

Oracle® Enterprise Manager Cloud Administration Guide



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Index

Preface

This book describes how to set up a Private Cloud, manage and deploy virtualization targets with Oracle Enterprise Manager. The preface covers the following:

- [Audience](#)
- [Supported Plug-ins](#)
- [Documentation Accessibility](#)
- [Related Documents](#)
- [Conventions](#)

Audience

This document is intended for administrators who want to setup and manage the cloud infrastructure. It is also intended for Cloud Administrators, Self Service Administrators and Self Service Users.

Supported Plug-ins

The features in this book pertain to the following plug-ins:



Note:

It is recommended that you check the *My Oracle Support Note 1549855.1* for the latest patches.

Plug-in Name (My Oracle Support)	Plug-in Name (Self Update)	Version
Enterprise Manager for Oracle Cloud	Oracle Cloud Application	13.2.2.0
Enterprise Manager for Oracle Consolidation Planning and Chargeback	Oracle Consolidation Planning and Chargeback	13.2.1.0
Note: This is an optional plugin.		
Enterprise Manager for Oracle Virtualization	Oracle Virtualization	13.2.2.0
Enterprise Manager for Oracle Virtualization Infrastructure	Oracle Virtual Infrastructure	13.2.2.0
Note: The Oracle Virtual Infrastructure plugin is required for direct monitoring of Xen based systems. See Direct Monitoring of Xen Based Systems .		

Plug-in Name (My Oracle Support)	Plug-in Name (Self Update)	Version
Enterprise Manager for Oracle Cloud Framework	Oracle Cloud Framework	13.2.2.0
Enterprise Manager for Oracle Database	Oracle Database	13.2.2.0
Enterprise Manager for Storage Management	Oracle Storage Management Framework	13.2.2.0
Note: This is an optional plugin.		
Enterprise Manager for Oracle Fusion Middleware	Oracle Fusion Middleware	13.2.2.0

 **Note:**

To use the latest updates, you must upgrade all the plugins to the versions listed in the table. For instance, if you upgrade the Oracle Database plugin from 12.1.0.8 to 13.2.1.0, you must upgrade the Oracle Cloud Application plugin from 12.1.0.10 to 13.2.1.0

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers that have purchased support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Related Documents

For more information, see the following documents in the Enterprise Manager documentation set:

- *Oracle Enterprise Manager Cloud Control Introduction*
- *Oracle Enterprise Manager Cloud Control Basic Installation Guide*
- *Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide*
- *Oracle Enterprise Manager Cloud Control Administrator's Guide*

For the latest releases of these and other Oracle documentation, check the Oracle Technology Network at:

<http://www.oracle.com/technetwork/documentation/index.html#em>

Oracle Enterprise Manager also provides extensive Online Help. Click **Help** at the top of any Enterprise Manager page to display the online help window.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, user names, text that appears on the screen, or text that you enter.

1

What's New in This Guide?

In addition to updating the books for an incremental software release or a patch set release, Oracle revises its books regularly to incorporate bug fixes and value-added feedback from customers, product managers, support teams, and other key stakeholders. Every time a book is revised, the revision number of the book is increased by one and then published on Oracle Technology Network (OTN). This chapter lists the changes incorporated in this release.

- [Setting Up and Using Oracle Compute](#): Added a new section and several new chapters on setting up and using the Oracle Compute Service and managing the Oracle Public Cloud Machine.
- [Setting Up the WebLogic Self Service Portal](#) : Updated the Load Balancer section to include 12c support.
- [WebLogic as a Service REST APIs](#) : Updated the REST APIs.

Part I

Cloud Management Overview

This section provides an introduction to the Oracle Cloud offering and explains the various Cloud service models available.

It contains the following sections:

- [Cloud Management - An Overview](#)

2

Cloud Management - An Overview

This chapter introduces Cloud Management and provides an overview of the various service offerings and components available with the Oracle Cloud platform. It also describes the Consolidation Planner, which is useful in planning your Cloud requirements, as well as various life cycle management capabilities of Oracle Enterprise Manager including resource management, metering and chargeback support.

This chapter contains the following sections:

- [Introduction to Cloud Management](#)
- [Managing the Cloud Management Lifecycle With Enterprise Manager](#)
- [Understanding the Oracle Cloud Service Models](#)
- [Accessing Oracle Cloud Features](#)

2.1 Introduction to Cloud Management

Enterprises and Cloud service providers can use Oracle Enterprise Manager to build and operate their Cloud services. The functionality provided by Enterprise Manager spans the entire Cloud lifecycle and allows you to setup and manage any type of Cloud service.

Enterprises must support hundreds or even thousands of applications to meet growing business demands. This growth has driven up the cost of acquiring and managing servers and storage. Clouds enable customers to consolidate servers, storage, and database workloads onto a shared hardware and software infrastructure.

By providing on-demand access to servers and storage in a self-service, elastically scalable and metered manner, Enterprise Manager offers the following benefits.

- **Increasing Quality of Service:** IT organizations are not only trying to drive down costs, they are also looking at solutions that will simultaneously improve quality of service in terms of performance, availability and security. Cloud consumers inherently benefit from the high availability characteristics built into the Cloud.
Organizations can also enforce a unified identity and security infrastructure as part of standardized provisioning. Thus, instead of bolting on security policies, these policies and compliance regulations are part of the provisioning process.
- **Enabling Faster Deployment:** Building the Cloud infrastructure using standard building block components (for example, servers, CPUs, storage, and network), configurations, and tools, enables a streamlined, automated, and simplified deployment process.
- **Providing Resource Elasticity:** The ability to grow and shrink the capacity of a given database, both in terms of storage size and compute power, allows applications the flexibility to meet the dynamic nature of business workloads.
- **Rapid Provisioning:** Databases in a Cloud can be rapidly provisioned, often by way of a self-service infrastructure, providing agility in application deployment.

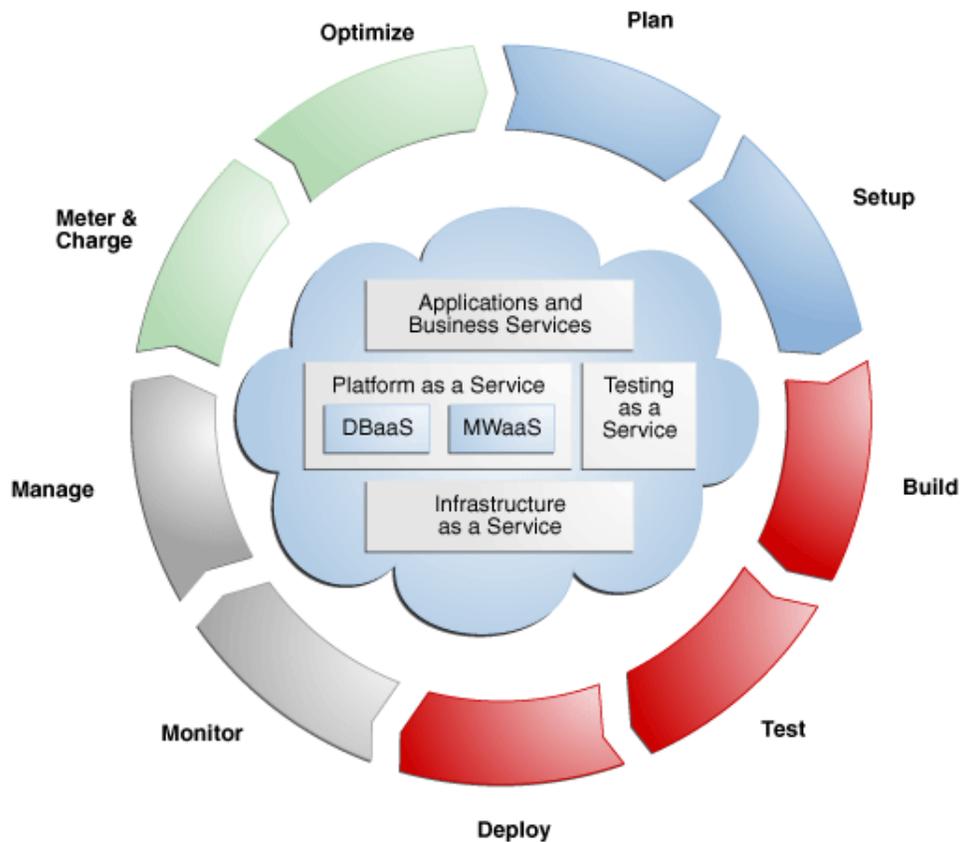
This reduces overall time in deploying production applications, development platforms, or creating test bed configurations.

2.2 Managing the Cloud Management Lifecycle With Enterprise Manager

Enterprise Manager allows you to manage the entire Cloud lifecycle which includes the following:

- [Planning](#)
- [Setting Up the Cloud](#)
- [Building the Cloud](#)
- [Testing and Deploying a Service](#)
- [Monitoring and Managing the Cloud](#)
- [Metering, Charging, and Optimization](#)

Figure 2-1 Cloud Lifecycle



2.2.1 Planning

Using Enterprise Manager, you can transform existing data centers into a Cloud environment. Before setting up a Cloud, you should map out your infrastructure

requirements, such as the physical and virtual networks, storage arrays, applications and so on.

The Enterprise Manager Consolidation Planner is a powerful tool that helps administrators plan the Cloud architecture. It allows you to identify source and destination targets and applicable technical and functional constraints such as where the application can reside, and so on. You can generate consolidation advisories that may include plans to move from Physical to Virtual (P2V), Physical to Physical (P2P), or Physical to an Exadata solution. The Consolidation Planner can also be used to identify the database consolidation plan which is helpful when setting up Database-as-a-Service (DBaaS). See [Enterprise Manager Consolidation](#) for details.

2.2.2 Setting Up the Cloud

Enterprise Manager can be used to model Infrastructure-as-a-Service (IaaS), Database-as-a-Service (DBaaS), and Middleware-as-a-Service (MWaaS) clouds. It is important to select the appropriate Cloud Service Model (as discussed in [Understanding the Oracle Cloud Service Models](#)) that suits the needs of your users and organization. To facilitate Cloud setup, Enterprise Manager offers capabilities for both physical and virtual infrastructure.

For physical infrastructure, Enterprise Manager leverages its core automation framework of deployment procedures, job system, and the enterprise software library. It offers out of the box deployment procedures that can be used for provisioning the pre-requisite software for both databases and middleware. The same automation framework is also used to interact with third party storage systems for the purposes of data cloning and storage management. For virtual infrastructure, it offers bare metal provisioning of hypervisor and setting up server and storage pools. Once completed, you can group all of these into zones based on functional or QoS characteristics. Enterprise Manager leverages the Virtualization Storage Connect technology, where the Cloud setup process is integrated with storage technologies like Netapp, Hitachi, Fujitsu. Administrators can define standardized service templates for databases and middleware platforms, and publish these as services. These services can represent single-tier templates or complex, multi-tier enterprise platforms.

Enterprise Manager uses components called assemblies created by the Oracle Virtual Assembly Builder (OVAB). Assemblies help package a multi-tier platform into a single metadata which can be deployed by the Enterprise Manager Cloud service. An assembly is essentially a complete multi-tier application stack - including database, application server and other middleware components - packaged as a single downloadable entity. When an assembly is deployed, the result is the creation of a set of related virtual machines representing every tier of the application stack.

Using OVAB, platform architects can model the entire platform topology graphically, define all dependencies, deployment constraints, and deliver the entire stack in the form of an assembly. This assembly can then be published to the centralized Software Library in Enterprise Manager, and be made available to developers as a Cloud service – an entire application development stack, that can be provisioned quickly. Administrators can create different types of services depending upon the business needs. For example, administrators may offer a database service based on different versions of the Oracle database, but only the ones approved for use within the business.

Enterprise Manager supports role-driven access control. Resource limits, or quotas, are assigned to roles to control access to services. This prevents unauthorized usage

of a service while also preventing a few users from using majority of the resources in the Cloud. Integration with LDAP allows Enterprise Manager to inherit enterprise roles.

2.2.3 Building the Cloud

Enterprise Manager allows entire applications or components to be packaged and published to the Cloud as a service. This expedites application development and provisioning processes within an organization.

Developers can publish utility components and applications in the form of assemblies and service templates for reuse within their groups. Similarly, allowing applications to be available as assemblies allows testing teams, business analysts or production teams to deploy pre-built applications in a few clicks.

2.2.4 Testing and Deploying a Service

After an application has been built, it needs to be tested. Enterprise Manager provides a testing portfolio that allows users to test both application changes and changes to the database. The testing solution provides the ability to capture a production load and replay in a test environment, so that the results are predictable. The testing solution also leverages the diagnostic capabilities built into the technology layers and provides prescriptions for remediation. Enterprise Manager provides a self-service application that lets end-users deploy a service. This self service application can also be customized. End users can choose to provision application assemblies, along with databases and platforms, in an on-demand manner. For each request, users can specify the amount of underlying resources such as CPU, memory, and so on that they require for each component. Enterprise Manager automatically provisions the requested service and the appropriate resources. The self-service application also lets users define policies to scale out or scale back resources based on schedule or performance metrics. For example, a user could set a policy to elastically scale out a Web server if the processor load on existing Web servers exceeds a certain threshold value.

2.2.5 Monitoring and Managing the Cloud

Enterprise Manger offers a number of inherent monitoring and management features that collectively comprise a full Cloud management system.

For example, Enterprise Manager provides the ability to collate targets into groups for better manageability. The Administration Group feature allows administrators to define monitoring settings, compliance standards and cloud policies through templates and also organize each target in multiple hierarchies, such as Line of Business and Lifecycle status. This allows the monitoring framework to scale to thousands of servers, databases and middleware targets in the Cloud.

Enterprise Manager's built-in Incident Management system allows you to monitor the Cloud for complex operational issues that may affect performance. You can review, suppress, escalate and remediate events that occur as needed, and even integrate incident escalation with existing support ticketing systems. See the Enterprise Manager Cloud Control Administrator's Guide for details. Contractual Service Level Agreements (SLAs) can be defined to govern the contract between the application owner and the provider of the Cloud. Administrators as well as users can also define management policies that automatically adjust the service resources to ensure that SLAs are met.

The configuration management capabilities of Enterprise Manager are optimized for Cloud environments. For example, Enterprise Manager can monitor vast numbers of configurations continuously to discover changes, measure drifts, pin-point configuration errors, and offer insight into system topologies - all through a single console. Enterprise Manager Cloud management capabilities are also integrated with My Oracle Support. This integration delivers facilities such as Patch Advisories, Service Request Management, Knowledge Management right on-premise and in-context of the overall Cloud.

The IaaS, DBaaS, and MWaaS Home pages provided through the Enterprise Manager Cloud Control user interface allow Cloud administrators to get a summary view of the requests, the general state of the service such as zones, pools, servers, service instances, and databases.

2.2.6 Metering, Charging, and Optimization

The Metering and Chargeback features in Enterprise Manager enable enterprises to account for actual usage versus representative usage. Administrators can also extend the pricing models to account for fixed costs, configurations, administrative expenses, people costs, energy utilization or a combination of these. Cloud Management also entails an ongoing optimization of resources as well as processes to make sure that the service levels are persistent. Enterprise Manager provides administrators and application users with features that help rediscover assets, re-evaluate the performance, rebalance the Cloud, and fine-tune the provisioning process. Chargeback supports basic metrics like CPU, memory, and storage usage. It also offers pricing models based on application usage, database usage, and Middleware-level metrics.

2.3 Understanding the Oracle Cloud Service Models

This section describes the available Oracle Cloud service models available.

- [Oracle Cloud Service Models](#)
- [Oracle Cloud Anatomy](#)
- [IaaS Components](#)
- [DBaaS and MWaaS Components](#)
- [TaaS Components](#)

2.3.1 Oracle Cloud Service Models

Oracle's Cloud service models can be divided into two primary categories: Infrastructure as a Service, which allows users to request the physical infrastructure required to run applications; and Platform as a Service, which provides the database and middleware components required by applications.

- **Infrastructure as a Service (IaaS) Service Model:** In the IaaS model, users request servers that are created as guest virtual machines, or Guest VMs.

The IaaS model allows users to request Guest VMs using the Self Service Portal in Enterprise Manager. It also allows users to specify an assembly or a template that is to be deployed on the requested Guest VMs. Using pre-packaged assemblies consisting of the operating system, database software and middleware software, a platform can be deployed using this service.

Users can monitor the services provided using the Self Service Portal and perform limited management operations as permitted. They can also run chargeback reports to review resource usage and chargeback amounts calculated for the resources consumed.

IaaS cloud infrastructure can be built out of Oracle hardware and software components such as Oracle VM, Oracle Solaris, Oracle Enterprise Linux, and so on, or it may have 3rd party components.

- **Platform as a Service (PaaS) Service Model:** The PaaS model allows you to create platforms onto which consumers can deploy their own applications. A platform resource is typically comprised of a host, an operating system, an Oracle WebLogic Application server - all of which can be virtualized. It can also include an Oracle database or RAC cluster.

Models available with PaaS include:

- **Database as a Service (DBaaS) Service Model:** In this model, users can request database services (single instance or RAC) through the Self Service Portal. DBaaS is implemented through several options:
 - * **Virtual Machine Based:** The database is deployed as a part of a virtual assembly or template, and several virtual machines share the same physical server. This offers the maximum level of isolation (at the operating system level).
 - * **Shared Cluster:** The database is deployed on existing clusterware. Typically the grid infrastructure (Oracle Clusterware, ASM) and database software is pre-installed; the Cloud service essentially consists of the deployment of databases on top of that infrastructure.
 - * **Shared Installation:** The database is deployed as a single instance database on an existing database installation.
 - * **Pluggable Database as a Service:** A pluggable database is deployed. This model provides high consolidation, and minimal administrative and maintenance overhead.
 - * **Snap Clone:** You can make a thin-clone using copy on write technology of the database. This model requires minimal space, provides instantaneous cloning, and is ideal for functional testing.
 - * **Full Clone:** You can make a full copy of the database. This model is ideal for load testing with significant data updates.
 - * **Shared Database (Schema as a Service):** The database service is a schema deployment on an existing database. It is assumed for purposes of metering and chargeback that each of the consumers of the database will use a different service while accessing the database. This service model is also referred to as Schema as a Service.

As in IaaS, users are allowed to perform a few administrative tasks such as start/stop, backup, and recovery of databases. Chargeback reports are also made available for Self Service users.

- **Middleware as a Service (MWaaS):** In this model, users submit requests for middleware domains to be created. Applications can then be deployed into these domains. MWaaS is implemented through the following option:
 - * **Physical Provisioning Based:** The MWaaS platform is built using physical hosts and Fusion Middleware Provisioning.

- **Testing as a Service (TaaS):** In this model, testing can be made faster and simpler through the Cloud Testing Self Service Portal. The applications being tested can be provisioned to the private cloud using assemblies or to an existing Enterprise Manager target. The TestDrivers need to be provisioned into the private cloud.

2.3.2 Oracle Cloud Anatomy

In the Oracle implementation, Clouds are composed of logical zones. Zones are composed of logical pools and pools are composed of targets on hosts.

The pools in an IaaS zone are collections of one or more Oracle VM servers and their associated storage resources. The pools in DBaaS zones are collections of one or more Oracle Database homes (used for database requests), or databases (used for schema requests) of the same platform and version (for example, Oracle Database 11.2.0.3 RAC on Oracle Linux 6 x86-64), or Oracle Middleware homes of the same platform and version (for example, Oracle Database 11.2.0.2 on Linux x86-64).

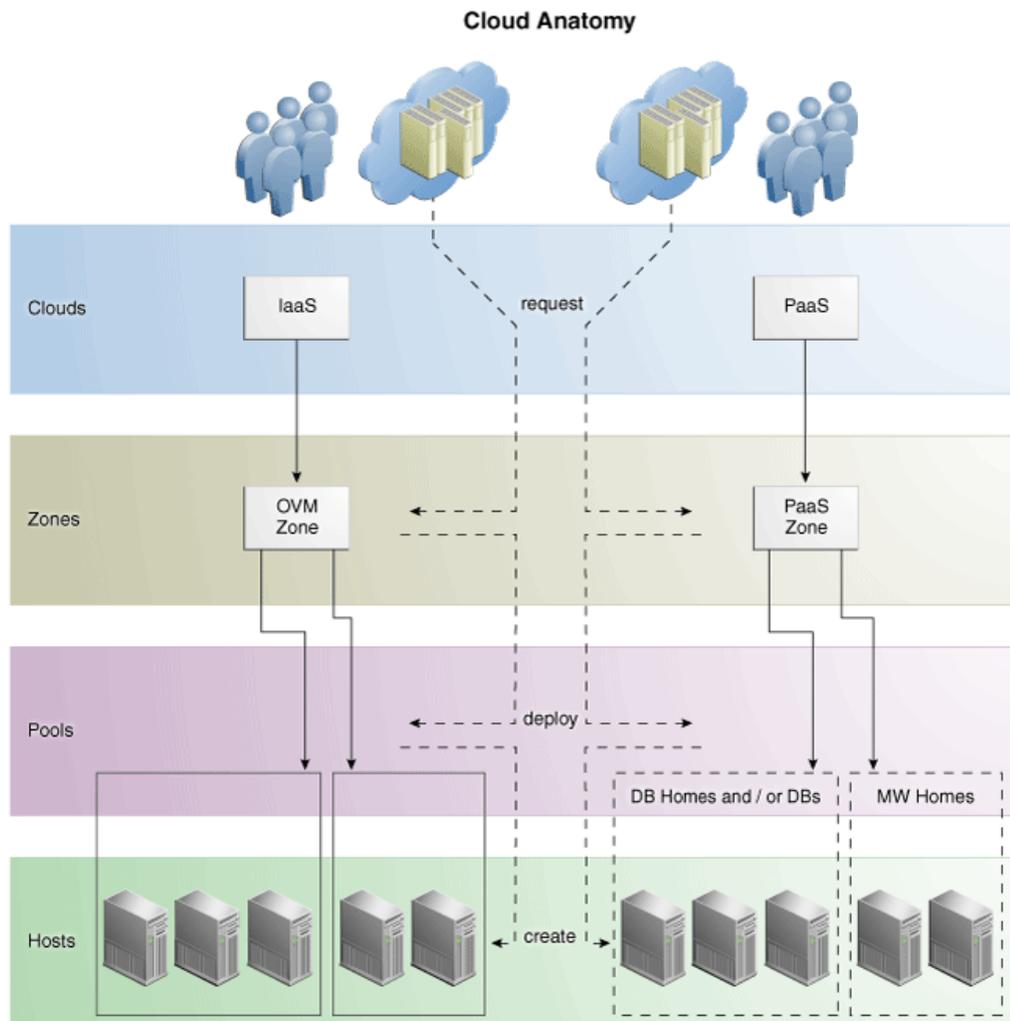
In either IaaS or PaaS, Self Service users will request resources at the zone level from a catalog of templates. Enterprise Manager will then determine which pool in the chosen zone can be used to satisfy the request. The needed Enterprise Manager jobs will be initiated on one or more hosts in the selected pool to create the entities required to fulfill the request.

In an IaaS Cloud, self-service users request that servers be created. These are actually guest virtual machines, or Guest VMs. A single IaaS request may result in one or more virtual machines being created complete with database(s), middleware software and deployed applications.

In the DBaaS view of a PaaS Cloud, a self-service user can request that new databases or schemas in existing databases be created. Databases can be single instance or RAC, depending upon the zones and catalog templates to which the user has access. Similarly, in the MWaaS view of the PaaS Cloud, self-service users request that middleware domains be created.

Figure [Figure 2-2](#) shows the Cloud anatomy.

Figure 2-2 Cloud Anatomy



2.3.3 IaaS Components

The IaaS Cloud model consists of the following components:

- **Cloud:** A *Cloud* is a set of storage pools, server pools and zones under the programmatic control of a Cloud Controller and the administrative control of the Cloud Administrator. The Cloud Administrator works with the Cost Center Administrator who has paid for the cloud to determine a resource allocation and charge back policy that meets their needs.
- **Zone:** A Cloud can consist of one or more *zones*. A zone is a logical grouping of resources - for example, servers and storage entities - that facilitate self-service provisioning and administration. A typical zone may consist of hundreds to thousands of servers.

A zone can be an empty zone or consist of a set of server pools. The second case may be simple to set up and will not require shared storage; however no HA and live migration is permitted within this zone.

Zones are non-overlapping, which means that a resource can only belong to one zone. However, resources within a zone may be accessible from another zone. For example, it is possible for a virtual machine in Zone 1 to interact with a virtual machine in another zone.

- **Server Pool:** A *server pool* is a set of tightly coupled group of servers (typically up to 32 servers) that hosts a set of Guest VMs. The servers are assumed to be largely homogeneous in capabilities and in connectivity. High Availability and Live Migration is permitted within a server pool boundary. Each server pool needs to have access to a shared storage subsystem (which could just be an NFS mount point) to facilitate live migration. In addition, access to a clustered file system may be required to maintain the HA heartbeat file.
- **Storage Entity:** A *storage entity* is an individual file system or block store. Each storage entity is served by a storage pool. Some entities are free standing and will exist until they are deleted. Other storage entities that are associated with one or more Guest VMs are deleted when those VMs are retired.
- **Storage Pool:** A *storage pool* is an abstract storage system that hosts a set of storage entities. A storage pool is generally implemented using a set of storage devices such as disks, SSDs, and storage servers.

2.3.4 DBaaS and MWaaS Components

The DBaaS and MWaaS Cloud structures consist of the following:

- **PaaS Infrastructure Zone:** A *PaaS infrastructure zone* is a group of hosts. Each resource in a zone represents a location at which a service instance is to be deployed.

Before you enable or setup DBaaS or MWaaS, you must create a PaaS Infrastructure Zone which allows you to define the placement policy constraints for a specified set of targets and the users to whom this zone will be available.

- **Software Pool:** A *software pool* is a set of homogeneous resources. You can create software pools for DBaaS and MWaaS. A Database Pool, which is created in DBaaS, is a collection of database homes, databases, or container databases depending on the type of cloud service model selected. You can create a Middleware Pool, used for MWaaS, which is a collection of hosts.

A software pool has the following constraints:

- A target can belong to only one software pool.
 - The name of the software pool and the version cannot be modified after it has been created.
 - All targets in a software pool must be homogeneous.
 - A service template can use multiple zones but only one software pool within each zone.
- **Database Provisioning Profile:** A *database provisioning profile* is an entity that captures source database information for provisioning. A profile can represent a complete database or a set of related schemas that form an application.
 - **Middleware Provisioning Profile:** A *middleware provisioning profile* is used to standardize deployments and help reduce errors when deployment procedures are configured.

- **Service Template:** A *service template* is a standardized service definition that is offered to self service users to create databases, schemas, or middleware services.

2.3.5 TaaS Components

The TaaS solution is based on the IaaS platform. Before you set up TaaS, ensure that you have set up Enterprise Manager, and the IaaS components. To use TaaS with the Oracle Load Testing TestDriver, you must download this through the Enterprise Manager self-update.

2.4 Accessing Oracle Cloud Features

Access to the Oracle Cloud features is either through the standard Enterprise Manager console, or the Self Service Portal, which is also part of Enterprise Manager.

Access to the rest of the Enterprise Manager functionality is restricted. This allows enterprises to safely implement Clouds without worrying about exposing the entire infrastructure to the end users.

2.4.1 Enterprise Manager Cloud Control Console

Administrators will use the Enterprise Manager Cloud Control console to set up, monitor, and manage Cloud services. Each service is managed using a page specific to that service. For example, IaaS, DBaaS, MWaaS, and TaaS all have their own pages that can be accessed directly from the Cloud Summary page or from the Enterprise Manager menu.

The Enterprise Manager Cloud Summary page is a single pane that contains the summary of all Cloud services. Enterprise Manager enables a layer of abstraction that hides the underlying complexities of the application from the end-user. This abstraction is delivered via a self-service interface, both in Graphical User Interface (GUI) and Application Programming User Interface (API).

2.4.2 Self Service Portal

To directly manage the Cloud infrastructure, Enterprise Manager provides an out-of-the-box Self Service Portal that allows self-service users to access Cloud services (provisioning applications) without IT intervention. It provides several pre-packaged virtual assemblies and templates for on-demand provisioning, tracks usage of services and resources, and allows data to be used for Chargeback reports and capacity planning.

The Self Service Portal is the Home Page for the self service user. Users who have the necessary privileges can navigate between Services pages by clicking the appropriate radio button. How you use the Portal will vary depending on the type of service you are managing.

Part II

Setting Up and Enabling Cloud

This section provides an introduction to virtualization concepts and describes how to start managing virtualization targets in Enterprise Manager.

It contains the following sections:

- [Setting Up the Cloud Management Infrastructure](#)
- [How to Enable Cloud](#)

3

Setting Up the Cloud Management Infrastructure

This chapter describes the initial setup needed before you can begin using the Enterprise Manager Cloud Management solution. The chapter includes the following sections:

- [Setting Up Self Update](#)
- [Deploying the Required Plug-ins](#)
- [Defining Roles and Assigning Users](#)
- [Configuring LDAP Authentication](#)
- [Configuring Privilege Delegation Settings](#)
- [Customizing the Self Service Login Page](#)

 **Note:**

From the Enterprise Manager 12.1.0.4 release, the Software Library is configured during the installation of Enterprise Manager. It need not to be separately configured.

3.1 Setting Up Self Update

The Self Update feature allows you to expand Enterprise Manager's capabilities by updating Enterprise Manager components whenever new and updated features become available between official releases. Oracle makes functional updates available between releases by publishing them to the Enterprise Manager Store, an external site that is periodically checked by Enterprise Manager to obtain information about available updates.

The updatable entities for the Oracle Cloud platform include:

- Cloud Plug-ins. See [Deploying the Required Plug-ins](#)
- Oracle VM Templates and Assemblies. See [Using Self Update to Download Oracle VM Templates and Virtual Assemblies](#).
- Database Provisioning Profiles. See [Creating a Container Database Provisioning Profile Using Database Template](#).
- Middleware Provisioning Profiles. See [Creating Provisioning Profiles](#).

Before you can use the Self Update feature, you must satisfy these prerequisites:

- If you are applying an update in online mode, ensure that the My Oracle Support credentials have been set up using the SYSMAN user. This is required to enable entities to be downloaded from the My Oracle Support site.

- The Software Library (also known as the local store) has been configured. Updates are downloaded to this local store before being deployed into Enterprise Manager.

Review the following sections for instructions on setting up Self Update:

- [Setting Up Enterprise Manager Self Update Mode](#)
- [Assigning Self Update Privileges to Users](#)
- [Setting Up the EM CLI Utility \(Optional\)](#)

3.1.1 Setting Up Enterprise Manager Self Update Mode

In order to set up or modify the Enterprise Manager Self Update feature, you must have Enterprise Manager Super Administrator privileges.

1. Log in to Enterprise Manager as an administrator with Super Administrator privileges.
2. From the **Setup** menu, select **Extensibility**, then select **Self Update**. The Self Update console appears with the default setup displayed.
3. From the **General** status area, click the **Connection Mode** status to set either offline or online mode. Enterprise Manager takes you to the Patching Setup page to specify online and offline settings.
4. Once the desired connection mode has been selected, return to the Self Update console.

From here you can select entity types and schedule updates from the Enterprise Manager Update Store.

3.1.2 Assigning Self Update Privileges to Users

Enterprise Manager administrators must have the requisite privileges to use the Self Update feature. The Enterprise Manager Super Administrator must assign the following Self Update roles to these administrators:

- **VIEW_SELF_UPDATE**: The user can view the Self Update console and can monitor the status of download and apply jobs.
- **MANAGE_SELF_UPDATE**: The user can schedule download and apply jobs. User can also suppress/unsuppress updates. This privilege implicitly contains **VIEW_SELF_UPDATE**.
- **EM_INFRASTRUCTURE_ADMIN**: The user can perform all self update operations. This privilege implicitly contains **MANAGE_SELF_UPDATE**.

By default, the Super Administrator will be granted **EM_INFRASTRUCTURE_ADMIN** privilege.

To assign Self Update privileges to regular Enterprise Manager administrators:

1. From the **Setup** menu, select **Security**, then select **Administrators**.
2. Select an administrator and click **Edit**.
3. From the Roles page, assign the appropriate Self Update roles.

3.1.3 Setting Up the EM CLI Utility (Optional)

If you plan to apply software updates in offline mode, you will need to use the Enterprise Manager Command Line Utility, or EM CLI, to import entity archives for deployment to Enterprise Manager.

A page is provided in the Enterprise Manager Cloud Control console with instructions on setting up EMCLI. Access the page by appending `/console/emcli/download` to the URL used to access the Cloud Control console:

```
https://emcc_host:emcc_port/em
```

For example:

```
https://emcc_host:emcc_port/em/console/emcli/download
```

3.2 Deploying the Required Plug-ins

Much of the functionality available in Enterprise Manager Cloud Control is made available through *plug-ins*. As its name implies, a plug-in is a component or module that can be plugged into an existing Enterprise Manager installation to extend its management and monitoring capabilities.

The features that collectively comprise the Oracle Cloud Management solution are provided via several plug-ins which must be deployed to your Oracle Management Service (OMS). The plug-ins that must be deployed to enable each Cloud model are listed below.

You can deploy the plug-ins needed to enable Cloud in two ways:

- If you have not yet installed Enterprise Manager Cloud Control, or have not yet upgraded to the latest Enterprise Manager release, you can deploy the plug-ins as part of the installation or upgrade process. You will select the Advanced Install mode and in the Select Plug-ins screen, select the plug-ins that you wish to install.
- If you already have Enterprise Manager Cloud Control 12c installed, you must download the needed plug-ins to the Software Library. You can then deploy the plug-ins to your Oracle Management Service (OMS).

See the Enterprise Manager Cloud Control Administrator's Guide for instructions on downloading and deploying the plug-ins.

 **Note:**

- The default plugins are:
 - Enterprise Manager for Oracle Database
 - Enterprise Manager for Oracle Fusion Middleware
 - Enterprise Manager for Oracle Cloud Framework
- The Enterprise Manager for Oracle Consolidation Planning and Chargeback plugin is an optional plugin for all service families and is required only you are using the chargeback features.
- For a complete list of all cloud plug-ins along with the version numbers, see [Supported Plug-ins](#). You must check for any plug-ins updates that are available and ensure that the latest version has been downloaded.

Plug-ins Required to Enable Infrastructure as a Service (IaaS)

- Enterprise Manager for Oracle Cloud (listed as Oracle Cloud Application in Self Update)
- Enterprise Manager for Oracle Virtualization (listed as Oracle Virtualization in Self Update)
- Enterprise Manager for Oracle Virtualization Infrastructure (listed as Oracle Virtual Infrastructure in Self Update)
- Enterprise Manager for Oracle Cloud Framework (listed as Oracle Cloud Framework in Self Update)
- Enterprise Manager for Oracle Consolidation Planning and Chargeback (listed as Oracle Consolidation Planning and Chargeback in Self Update)

Plug-ins Required to Enable Database as a Service (DBaaS)

- Enterprise Manager for Oracle Cloud (listed as Oracle Cloud Application in Self Update)
- Enterprise Manager for Oracle Virtualization (listed as Oracle Virtualization in Self Update)
- Enterprise Manager for Oracle Consolidation Planning and Chargeback (listed as Oracle Consolidation Planning and Chargeback in Self Update)
- Enterprise Manager for Oracle Database (listed as Oracle Database in Self Update)
- Enterprise Manager for Storage Management (listed as Oracle Storage Management Framework in Self Update)
- Enterprise Manager for Oracle Cloud Framework (listed as Oracle Cloud Framework in Self Update)

 **Note:**

When you are upgrading to the latest plugin versions, you must upgrade them in the following sequence:

1. Enterprise Manager for Oracle Cloud Framework
2. Enterprise Manager for Oracle Database
3. Enterprise Manager for Oracle Fusion Middleware (Mandatory even if not performing any Fusion Middleware or Middleware as a Service operations).
4. Enterprise Manager for Oracle Virtualization
5. Enterprise Manager for Oracle Cloud (This plugin cannot be upgraded unless the Enterprise Manager for Oracle Fusion Middleware plugin has been upgraded).
6. Enterprise Manager for Storage Management

Plug-ins Required to Enable Middleware as a Service (MWaaS)

- Enterprise Manager for Oracle Consolidation Planning and Chargeback (listed as Oracle Consolidation Planning and Chargeback in Self Update)
- Enterprise Manager for Oracle Fusion Middleware (listed as Oracle Fusion Middleware in Self Update)
- Enterprise Manager for Oracle Cloud Framework (listed as Oracle Cloud Framework in Self Update)
- Enterprise Manager for Oracle Virtualization (listed as Oracle Virtualization in Self Update)

 **Note:**

- The Enterprise Manager for Cloud and the Enterprise Manager for Oracle Virtualization plugins are not required if you are using Middleware as a Service for the first time. The features that are part of these plugins have now been bundled with the Enterprise Manager for Oracle Fusion Middleware 12.1.0.7 plugin onwards.
- If you have already deployed the Enterprise Manager for Cloud plugin (12.1.0.8 or earlier), you must upgrade the following plugins to use the new features in this release:
 - Enterprise Manager for Oracle Cloud to 12.1.0.10
 - Enterprise Manager for Oracle Cloud Framework to 12.1.0.3
 - Enterprise Manager for Oracle Virtualization to 12.1.0.8
 - Enterprise Manager for Oracle Fusion Middleware to 12.1.0.8

Plug-ins Required to Enable Testing as a Service (TaaS)

- Enterprise Manager for Oracle Cloud (listed as Oracle Cloud Application in Self Update)
- Enterprise Manager for Oracle Virtualization (listed as Oracle Virtualization in Self Update)
- Enterprise Manager for Oracle Consolidation Planning and Chargeback (listed as Oracle Consolidation Planning and Chargeback in Self Update)
- Enterprise Manager for Oracle Cloud Framework (listed as Oracle Cloud Framework in Self Update)

Plug-ins Required for Direct Monitoring of Xen Based Systems

- Enterprise Manager for Oracle Virtualization Infrastructure (listed as Oracle Virtual Infrastructure in Self Update)

3.3 Defining Roles and Assigning Users

Roles are named groups of related system and object privileges. You can create roles and then assign them to users and to other roles. You can assign any of the existing roles to a new role and the associated privileges. Enterprise Manager contains four out-of-the-box roles for the Cloud Self Service Portal, namely:

- `EM_CLOUD_ADMINISTRATOR`: Users with this role can set up and manage the cloud infrastructure. This role is responsible for deploying the cloud infrastructure (servers, zones, storage, and networks) and infrastructure cloud operations for performance and configuration management. This user has the following privileges:
 - Access to all services and service families.
 - Privileges to manage any service or service family.
 - Privileges to view any target.
- `EM_SSA_ADMINISTRATOR`: Users with this role can define quotas and constraints for the self service users and grant them access privileges. Users with this role also have provisioning and patching designer privileges that allow them to create and save deployment procedures, create and view patch plans, and support the plug-in lifecycle on the Management Agent. These privileges are required for initial setup and on going maintenance of the infrastructure. This user has the following privileges:
 - Access to all services and service families.
 - Privileges to manage any service or service family.
 - Privileges to view any target.

Apart from this default role, you can create custom self service administrator roles with access to specific service families and specific services.

- `EM_SSA_ADMINISTRATOR_BASE`: Users with this role do not have access to any services or service family. This user has **View Any Target** privilege only.
- `EM_SSA_USER`: Users with this role, by default, can only access the Self Service Portal and all the service families. An administrator with the `EM_SSA_ADMINISTRATOR` role can provide additional privileges that allow users with the `EM_SSA_USER` role to access other features in Enterprise Manager.

- **EM_SSA_USER_BASE:** Users with this role can access the Self Service Portal but will not have access to any service family. Access to a specific service family (DBaaS, MWaaS, and so on) needs to be explicitly granted to the users with this role. This user has the following privileges:
 - Can submit service requests.
 - Can view PaaS Infrastructure Zone targets.

The table below lists the roles associated with each user.

User Profile	EM_CLOUD_ADMINISTRATOR	EM_SSA_ADMINISTRATOR	EM_SSA_USER	EM_SSA_USER_BASE
Minimum roles required to create a user	<ul style="list-style-type: none"> • EM_CLOUD_ADMINISTRATOR • PUBLIC • EM_USER 	<ul style="list-style-type: none"> • EM_SSA_ADMINISTRATOR • PUBLIC • EM_USER 	<ul style="list-style-type: none"> • EM_SSA_USER • EM_SSA_USER_BASE 	<ul style="list-style-type: none"> • EM_SSA_USER_BASE
Roles to be removed when creating a user	NONE	NONE	<ul style="list-style-type: none"> • PUBLIC • EM_USER 	NONE
NONE	Additional roles may be added as required		NONE	NONE

The Oracle Cloud Self Service Portal is intended for end-users to be able to provision and manage their own cloud services. Since the functions performed by users with the `EM_CLOUD_ADMINISTRATOR` and `EM_SSA_ADMINISTRATOR` roles are consistent across Enterprise Manager, these out-of-box roles can be used as they are. All you need to create users with the `EM_CLOUD_ADMINISTRATOR` and `EM_SSA_ADMINISTRATOR` roles.

If you want to restrict access to certain service families and specific service types, you can create custom self service administrator roles based on the out-of-the-box `EM_SSA_ADMINISTRATOR` role.

But the `EM_SSA_USER` and `EM_SSA_USER_BASE` roles are used for quota assignment, and to limit access to PaaS Infrastructure zones, and service templates. In this case, the pre-defined role cannot be used as it is defined. You must create custom self service user roles based on the standard `EM_SSA_ROLE` and `EM_SSA_USER_BASE` roles as described in [Creating Custom Roles for Self Service Application Administrators and Users](#). After creating a custom role, you must assign users to this role.

For example, in a DBaaS Cloud setup, you may want to create the following users:

- **CLOUD_ADMIN:** This user will have the `EM_CLOUD_ADMINISTRATOR` role and is responsible for network, system, storage, and administration activities.
- **SSA_ADMIN_DBAAS:** This user will have the `EM_SSA_ADMINISTRATOR` role but will have access only to the Database Service Family. Users with this role will be responsible for all database administration activities. You can further restrict access by granting access to only to a certain service type within the Database Service Family.
- **SSA_USER_DBAAS:** In this case, the default `EM_SSA_USER` role must be customized and a custom role must be created. A user in this role is typically a junior database administrator, developer, or tester.
- **SSA_USER_BASE_DBAAS:** In this case, you need to create a copy of the `EM_SSA_USER_BASE` role and grant access to the Database Service Family to this

role. You can then create the `SSA_USER_BASE` user who will have access the Database Cloud Self Service Portal.

For more details on Users and Roles, see the *Enterprise Manager Cloud Control Security Guide*.

3.3.1 Creating Custom Roles for Self Service Application Administrators and Users

This section describes the following:

- [Creating a Custom Role Based on the EM_SSA_ADMINISTRATOR Role](#)
- [Creating a Custom Role Based on the EM_SSA_USER Role](#)
- [Creating a Custom Role Based on the EM_SSA_USER_BASE Role](#)

3.3.1.1 Creating a Custom Role Based on the EM_SSA_ADMINISTRATOR Role

You can create a custom self service administrator role and grant access to the Database Service Family. You can grant privileges to users with this role to access all service types or specific service types and view or manage the services. To create a custom role, follow these steps:

1. Log in to Enterprise Manager as a Super Administrator user.
2. From the **Setup** menu, select **Security**, then select **Roles**.
3. Click **Create** in the Roles page to launch the Create Role wizard.
4. Provide a name and description (`SSA_ADMIN_DBAAS`) for the role and click **Next**.
5. From the list of Available Roles, select the `EM_SSA_ADMINISTRATOR` role and move it to the Selected Roles table. Click **Next**.
6. Accept the default target privileges and click **Next**.
7. In the Resource Privileges page, click the **Edit** icon for the Cloud Service Families. In the Resource Privileges page, click **Add** and select `DBAAS` and click **Continue** to return to the Manage Privileges page.

Note:

If you want users with this role to view and manage all the DBaaS service types, click the Manage Resource Privilege Grants icon and select the following privileges:

- View Service Family
 - Manage Service Family
8. Click **Continue** to return to the Resource Privileges page. Click the **Edit** icon for the Cloud Service Types. Click **Add** and select the database service type for which the privileges should be granted. You can select one of the following:
 - DB

- PDB
 - Schema
9. Click the **Manage Resource Privilege Grants** for the Cloud Service Types resource type. Select the following privileges:
 - Manage Service Type
 - View Service Type
 10. Click **Continue** to return to the Resource Privileges page.
 11. Review the changes and click **Finish** to create the custom SSA user (SSA_ADMIN_DBAAS) role.

3.3.1.2 Creating a Custom Role Based on the EM_SSA_USER Role

Typically, you need to create new SSA User roles either for different functional groups like developers, testers, production DBAs, or for different customer teams like the Siebel DBA team, BRM DBA team, and operations team for hosting custom Java applications, and so on. To create a custom SSA user role who has access only to the Database Service Family and can submit requests, follow these steps:

1. Log in to Enterprise Manager as a Super Administrator user.
2. From the **Setup** menu, select **Security**, then select **Roles**.
3. Click **Create** in the Roles page to launch the Create Role wizard.
4. Provide a name and description (SSA_USER_DBAAS) for the role and click **Next**.
5. From the list of Available Roles, select the EM_SSA_USER role and move it to the Selected Roles table. Click **Next**.
6. Accept the default target privileges and click **Next**.
7. In the Resource Privileges page, remove access to the following resource types
 - Cloud Self Service Portal for JVM Diagnostics
 - Cloud Self Service Portal for Test
 - Infrastructure Self Service Portal
8. Click the **Manage Privilege Grants** for the Cloud Service Families resource type. In the Resource Type Privileges region, select the **View Any Service Family** checkbox.
9. Click **Add** in the Resource Privileges region and select the DBAAS service family and click **Continue**.
10. Skip the Create Role: Administrators step and click **Next**.
11. Review the changes and click **Finish** to create the custom SSA user (SSA_USER_DBAAS) role.

3.3.1.3 Creating a Custom Role Based on the EM_SSA_USER_BASE Role

You may want to restrict some self service users from using all service families and allow them to access only certain service types depending on their requirements. In this case, you can create a custom role based on the EM_SSA_USER_BASE role and grant them access to only certain service types.

To create a custom SSA user role, follow these steps:

1. Log in to Enterprise Manager as a Super Administrator user.
2. From the **Setup** menu, select **Security**, then select **Roles**.
3. Click **Create** in the Roles page to launch the Create Role wizard.
4. Provide a name and description (`SSA_USER_BASE_DBAAS`) for the role and click **Next**.
5. From the list of Available Roles, select the `EM_SSA_USER_BASE` role and move it to the Selected Roles table. Click **Next**.
6. Select the default target privileges and click **Next**.
7. In the Resource Privileges page, click the **Manage Privilege Grants** icon for the Cloud Requests resource type.
8. In the Resource Privileges page, deselect the **Create Any Cloud Request** checkbox and click **Continue**.
9. Click the **Manage Privilege Grants** icon next to the Cloud Service Families and Cloud Service Types resource types and select the service families and service types for which you need access.
10. Skip the Create Role: Administrators step and click **Next**.
11. Review the changes and click **Finish** to create the custom SSA user (`SSA_USER_BASE_DBAAS`) role. This user can only access the Database Cloud Self Service Portal.

3.3.2 Creating a User and Assigning Roles

To create a user called `SSA_USER1` and grant the custom role created earlier (`SSA_USER_DBAAS`), follow these steps:

1. Log in to Enterprise Manager as a Super Administrator user.
2. From the **Setup** menu, select **Security**, then select **Administrators**.
3. Click **Create** in the Administrators page to launch the Create Administrator wizard.
4. Enter the name and password for the user (`SSA_USER1`) and create **Next**.
5. From the list of Available Roles, select the `SSA_USER_DBAAS` role and move it to the Selected Roles table. Remove the `EM_USER` and `PUBLIC` roles from the Selected Roles table. Click **Next**.
6. Accept the default target privileges and click **Next**.
7. Accept the default resource privileges and click **Next**.
8. Review all the changes and click **Finish** to create the `SSA_USER1` user.

Tip:

To create multiple users with the same role, select the newly created user and click **Create Like**. This will create a new user that will have the same properties as the source. You can then update the name, description, and email address for the new user.

 **Note:**

Repeat these steps to create other users. For users with the `EM_CLOUD_ADMINISTRATOR` and `EM_SSA_ADMINISTRATOR` roles, the `EM_USER` and `PUBLIC` roles must be retained as these users need access to additional features.

3.3.3 Granting Roles and Privileges for Managing Storage Servers for Snap Clone

To perform various storage server activities, you need to grant the following roles and privileges:

- [Granting General Privileges](#)
- [Granting Target Privileges](#)
- [Granting Roles](#)
- [Granting Privileges for Provisioning](#)

3.3.3.1 Granting General Privileges

[Table 3-1](#) displays the general privileges you need to set before you register a storage server.

Table 3-1 General Privileges for Storage Server Registration and Management

Privilege	Description	Scope	Notion	Included Privilege
<code>VIEW_ANY_STORAGE</code>	Ability to view any storage.	class	VIEW	nil
<code>REGISTER_STORAGE</code>	Ability to register storage.	class	CREATE	nil
<code>VIEW_STORAGE</code>	Ability to view storage details.	object	VIEW	nil
<code>MANAGE_STORAGE</code>	Ability to synchronize storage.	object	EDIT	<code>VIEW_STORAGE</code> <code>CREATE_JOB</code>
<code>MANAGE_ANY_STORAGE</code>	Ability to manage any of the registered storage servers.	object	EDIT	<code>VIEW_ANY_STORAGE</code> <code>CREATE_JOB</code>
<code>FULL_STORAGE</code>	Ability to modify or remove storage.	object	FULL	<code>MANAGE_STORAGE</code>

3.3.3.2 Granting Target Privileges

[Table 3-2](#) displays the target privilege you need to set, for enabling or disabling Snap Clone for a target.

Table 3-2 Target Privilege for Enabling or Disabling Snap Clone

Target Privilege	Scope	Notion	Include In Privilege	Included Privilege	Applicable Target Type
SNAP_CLONE_TARGET	object	Manage	FULL_TARGET	VIEW_TARGET	oracle_database rac_database

3.3.3.3 Granting Roles

Table 3-3 displays the roles you need to grant to be able to register a storage server and perform various activities on the registered storage server.

Table 3-3 Roles for Registering and Managing the Storage Server

Role	Description	Security Class	Privilege	Granted To Role
EM_STORAGE_ADMINISTRATOR	Role has privileges to register storage hardware for Snap Clone.	STORAGE STORAGE TARGET TARGET NAMED_CREDENTIALS JOB SWLIB_ENTITY_MGMT	MANAGE_ANY_STORAGE REGISTER_STORAGE VIEW_ANY_TARGET PERFORM_OPERATION_ANYWHERE CREATE_CREDENTIAL CREATE_JOB SWLIB_CREATE_ANY_ENTITY SWLIB_VIEW_ANY_ENTITY	EM_ALL_ADMINISTRATOR
EM_STORAGE_OPERATOR	Role has privileges to manage storage hardware for Snap Clone.	STORAGE TARGET TARGET JOB SWLIB_VIEW_ANY_ENTITY	MANAGE_ANY_STORAGE VIEW_ANY_TARGET PERFORM_OPERATION_ANYWHERE CREATE_JOB SWLIB_VIEW_ANY_ENTITY	EM_ALL_OPERATOR

3.3.3.4 Granting Privileges for Provisioning

You need the following privileges to be able to use the storage server for provisioning:

- VIEW_STORAGE on the storage server
- GET_CREDENTIAL on the storage server
- GET_CREDENTIAL on all the Management Agent credentials of the storage server
- PERFORM_OPERATION on the storage server Management Agent

 **Note:**

Snap Clone supports Sun ZFS storage on HP-UX hosts only if the OS version is B.11.31 or higher. If the OS version is lower than that, the Sun Storage may not function properly thereby Snap Clone gives unexpected results.

3.4 Configuring LDAP Authentication

Oracle Enterprise Manager provides tools and procedures to help you ensure that you are managing your Oracle environment in a secure manner. Enterprise Manager's authentication framework consists of pluggable authentication schemes that let you use the type of authentication protocol best suited to your environment. The following authentication schemes are available:

- Oracle Access Manager (OAM) SSO
- Repository-Based Authentication
- SSO-Based Authentication
- Enterprise User Security Based Authentication
- Oracle Internet Directory (OID) Based Authentication
- Microsoft Active Directory Based Authentication

Enterprise User Security (EUS) provides automatic authentication to users and roles from the LDAP compliant directory server.

For more details on Enterprise User Security, see the *Enterprise Manager Cloud Control Security Guide*.

3.5 Configuring Privilege Delegation Settings

Privilege delegation allows a logged-in user to perform an activity with the privileges of another user. Sudo and PowerBroker are privilege delegation tools that allow a logged-in user to be assigned these privileges. These privilege delegation settings will be used for all provisioning and patching activities on these hosts.

For details on how to configure the privilege delegation settings, see the *Enterprise Manager Cloud Control Security Guide*.

3.6 Customizing the Self Service Login Page

You can configure Enterprise Manager and provide specific access to SSA users. To configure Enterprise Manager for SSA users, you must set some properties on the OMS and copy the required images to a specified directory. This section describes the following:

- [Configuring the Self Service Login Page](#)
- [Switching Back to the Enterprise Manager Login Page](#)
- [Routing SSA Requests to a Specific OMS Pool](#)

3.6.1 Configuring the Self Service Login Page

To launch a separate SSA login page for all SSA users, you must do the following:

- Set the following mandatory property on all OMSes:

```
$ORACLE_HOME/bin/emctl set property -name oracle.sysman.ssa.logon.ssa_oms -  
value true
```

If this property is not set to *true*, the standard Enterprise Manager login page is displayed.

- Set the following optional OMS properties.

```
- $ORACLE_HOME/bin/emctl set property -name  
oracle.sysman.ssa.logon.show_cloud_provider_brand -value true
```

If this property is not set to *true*, the default Oracle Enterprise Manager 12c logo is displayed.

```
- $ORACLE_HOME/bin/emctl set property -name  
oracle.sysman.ssa.logon.show_cloud_tenant_brand -value true
```

If this property is not set to *true*, the tenant logo is not displayed.

```
- $ORACLE_HOME/bin/emctl set property -name  
oracle.sysman.ssa.logon.cloud_provider_alt_text -value "Cloud Provider"
```

```
- $ORACLE_HOME/bin/emctl set property -name  
oracle.sysman.ssa.logon.cloud_tenant_alt_text -value "Cloud Tenant"
```

These properties are optional and if not set, the default values for "Cloud Provider", and "Cloud Tenant" are displayed.

```
- $ORACLE_HOME/bin/emctl set property -name  
oracle.sysman.ssa.logon.show_disclaimer_text -value true
```

If this property is not set to *true*, the default Oracle copyright message is displayed.

```
- $ORACLE_HOME/bin/emctl set property -name  
oracle.sysman.ssa.logon.disclaimer_text -value "Customer specified  
Disclaimer text"
```

If this property is set to *true*, the specified disclaimer text is displayed instead of the default Oracle copyright message.

```
- $ORACLE_HOME/bin/emctl set property -name  
oracle.sysman.ssa.logon.show_em_branding_text -value true
```

If this property is not set to *false*, the "Powered by Oracle Enterprise Manager" text will appear on the Self Service Login page.

- Copy the following images to the `$ORACLE_HOME/sysman/config/` directory.

```
- cloud_provider_small_brand.png  
- cloud_tenant_small_brand.png
```

If a single image is used, the maximum recommended size is 500 * 20 px. If 2 images are used, the maximum recommended size is 200 * 20 px per image. After login, these images are displayed instead of the Oracle logo, if the OMS properties `oracle.sysman.ssa.logon.show_cloud_provider_brand` and `oracle.sysman.ssa.logon.show_cloud_tenant_brand` are set. If the OMS property

`oracle.sysman.ssa.logon.show_cloud_provider_brand` is not set to **true**, along with the tenant logo, the default Oracle logo appears.

- `cloud_provider_large_brand.png`
- `cloud_tenant_large_brand.png`

If a single image is used, then the maximum recommended size is 525 * 60 px. If 2 images are used, the maximum recommended size is 250 * 50 px per image. These images are displayed on the login page, if the OMS properties `oracle.sysman.ssa.logon.show_cloud_provider_brand` and `oracle.sysman.ssa.logon.show_cloud_tenant_brand` are set.

3.6.2 Switching Back to the Enterprise Manager Login Page

To revert to the default Enterprise Manager login page, set the following property:

```
$ORACLE_HOME/bin/emctl set property -name oracle.sysman.ssa.logon.ssa_oms -value false
```

3.6.3 Routing SSA Requests to a Specific OMS Pool

Oracle Management Service (OMS) is one of the core components of Enterprise Manager Cloud Control that works with the Oracle Management Agents (Management Agents) and plug-ins to discover targets, monitor and manage them, and store the collected information in a repository for future reference and analysis.

When you install Enterprise Manager for the very first time, by default, one OMS is installed along with one Management Agent. This default configuration is suitable for small environments. In larger production environments with several SSA users, you may need to install additional OMS instances to reduce the load on a single OMS and improve the efficiency of the data flow. You can then configure the Server Load Balancer (SLB) to redirect all SSA requests to a specific OMS pool. The other OMS pools will then be available for administration usage. To learn more about setting up multiple OMS instances and the SLB, see *Adding Additional Oracle Management Service* section in the *Enterprise Manager Cloud Control Basic Installation Guide*.

To redirect SSA requests, you must specify the following SLB configuration:

```
https://<slb_host_name>:<slb_em_port>/em redirecting to oms for em
```

```
https://<slb_host_name>:<slb_ssa_port>/em redirecting to oms for ssa
```

The SSA and non-SSA OMS pools are differentiated based on the port number. All requests with a particular port number will be redirected to a specific OMS pool (SSA OMS pool) and all the other requests will be redirected to the other pool.

4

How to Enable Cloud

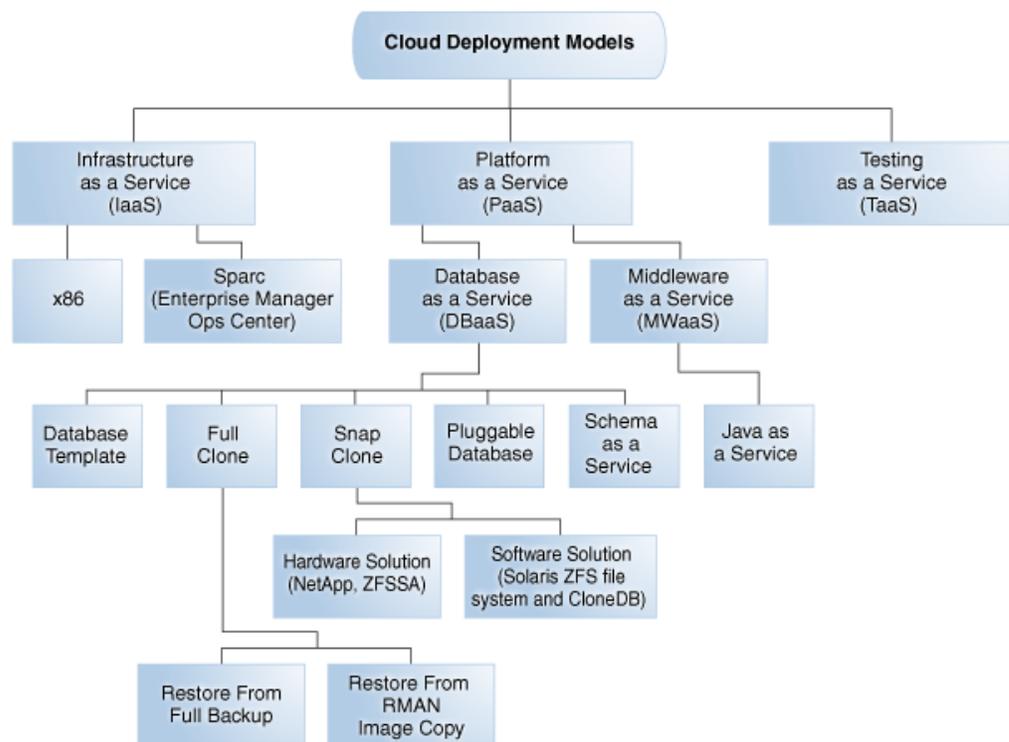
This chapter lists the tasks to be performed to enable your IaaS or PaaS Cloud. It contains the following sections:

- [Enterprise Manager Cloud Deployment Models](#)
- [Enabling Infrastructure as a Service \(IaaS\)](#)
- [Enabling Platform as a Service \(PaaS\)](#)
- [Enabling Middleware as a Service \(MWaaS\)](#)
- [Enabling Testing as a Service \(TaaS\)](#)

4.1 Enterprise Manager Cloud Deployment Models

Figure 4-1 shows the cloud deployment models supported by Enterprise Manager.

Figure 4-1 Cloud Deployment Models



The sections below list the tasks that need to be performed to set up and use the various cloud deployment models. Apart from these tasks, you must also ensure that the correct plugins have been deployed. For more details on the plugins required, see [Supported Plug-ins](#).

4.2 Enabling Infrastructure as a Service (IaaS)

This section describes the tasks that need to be performed by users with the Super Administrator, EM_CLOUD_ADMINISTRATOR, EM_SSA_ADMINISTRATOR, and EM_SSA_USER roles to setup and use IaaS.

4.2.1 Infrastructure as a Service (IaaS): Super Administrator Tasks

This section lists the tasks that can be performed by the Super Administrator.

Table 4-1 Super Administrator User Tasks (IaaS)

Cloud Service Model	Usecase
Infrastructure as a Service (IaaS)	<ul style="list-style-type: none"> Defining Roles and Assigning Users

4.2.2 Infrastructure as a Service (IaaS): Cloud Administrator Tasks

This section lists the tasks that can be performed for IaaS by users with the EM_CLOUD_ADMINISTRATOR role.

Table 4-2 Cloud Administrator Tasks (IaaS)

Cloud Service Model	Usecase
Infrastructure as a Service (IaaS)	<ul style="list-style-type: none"> Registering the Oracle VM Manager Synchronizing the Oracle VM Manager Targets Discovering a Virtual Server Rediscovering a Virtual Server Setting Up Networks Creating a Network Profile Creating a Storage Repository Presenting the Storage Repository Importing Assemblies, Templates, and Virtual Disks into the Storage Repository Creating a Virtual Server Pool Creating a Zone Setting Up the Storage Quality of Service (QoS) Patching the Oracle VM Server Acknowledging OVM Events About Cloud Policies Viewing Cloud Policies Viewing Policies for a Target Defining a Performance Policy Defining a Schedule-Based Policy Activating and Deactivating Policies Viewing Policy Groups Creating DRS and DPM Policies
Chargeback	<ul style="list-style-type: none"> Overview of Chargeback Setting Up Chargeback Accessing Chargeback Information

Table 4-2 (Cont.) Cloud Administrator Tasks (IaaS)

Cloud Service Model	Usecase
Consolidation	<ul style="list-style-type: none"> Overview of Consolidation

4.2.3 Infrastructure as a Service (IaaS): Self Service Administrator Tasks

This section lists the tasks that need to be performed for IaaS by users with the `EM_SSA_ADMINISTRATOR` role.

Table 4-3 SSA Administrator Tasks (IaaS)

Cloud Service Model	Usecase
Infrastructure as a Service (IaaS)	<ul style="list-style-type: none"> Setting Up the Self Service Portal Viewing the Infrastructure Cloud Home Page Viewing the OVM Manager Home Page Viewing and Managing Members Virtual Server Pool Home Page Managing Guest Virtual Machines Deploying Guest Virtual Machines Viewing the Infrastructure Request Dashboard Request Details Page

4.2.4 Infrastructure as a Service (IaaS): Self Service User Tasks

This section lists the tasks that can be performed for IaaS by users with the following roles:

- `EM_SSA_USER`: Users with this role, by default, can only access the Self Service Portal and all the service families.
- `EM_SSA_USER_BASE`: Users with this role can access the Self Service Portal but will not have access to any service family. Access to a specific IaaS service family must to be explicitly granted to the users with this role. See [Creating a Custom Role Based on the EM_SSA_USER_BASE Role](#) for details.

Table 4-4 SSA User Tasks (IaaS)

Cloud Service Model	Usecase
Infrastructure as a Service (IaaS)	<ul style="list-style-type: none"> Using the Self Service Portal to Request Server Resources Requesting Servers

4.3 Enabling Platform as a Service (PaaS)

This section describes the tasks that need to be performed by users with the Super Administrator, `EM_CLOUD_ADMINISTRATOR`, `EM_SSA_ADMINISTRATOR`, and `EM_SSA_USER` roles to setup and use PaaS.

4.3.1 Platform as a Service (PaaS): Super Administrator Tasks

This section lists the tasks that need to be performed for PaaS by users with the Super Administrator role.

Table 4-5 Super Administrator User Tasks (PaaS)

Cloud Service Model	Usecase
Platform as a Service (PaaS)	<ul style="list-style-type: none">• Defining Roles and Assigning Users• Configuring Privilege Delegation Settings
<ul style="list-style-type: none">• Database as a Service (DBaaS)• Middleware as a Service (MWaaS)	

4.3.2 Platform as a Service (PaaS): Cloud Administrator Tasks

This section lists the tasks that need to be performed for PaaS by users with the EM_CLOUD_ADMINISTRATOR role.

Table 4-6 Cloud Administrator Tasks (PaaS)

Cloud Service Model	Usecase
Platform as a Service (PaaS)	<ul style="list-style-type: none">• Adding Hosts• Creating a PaaS Infrastructure Zone

4.3.3 Platform as a Service (PaaS): Storage Administrator Tasks

This section lists the tasks that need to be performed for PaaS by users with the EM_STORAGE_ADMINISTRATOR role.

Table 4-7 Storage Administrator Tasks (PaaS)

Cloud Service Model	Usecase
Platform as a Service (PaaS)	<ul style="list-style-type: none">• Registering and Managing Storage Servers

4.3.4 Platform as a Service (PaaS): Self Service Administrator Tasks

This section lists the tasks that need to be performed for PaaS by users with the EM_SSA_ADMINISTRATOR role.

Table 4-8 SSA Administrator Tasks (PaaS)

Cloud Service Model	Usecase
Platform as a Service (PaaS)	<ul style="list-style-type: none"> • Configuring Request Settings • Creating the Resource Providers • Setting Up Quotas • Viewing the Cloud Home Page • Viewing the List of Resource Providers • Viewing the List of Service Templates • Viewing the List of Service Instances • Viewing the Cloud Request Dashboard • Viewing All Cloud Requests • Viewing the PaaS Infrastructure Zone Home Page

4.4 Enabling Middleware as a Service (MWaaS)

 **Note:**

Before you enable Middleware as a Service, you must have performed the tasks listed in [Enabling Platform as a Service \(PaaS\)](#).

This section describes the tasks that need to be performed by users with the `EM_CLOUD_ADMINISTRATOR`, `EM_SSA_ADMINISTRATOR`, and `EM_SSA_USER` roles to setup and use MWaaS.

4.4.1 Middleware as a Service (MWaaS): Cloud Administrator Tasks

This section lists the tasks that need to be performed for MWaaS by users with the `EM_CLOUD_ADMINISTRATOR` role.

Table 4-9 Cloud Administrator Tasks (MWaaS)

Cloud Service Model	Usecase
Middleware as a Service (MWaaS)	<ul style="list-style-type: none"> • Getting Started with Middleware as a Service • Uploading a Java EE Component to the Software Library

4.4.2 Middleware as a Service (MWaaS): Self Service Administrator Tasks

This section lists the tasks that need to be performed for MWaaS by users with the `EM_SSA_ADMINISTRATOR` role.

Table 4-10 SSA Administrator Tasks (MWaaS)

Cloud Service Model	Usecase
Middleware as a Service (MWaaS)	<ul style="list-style-type: none"> • Creating a Middleware Pool • Configuring Request Settings • Setting Up Quotas • Creating a WebLogic Service Template • Configuring Chargeback

4.4.3 Middleware as a Service (MWaaS): Self Service User Tasks

This section lists the tasks that need to be performed for MWaaS by users with either of the following roles:

- **EM_SSA_USER:** Users with this role, by default, can only access the Self Service Portal and all the service families.
- **EM_SSA_USER_BASE:** Users with this role can access the Self Service Portal but will not have access to any service family. Access the MWaaS service family must to be explicitly granted to the users with this role. See [Creating a Custom Role Based on the EM_SSA_USER_BASE Role](#) for details.

Table 4-11 SSA User Tasks (MWaaS)

Cloud Service Model	Usecase
Middleware as a Service (MWaaS)	<ul style="list-style-type: none"> • Using the MWaaS Self Service Portal • Requesting a Middleware Service • Middleware Service Home Page • Application Home Page • Uploading a Java EE Component to the Software Library

4.5 Enabling Testing as a Service (TaaS)

This section describes the tasks that need to be performed by users with the `EM_CLOUD_ADMINISTRATOR`, `EM_SSA_ADMINISTRATOR`, and `EM_SSA_USER` roles to setup and use TaaS.

4.5.1 Testing as a Service (TaaS): Cloud Administrator Tasks

This section lists the tasks that need to be performed for TaaS by users with the `EM_CLOUD_ADMINISTRATOR` role.

Table 4-12 Cloud Administrator Tasks (TaaS)

Cloud Service Model	Usecase
Testing as a Service (TaaS)	<ul style="list-style-type: none"> • Getting Started • Creating Test Administrators • Creating an Assembly Component • Creating a Deployment Plan

4.5.2 Testing as a Service (TaaS): Self Service Administrator Tasks

This section lists the tasks that need to be performed for TaaS by users with the EM_SSA_ADMINISTRATOR.

Table 4-13 SSA Administrator Tasks (TaaS)

Cloud Service Model	Usecase
Testing as a Service (TaaS)	<ul style="list-style-type: none"> • Getting Started • Creating Test Administrators • Creating an Assembly Component • Creating a Deployment Plan

4.5.3 Testing as a Service (TaaS): Self Service User Tasks

This section lists the tasks that need to be performed for TaaS by users with either of the following roles:

- EM_SSA_USER: Users with this role, by default, can only access the Self Service Portal and all the service families.
- EM_SSA_USER_BASE: Users with this role can access the Self Service Portal but will not have access to any service family. Access to a the TaaS service family must to be explicitly granted to the users with this role. See [Creating a Custom Role Based on the EM_SSA_USER_BASE Role](#) for details.

Table 4-14 SSA User Tasks (TaaS)

Cloud Service Model	Usecase
Testing as a Service (TaaS)	Using the Testing as a Service Portal

Part III

Setting Up and Using Infrastructure as a Service

This section describes how to set up infrastructure as a service, manage virtualization targets, deploy guest virtual machines, set up, and use the self service application.

It contains the following chapters:

- [Setting Up Cloud for IaaS](#)
- [Defining and Managing Cloud Policies](#)
- [Setting Up the IaaS Self Service Portal](#)
- [Using the IaaS Self Service Portal](#)
- [Administering and Monitoring an IaaS Cloud](#)

5

Setting Up Cloud for IaaS

This chapter describes the server, storage and networking infrastructure that needs to be defined for providing Infrastructure as a Service (IaaS) cloud using the Oracle VM technology.

It contains the following sections:

- [Getting Started](#)
- [Cloud Infrastructure Privileges](#)
- [Registering the Oracle VM Manager](#)
- [Synchronizing the Oracle VM Manager Targets](#)
- [Discovering a Virtual Server](#)
- [Rediscovering a Virtual Server](#)
- [Setting Up Networks](#)
- [Creating a Network Profile](#)
- [Registering Storage Servers](#)
- [Creating a Storage Repository](#)
- [Presenting the Storage Repository](#)
- [Using Self Update to Download Oracle VM Templates and Virtual Assemblies](#)
- [Importing Assemblies, Templates, and Virtual Disks into the Storage Repository](#)
- [Creating a Virtual Server Pool](#)
- [Creating a Zone](#)
- [Setting Up the Storage Quality of Service \(QoS\)](#)
- [Patching the Oracle VM Server](#)
- [Acknowledging OVM Events](#)
- [Managing the NTP Configuration](#)
- [Importing Virtual Machines](#)
- [Acknowledging the Repository Events](#)

5.1 Getting Started

This section helps you get started with this chapter by providing an overview of the steps involved in setting up the virtualization infrastructure. Consider this section to be a documentation map to understand the sequence of actions you must perform to successfully set up virtualized systems.

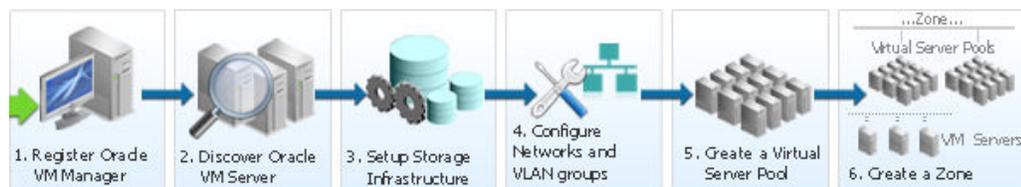
 **Note:**

Click [here](#) to view a visual demonstration on how to discover OVM servers into the Cloud, configure storage for the Cloud, configure networking, and create server pools and Cloud zones using Oracle Enterprise Manager Cloud Control 12c.

1. Before you start monitoring and managing virtualization targets, you must register the Oracle VM Manager with Oracle Enterprise Manager. See [Registering the Oracle VM Manager](#) for details.
2. You can then discover one or more Oracle VM Server targets. See [Discovering a Virtual Server](#) for details.
3. Set up the storage infrastructure for the cloud. See [Registering Storage Servers](#) for details.
4. Configure networks and VLAN Groups. See [Setting Up Networks](#) for details.
If you are using Oracle VM Manager 3.3, you must configure the VLAN Interface. See [Creating a VLAN Interface for Oracle VM Manager 3.3](#)
5. Create a virtual server pool. See [Creating a Virtual Server Pool](#) for details.
6. Create a zone by grouping one or more server pools. See [Creating a Zone](#) for details.

Figure 5-1 shows the sequence of steps involved in setting up the virtualization infrastructure.

Figure 5-1 Setting Up the Cloud Infrastructure



5.2 Cloud Infrastructure Privileges

This section lists the actions that can be performed on various targets in the Infrastructure Cloud Home page when you:

- Right click on a target in the left panel.
- Select a target on the Members region on the parent target home page and then select the **Action** menu.
- Select the **Target** menu of the corresponding Target Home page.

Table 5-1 Infrastructure Cloud

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Register OVM Manager	Single		Add any Target
Setup	Single		View on Infrastructure Cloud
Members	Single		Operator on Infrastructure Cloud

Table 5-2 OVM Manager

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Members	Single		View On OVM Manager
Edit	Single		Operator on OVM Manager
Synchronize	Single		Full on OVM Manager
Deregister	Single		Full on OVM Manager and all its sub targets
Create Zone	Single		Operator on OVM Manager and Add any Target
Create Virtual Server Pool	Single		Operator on OVM Manager and Add any Target
Discover Virtual Server	Single		Operator on OVM Manager and Add any Target
Manage Unowned Virtual Servers	Single		Operator on OVM Manager
Manage Network	Single		Operator on OVM Manager
Manage Storage	Single		Operator on OVM Manager
Manage Storage Repository	Single		Operator on OVM Manager
Manage Yum Repository	Single		Full on OVM Manager
Manage NTP Configuration	Single		Full on OVM Manager

Table 5-3 Zone

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Members	Single		View On Zone
Edit	Single		Operator on Zone
Delete	Single		Full on Zone
Delete only from Enterprise Manager	Single		Full on Zone

Table 5-3 (Cont.) Zone

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Deploy Assembly	Single		Operator on Zone and Add any Target
Deploy Template	Single		Operator on Zone and Add any Target
Deploy ISO	Single		Operator on Zone and Add any Target
Deploy PXE	Single		Operator on Zone and Add any Target
Import Virtual Machine	Single		Operator on Zone and Add any Target

Table 5-4 Virtual Server Pool

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Members	Single		View On Virtual Server Pool
Edit	Single		Operator on Virtual Server Pool
Delete	Single		Full on Virtual Server Pool
Delete only from Enterprise Manager	Single		Full on Virtual Server Pool
Manage DRS / DPM Policies	Single		Operator on Virtual Server Pool
Deploy Assembly	Single		Operator on Virtual Server Pool and Add any Target
Deploy Template	Single		Operator on Virtual Server Pool and Add any Target
Deploy ISO	Single		Operator on Virtual Server Pool and Add any Target
Deploy PXE	Single		Operator on Virtual Server Pool and Add any Target
Import Virtual Machine	Single		Operator on Zone and Add any Target

Table 5-5 Virtual Server

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Edit	Single	Up	Operator on Virtual Server
Deregister	Single		Full on Virtual Server
Delete only from Enterprise Manager	Single		Full on Virtual Server
Start Maintenance	Multiple	Up	Operator on Virtual Server

Table 5-5 (Cont.) Virtual Server

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Stop Maintenance	Multiple	Blackout	Operator on Virtual Server
Upgrade	Multiple		Full on Virtual Server
Start	Multiple	Down	Operator on Virtual Server
Stop	Multiple	Up	Operator on Virtual Server
Restart	Multiple	Up	Operator on Virtual Server
Rediscover Virtual Server	Single		Full on Virtual Server
Deploy Assembly	Single		Operator on Virtual Server and Add any Target
Deploy Template	Single		Operator on Virtual Server and Add any Target
Deploy ISO	Single		Operator on Virtual Server and Add any Target
Deploy PXE	Single		Operator on Virtual Server and Add any Target
Import Virtual Machine	Single		Operator on Zone and Add any Target
Members	Multi-select / Single Select:Single		View on Virtual Server

Table 5-6 Guest VM

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Edit	Single		Operator on Guest VM
Delete	Multiple	Down, Metric Error	Full on Guest VM
Delete only from Enterprise Manager	Multiple		Full on Guest VM
Migrate	Multiple	Up, Down	Operator on Guest VM
Move	Single	Down	Operator on Guest VM
Clone	Single	Up, Down	Operator on Guest VM
Save as Template	Single	Down	Operator on Guest VM
Start	Multiple	Down	Operator on Guest VM
Stop	Multiple	Up	Operator on Guest VM
Restart	Multiple	Up	Operator on Guest VM
Kill	Multiple	Up	Operator on Guest VM
Stop and Start	Multiple	Up	Operator on Guest VM
Suspend	Multiple	Up	Operator on Guest VM
Resume	Multiple		Operator on Guest VM

Table 5-6 (Cont.) Guest VM

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Launch VNC Console	Single		Operator on Guest VM

Table 5-7 Assembly

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Start	Single		Operator on Assembly
Stop	Single		Operator on Assembly
Delete	Single		Operator on Assembly
Scale Up	Single		Operator on Assembly
Scale Down	Single		Operator on Assembly
Add Nodes	Single		Operator on Assembly

Table 5-8 Tier

Action Label	Multi-select / Single Select	Required Target State	Privileges Required
Start	Single		Operator on Tier
Stop	Single		Operator on Tier
Scale Up	Single		Operator on Tier
Scale Down	Single		Operator on Tier

5.3 Registering the Oracle VM Manager

The Oracle VM Manager provides the user interface that allows you to create and manage zones, virtual server pools, virtual servers, and guest virtual machines. Before you use the Oracle VM Manager to manage virtualization targets in Enterprise Manager, you must register an existing installation of the Oracle VM Manager.

 **Note:**

- The Oracle VM Manager that you register with Enterprise Manager must be at least version 3.0.2 or higher.
- The Oracle VM Manager must be associated with only one Enterprise Manager installation.
- As a best practice, it is recommended that the Management Agent and the Oracle VM Manager are present on the same physical machine.
- If you are registering Oracle VM Manager 3.3 or later, you must ensure that the Enterprise Manager for Oracle Virtualization (Oracle Virtualization) plugin 13.1.1.0 or a later version has been deployed on the Oracle Management Service and the Management Agent.

Prerequisites

- If you are registering Oracle VM Manager 3.1.1 through 3.3, before you update the Oracle VM Manager URL, you must have configured tcps as described in [Configure Secure TCP \(TCPS\) for Oracle VM Manager \(Doc ID 1456338.1\)](#).
- You must have imported the Oracle VM Manager certificate to the Agent keystore by following these steps:
 - Login as a root user and export the OVM Manager certificate `<JAVA_HOME>/bin/keytool -keystore <OVM_MANAGER_HOME>/ovmmCoreTcps.ks -exportcert -alias ovmm -file <file_loc_for_certificate>`
 - Login as an EM Agent install user and import the OVM Manager certificate `<AGENT_INSTANCE_HOME>/bin/emctl secure add_trust_cert_to_jks -trust_certs_loc <file_loc_for_certificate> -alias <alias_name>`

If the certificate is being imported for multiple Oracle VM Managers, you can specify multiple alias names.
- If you are registering Oracle VM Manager 3.3, in addition to importing the Oracle VM Manager certificate, you must export the Oracle VM Manager WebLogic certificate and import the certificate to the Agent Keystore. See [Importing the Oracle VM Manager WebLogic Certificate](#) for details.

To register the Oracle VM Manager, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. From the Infrastructure Cloud menu, select **Register OVM Manager**. The Add Oracle VM Manager page appears.
3. Enter the target name for the Oracle VM Manager instance to be registered.
4. Select the Management Agent to monitor and manage the Oracle VM Manager instance to be registered. It is recommended that the Management Agent (with *Enterprise Manager for Oracle Virtualization* plug-in (listed as *Oracle Virtualization* in Self Update) is present on the same machine where the Oracle VM Manager instance is running.

5. Enter the Oracle VM Manager URL. Refer to *Note 1456338.1 (Configure Secure TCP (TCPS) for Oracle VM Manager)* for details on configuring Oracle VM Manager for tcps access. The URL must be in one of the following formats:
 - tcp://localhost:<port>. Example: tcp://localhost:54321 (If the Oracle VM Manager version is 3.1.1 or greater, you can specify only the tcps URL.)
 - tcps://<hostname>:<port>. Example: tcps://server.domain:54322
6. Enter the Oracle VM Manager's Console URL. This is the URL to enable the VNC Console for the Guest VMs. For example, `https://ovmmgr.example.com:7002/ovm/console`
7. The URL must be in the following format:
`https://<hostname>:<port>`

 **Note:**

If you are registering Oracle VM Manager 3.3, this URL is used to connect to the Oracle VM Manager.

8. By default, data from Oracle VM Manager is automatically synchronized with Enterprise Manager at fixed intervals of time. If you do not wish to enable this option, you must disable the Automatic Synchronization checkbox and manually synchronize the data. For more details on the automatic and manual synchronization options, see [Synchronizing the Oracle VM Manager Targets](#) for details.
9. Enter the administrator user name and password to connect to the Oracle VM Manager URL provided in **Step C**. If you want to use separate credentials for managing Oracle VM Manager, check the **Use Administration Credentials** checkbox. If these credentials are not specified, the monitoring credentials are used by default.
10. Click **Submit** to register the Oracle VM Manager. You can now use the Oracle VM Manager to monitor and manage the virtualization targets in Enterprise Manager.

Registering Oracle VM Manager 3.4.X

Prerequisites

You must export the Oracle VM Manager WebLogic certificate and import the certificate to the Agent Keystore. See [Importing the Oracle VM Manager WebLogic Certificate](#) for details.

To register Oracle VM Manager 3.4.x, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. From the Infrastructure Cloud menu, select **Register OVM Manager**. The Add Oracle VM Manager page appears.
3. Enter the target name for the Oracle VM Manager instance to be registered.
4. Select the Management Agent to monitor and manage the Oracle VM Manager instance to be registered. It is recommended that the Management Agent (with *Enterprise Manager for Oracle Virtualization* plug-in (listed as *Oracle Virtualization*

in Self Update) is present on the same machine where the Oracle VM Manager instance is running.

5. Enter the Oracle VM Manager URL.

The URL must be in one of the following formats:

- `tcp://localhost:<port>`. Example: `tcp://localhost:54321`

- `tcps://<hostname>:<port>` (As `tcps` specification is not required for Oracle VM Manager 3.4.x, enter a dummy URL such as `tcps://here.`)

Enter the Oracle VM Manager's Console URL. This is the URL to enable the VNC Console for the Guest VMs. For example, `https://ovmmgr.example.com:7002/ovm/console`

The URL must be in the following format:

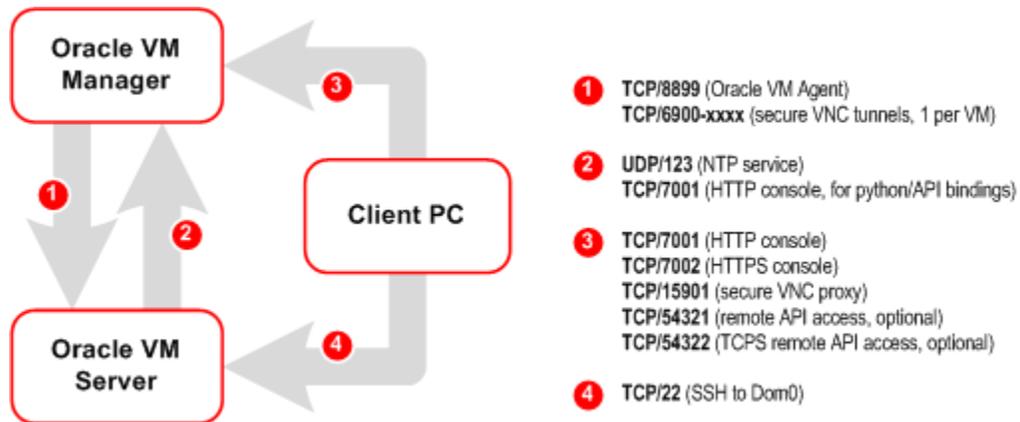
`https://<hostname>:<port>`

6. By default, data from Oracle VM Manager is automatically synchronized with Enterprise Manager at fixed intervals of time. If you do not wish to enable this option, you must disable the Automatic Synchronization checkbox and manually synchronize the data. For more details on the automatic and manual synchronization options, see [Synchronizing the Oracle VM Manager Targets](#) for details.
7. Enter the administrator user name and password to connect to the Oracle VM Manager URL provided in **Step C**. If you want to use separate credentials for managing Oracle VM Manager, check the **Use Administration Credentials** checkbox. If these credentials are not specified, the monitoring credentials are used by default.
8. Click **Submit** to register the Oracle VM Manager. You can now use the Oracle VM Manager to monitor and manage the virtualization targets in Enterprise Manager.

5.3.1 Port Requirements for Oracle VM Manager Setup

The ports required for the Web browser connection to Oracle VM Manager are 7002 and 15901. TCP 7002 is used by the Oracle VM Servers to connect to Oracle VM Manager. Oracle VM Manager, in turn, connects to the Oracle VM Servers through port 8899 for Oracle VM Agent communication, and port 6900 and up for secure VNC tunneling to virtual machines (one port per VM). Ports 7900 and up are used to allow Oracle VM Manager to open secure serial console tunnels to virtual machines (one port per VM) on the Oracle VM Servers. The Oracle VM Command Line Interface connects to Oracle VM Manager on port 10000. TCP ports 54321 and 54322 must be enabled for remote API access to the Oracle VM Manager core. Follow the guidelines of in the diagram below:

Figure 5-2 Oracle VM Manager Firewall Configuration



5.3.2 Updating the Oracle VM Manager URL

If you had Oracle VM Manager 3.0.x registered with Enterprise Manager previously and had upgraded it to higher versions 3.1.x or 3.2.1, you must update the Oracle VM Manager URL.

If you are upgrading to version 3.3, you must also import the WebLogic certificate. See [Importing the Oracle VM Manager WebLogic Certificate](#) for details.

Prerequisites

- Before you update the Oracle VM Manager URL, you must have configured tcps as described in Note 1490283.1.
- You must have imported the Oracle VM Manager certificate to the Agent keystore by following these steps:
 - Login as a root user and export the OVM Manager certificate `<JAVA_HOME>/bin/keytool -keystore <OVM_MANAGER_HOME>/ovmmCoreTcps.ks -exportcert -alias ovmm -file <file_loc_for_certificate>`
 - Login as an EM Agent user and import the OVM Manager certificate `<AGENT_INSTANCE_HOME>/bin/emctl secure add_trust_cert_to_jks -trust_certs_loc <file_loc_for_certificate> -alias <alias_name>`

To update the Oracle VM Manager URL, follow these steps:

1. Right click on the OVM Manager target that is to be upgraded and select **Edit**.
2. Enter a tcps based (`tcps://hostname:port`) URL in the Oracle VM Manager field.

It is recommended that you use the tcps based URL. But if the Management Agent is running on the same host on which Oracle VM Manager has been installed, you can use the tcp based URL (`tcp://localhost:54321`.)

 **Note:**

For Oracle VM Manager versions 3.4 and above, `tcps` is not used. But a dummy value such as `tcps://` must be entered for the registration to be successful.

5.3.2.1 Importing the Oracle VM Manager WebLogic Certificate

 **Note:**

This step is required for Oracle VM Manager versions 3.3 and 3.4

Oracle VM Manager version 3.3 or later contains an internal Certificate Authority (CA) that is used to perform certificate-based authentication and to sign the SSL certificate that is used for the web-based user interface. Certificates are generated automatically when Oracle VM Manager is installed.

To export the Oracle VM Manager WebLogic certificate, login as the root user and enter the following command:

```
#!/u01/app/oracle/ovm-manager-3/ovm_upgrade/bin/ovmkeytool.sh exportca >  
<file_loc_for_certificate>
```

To import the Oracle VM Manager Weblogic certificate to the Agent Keystore, login as EM Agent user enter the following command:

```
<AGENT_INSTANCE_HOME>/bin/emctl secure add_trust_cert_to_jks -trust_certs_loc  
<file_loc_for_certificate> -alias <alias_name>
```

 **Note:**

If you are using a pre-3.4 Oracle VM Manager version, you must delete the first line in the `<file_loc_for_certificate>`: `"libdir is /u01/app/oracle/ovm-manager-3/ovm_upgrade/bin/../../lib"` before you can import the OVM Manager certificate.

5.3.3 Discovering and Promoting the Oracle VM Manager (Optional)

Automatic discovery is a process that detects hosts, Oracle VM Managers, and other targets so that they can be monitored and managed by Enterprise Manager. If you know the Oracle VM Manager instances in your environment, see [Registering the Oracle VM Manager](#) for details on registering them with Enterprise Manager. Discovery and promotion of Oracle VM Manager should be attempted if you want to scan your networks to discover unknown Oracle VM Manager instances.

To discover an Oracle VM Manager, follow these steps:

1. Log in to Enterprise Manager as a user with the Super Administrator role.

2. From the **Setup** menu, select **Add Target**, then select **Configure Auto Discovery**.
3. In the Network Scan-based Auto Discovery table, click **Configure Network Scan Discovery** in the Host and Oracle VM Manager row. The Network Discovery page appears. Use this page to search, browse, and create OVM Manager discovery specifications.
4. Click **Create**. The Network Scan Discovery: Create page appears.
5. Enter the Name and Description for the Discovery Specification. Click **Add** in the Network Scans region to select the Agent that is to be used perform the IP scan. For each Agent, specify the IP ranges for the scan. The following formats are supported: host name, IP address, and IP range. Use space to separate values.
6. Use the Job Details tab on the Host Discovery Specification Create page to schedule the discovery IP scan, allowing you to start it immediately or at a later specified time. Use the Credentials section to enter preferred credentials for the host. You can choose from Preferred Credentials, Named Credentials, or New Credentials. The discovery IP Scan is run as root. It is required that you set privileged host credentials or named credentials that use Sudo.
7. You can use the Host Discovery page to check the status of discovery and view newly discovered OVM Managers.
8. After the target has been discovered, from the **Setup** menu, select **Add Target**, then select **Auto Discovery Results**. Enterprise Manager displays the Auto Discovery Results page where you can review discovered unmanaged targets and promote targets to be managed by Enterprise Manager for monitoring.
9. On the Network-scanned Targets tab, the target discovery results are displayed in the table at the bottom. Select the OVM Manager target and click **Promote**. The OVM Manager Registration page is displayed. See [Registering the Oracle VM Manager](#) for details.

5.3.4 Upgrading Oracle VM Manager

The instructions to upgrade earlier versions of Enterprise Manager and Oracle VM Manager are covered in the following sections:

Topics

- [Upgrading to the 3.3 Release](#)
- [Upgrading the 3.4 Release](#)

5.3.4.1 Upgrading to the 3.3 Release

To upgrade from earlier versions of Enterprise Manager and Oracle VM Manager to Oracle VM Manager 3.3, follow these steps:

1. Upgrade Oracle Management Service to 12.1.0.4 and deploy the Oracle Virtualization plugin version 12.1.0.7 or higher.
2. Upgrade Management Agent to 12.1.0.4 and the deploy the Oracle Virtualization plugin 12.1.0.7 or higher.
3. Blackout the old Oracle VM Manager target.
4. Upgrade the Oracle VM Manager to 3.3.1. For more information, see the *Oracle VM Installation and Upgrade Guide for Release 3.3*.

5. Upgrade the Oracle VM Server to 3.3.1. For more information, see the *Oracle VM Installation and Upgrade Guide for Release 3.3*.
6. Import the WebLogic certificate. See [Importing the Oracle VM Manager WebLogic Certificate](#) for details.
7. Change the blackout status of the Oracle VM Manager target.
8. Add or modify the target property if required. For example, Webservice URL using Edit Oracle VM Manager page.

5.3.4.2 Upgrading to the 3.4 Release

To upgrade from earlier versions of Enterprise Manager and Oracle VM Manager to Oracle VM Manager 3.4, follow these steps:

1. Upgrade the Oracle Management Service to 13.2.1.0 and deploy the Oracle Virtualization 13.2.1.0 plugin
2. Upgrade Management Agent to 13.2.1.0 and the deploy the Oracle Virtualization 13.2.1.0 plugin..
3. Blackout the old Oracle VM Manager target.
4. Upgrade the Oracle VM Manager to version 3.4. For more information, see the *Oracle VM Installation and Upgrade Guide for Release 3.4*.
5. Upgrade the Oracle VM Server from 3.3.x to 3.4. For more information, see the *Oracle VM Installation and Upgrade Guide for Release 3.4*.

Note: If you are upgrading the Oracle VM Server from the 3.2.10 version, follow the steps listed in the *Oracle VM Installation and Upgrade Guide for Release 3.4*.

6. Import the WebLogic certificate. See [Importing the Oracle VM Manager WebLogic Certificate](#) for details.
7. Change the blackout status of the Oracle VM Manager target.
8. Add or modify the target property if required. For example, Webservice URL using Edit Oracle VM Manager page.

5.3.5 Viewing the Monitoring Configuration (OVM Manager)

To customize or view the monitoring configuration details for the OVM Manager target, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Infrastructure Home**.
2. Click on an OVM Manager target in the left panel.
3. From the **VM Manager** menu, select **Target Setup**, then select **Monitoring Configuration**. The Monitoring Configuration page for the OVM Manager target appears.

Figure 5-3 Monitoring Configuration (OVM Manager)

The screenshot shows the 'Monitoring Configuration' page in the Oracle VM Manager interface. At the top right, it says 'Page Refreshed Aug 19, 2015 6:14:53 PM PDT'. Below the title, there are 'OK' and 'Cancel' buttons. The main content area is divided into two sections: 'Current Operation' and 'Monitoring'. Under 'Current Operation', 'LiveSyncEnabled' is set to 'true'. Below this are several input fields for timeout settings: 'Timeout Settings For Network Configuration Of Deployment (minutes)' is 60, 'OVM Job Retry Count' is 5, 'OVM Job Retry Sleep Interval' is 5, and 'Timeout value for short running OVM Job (minutes)' is 5. The 'OVM Manager Console URL' is 'https://v22-177.in.oracle.com:7002/' and the 'OVM Manager URL' is 'https://v22-177.in.oracle.com:54322'. The 'Oracle VM Manager Password' is masked with asterisks, and the 'Oracle VM UID' is '0004b00000100003ae57ac309a9f460'. The 'Oracle VM Manager Username' is also masked. Under 'Monitoring', 'Timeout Settings For Product Configuration Of Deployment (minutes)' is 60, 'Timeout Value for Checking if SSH service is Running on a deployed Virtual Machine (minutes)' is 10, 'SyncDataFetchTime' is 0, 'SyncStatus' is 'SYNC_FAILED', and 'Deployed on Exalogic' is 'false'. A note at the bottom states: 'Oracle has automatically enabled monitoring for this target's availability and performance, so no further monitoring configuration is necessary. You can edit the metric thresholds from the target's homepage.'

4. The following details are displayed:

- **LiveSyncEnabled:** Indicates if auto synchronization is enabled between Enterprise Manager and Oracle VM Manager. By default, this is true. If enabled, the data is synchronized every 1 minute.
- **Timeout Settings For Network Configuration of Deployment:** The total wait time allowed for network configuration during assembly deployment. The default is 60 minutes.
- **OVM Job Retry Count:** The number of attempts that can be made after which the OVM Job should be retired. The default number of attempts is 5.
- **OVM Job Retry Sleep Interval:** The interval between two subsequent OVM job retry attempts. The default interval is 5 seconds.
- **Timeout value for short running OVM Job (minutes):** The time interval allowed for an OVM job to be completed.
- **OVM Manager Console URL:** The URL used to launch VNC consoles for VM.

 **Note:**

For Oracle VM Manager 3.3, this URL is used to connect to the Oracle VM Manager.

- **OVM Manager URL:** The OVM Manager registration URL used for communication between Enterprise Manager and Oracle VM Manager.
- **Oracle VM Manager Password:** The password required to access Oracle VM Manager.
- **Oracle VM UID:** The internal Oracle VM identifier.
- **Oracle VM Manager Username:** The username required to access Oracle VM Manager
- **Timeout Settings for Product Configuration of Deployment:** The total wait time allowed for product configuration during assembly deployment. The default is 60 minutes.
- **Timeout Value for Checking if SSH Service is Running on a Deployed Virtual Machine:** The total wait time allowed to check if the SSH service is

running on a Guest VM. This parameter is used as prerequisite for deploying the Management Agent on the Guest VM.

- **SyncDataFetchTime:** The time at which the Oracle VM Manager was last synchronized.
- **SyncStatus:** The status of the Oracle VM Manager synchronization.
- **Deployed on Exalogic:** Indicates whether the Oracle VM Manager is inside an Exalogic rack.

5. After editing the entries, click **OK** to return to the previous page.

5.4 Synchronizing the Oracle VM Manager Targets

Enterprise Manager can monitor the OVM Manager and the various virtualization targets registered with the OVM Manager. The targets registered with the OVM Manager must also be monitored targets in Enterprise Manager. If some targets have been created directly in OVM Manager, you can synchronize them in two ways:

- [Automatically Synchronizing the Oracle VM Manager Targets](#)
- [Manually Synchronizing the Oracle VM Manager Targets](#)

5.4.1 Automatically Synchronizing the Oracle VM Manager Targets

You can enable this option when Oracle VM Manager is registered or when you Edit Oracle VM Manager. If the **Automatic Synchronization** option is enabled, all changes made in Oracle VM Manager are automatically reflected in Enterprise Manager at fixed intervals. The default interval is 1 minute. To change the default interval, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select an Oracle VM Manager target from the right panel to navigate to the Oracle VM Manager Home page.
3. From the **Target** menu, select **Monitoring**, then select **Metrics and Collection Settings**.
4. Click **Other Collected Items** and then click the **Collection Schedule** link for the OVM Manager Events Data metric.
5. Modify the frequency as required, click **Continue**, then click **OK**.

Note:

If you do not enable automatic synchronization at this time, you can enable it later by following these steps:

- Navigate to the OVM Manager homepage.
- From the **Target** menu, select **Target Setup**, then select **Edit OVM Manager**.
- Select the **Automatic Synchronization** check box and click **Submit**.

5.4.2 Manually Synchronizing the Oracle VM Manager Targets

When the Oracle VM Manager is registered, if the **Automatic Synchronization** option is enabled, for the targets created in Oracle VM Manager, corresponding targets are created in Enterprise Manager. If, this option is not enabled, you can manually synchronize the targets by following these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on an OVM Manager target from the left panel and select **Synchronize**.
3. A confirmation message appears. Click **Submit** to submit a job to perform synchronization. The targets in Enterprise Manager and OVM Manager are synchronized.
 - Targets that are not present in OVM Manager will be removed.
 - For targets present only in OVM Manager, corresponding targets are created in Enterprise Manager.
 - Configuration collections are refreshed for all other targets.

5.5 Discovering a Virtual Server

A virtual server is a generic term used to describe a physical box which has virtualization software (hypervisor) running on it. A new virtual server can be provisioned by installing the OVM Hypervisor on a bare metal box. Before you add a virtual server to a server pool, it must be discovered.

To discover an Oracle VM Server, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Click on an OVM Manager target from the left panel to navigate to the OVM Manager Home page. From the **VM Manager** menu, select **Discover Virtual Server**.

Figure 5-4 Discover Virtual Servers

VM Manager Page Refreshed Aug 19, 2016 6:21:22 PM PDT

Discover Virtual Servers Submit Cancel

Virtual Servers

Specify long host name(FQDN) or IP address. To enter multiple entries, enter each new host name/IP address/IP range in a new line

Oracle VM Agent Credentials

Specify the Oracle VM Agent Username and Password for the virtual servers to be discovered.

* User Name

* Password

3. Specify the host name or the IP address of the virtual server. You can enter multiple host names or IP addresses on separate lines.
4. Enter the user name and password of the Oracle VM Agent running on the virtual server to be discovered.

5. Click **Submit** to discover the virtual server.

The newly discovered Oracle VM Server contains some basic information about itself, and about any immediate connectivity to a network storage, but it is considered to be in an unconfigured state. After the storage and networking has been configured, the Oracle VM virtual servers are ready to be used as the infrastructure for cloud.

5.6 Rediscovering a Virtual Server

To rediscover a virtual server, follow these steps:

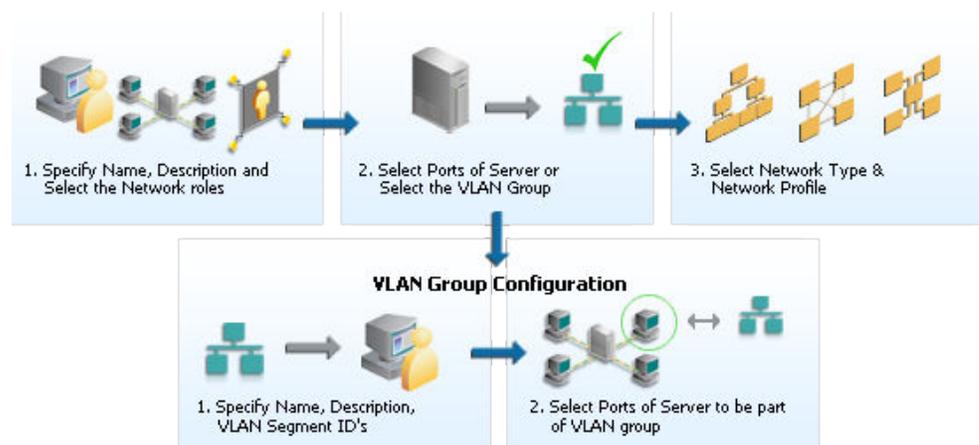
1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a Virtual Server target in the left panel and select **Rediscover Virtual Server**.
3. A confirmation message appears. Click **OK** to rediscover the virtual server and discover any new NICs and LUNs that have been added.

5.7 Setting Up Networks

This section discusses creation and use of Oracle VM Networks. You can define a name or an alias for each logical network. When you have created your networks, you connect the physical network ports on Oracle VM Servers to the logical networks. Before you define the logical networks in Enterprise Manager, you have to review your physical network configuration that you intend to use, such as VLAN and subnet usage. Setting up an Oracle VM network involves:

- [Generating MAC Addresses](#)
- [Creating and configuring VLAN Groups / Interfaces](#)
 - [Configuring a VLAN Group for Oracle VM Manager 3.2 or Earlier Versions](#)
 - [Creating a VLAN Interface for Oracle VM Manager 3.3](#)
- [Creating Networks](#)

Figure 5-5 Setting Up Networks



 **Note:**

In Oracle VM Manager 3.3, VLAN Groups have been replaced with VLAN Interfaces. When you are configuring the VLAN Interface, you are prompted for the VLAN Segment IDs and the ports on which the interfaces are to be created.

5.7.1 Generating MAC Addresses

Virtual network interfaces (VNICs) are used to carry network traffic to virtual machines. You can generate MAC addresses that can be assigned to VNICs in a virtual machine. Specify a range of MAC addresses that need to be generated.

VLAN Group has been replaced with VLAN Interface and during Vlan interface configuration, it asks VLAN Segment ID's and then Select Ports of Servers where the Interfaces to be created"

 **Note:**

MAC addresses must be unique across all Oracle VM Managers in the data center.

To create MAC Addresses, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on an OVM Manager target from the left panel and select **Manage Network**.
3. Click the **Virtual Network Interface Card Manager** tab.
4. Click **Generate**. In the Generate MAC Addresses pop-up window, you are prompted to specify an initial MAC address in 3 sets of 3 characters. This is a two-digit number for the Initial MAC Address. Click **OK** to return to the previous page. You can now use these VNICs while creating virtual machines.

 **Note:**

If you are using 3.4 or later versions of Oracle VM Manager, enter the **From** and **To** range in the Dynamic MAC Address field and click Apply Range. This range will then be used to create MAC addresses as needed in future deployments.

5.7.2 Configuring a VLAN Group for Oracle VM Manager 3.2 or Earlier Versions

 **Note:**

Configuring a VLAN Group is an optional feature. If VLANs exist in your physical network, you must follow the steps in this section to use them in the cloud.

VLAN (Virtual Area Network) is a mechanism to virtualize network interfaces across subnets and physical location so that they appear to be on a single confined LAN. This concept is used to isolate (and group) the network traffic across these distributed interface, which enables secure network traffic within such nodes.

You can create multiple virtual LAN (VLANs) on the same NIC port. Each VLAN is an independent logical network operating with other VLANs over the same physical connection. Configuring VLANs involves creating one or more VLAN Groups, each of which contain multiple VLANs segments.

Each VLAN is assigned a distinct VLAN identification. The VLAN ID is used by an attached VLAN switch to segregate traffic among the different VLANs operating on the same link. Once a VLAN is configured, it functions exactly like a separate physical connection. VLANs need to be configured in the physical switches before you use them. To create a VLAN group, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on an OVM Manager target from the left panel and select **Manage Network**.
3. Click the **VLAN Groups** tab and click **Create**.
4. Enter a name and description for the VLAN Group.
5. Enter one or more VLAN Segments. This is the VLAN ID that is enabled on the switch ports connecting the virtual server to the switch. The valid range is from 1 to 4094.
6. Click **Add** to select the ports to be added to the network. Select one or more virtual servers to be added to the network. If you add more than two ports of a virtual server, the first four ports will be bonded. Network bonding refers to the combination of network interfaces on one host for redundancy or increased throughput.

If your network supports jumbo frames, you must set the Maximum Transfer Unit size in the MTU field. Setting the MTU field, sets the maximum transmission rate, so that larger packets can be sent and received. You can set the MTU to a maximum of 1500 for Ethernet, 9000 for 1GbE, and 64,000 for 10GbE.

 **Note:**

The ports that you have selected must have the VLAN Segment IDs enabled.

7. Click **OK** to create the VLAN Group.

5.7.3 Creating a VLAN Interface for Oracle VM Manager 3.3

 **Note:**

Configuring a VLAN Interface is an optional feature. If VLANs exist in your physical network, you must follow the steps in this section to use them in the cloud.

VLAN (Virtual Area Network) is a mechanism to virtualize network interfaces across subnets and physical location so that they appear to be on a single confined LAN. This concept is used to isolate (and group) the network traffic across these distributed interface, which enables secure network traffic within such nodes. VLANs are divided into segments that are usually tagged with an ID.

To manage network traffic tagged for different VLAN IDs, a separate VLAN or virtual interface can be created for each VLAN ID. When creating different logical networks in Oracle VM Manager, these VLAN interfaces can be attached to different networks to specify the type of traffic that belongs to a particular VLAN ID.

If your network is configured to support VLANs, you should define interfaces for your different VLAN IDs on each of your servers, so that you are able to define Oracle VM networks that take advantage of VLAN separation.

You can create multiple virtual LAN (VLANs) on the same NIC port. Each VLAN is an independent logical network operating with other VLANs over the same physical connection. Configuring VLANs involves creating one or more VLAN Interfaces, each of which contain multiple VLANs IDs.

Each VLAN is assigned a distinct VLAN identification. The VLAN ID is used by an attached VLAN switch to segregate traffic among the different VLANs operating on the same link. Once a VLAN is configured, it functions exactly like a separate physical connection. VLANs need to be configured in the physical switches before you use them. To create a VLAN Interface, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on an OVM Manager target from the left panel and select **Manage Network**.
3. Click the **VLAN Interfaces** tab and click **Create**.
4. Enter one or more VLAN Segments separated by commas.

VLANs are divided into segments that are usually tagged with an ID. The ID is enabled on the switch ports connecting the virtual server to the switch. The valid range is from 2 to 4094.

5. Click **Add** to select the ports to be added to the network. In the Create VLAN Interfaces: Add Ports page, click the **Search** icon next to the Select Virtual Server(s) field. Select one or more virtual servers to be added to the network and click **Select**. The list of ports with the MTU size, MAC Address, and status is displayed. Select the ports to be added and click **Continue**. If you select more than one port of a virtual server, they will be bonded. Network bonding refers to the combination of network interfaces on one host for redundancy or increased throughput.
6. The selected ports are displayed. You can modify the following for each port:
 - **MTU:** If your network supports jumbo frames, you must set the Maximum Transfer Unit size in the MTU field. Setting the MTU field, sets the maximum transmission rate, so that larger packets can be sent and received. You can set the MTU to a maximum of 1500 for Ethernet, 9000 for 1GbE, and 64,000 for 10GbE.
 - **Address Type:** The network address assignment type can be Static, Dynamic, or None.
 - **IP Address:** The IP address for the port.
 - **Netmask:** The netmask for the port.
 - **Bonding Mode:** Network bonding refers to the combination of network interfaces on one host for redundancy and/or increased throughput. This can be:
 - **Active-Backup:** There is one NIC active while another NIC is asleep. If the active NIC goes down, another NIC becomes active.
 - **Load Balancing:** The network traffic is equally balanced over the NICs of the machine and failover is also supported to provide redundancy.
 - **Link Aggregation:** Aggregated NICs act as one NIC which results in a higher throughput, but also provides failover in the case that a NIC fails.

**Note:**

The ports that you have selected must have the VLAN Segment IDs enabled.

7. The VLAN Segments with the ports, MTU, Address Type, IP Address, and NetMask are listed in the VLAN Interfaces region. These parameters can be modified if necessary.

Click the **Manage** icon to add or delete VLAN Segments and click **OK** and return to the Create VLAN Interfaces page. Click **OK** to create the VLAN Interfaces and return to the Network page.

5.7.3.1 Viewing the VLAN Interfaces

To view the VLAN Interfaces that have been added, click the VLAN Interfaces tab on the Network page. The VLAN Interfaces are listed with the following details:

- **Name:** The name of the VLAN Interface that is created.
- **Port:** The network port on which the VLAN Interface has been assigned.

- Segment: The VLAN ID assigned to the VLAN Interface.
- Server: The server where the VLAN Interface is located.
- Network: The network to which the VLAN Interface is attached.
- MTU: The MTU value for the VLAN Interface.
- Address Type: The network address assignment type. This can be Static, Dynamic, or None.
- IP Address: The IP address allocated to the VLAN Interface.
- Netmask: The netmask applied to the VLAN Interface.

5.7.3.2 Editing a VLAN Interface

To edit a VLAN Interface, follow these steps:

1. Select the VLAN Interface you wish to edit from the list of VLAN Interfaces and click **Edit**.
2. In the Edit VLAN Interface page, you can edit the MTU setting and the Address Type. If you select Static type, you can specify the IP Address and the Netmask.
3. Click OK to save the changes and return to the previous page.

5.7.3.3 Deleting a VLAN Interface

To delete a VLAN Interface, follow these steps:

1. Select the VLAN Interface you wish to delete from the list of VLAN Interfaces and click **Delete**.
2. The Delete Confirmation dialog box is displayed. Click **OK** to delete the VLAN Interface.

5.7.4 Creating Networks

A network is a grouping of Oracle VM virtual server physical NIC ports. This section describes the procedure to create a logical network.

Prerequisites

- If you choose to associate a network profile with the network, then the network profile must be created before the network is created. A network profile stores the network interface configuration (IP address, subnet mask, host name, DNS servers) that is allocated to network interfaces of newly provisioned virtual machines.

Follow these steps to create a logical network:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on an OVM Manager target from the left panel and select **Manage Network**.
3. Click the **Create** option in the Networks tab. You are prompted to configure the ports of the VLAN groups. Click **Create VLAN Groups** to configure VLAN Groups.

For Oracle VM Manager 3.3, click Create VLAN Interfaces to configure the VLAN interfaces. See [Creating a VLAN Interface for Oracle VM Manager 3.3](#) for details.

If you want to create the networks without configuring the VLAN groups or interfaces, click **Continue Network Creation**. In the Create Network: General page, enter the name and description of the network.

Figure 5-6 Create Network: General

Network Roles

Name	Description	Select
Server Management	Used to communicate between the Manager and Server Pool ...	<input checked="" type="checkbox"/>
Cluster Heartbeat	This network role is used for cluster heartbeat traffic.	<input checked="" type="checkbox"/>
Storage	This network role is used to carry storage traffic.	<input checked="" type="checkbox"/>
Live Migrate	This network role is used for virtual machine live migration data.	<input type="checkbox"/>
Virtual Machine	Used to carry network traffic to Virtual Machines.	<input checked="" type="checkbox"/>

- Specify if you are creating an inter-server or intra-server network. An inter-server network is routable through standard switches. An intra-server network is available within a single server without a route to an external physical network.
- Specify the network role by checking one or more check boxes in the Network Roles section.

Note:

To deploy a Guest VM, you must have at least one logical network with the **Virtual Machine** role.

- Server Management:** Manages the physical virtual servers in a server pool, for example, to update the Oracle VM Agent on the different virtual servers.
- Live Migrate:** Carries live migrate traffic. You can migrate virtual machines from one virtual server to another in a server pool, without changing the status of the virtual machine.
- Cluster Heartbeat:** Carries cluster heartbeat traffic.
- Virtual Machine:** Used for the network traffic between the different virtual machines in a server pool. The virtual machine role can either be an Inter-Server (routable through standard switches), or an Intra-Server (without a route to an external physical network). The Virtual Machine role must be unique on the network, which means that this network cannot have other network roles. It is however possible, and very likely, to have multiple networks with the Virtual Machine role in one Oracle VM Manager.
- Storage:** Used for all storage transport in a server pool. It is used by the virtual servers to connect to ethernet-based storage repositories.

- Click **Next**. In the Configure Ports and VLAN Interfaces page, click **Add** and select a VLAN Interface from the list.

Figure 5-7 Create Network: Configure Ports and VLAN Interfaces (OVM Manager 3.2)

OVM: Create Network

General **Configure Ports and VLAN Interfaces** Network Profile and QoS Review

Create Network : Configure Ports and VLAN Interfaces Back Step 2 of 4 Next Finish Cancel

VLAN Interfaces

View

Port	MAC Address	MTU	Address Type	IP Address	Netmask	Bonding Mode
▼ vlan_120102, 100	00:16:3e:3a:65:8a	1500	None			

Ports

View

Port	MAC Address	MTU	Address Type	IP Address	Netmask	Bonding Mode
network.EthernetPort (2) in	00:16:3e:3a:65:87	9000	None			

- After adding the VLAN Segment, click **Add** the VLAN Interfaces and the ports. Select the ports to be added to network. If you select more than two ports, they will be bonded or aggregated into a single interface. By default, the Bonding Mode is Active Passive but you can change it by selecting one of the following:
 - Active Passive:** There is one active NIC. If this one goes down, another NIC becomes active.
 - Link Aggregation:** All NICs act as one NIC which results in a higher throughput.
 - Load Balanced:** The network traffic is equally balanced over the NICs of the machine.

If your network supports jumbo frames, you must set the Maximum Transfer Unit size in the MTU field. Setting the MTU field, sets the maximum transmission rate, so that larger packets can be sent and received. You can set the MTU to a maximum of 1500 for Ethernet, 9000 for 1GbE, and 64,000 for 10GbE.

Note: If you are using Oracle VM Manager 3.3, you will see the following page:

Figure 5-8 Create Network: Configure Ports and VLAN Interfaces (OVM Manager 3.3)

OVM: Create Network

General | **Configure Ports and VLAN Interfaces** | Network Profile and QoS | Review

Step 2 of 4 | Back | Next | Finish | Cancel

All the selected VLAN Interfaces should have same segment ID.
 All selected VLAN Interfaces should be on different Servers.

VLAN Interfaces

View

Name	Port	Segment	Server Name	Network	MTU	Address Type	IP Address	Netmask
No VLAN Interfaces Added.								

Ports

View

Port	MAC Address	MTU	Address Type	IP Address	Netmask	Bonding Mode
v22-71.in.oracle.com : eth1 on v22-71.in.oracle...	00:21:28:#7a:77	1500	DHCP			

8. Click **Next**. The Network Profile and QoS page appears.

Note:

Defining the Network Profile and QoS is optional. A network profile stores the network interface configuration (IP address, subnet mask, host name, DNS servers) to be allocated to network interfaces of newly provisioned virtual machines.

Specify the following:

- **Network Type:** You can select Internet Routable, Non Internet Routable, or a predefined set of network types. For more details, see [Setting Up the Network Type](#).
- **Network Profile:** A network profile defines a set of IP Addresses, their associated host names (optionally), and common networking attributes for them. See [Creating a Network Profile](#) for details.

9. **Review** the details entered so far and click **Finish** to create the network.

5.8 Creating a Network Profile

A network profile is used to automate assignment of IP addresses to guest virtual machines. A network profile is a list of IP address along with host names. It defines a set of IP addresses, their associated host-names, and common networking attributes for them.

To create a network profile, follow these steps:

1. From the **Setup** menu, select **Provisioning and Patching**, then select **Network Profile**.
2. Click **Create** on the Network Profile page.
3. Enter the following details in the Create Network Profile pop-up window:

Figure 5-9 Create Network Profile

Create Network Profile [X]

* Name

* Domain Name

* Netmask

* Gateway

* DNS Servers

IP Address List Range

+ Add X Delete...

IP Address	Hostname
No IP Address Added.	

OK Cancel

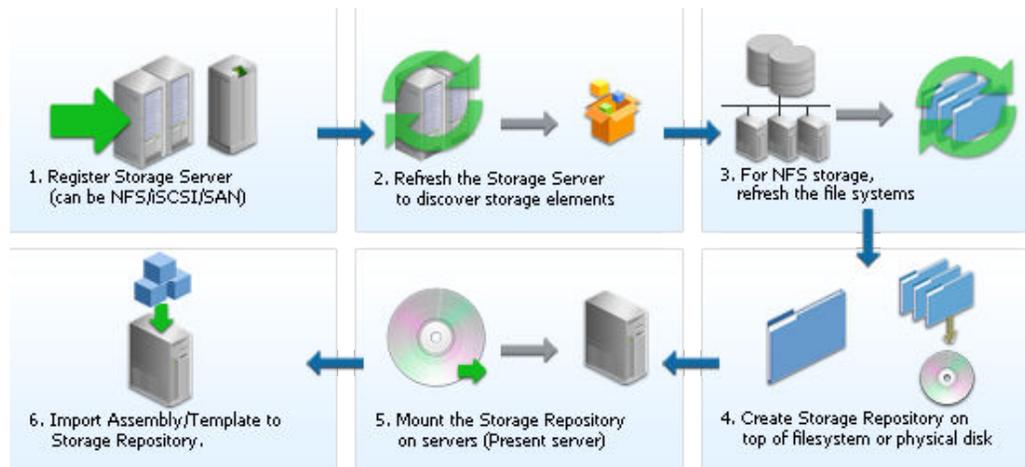
- **Name:** Unique name that identifies the network profile name.
 - **Domain Name:** Domain for which the profile is being defined. The domain name must not begin with a dot ('.'). For example, you must specify the domain name as `us.example.com` and not with a dot (.) in the front like `.us.example.com`.
 - **Netmask:** Network mask for the subnet IP. For example: `255.255.240.0`
 - **Gateway:** Gateway for the IP address list.
 - **DNS Servers:** Name resolution servers.
4. You can add a list of IP addresses or specify a range. If you select:
- **List:** Specify IP addresses with host name and MAC address (optional).

- **Range:** Specify a Hostname Pattern. The Start Value is appended to the host names generated. The First IP Address and the Last IP Address defines the range. For example: If the pattern is say `hostprod` and Start Value is 1, First IP Address is 10.1.1.1 and Last IP Address is 10.1.1.3, the host names will be `hostprod1`, `hostprod2` and `hostprod3`.
5. Click **OK** to save the network profile.

5.9 Registering Storage Servers

You can create external storage elements like storage servers, file systems, and LUNs. An external storage element is created on dedicated storage hardware such as a server configured for NAS offering NFS shares. The server on which the storage element is present must be accessible by the Oracle VM Servers through a fibre channel or ethernet network. You can configure a virtual server pool with multiple such external storage devices.

Figure 5-10 Creating Storage Servers and File Systems



To set up a storage server, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on an OVM Manager target in the left panel and select **Manage Storage**. [Figure 5-11](#) appears.

Figure 5-11 Storage Server

Storage 1	
Name	Description
File Servers	NFS Storage Servers available in the OVM Manager.
Storage Arrays	iSCSI and Fibre Channel(SAN) Storage Arrays available in the OVM Manager
Unmanaged FibreChannel Storage Array	Default Fibre Channel(SAN) Storage Array managed by the Oracle Generic SCSI Storage Plug-in.
Unmanaged iSCSI Storage Array	Default iSCSI Storage Array managed by the Oracle Generic SCSI Storage Plug-in.
v22-51_india	Sun Storage 7110
Local File Servers	OCFS2 File Systems on servers
Local FS v22-127.in.oracle.com	
Local FS v22-71.in.oracle.com	

3. A list of file servers, storage arrays, and local file servers that have been defined appears.
 - **Type:** Select the type of storage array that can be defined. A storage array is additional network provided storage that can be specifically used to store virtual disks for virtual machines. A server pool can be configured with multiple external storage devices. You can define 3 types of storage servers:
 - **iSCSI:** An iSCSI target configured or discovered on the Oracle VM Server.
 - **SAN:** A Fiber Channel SAN target configured/discovered on the Oracle VM Server.
 - **NFS:** An NFS or NAS file system mounted locally.
 Select File Server (NFS) or Storage Array (iSCSI or SAN).
4. You can register a File Server or a Storage Array by clicking the appropriate link.
5. Select a storage element and click **Discover** to start the discovery operation of the file systems available on the server. A confirmation message prompting you to refresh the file system appears. Click **OK** to refresh the file system and return to the Storage page.
6. Click on a **File Server**, **Storage Array**, or **Local File Server** link to drill down to the Details page.
7. Select a storage element and click **Validate**. A confirmation message prompting you to validate the storage server appears. Click **OK** to refresh the file system and return to the Storage page.

5.9.1 Registering the File Server

To register a file server, follow these steps:

1. Click the **File Server** link on the Storage page. The Register File Server: General page appears.

Figure 5-12 Register File Server: General

2. Enter the following details:
 - **Name:** Name by which the storage server is to be identified.
 - **Plugin Name:** The Oracle VM Manager communicates with the external storage through a set of plug-ins. Generic plug-ins offer a limited set of standard storage operations on virtually all storage hardware, such as

discovering and operating on existing storage resources. Vendor-specific plug-ins include a much larger set of operations (snapshot, clone, and so on).

- **Admin Host:** Host name of the Administration Server.
 - **Admin Username and Password:** User name and password for the Administration Server.
 - **Access Host:** Host name or IP address of the server offering external storage.
 - **Uniform Exports:** Select this check box to indicate that the NFS exports are uniform. This ensures that all the VM Servers in the server pool will have access to the same exports on the NFS server. If this check box is not selected, the NFS exports can be accessed only by specific servers that are used to refresh the NFS file systems.
3. Click **Next**. The Register File Server: Admin and Refresh Servers page appears. Enter the following:
 - **Admin Servers:** VM Servers that have the required Storage Plugin installed and are responsible for information exchange with the Admin Host of the Storage Server are referred to as Admin Servers. Click Add to add one or more Admin Servers.
 - **Refresh Servers:** If you have not selected the Uniform Exports checkbox in the Register File Server: General page, click Add to specify the list of Refresh servers that will be used to refresh the NFS file systems.
 4. Click **Finish** to add the file server. The new server appears in the table. At this point, the Storage Connect plugin has established a link to the storage location. No storage has been mounted yet.
 5. Click **Discover** to start the discovery operation of the file systems available on the server. When the operation is complete, the available file systems appear in the File Systems tab in the Storage Details page.

5.9.2 Registering the Storage Array

To register a storage array, follow these steps:

1. Click the **Storage Array** link on the Storage page. The Register Storage Array: General page appears.

Figure 5-13 Register Storage Array: General

The screenshot shows the 'Register Storage Array: General' page in the OVM interface. The page has a breadcrumb trail: 'General' (selected), 'Access Information', and 'Admin Servers'. Below the breadcrumb is the title 'Register Storage Array: General' and navigation buttons: 'Back', 'Step 1 of 3', 'Next', and 'Cancel'. The form contains the following fields:

- Name:** A text input field containing 'test'.
- Description:** A text area.
- Storage Type:** A dropdown menu with 'Fibre Channel Storage Arr' selected.
- Plug-in Name:** A dropdown menu with 'Oracle Generic SCSI Plug' selected.
- Plug-in Private Data:** A section with three sub-fields: 'Admin Host', 'Admin Username', and 'Admin Password', each with a text input field.

2. Enter the following details:

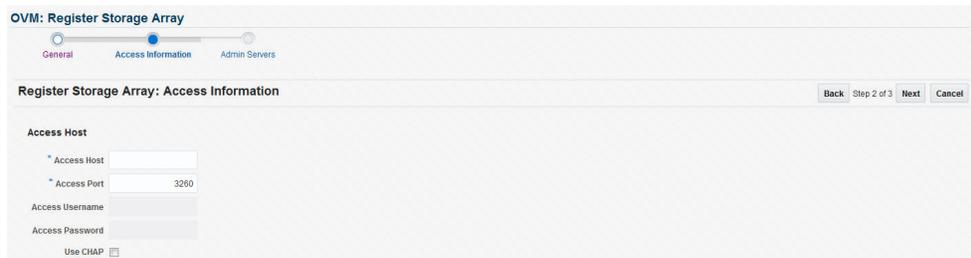
- **Name:** Name by which the storage server is to be identified.
- **Storage Type:** Select the type of storage array that can be defined. A storage array is additional network provided storage that can be specifically used to store virtual disks for virtual machines. You can define 2 types of storage arrays:
 - **Fibre Channel Storage Array:** A Fiber Channel SAN target configured or discovered on the Oracle VM Server.
 - **iSCSI Storage Array:** An iSCSI target configured or discovered on the Oracle VM Server.
- **Plugin Name:** The Oracle VM Manager communicates with the external storage through a set of plug-ins. Generic plug-ins offer a limited set of standard storage operations on virtually all storage hardware, such as discovering and operating on existing storage resources. Vendor-specific plug-ins include a much larger set of operations (snapshot, clone, and so on).
- **Plugin Private Data:** Any vendor-specific storage plug-in data that may be required. This is not available to generic storage.

 **Note:**

When registering a vendor-specific storage array, be sure to double-check the information you entered in the plug-in private data field. Once the storage array is registered, this field can no longer be modified. If you need to update the plug-in private data, you must unregister and re-register the storage array.

- **Admin Host:** Host name of the Administration Server.
 - **Admin Username and Password:** User name and password for the Administration Server.
3. Click **Next**. The Register Storage Array: Access Information page appears.

Figure 5-14 Register Storage Array: Access Information



OVM: Register Storage Array

General Access Information Admin Servers

Register Storage Array: Access Information Back Step 2 of 3 Next Cancel

Access Host

* Access Host

* Access Port 3260

Access Username

Access Password

Use CHAP

4. Enter the following details:
- **Access Host:** Host name or IP address of the server offering external storage.
 - **Access Port:** Port number used to access the storage.
 - **Access Username and Password:** User name and password for the Access Host.
 - **Use Chap (Applies to all Access Hosts):** Select this check box to enable Chap authentication.

 **Note:**

If you have selected the Storage Type as iSCSI Storage Array and Plugin Name as Oracle Generic SCSI Plugin (1.2.1 or above) in the Register Storage Array: General page, you can add multiple Access Hosts.

5. Click **Next**. The Register Storage Array: Admin Servers page appears. Click Add to add one or more Administration Servers on which the storage plug-in has been installed. The Administration Server is responsible for information exchange with the Administration Host of the storage server.
6. Click **Finish** to add the storage array. The new server appears in the table. At this point, the Storage Connect plugin has established a link to the storage location. No storage has been mounted yet.
7. Click **Discover** to start the discovery operation of the file systems available on the server. When the operation is complete, the available file systems appear in the General tab of the Storage Details page.

5.9.3 File Server Details

Click a File Server link to view the Details page. This page contains the following tabs:

- **General:** A list of Administration Servers is displayed. An Administration Server is a virtual server on which the storage plug-in has been installed. You can add an Administration Server or delete an existing one.

In the Configuration region, the storage server details are displayed. Click **Edit** to modify details such as Name, Description, and the name of the Access Host which provides the external storage.

In the Storage QOS Mapping region, map the storage type defined by the Cloud Administrator to the QOS defined by the Storage Server.

- **Refresh Servers:** For non-uniform NFS file system exports, you can specify the servers that need to be refreshed. Click **Add**. The Refresh Servers dialog box is displayed. Click Select Servers, choose one or more servers from the list and click Select. Click **OK** to refresh the servers.
- **File Systems:** A list of file systems is displayed. You can do the following:
 - Select a file system from the list and click **Edit**. You can modify the name and description of the file system.
 - Select a file system and click **Delete**. A confirmation message is displayed. Click **OK** to delete the file system.
 - Select one or more file systems and click **Refresh**. A confirmation message is displayed. Click **OK** to refresh the file system.
- **Access Groups:** Shows the mapping between Refresh Servers and File Systems (Exports). You can Create, Edit, or Delete an Access Group.

5.9.4 Storage Array Details

Click a Storage Array link to view the Details page. This page has four tabs:

- **General:** Provides general information on the storage array. A list of administration servers is displayed in the Administration region. An Administration Server is a virtual server on which the storage plug-in has been installed. You can add an Administration Server or delete an existing one.

In the Configuration region, the storage server details are displayed. Click **Edit** to modify the Name and Description.

- **Physical Disks:** Displays a list of all the physical disks on the storage array. Depending on the type of storage connector (You can **Create**, **Clone**, **Edit**, **Resize** (resize or extend the physical disk), **Rescan** (refreshes the physical disk), **Delete**, and **Create File System** (create OCFS2 file system on the physical disk).

 **Note:**

The operation allowed depends on the type of storage connect plug-in that has been installed. For example, if the generic storage connect plug-in has been installed, you cannot perform a **Create** operation on the physical disks.

- **Access Group:** Shows the mapping between Storage Initiators and Physical Disks. You can **Create**, **Edit**, **Present / Unpresent Access Group** (Add or Delete physical disk), and **Delete access group**.
- **Volume Group:** Displays the volume group available for this storage server.

5.9.5 Local File Server Details

Click on a Local File Server link to view the Details page. This page contains the following tabs:

- **General:** The configuration details of the selected Local File Server including the Administration Host, Plug-in Name, and so on are displayed.
- **File Systems:** You can edit or refresh a file system in the list. Select a file system from the list and click **Edit**. You can modify the name and description of the file system.

To refresh, select a file system from the list and click **Refresh**. Select the name of the virtual server and click **OK** to refresh the file system.

5.10 Creating a Storage Repository

A storage repository is virtual disk space on top of physical storage hardware, made available to the Oracle VM Servers in a server pool or various server pools. It defines where Oracle VM resources may reside. Resources include virtual machines, templates for virtual machine creation, virtual machine assemblies, ISO images, shared virtual disks, and so on.

After you have created the storage server, you can assign these storage resources to the server pools in a zone by creating a storage repository.

To create a storage repository, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.

- Right click on an OVM Manager target in the left panel and select **Manage Storage Repository**.

Figure 5-15 Storage Repository

Name	Owned	File System Size (GB)	File System Size Used (%)	Disk	Share Path	Storage Server	Description
149_repo_v22...	Yes	100	4	repo_149		Local FS v22-71.in.oracle...	

- The list of storage repositories that have been defined appears. Click **Create** to create a storage repository.
- In the pop-up window, enter the name of the storage repository.
- Click the **Search** icon in the Disk field to select the Storage Server and File System on which the storage repository is to be created and click **OK**.

If you select the NFS File System, you must select the location of the storage server and a virtual server. You can optionally specify the Share Path and a description. The storage repository has now been created and will be displayed in the Storage Repositories page.

5.10.1 Performing Administrative Operations on a Storage Repository

After the storage repository has been created, you can perform a number of management operations on it. The listing of storage repositories depends on the server pool selection. If you select server pools, you see all the storage repositories. If you select an individual server pool, only the storage repositories related to that server pool appear. You can perform the following operations:

- Edit:** Select a repository and click **Edit**. You can modify the name and description or release the ownership of the repository. Click **OK** to save the changes.

Note:

If you are editing a storage repository that has been created on a physical disk, you can change the server pool with which the storage repository is associated. To change the server pool, in the Edit dialog box, click the **Search** icon next to the Server Pool field, select a different server pool and click **OK**.

- Delete:** Select a repository and click **Delete**. All the contents of the selected repository along with its associations will be deleted.
- Auto-Refresh:** Select this option to enable Auto-Refresh and periodically refresh and update the file system size of all storage repositories. In the dialog box that appears, select the **Enable** check box and specify the Interval at which the file system size is to be refreshed.

 **Note:**

As the Auto-Refresh option locks the repositories, you must use this option when no deployment operations are scheduled.

5.11 Presenting the Storage Repository

After you have created the storage repository, you can propagate it to one or more server pools. When the storage repository is prepared and created, it still must be made available for use by your virtual servers before it can be used. Typically you present the storage repository to all the virtual servers in the server pool.

To present a storage repository to server pool, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on an OVM Manager target from the left panel and select **Manage Storage Repository**.
3. In the Storage Repository page, click on a storage repository from the list. The list of server pools on which the storage repositories have been propagated appears.

Figure 5-16 Presented Servers



Host	Server Pool	Description
v22-127.in.oracle.com	pool_149	
v22-71.in.oracle.com	pool_149	

4. Select one or more server pools from the list and click **Present**. In the Present Servers dialog box, click the **Select Servers** icon. The list of members appears in the Select Targets dialog box. Expand the Members in this dialog box and check the boxes for zones, pools, or individual virtual servers and click **Select** to return to the previous dialog box. Click **Present** to mount the member on the server.

5.12 Importing Assemblies, Templates, and Virtual Disks into the Storage Repository

A storage repository associated with an Oracle VM server stores binary components associated with an Oracle VM servers. The following software components can be stored in the storage repository:

- Oracle VM Templates
- Oracle Virtual Assemblies
- ISOs
- Virtual Disks
- VM Files

The Oracle Virtual Assemblies, Oracle VM Templates and ISO images need to be imported into the storage repository before guest virtual machines can be created using them. Follow these steps to import software components into the storage repository:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on an OVM Manager target in the left panel and select **Manage Storage Repository**.
3. Click on a Repository Name link. The Storage Repository Details page shows the list of server pools on which the selected storage repository has been propagated.
4. Click the **Assemblies** tab. An assembly can be imported as a single `.ova` file.

Figure 5-17 Storage Repository - Assemblies

Storage Repository * 149_repo_vt22_51
Storage Repository Details : 149_repo_vt22_51

Presented Servers Assemblies ISOs VM Templates Virtual Disks VM Files Repository Exports Repository Events

View Import... Edit... Delete...

Name	Size (MB)	Creation Time	VM Templates	Description
OVM_OL7U1_x	625.70	Sep 30, 2015 3:11:48 PM IST	1	Import URL: http://10.104.22.121/OVM_OL7U1_x86_64_PVHVM.ova
asmb_olsu2	600.30	Oct 1, 2015 7:14:12 PM IST	1	Import URL: http://10.104.22.121/OVM_OL8U2_x86_64_PVM.ova

- Click **Import**. You can import the assembly from the Software Library or from an external source. If you select:
 - **Software Library**: The list of assemblies present in the Software Library are displayed. Select the assemblies to be imported and click **OK**. After the assembly has been imported, a series of templates is created. This option unpacks the contents of the assembly, for example, configuration files, disk images, and so on.
 - **External**: Specify a external URL from which the assembly is to be imported and click **OK**. The URL you specify must be accessible from the OVS Host on which the repository is presented.

 **Note:**

If the Enterprise Manager upload port is not present in the tinyproxy configuration file, the assembly or template cannot be imported. To resolve this issue, do the following:

- * On the Enterprise Manager node, as Oracle user, enter the following command

```
$OMS_HOME/bin/emctl status oms -details
```

- * From the output, capture the HTTPS upload port from the example below:

```
HTTPS Upload Port : 4473
```

- * On both active and passive PCA management nodes, run the following command:

```
Edit /etc/tinyproxy/tinyproxy.conf
```

- * Add a line as follows in the ConnectPort section:

```
ConnectPort 4473
```

- * Restart the tinyproxy service on both active and passive management nodes as follows:

```
service tinyproxy restart
```

5. Click on the **ISOs** tab to import the ISO images. Virtual machines have no access to the physical DVD or CD-ROM drive. You can assign virtual drives to virtual machines by offering .iso files containing the image of a DVD or CD-ROM. These image files can be found in the ISOs tab of the storage repository.
 - Click **Import**. You can import the ISO image from the Software Library or from an external source. If you select:
 - **Software Library**: The list of ISO images present in the Software Library are displayed. Select the ISO images to be imported and click **OK**. Select the ISO image that has been imported and click **Assign** to assign this template to a server pool.
 - **External**: Specify a valid external URL from which the ISO image is to be imported and click **OK**. The URL you specify must be accessible from the OVS Host on which the repository is presented.

 **Note:**

Creation Time is not displayed if you are using 3.4 or later versions of Oracle VM Manager.

6. Click the **VM Templates** tab. Templates contain the configuration of a single virtual machine. When you create a new virtual machine, you choose to either create it from scratch or from a template. In a storage repository, templates are typically imported as an archive (.tgz, .tar or other). The archive contains a .cfg file with the virtual machine configuration, and at least one .img file which is a virtual disk image.

Figure 5-18 Storage Repository - VM Templates

Storage Repository > 149_repo_vt22_51
Storage Repository Details : 149_repo_vt22_51

Presented Servers Assemblies ISOs **VM Templates** Virtual Disks VM Files Repository Exports Repository Events

View

Name	Size (MB)	Creation Time	Parent Assembly	Description
OVM_OI7U1_x86_64_PVHVM1	2,503.00	Sep 30, 2015 3:13:02 PM IST	OVM_OI7U1_x...	Oracle Linux OL7 update 1 for x86_64
oi7u1_template	2,504.50	Sep 30, 2015 3:30:14 PM IST	oi7u1_template	Oracle Linux OL7 update 1 for x86_64
oi7u1	12,288.00	Sep 30, 2015 4:11:39 PM IST		Oracle Linux OL7 update 1 for x86_64
OVM_OI6U2_x86_64_PVM	12,288.00	Oct 1, 2015 7:18:13 PM IST	asmb_oi6u2	Oracle Linux OL6 update 2 for x86_64

- Click **Import**. You can import the VM Template from the Software Library or from an external source. If you select:
 - **Software Library**: The list of VM Templates present in the Software Library are displayed. Select the VM Template to be imported and click **OK**. After the template has been imported, select the template and click **Assign** to assign this template to a server pool.
 - **External**: Specify a valid external URL from which the VM template is to be imported and click **OK**. The URL you specify must be accessible from the OVS Host on which the repository is presented.

**Note:**

Creation Time is not displayed if you are using 3.4 or later versions of Oracle VM Manager.

7. Click on the **Virtual Disks** tab.

Figure 5-19 Storage Repository - Virtual Disks

Storage Repository > 149_repo_vt22_51
Storage Repository Details : 149_repo_vt22_51

Presented Servers Assemblies ISOs VM Templates **Virtual Disks** VM Files Repository Exports Repository Events

View

Name	Used (MB)	Max (MB)	Fragmentation %	Creation Time	Shared	Associations	Description
system	2,503.00	12,288.00	0	Sep 30, 2015 3:13:02 PM IST			1
system (2)	2,503.00	12,288.00	0	Sep 30, 2015 3:13:45 PM IST			1
system (3)	2,503.00	12,288.00	0	Sep 30, 2015 3:27:09 PM IST			1
system (4)	2,504.50	12,288.00	0	Sep 30, 2015 3:30:14 PM IST			1
0004fb00001200007a14c78d57c05a28.img	12,288.00	12,288.00	0	Sep 30, 2015 4:11:39 PM IST			1
0004fb00001200007a14c78d57c05a28.im...	12,288.00	12,288.00	0	Sep 30, 2015 4:12:17 PM IST			1
system	12,288.00	12,288.00	0	Oct 1, 2015 7:18:13 PM IST			1
system (5)	12,288.00	12,288.00	0	Oct 1, 2015 7:19:07 PM IST			1

- Click **Create** and size of virtual disk to be created.
- Indicate if this is a shared disk by checking the **Shared** check box.
- Click **Import**. You can import the virtual disk from the Software Library or an external source. If you select:
 - **Software Library**: The list of virtual disks present in the Software Library are displayed. Select the virtual disks to be imported and click **OK**. Select the virtual disk has been imported, click **Assign** to assign this template to a server pool.

- **External:** Specify a valid external URL from which the virtual disk is to be imported and click **OK**. The URL you specify must be accessible from the OVS Host on which the repository is presented. If you reference the virtual disk using `http://` or `ftp://` protocols, you must include `user/pw` in the reference.

For example, you must specify the URL as `http://user:pw@host/virtualdisk_file_image_file` or `ftp://user:pw@host/virtual_disk_image_file`. If the virtual disk is accessible by way of NFS, you can also specify `file:///net/host/virtual_disk_image_file` if the OVS is enabled for NFS automount.

8. Click **Return** to return to the Storage Repository page.



Note:

Creation Time is not displayed if you are using 3.4 or later versions of Oracle VM Manager.

5.12.1 Creating a Repository Export (Optional)

You can configure the virtual server to enable third party applications to back up the contents of the storage repository.

Prerequisites

- The Repository Exports feature is available only for storage repositories based on physical disks and at least one server must have been presented to the repository.
- The virtual server must be configured to provide an NFS share to access the contents of the repository.
- The virtual server must be in a clustered server pool and have the OCFS2-based storage repository presented to it.

To create a repository export, follow these steps:

1. Click the **Repository Exports** tab in the Storage Repository Details page.
2. Click **Create**. The Create Repository Export window appears.
3. Enter a name of the host which is used to mount the contents of the storage repository to the Export Server.
4. Specify the options to restrict access to the repository. For Linux systems, the default is `rw, async, no_root_squash`.
5. Click **Add** in the Export Server(s) region. Select one or more virtual servers on which the storage repository is to be presented and click **Select**.
6. Click **OK** to submit the job and return to the Storage Repository Details page.

5.13 Using Self Update to Download Oracle VM Templates and Virtual Assemblies

You can download the preconfigured assemblies and templates from the Self Update Console by following these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Setup** menu, select **Extensibility** and then select **Self Update**. The Self Update Console with the list of entity types that can be downloaded appears.
3. Select the Oracle VM Templates and Oracle Virtual Assemblies folder and click **Open**. The Oracle VM Templates and Oracle Virtual Assemblies Updates page appears.
4. Select an update and click **Download**. The Schedule Download dialog appears.
5. Specify if the update is to be downloaded immediately or at a later date.
6. Click **Select**. An Enterprise Manager job is created to download the update to the Software Library. Enterprise Manager starts downloading the archive from the Oracle Enterprise Manager store. Wait for the download to complete. (When in offline mode the system starts reading from the specified location.) When the download is complete, the status indicates that the update has been downloaded.
7. Click **Apply**. A job is submitted to apply the update. The downloaded plug-in is applied and appears on the Oracle VM Templates and Oracle Virtual Assemblies Updates page.

5.14 Creating a Virtual Server Pool

This section guides you through the ways of designing a server pool to meet your requirements.

Before creating a server pool, you need to consider how many physical servers will be contained in the server pool, and what functions each physical server will perform. The more virtual machines you will run in the server pool, the more resources these virtual machines will consume, therefore the more physical servers are needed to provide sufficient resources for the server pool. A server pool is scalable. If you find a server pool does not have sufficient resources, such as CPU and memory, to run the virtual machines and the applications inside, you can expand the server pool by adding more Oracle virtual servers.

A virtual server pool contains one or more virtual servers and guest virtual machines. A virtual server can belong to one and only one virtual server pool at a time. Guest virtual machines and resources are also associated with the server pools.

Prerequisites

- A non-clustered virtual server pool can contain a maximum of 64 Oracle VM servers and a clustered virtual server pool can contain a maximum of 32 Oracle VM servers.
- Virtual servers that can be deployed as the Master Server, the Utility Server, and/or the Guest Virtual Machine. At least one virtual server is required in a server pool.
- All virtual servers in a server pool should have CPUs in the same CPU family. If they are not in the same CPU family, some operations such as live migration may fail. Though the CPUs should be in the same CPU family, they may have differing configurations, such as different number of cores. Other hardware components on the host computer may also differ, such as the amount of RAM, the number and size of disk drives, and so on.

 **Note:**

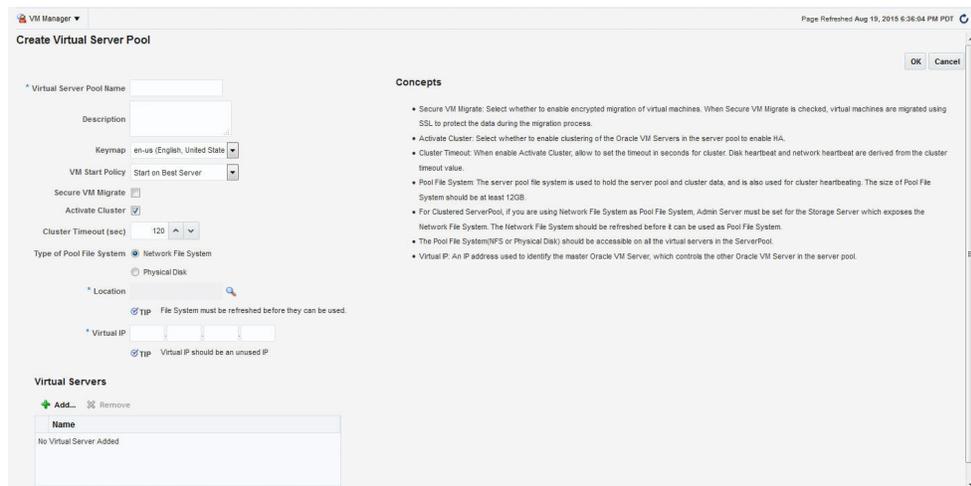
Although the host computers may have differing configurations, Oracle recommends that all virtual servers in a server pool are identical.

- A dedicated file system (either a NAS export, or a LUN) to use as the server pool file system is available.
- IP addresses for the virtual servers must be available. The IP address to be used as the Master Server's virtual IP address must be an unused and available IP address.
- To create a virtual server pool, you must be logged in as an **Administrator** with **Add Any Target** privilege.
- To delete a virtual server pool, you must have **Full** privilege on the server pool and appropriate privileges on the virtual servers and guest virtual machines belonging to the virtual server pool.

To create a virtual server pool:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on an OVM Manager target in the left panel and select **Create Virtual Server Pool**.

Figure 5-20 Create Virtual Server Pool



The screenshot shows the 'Create Virtual Server Pool' dialog box. The 'Virtual Server Pool Name' field is empty. The 'Description' field is empty. The 'Keymap' is set to 'en-us (English, United States)'. The 'VM Start Policy' is 'Start on Best Server'. The 'Secure VM Migrate' checkbox is unchecked. The 'Activate Cluster' checkbox is checked. The 'Cluster Timeout (sec)' is set to 120. The 'Type of Pool File System' is 'Network File System'. The 'Location' field is empty. The 'Virtual IP' field is empty. The 'Virtual Servers' section shows 'No Virtual Server Added'. The 'Concepts' section on the right provides detailed information about the various options.

3. Enter the server pool information:
 - **Virtual Server Pool Name:** The name of the server pool. A server pool name must consist of alphanumeric characters, and must not contain spaces or special characters, except the underscore (`_`) or hyphen (`-`) characters. The maximum length of a server pool name is 200 characters.
 - **Description:** A description of the server pool.
 - **Keymap:** Specify the keyboard type for the guest virtual machines created in this server pool.

- **VM Start Policy:** Select the policy to be used to start the virtual machines. You can choose:
 - **Start on Best Server:** The best server in the server pool is used to start the virtual machine.
 - **Start on Current Server:** The virtual machine will be started on the same server on which it was created.
 - **Secure VM Migrate:** Specify whether encrypted migration of virtual machines is to be enabled. If this checkbox is selected, virtual machines are migrated using SSL to protect data during the migration process.
 - **Activate Cluster:** Select this check box to enable high availability on the server pool.
 - **Cluster Timeout:** If the Activate Cluster is enabled, you can set the cluster timeout period in seconds. The disk heartbeat and network heartbeat are derived from the cluster timeout value.
 - **Type of Pool File System:** Select the pool file system to use for the server pool. The pool file system is used to hold the server pool, cluster data, and is also used for the cluster heartbeat.

The type can either be Network File System or Physical Disk. If you are using a file server for the server pool, select Network File System. If you are using a physical disk on a storage array for the server pool, select the type as Physical Disk.
 - **Location:** Click the **Search** icon to search for and select the pool file system. This must be accessible by all virtual servers in the server pool.
 - **Virtual IP:** An IP address used to locate the Master Server in the server pool. If the Master Server changes to another Oracle VM Server, this IP address is then assigned to the new host.
4. Click **Add** in the Virtual Servers section. Select one or more virtual servers from the Search window and click **OK**.

 **Note:**

Before you add a virtual server to the server pool, it must have been discovered. See [Discovering a Virtual Server](#) for details.

5. Click **OK** to create a virtual server pool.

5.14.1 Editing a Virtual Server Pool

You can edit the configuration information of a virtual server pool, including the description, key map, start policy, and so on. You can also change the master server, which controls the cluster, as well as whether the virtual machines are migrated securely. You cannot change the Virtual IP or the Pool File System used for the server pool. To edit a virtual server pool, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. From the left panel, select the virtual server pool target that you want to edit.

3. From the **VM Server Pool** menu, select **Target Setup**, then select **Edit VM Server Pool**. The Edit Virtual Server Pool page appears.
4. You can also edit the following fields:
 - **Keymap**: The keyboard type for the guest virtual machines created in this server pool.
 - **VM Start Policy**: The policy to be used to start the virtual machines. You can choose to start on the current server or on the best server.
 - **Secure VM Migrate**: Indicates whether encrypted migration of virtual machines is to be enabled. If this checkbox is selected, virtual machines are migrated using SSL to protect data during the migration process.
 - **Master Server**: Indicates the server that is the master of the server pool. You can choose any server in the server pool to become a master. This feature is not available for Oracle VM Manager versions 3.4 and later.

 **Note:**

The Master Server feature is not supported in Oracle VM Managers versions 3.4 and higher.

5. In the Virtual Servers region, you can add or remove virtual servers.
6. Click **Change Agent Password** to change the password for the Management Agent running on the Master Server. The modified password will be applied to the Management Agents running on all virtual servers in the server pool.

 **Note:**

Before you add a virtual server to the server pool, it must have been discovered. See [Discovering a Virtual Server](#) for details.

7. You can **Add**, **Edit**, or **Delete** Anti-Affinity Groups. Anti-affinity groups specify that a group of virtual machines cannot run on the same server. In the Add Anti-Affinity Group window, enter a name for the group and select one or more virtual machines that should be part of this group. The virtual machines that are part of this group cannot run on the same server.
8. Click **OK** to apply the changes to the virtual server pool.

5.15 Creating a Zone

A zone is used to group related cloud resources together. Cloud zones can be created based on location, software lifecycle status, for grouping resources according to a cost center or for metering and chargeback purposes. Typically, a zone can cover a department or possibly a small data center. The cloud environment can comprise of one or more zones. Each zone has a set of metrics that show the aggregate utilization of the zone.

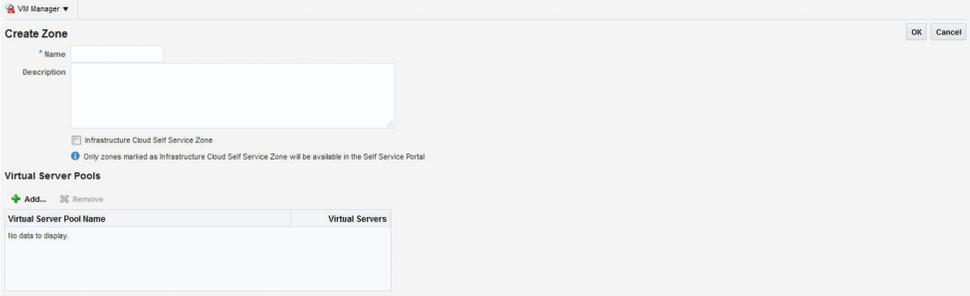
Prerequisites

- To create a zone, you must be logged in as an Administrator with Add Any Target privilege.
- To remove a zone, you must have Operator / Full privilege on the zone.

Follow these steps to create a zone:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click the OVM Manager target for which the zone is to be created in the left panel and select **Create Zone**.

Figure 5-21 Create Zone



3. In the Create Zone page, specify the zone name and description.
4. Indicate if this zone will be used by the self service users by checking the **Infrastructure Cloud Self Service Zone** check box.
5. Click **Add** in the Virtual Server Pool section to add one or more virtual server pools. See [Creating a Virtual Server Pool](#) for details. You can add the virtual server pools for which you have the privileges and that are not part of any other zone.
6. Click **OK**. The virtual server pools and the storage arrays appears in the newly created zone on the Home page.

5.16 Setting Up the Storage Quality of Service (QoS)

Storage QoS refers to quality of service that is defined at the storage server level. Setting up the storage QoS involves defining various storage properties. Before deploying a guest virtual machine, you can define the storage QoS, map this QoS to a storage server, and specify this QoS while deploying a guest virtual machine.

This involves defining the machine size, network type, and the storage QoS. After you have set up the storage QoS, you can set up the storage servers, network repositories, and storage arrays. This storage QoS can then be used during deployment of guest virtual machines.

To define the storage QoS, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on the **Infrastructure Cloud** menu in the left panel and select **Setup**.

Figure 5-22 Storage Quality of Service



3. Click **Create** in the Storage Quality of Service page.
4. In the pop-up window, specify the name and description of the storage QoS and click **OK**. The newly added storage QoS appears on the Storage Quality of Service page.
5. Navigate to the OVM Manager Home page and select **Storage** from the **OVM Manager** menu.
6. Click the **Storage** link under File Servers. In the General tab, scroll down to the Storage QoS Mapping region.
7. Click **Edit**. The Storage QoS Mapping window appears. Click **Add** and select that you had created earlier. The Storage QoS you have added appears in the Storage QoS Mapping table.
8. To see how this mapping is used when you deploy an assembly, navigate to the Home page of a Zone under the OVM Manager. From the **Zone** menu, select **Deploy**, then select **Assembly**.
9. In the Deployment Configuration page, click **Override** in the Disk section and select the Storage QoS you have created. This storage QoS will be used for deploying the assembly.

5.16.1 Setting Up the Network Type

You can define the QoS for network by defining some network types like routable, internet-facing, and so on. After the network QoS has been defined, you can map this to any network that is being created. You can then use this network type while deploying a guest virtual machine.

To define the network QoS, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select **Setup** from the **Infrastructure Cloud** menu.
3. Click the **Network Types** link on the Infrastructure Cloud page.

Figure 5-23 Network Types



4. Click **Create** in the Network Types page.
5. Enter a name and description of the network type and click **OK**.

5.16.2 Setting Up the Machine Sizes

You can define the machine size that will be available to the SSA users and during deployment. To define the machine size, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on the **Infrastructure Cloud** menu in the left panel and select **Setup**.
3. Click the **Machine Sizes** link on the Infrastructure Cloud page.
4. Click **Add Machine Size**.
5. Enter the name (internal name of the machine size), description, number of VCPUs, amount of memory and local storage assigned to machines of this size. Click **Save** to add this machine size.

5.16.3 Configuring the Software Library User

While setting up the storage repository, you can import VM Templates, Assemblies, and other software components into the storage repository. To configure the software library user who has the privileges to perform these tasks, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on the **Infrastructure Cloud** menu and select **Setup**.
3. Click the **Software Library User Configuration** link on the Infrastructure Cloud page.
4. Enter the password for the Cloud Software Library user who is allowed to import components from the Software Library. This password must be specified when the user accesses the Software Library and download the required components.

5.16.4 Configuring the Software Library User with External Management Agent

If the Management Agent is running on a remote machine, when importing the virtualization components, you must ensure that:

- The Software Library user must have Execute command privileges on the remote host.
- If Named Credentials are required to access the Management Agent on the remote host, the Software Library user must have View privileges while creating the Reference File locations for the Agent Storage Type.

To set up View privileges, follow these steps:

1. From the **Setup** menu, select **Security**, then select **Named Credentials**.
2. Select the Named Credentials to be used while creating the Software Library Reference Location of Storage Type: Agent.
3. Click **Add Grant**. Select the `CLOUD_SWLIB_USER` and click **Save**.

To set up Execute privileges on the remote host, follow these steps:

1. From the **Setup** menu, select **Security**, then select **Administrators**.
2. Select the `CLOUD_SWLIB_USER` and click **Edit**.
3. Navigate to the Target Privileges step. In the Target Privileges section, click **Add** and select the host target on which the Management Agent is running. The host target is added to the table.
4. Select the host target added in the Step 3 and click the **Edit** icon in the Manage Privilege Grants column. Select **Execute Command** in addition to the already existing View option and click **Continue**.
5. Click **Save** to save this configuration.

5.16.5 Defining the Request Purging Policy

All deployment requests can be retained for a certain period and then purged. To specify the number of days for which the requests should be available, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on the **Infrastructure Cloud** menu and select **Setup**.
3. Click the **Request Archiving Policy** link on the Infrastructure Cloud page.
4. Select the **Enable Archiving** check box, specify the Archiving Duration, and click **Apply**. The requests will be archived for the specified period and will then be purged.

5.17 Patching the Oracle VM Server

Oracle provides a publicly available YUM repository which includes repositories for Oracle VM. These repositories include the full releases of Oracle VM and mirror those releases on the Oracle VM DVDs/ISOs. The Oracle VM Server must be patched to ensure that the latest software updates and enhancements are applied. Patching the Oracle VM Server involves the following:

- Configuring the YUM Repository
- Upgrading the Virtual Server

5.17.1 Configuring the YUM Repository

You can configure the YUM repository that is to be used to upgrade the virtual server. The configured YUM repository can be used for to upgrade all discovered virtual servers.

Prerequisites

- The YUM repository being configured must be present at a *http* location. You can configure an internal or public YUM repository.

To configure the YUM repository, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.

2. Right click on an OVM Manager target in the left panel, then select **Manage YUM Repository**.
3. Enter the following details in the YUM Repository page:
 - **Name:** Name of the YUM repository.
 - **YUM Base URL:** HURL for the YUM repository.
 - **Enable GPG Key:** Select this check box if you want to enable the GPG key. The GPG key checks the validity of the YUM repository and packages downloaded from the repository.
 - **YUM GPG Key:** If the Enable GPG Key field has been checked, specify the YUM GPG Key here.
4. Click **OK**. The YUM repository will be configured for the Oracle VM Manager.

5.17.2 Upgrading the Virtual Server

After you have configured the YUM repository, you must upgrade the virtual server to ensure that it has the latest updates. The virtual server being upgraded must be in maintenance mode. To upgrade the virtual server, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a VM Server in the left panel and select **Upgrade**.

Note:

The Upgrade button is disabled if the Oracle VM Manager version is 3.3.x and the Oracle Virtual Server version is less than 3.3.1.

3. A confirmation message appears. Click **OK** to proceed with the upgrade. After the virtual server has been upgraded, the virtual server will be restarted.

5.18 Acknowledging OVM Events

OVM events are generated for all operations performed on a server, server pool, storage, or network. The event can be Informational, Minor, or Critical. When a target is in an error state, a Critical event is generated. Targets with a Critical status cannot be used to perform any operations. The `EM_CLOUD_ADMINISTRATOR` can acknowledge such events as the associated targets cannot be used. To acknowledge an OVM event, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Click on a VM Server in the left panel to navigate to the VM Server Home page.
3. From the **VM Server** menu, select **OVM Events**. The list of unacknowledged events appears. Select an event from the list and click **Acknowledge** to acknowledge the event.

5.19 Managing the NTP Configuration

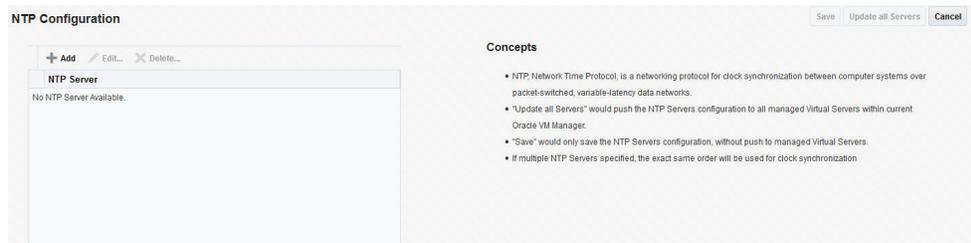
Note:

- This feature is available only with Oracle VM Manager 3.2.1 or later.
- The NTP Server to be added must already be configured to provide the NTP service.

Network Time Protocol (NTP) is a networking protocol that enables clock synchronization across all Oracle VM Servers managed by an Oracle VM Manager. By default, when an Oracle VM Server is discovered, it is configured to use the Oracle VM Manager host computer as the NTP time source. You can configure a custom list of NTP servers that will be used to synchronize the clock when an Oracle VM Server is discovered. To create a custom list of NTP servers, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**. The Infrastructure Cloud Home page appears.

Figure 5-24 NTP Configuration



2. Right click on an Oracle VM Manager target from the left panel and select **Manage NTP Configuration**.
3. To add an NTP server, click **Add**. In the Add NTP Server dialog box, enter the IP address or hostname of the NTP server in the IP Address/DNS Hostname field and click **OK**.
4. To edit an NTP server, select the server in the table and click **Edit**. In the Edit NTP Server dialog box, you are prompted for the name of the New NTP Server. Enter the IP address or hostname of the new NTP Server and click **OK**.
5. To delete an NTP server, select the server in the table and click **Delete**. A confirmation message is displayed. Click **OK** to delete the server or **Cancel** to cancel the operation.
6. To update the NTP server configuration on all Oracle VM Servers managed by the VM Manager, click **Update All Servers**. Any previous NTP configuration is overwritten.

Alternatively, you can save the NTP server configuration that you have added by clicking **Save**. This option saves the configuration but does not update the Oracle VM Servers. You can push the configuration to the VM Servers at a later date.

After any changes have been made the NTP server configuration, you must restart the VM Server for the changes to be effective.

 **Note:**

If multiple NTP configurations have been defined, the order in which have they have been defined will be used for clock synchronization.

5.20 Importing Virtual Machines

 **Note:**

This feature is available only with Oracle VM Manager 3.2.1 or later.

You can import a virtual machine into Oracle VM Manager from an external location. The imported virtual machine is placed under the VM Zone, VM Server Pool, or the VM Server you have selected. The virtual machine must be located on an FTP or web server, either as separate files, or compressed into a single archive file (for example, a .tgz or .zip file).

To import a virtual machine, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**. The Infrastructure Cloud Home page appears.
2. Right click on a VM Zone, VM Server Pool, or a VM Server target from the left panel and select **Import Virtual Machine**. The Import Virtual Machine: Select Target and Source page appears.
3. The destination target on which the virtual machine is to be imported and the name of the target is displayed.
4. Enter the following details:
 - **Source:** Enter the URL of the archive (tgz or gzip) that is to be imported as a virtual machine. The URL can be in format HTTP, HTTPS, or FTP.
 - **Request Name:** Enter a name for the virtual machine import request.
5. Click **Next**. The Import Virtual Machine: Instance Details page appears.

Figure 5-25 Import Virtual Machine: instance Details

6. Enter the following details:

- **Enable High Availability:** If you want to enable high availability for this guest virtual machine, select this checkbox. This option allows the guest virtual machine to be automatically restarted on other virtual servers in the pool in case the virtual server hosting the guest virtual machine fails.

 **Note:**

High availability must be enabled both on the virtual server pool and on the guest virtual machine. If it is not enabled on both, high availability is disabled.

- **Start VM After Creation:** Specify whether the guest virtual machine should be started automatically after it is created.
- **CPU Scheduling Priority:** Specify the priority of a guest virtual machine to access the physical CPUs, while competing with other guest virtual machines on the same virtual server. Higher the priority, higher is the stake of the guest virtual machine in claiming CPU cycles
- **CPU Scheduling Cap (%):** Restricts the amount of physical CPU that a guest virtual machine can use. Use this to constrain guest virtual machine resource allocation.
- **Keymap:** The keyboard mapping that will be used by the guest virtual machine being cloned.
- **Tags:** Specify one or more tags for the virtual machine. These tags are used to logical group the virtual machines and can be used to search for one or more virtual machines that meet a certain criteria.
- **VM Size:** The amount of memory to be allocated to the guest virtual machine. The virtual server should have sufficient memory to run the guest virtual machine. Otherwise, the guest virtual machine will be created, but will not be started. The size of the guest virtual machine (memory and CPU values). Select the VM Size which can be Small, Medium, Large, or Custom.

 **Note:**

The Root Password, Network, and Storage configuration cannot be modified for an imported virtual machine.

7. Click **Next**. In the Import Virtual machine: Schedule page, specify the Start and End Date. The Start Date is the date on which the request is being submitted and the End Date is the date on which the virtual machine is retired. Click **Next**.
8. Review the details of the virtual machine being imported and click **Submit**. From the Enterprise menu, select Job, then select Activity to view the Job Activity page. This page shows the details of the submitted job. You can click on the Name link to view more details.

5.21 Acknowledging the Repository Events

When the file system on the storage repository gets corrupted, a critical event is raised on the storage repository. This page displays all the critical events for the storage repository. To acknowledge repository events, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**. The Infrastructure Cloud Home page appears. Select an OVM Manager target from the left panel.
2. From the **VM Manager** menu, select **Administration**, then select **Storage Repository**.
3. A list of storage repositories that have been defined is displayed. Click on a storage repository name and click the **Repository Events** tab.
4. A list of unacknowledged critical events is displayed. Select an event from list and click **Acknowledge Events**. The file system associated with the acknowledged event cannot be used

6

Defining and Managing Cloud Policies

This chapter describes the process to define policies for different target types and perform specific actions on virtualization targets. It contains the following sections:

- [About Cloud Policies](#)
- [Viewing Cloud Policies](#)
- [Viewing Policies for a Target](#)
- [Defining a Performance Policy](#)
- [Defining a Schedule-Based Policy](#)
- [Activating and Deactivating Policies](#)
- [Viewing Policy Groups](#)
- [Creating a Policy Group](#)
- [Creating DRS and DPM Policies](#)

6.1 About Cloud Policies

Cloud management policies are rules that a `EM_CLOUD_ADMINISTRATOR` can define to take certain actions based on either performance metric thresholds or based on a schedule. You can create your own policies or use the ready-to-use policies. The ready-to-use policies provided by Oracle cannot be edited but you can do a *create like* cloning of the policy and then edit it as required.

 **Note:**

A self service user (`EM_SSA_USER`) can also create cloud policies for the services for which he has been granted access..

There are two kinds of cloud management policies: Performance-based policies and Schedule-based policies. Performance policies are based on the performance metrics of a specific type of target. Schedule based policies are executed based on the schedule you have defined. You can group one or more policies together to form policy groups. You can:

- [View and Monitor Cloud Policies](#)
- Define a new policy which can be of the following types:
 - [Performance Policy](#)
 - [Schedule Policy](#)
- [Activate or Deactivate a Policy](#)

- Define Policy Groups

6.2 Viewing Cloud Policies

You can view all the cloud policies and policy groups from the Cloud Policy Home page. You can view details like the status of the policy, type of policy, action type, policy associations and the schedule for the policy.

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role and from the **Enterprise** menu, select **Cloud**, then select **Infrastructure Policies**.

Note:

if you have logged into as a user with the `EM_SSA_USER` role, click the **Policies** tab in the Infrastructure Cloud Self Service Portal.

2. On the Policy Home page, you will see a list of a policies that you own and for which you have administration privileges.

Figure 6-1 Cloud Policies

The screenshot displays the Oracle Enterprise Manager Cloud Policies interface. At the top, there is a navigation bar with 'Policies' and 'Policy Groups' tabs. Below the navigation bar is a toolbar with actions like 'Create Like...', 'Edit...', 'Delete', 'Activate', and 'Deactivate'. A search bar is also present. The main content area features a table of policies with columns for Name, Type, Associations, Target Type, Status, Owner, Date Created, and Last Modified. The table lists three policies: 'perf_scale_up_policy', 'vm_policy1', and 'vm_policy'. Below the table, the details for the 'perf_scale_up_policy' are shown, including its General information (Type: Performance, Associations: 2, Description, Status: Active, Owner: GK_CLOUD_ADMIN, Date Created: 10/3/2015, Last Modified: GK_CLOUD_ADMIN, Target Type: Oracle Tier Instance) and its Associations (Target: OVM_OI7U1_X86_04_PV/HVM1:07u1_wthinnet, Created By: GK_CLOUD_ADMIN, Last Updated On: 2015-10-03 21:13:08 PM PDT).

Name	Type	Associations	Target Type	Status	Owner	Date Created	Last Modified
perf_scale_up_policy	Performance	2	Oracle Tier Instance	Active	GK_CLOUD_ADMIN	2015-10-03 21:04:55 P...	2015-10-03 21:04:55 P...
vm_policy1	Schedule	3	Oracle VM Guest	Active	GK_CLOUD_ADMIN	2015-10-03 21:14:22 P...	2015-10-03 21:14:22 P...
vm_policy	Schedule	1	Oracle VM Guest	Active	GK_CLOUD_ADMIN	2015-10-02 14:39:06 P...	2015-10-02 14:39:06 P...

3. Select a policy from the table. The policy details including the type of policy, performance (rule, action, action description), or schedule (schedule, action and action description), the status, date on which it was created, and the target type are displayed.
4. You can perform the following actions on this page:
 - **Create:** To create a new policy, from the **Create** menu, select either of the following:
 - Schedule Policy: See [Defining a Schedule-Based Policy](#).
 - Performance Policy: See [Defining a Performance Policy](#).
 - **Create Like:** Select a policy and click **Create Like** to make a copy of an existing policy.
 - **Edit:** Select a policy and click **Edit** to launch the Edit Policy wizard. You can modify the description of the policy and add metrics to the policy. You cannot

change the name of the policy, the type of policy, the target with which the policy is associated, and the actions that can be performed.

- **Activate or Deactivate a Policy:** See [Activating and Deactivating Policies](#).
- **Create Policy Associations:** In the Associations region, you can view a list of targets that have been associated with a selected policy. A policy can be associated with one or more targets. Click **Add**. In the Search and Select: Targets window, choose a target and click **Select** to associate the target with the policy. After you have associated one or more targets with the policy, you can:
 - Click on a target to drill down to the Policies page for the target. See [Viewing Policies for a Target](#).
 - Select a target and click **View History** to view the Policy Action History.
 - Select a policy and click **Remove** to delete the associations for the policy.

 **Note:**

- Associations cannot be added for inactive policies.
- The **View History** option is not available for users with the EM_SSA_USER role.

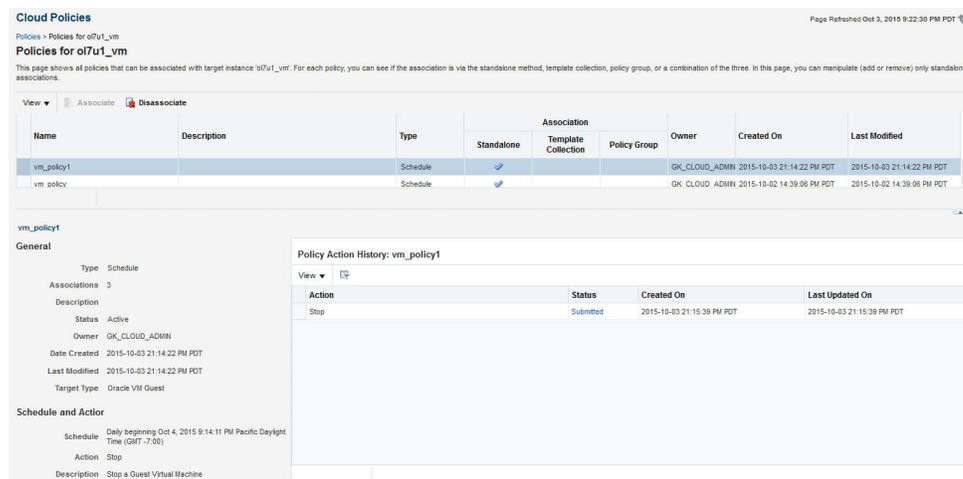
6.3 Viewing Policies for a Target

After you have associated a target with a policy, you can view all policies that can be associated with a target on the Policies page.

To view policies that can be associated with a selected target, follow these steps:

1. Navigate to the Cloud Policies page.
2. Select a policy from the list of active policies in the list. In the Associations region, click on a target link to drill down to the Policies page for the target.

Figure 6-2 Policies - Target



The screenshot displays the Oracle Cloud Policies interface. At the top, it shows 'Cloud Policies' and 'Policies for o17u1_vm'. Below this is a table listing policies associated with the target 'vm_policy1'. The table has columns for Name, Description, Type, Standalone, Association Template Collection, Policy Group, Owner, Created On, and Last Modified. Two policies are listed: 'vm_policy1' and 'vm_policy'. Below the table, there is a detailed view for the selected policy 'vm_policy1'. This view includes a 'General' section with fields for Type, Associations, Description, Status, Owner, Date Created, Last Modified, and Target Type. It also includes a 'Schedule and Action' section with fields for Schedule, Action, and Description. To the right of the detailed view is a 'Policy Action History' table for 'vm_policy1' with columns for Action, Status, Created On, and Last Updated On. One action is listed: 'Stop' with a status of 'Submitted'.

3. All policies that can be associated with the selected target are listed on this page. For each policy, the type of policy association that has been defined is displayed. This can be:

- Standalone
- Template Collection
- Policy Group

For each policy, the following details are displayed:

- Name and description of the policy.
- The type of policy which can be Schedule or Performance.
- The policy association method. A policy can be associated with a standalone association, template collection, a policy group or a combination of the three.
- The General section displays details like status of the policy, the number of associations, the date on which the policy was created, and the type of policy.
- The Policy Action History region shows the history of associations for this target.

 **Note:**

- The history of policy associations is displayed only for users with the `EM_CLOUD_ADMINISTRATOR` role.
- The Policy Action History region is blank if the action has a **Failed** status.

4. For policies that are active, you can do the following:
 - Select a policy and click **Associate** to associate it with the target.
 - Select a policy that has already been associated and click **Disassociate** to delete the policy association.

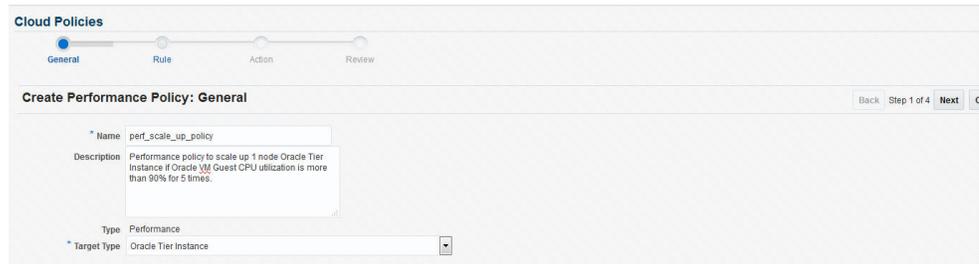
6.4 Defining a Performance Policy

Performance policies are formed based on the performance metrics of a specific target type and its associated targets. You can create conditions and rules for the policy based on the metrics.

To define a performance policy, follow these steps:

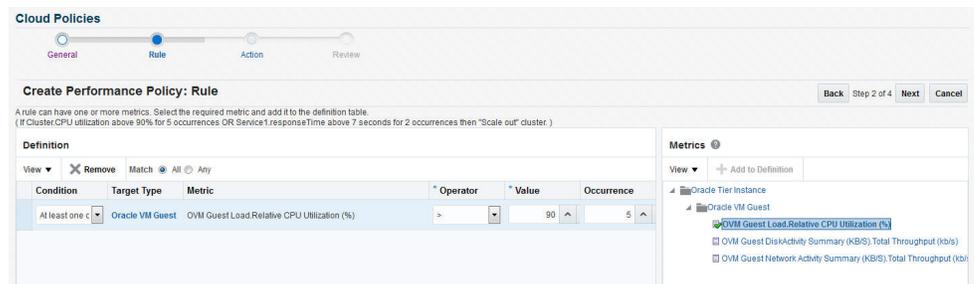
1. Depending on your user role, use the menu options to navigate to the Infrastructure Policies page.
2. On the Policy Home page, you will see a list of policies that you own and for which you have administration privileges.
3. From the **Create** menu, select **Performance Policy**.
4. In the General Information page, enter the name and description of the policy. Select the Target Type with which the policy is to be associated.

Figure 6-3 Create Performance Policy - General



- Click **Next**. In the Rule page, select a metric from the right panel and click **Add to Definition**, or drag and drop metric from the Metrics column to the Definition column. Specify the condition, value, and number of occurrences. In the Match radio button, you can select
 - All: All conditions must be met before the policy is executed on the target.
 - Any: Any of the conditions must be met for the policy to be executed.

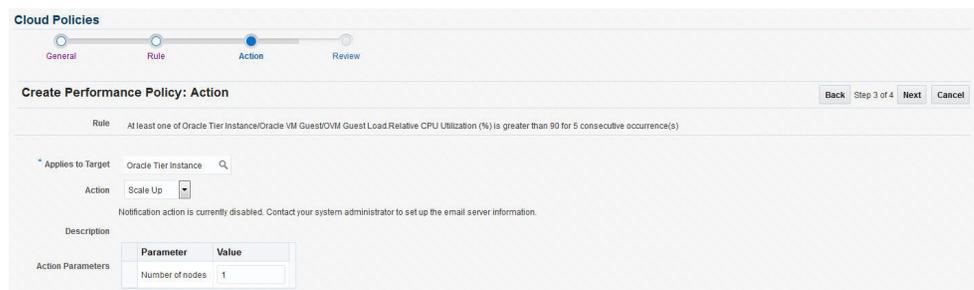
Figure 6-4 Create Performance Policy - Rule



- Click **Next**. Specify the action to be performed when the policy condition is met. The list of available actions can vary depending on the selected target type. If notifications are disabled, you will see the following message:

Notification action is currently disabled. Contact your system administrator to set up the email server information.

Figure 6-5 Create Performance Policy - Action



- Review the policy and click **Save** to define this policy and return to the Policy Home page.

 **Note:**

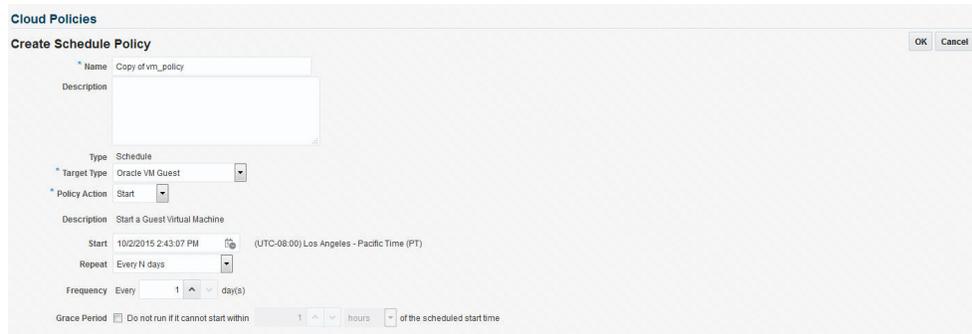
After you have defined the policy, you can associate one or more targets with the policy.

6.5 Defining a Schedule-Based Policy

Schedules based on policies are based on a predefined schedule. To define a schedule-based policy, follow these steps:

1. Depending on your user role, use the menu options to navigate to the Infrastructure Policies page.
2. On the Policy Home page, you will see a list of a policies that you own and for which you have administration privileges. From the Create menu, select **Schedule Policy**.

Figure 6-6 Create Schedule Policy



The screenshot shows the 'Create Schedule Policy' form. The 'Name' field contains 'Copy of vm_policy'. The 'Description' field is empty. The 'Type' is set to 'Schedule'. The 'Target Type' is 'Oracle VM Guest'. The 'Policy Action' is 'Start'. The 'Description' for the action is 'Start a Guest Virtual Machine'. The 'Start' time is '10/2/2015 2:43:07 PM' in '(UTC-08:00) Los Angeles - Pacific Time (PT)'. The 'Repeat' is 'Every N days'. The 'Frequency' is 'Every 1 day(s)'. The 'Grace Period' is 'Do not run if it cannot start within 1 hours of the scheduled start time'.

3. In the Create Schedule Policy page, enter the name, description of the policy, and the Target Type with which the policy is to be associated.
4. Specify the Grace Period, frequency, and schedule for the policy.
5. When the policy conditions are met, the policy is executed as per the schedule on the selected target. The list of available actions can vary depending on the target type with which the policy is associated.
6. Click **Save** to define this policy.

 **Note:**

After you have defined the policy, you can associate one or more targets with the policy.

6.6 Activating and Deactivating Policies

Once a policy is defined, it becomes active and can be applied to one or more targets. You can deactivate an active policy by following these steps:

1. Depending on your user role, use the menu options to navigate to the Infrastructure Policies page.
2. On the Policy Home page, you will see a list of a policies that you own and have administration privileges.
3. Select a policy from the table and click **Deactivate**. The policy is deactivated and the status of the policy is marked as Inactive. You cannot associate this policy to any target until it is activated and its current associations will be suspended for further evaluations.

Once a policy is deactivated, it is marked as Inactive. To activate an Inactive Policy, select the policy from the table and click **Activate**. In the confirmation window, click **Activate** again. The policy is now marked as Active.

6.7 Viewing Policy Groups

A policy group is a collection of policies that can be applied together and evaluated to generate a compliance score. To view the policy groups, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role and from the **Enterprise** menu, select **Cloud**, then select **Infrastructure Policies**.

Note:

if you have logged into as a user with the `EM_SSA_USER` role, click the **Policies** tab in the Infrastructure Cloud Self Service Portal.

2. The Cloud Policies page appears. Click on the **Policy Groups** tab.

Figure 6-7 Policy Groups

The screenshot shows the 'Cloud Policies' interface. At the top, there are tabs for 'Policies' and 'Policy Groups'. Below the tabs is a search bar and a table of existing policy groups. The table has columns for Group Name, Description, Policies, Associations, Owner, Date Created, Last Modified By, and Last Modified. One row is visible for 'New Policy Group' with 2 policies and 3 associations.

Below the table is a section for a 'New Policy Group'. It has two sub-sections: 'Associations' and 'Policies Included'. The 'Policies Included' section contains a table with columns for Name, Target Type, Policies Associated, Policy Type, and Policy Description. Three policies are listed:

Name	Target Type	Policies Associated	Policy Type	Policy Description
o7u1_vm	Oracle VM Guest	2		
OVW_DL7U1_x86_64_P/HV/H1_Lvm0 of7u1_withnet	Oracle VM Guest	2		
OVW_DL7U1_x86_64_P/HV/H1 of7u1	Oracle Tier Instance	0		

3. The list of policy groups that have already been defined are displayed. You can do the following:
 - **Create a Policy Group:** See [Creating a Policy Group](#).
 - **Create Like:** Select a policy group and click **Create Like** to make a copy of an existing policy group.
 - **Edit:** Select a policy group and click **Edit** to launch the Edit Policy Group wizard. You can add or remove policies from the policy group. You cannot modify the name of the policy group.

- **Delete:** Select a policy group and click **Delete**. When a policy group is deleted, all associations defined for the policy group will also be deleted.

 **Note:**

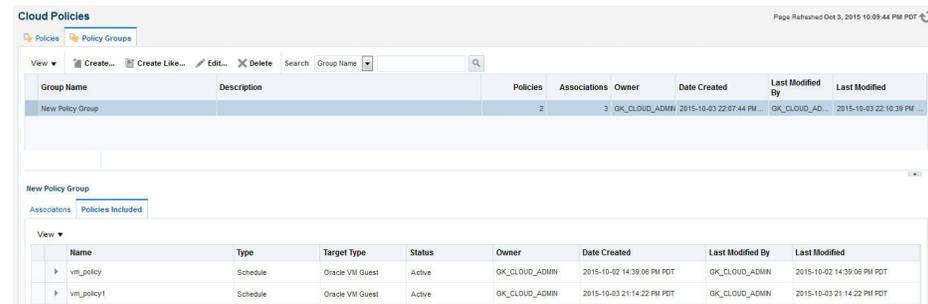
You can edit or delete policy groups that you have created or for which you have the privileges.

- **Create Policy Group Associations:** Click the **Associations** tab in the Policy Group region, to view a list of targets that have been associated with the selected policy group.

A policy group can be associated with one or more targets. Click **Add**. In the Search and Select: Targets window, choose a target and click **Select** to associate the target with the policy group. After you have associated one or more targets with the policy group, you can:

- Click on a target to drill down to the Policies page for the target. See [Viewing Policies for a Target](#).
 - Select a target and click **View History** to view the Policy Group Action History.
 - Select a target and click **Remove** to delete the policy group association.
- **View Policies:** Click the **Policies Included** tab in the Policy Group region to view the list of policies included in the policy group.

Figure 6-8 Policy Group: Policies Included



The screenshot shows the Oracle Cloud Policies interface. At the top, there are tabs for 'Policies' and 'Policy Groups'. Below the tabs is a search bar and a table of policy groups. The table has columns for Group Name, Description, Policies, Associations, Owner, Date Created, Last Modified By, and Last Modified. Below this table is a section for 'New Policy Group' with tabs for 'Associations' and 'Policies Included'. The 'Policies Included' tab is active, showing a table of included policies with columns for Name, Type, Target Type, Status, Owner, Date Created, Last Modified By, and Last Modified.

Group Name	Description	Policies	Associations	Owner	Date Created	Last Modified By	Last Modified
New Policy Group		2	3	OK_CLOUD_ADMIN	2015-10-03 22:07:44 PM ...	OK_CLOUD_AD...	2015-10-03 22:10:39 PM ...

Name	Type	Target Type	Status	Owner	Date Created	Last Modified By	Last Modified
vst_policy	Schedule	Oracle VM Guest	Active	OK_CLOUD_ADMIN	2015-10-02 14:39:06 PM PDT	OK_CLOUD_ADMIN	2015-10-02 14:39:06 PM PDT
vst_policy1	Schedule	Oracle VM Guest	Active	OK_CLOUD_ADMIN	2015-10-03 21:14:22 PM PDT	OK_CLOUD_ADMIN	2015-10-03 21:14:22 PM PDT

6.8 Creating a Policy Group

To define a policy group, follow these steps:

1. Depending on your user role, use the menu options to navigate to the Infrastructure Policies page.
2. Click on the **Policy Groups** tab. On the Policy Groups page, you will see a list of a policy groups that have been defined.
3. Click **Create**. The Create Policy Group page appears.

Figure 6-9 Policy Group: Create

Name	Type	Target Type	Status	Owner	Date Created	Last Modified By	Last Modified	Associations
per_ticall_us_policy	Performance	Oracle Tier Instance	Active	OK_CLOUD_ADMIN	2015-10-03 21:04:55 PM	OK_CLOUD_AD...	2015-10-03 21:04:55 PM	2
vm_policy1	Schedule	Oracle VM Guest	Active	OK_CLOUD_ADMIN	2015-10-03 21:14:22 PM	OK_CLOUD_AD...	2015-10-03 21:14:22 PM	3

4. Click **Add**. A list of policies that can be added to the policy group are displayed. Select one or more policies from the list and click **Select**.
5. The selected policies will be added to the policy group. Click **OK** to save this policy group.
6. Click **OK** to save this policy group.

6.8.1 Example 1

If you want to shut down a guest virtual machine every Friday at 6:00 pm and restart it every Monday at 9:00 pm, you can create policies as follows:

- First, create a schedule based policy where the guest virtual machine shuts down every Friday at 6:00 pm. See [Creating a Policy for Shutting Down Guest Virtual Machine](#).
- Secondly, create another schedule based policy where the guest virtual machine is restarted every Monday at 6:00. See [Creating a Policy for Starting Up Guest Virtual Machine](#).
- Combine these two policies into a Policy Group and associate these policies with one or more guest virtual machine targets. See [Creating a Policy Group \(Start Up and Shut Down\)](#).

6.8.1.1 Creating a Policy for Shutting Down Guest Virtual Machine

To shut down a guest virtual machine every Friday, you can set up the policy as follows:

1. Depending on your user role, use the menu options to navigate to the Infrastructure Policies page.
2. In the Cloud Policies page, select **Schedule Policy** from the **Create** menu. In the Create Schedule Policy page, enter the following details:
 - Enter a name and description for the policy.
 - Select the Target Type as **Oracle VM Guest**.
 - Select **Stop** in the Policy Action field.
 - In the Start field, specify the date and time from which this policy should be effective.
 - In the Repeat field, select **Specific Days of the Week** and select **Friday** in the Days of Week checkbox.

3. Click **OK** to save this policy and return to the Cloud Policies page.

6.8.1.2 Creating a Policy for Starting Up Guest Virtual Machine

To start a guest virtual machine every Monday, navigate to the Cloud Policy page and select the policy you just created. Perform the following steps:

1. Click **Create Like** to make a copy of the policy.
2. In the Cloud Policies page, select **Schedule Policy** from the **Create** menu. In the Create Schedule Policy page, enter the following details:
 - Enter a name and description for the policy.
 - Select the Target Type as **Oracle VM Guest**.
 - Select **Start** in the Policy Action field.
 - In the Start field, specify the date and time from which this policy should be effective.
 - In the Repeat field, select **Specific Days of the Week** and select **Monday** in the Days of Week checkbox.
3. Click **OK** to save this policy and return to the Cloud Policies page.

6.8.1.3 Creating a Policy Group (Start Up and Shut Down)

After defining the two policies for the guest virtual machine target type, you can combine these policies into a policy group and associate these policies to one or more targets. To create a policy group, follow these steps:

1. Depending on your user role, use the menu options to navigate to the Infrastructure Policies page.
2. On the Cloud Policies page, click the **Policy Groups** tab.
3. Click **Create**. The Cloud Policy Group page appears.
4. Enter a name and description for the group.
5. Click **Add** and select the two schedule policies that you have created.
6. Click **OK** to return to the Cloud Policies page and click on the Policy Group that you have created.
7. The details of the policy group that you have created such as the name of the policy group, number of policies associated with this group, number of targets associated, and so on are displayed.
8. Click the **Policies Included** tab in the bottom region to view the policies associated with this policy group.
9. Click the **Associations** tab to view the list of guest virtual machines associated with this policy. Click **Add** to associate more guest virtual machines with this policy group.
10. When this policy group is active, the guest virtual machines associated with the policies are shut down and started up as per the schedule.

6.8.2 Example 2

Suppose you want to define a policy group for an Oracle Tier Instance target where the tier instance is scaled down to 1 every Friday and scaled up to 2 every Monday. You can create the following policies:

- First, create a Schedule Policy to scale down the tier instance to 1. See [Creating a Policy to Scale Down a Tier Instance](#).
- Next, create another policy to scale up the tier instance to 2 every Monday. See [Creating a Policy to Scale Up a Tier Instance](#).
- Combine these policies and create a Policy Group. See [Creating a Policy Group \(Scale Up and Scale Down\)](#).

6.8.2.1 Creating a Policy to Scale Down a Tier Instance

To scale down a tier instance every Friday, you can set up a performance policy as follows:

1. Depending on your user role, use the menu options to navigate to the Infrastructure Policies page.
2. In the Cloud Policies page, select **Schedule Policy** from the **Create** menu. The Create Schedule Policy page appears.
3. Enter a name and description for the policy and specify the following details:
 - **Target Type:** Select the **Tier Instance** target type.
 - **Policy Action:** Select the **Scale Down** policy action.
 - **Repeat:** In the Repeat field, select **Specify Days of the Week**.
 - **Days of the Week:** Select **Friday** here.
4. Click **OK** to save the policy.

6.8.2.2 Creating a Policy to Scale Up a Tier Instance

To scale down a tier instance every Friday, you can set up a performance policy as follows:

1. Depending on your user role, use the menu options to navigate to the Infrastructure Policies page.
2. In the Cloud Policies page, select **Schedule Policy** from the **Create** menu. The Create Schedule Policy page appears.
3. Enter a name and description for the policy and specify the following details:
 - **Target Type:** Select the **Tier Instance** target type.
 - **Policy Action:** Select the **Scale Up** policy action.
 - **Action Parameters:** Enter 2 for the **Number of Nodes** parameter.
 - **Repeat:** In the Repeat field, select **Specify Days of the Week**.
 - **Days of the Week:** Select **Monday** here.
4. Click **OK** to save the policy.

6.8.2.3 Creating a Policy Group (Scale Up and Scale Down)

After defining the two policies for the Oracle Tier Instance target type, you can combine these policies into a policy group and associate these policies to one or more targets. To create a policy group, follow these steps:

1. Depending on your user role, use the menu options to navigate to the Infrastructure Policies page.
2. On the Cloud Policies page, click the **Policy Groups** tab.
3. Click **Create**. The Cloud Policy Group page appears.
4. Enter a name and description for the group.
5. Click **Add** and select the two schedule policies that you have created.
6. Click **OK** to return to the Cloud Policies page and click on the Policy Group that you have created.

6.9 Creating DRS and DPM Policies

The Dynamic Resource Scheduling (DRS) and Distributed Power Management (DPM) policies are automated policies that improve quality of service and reduce power consumption by dynamically relocating running virtual machines within a server pool based on the load.

Dynamic Resource Scheduling (DRS) policies provide real-time monitoring of Oracle VM Server utilization to rebalance a server pool and provide consistent resources to the running virtual machines. DRS migrates VMs away from heavily loaded Oracle VM Servers to those servers with more resources available.

Distributed Power Management (DPM) policies optimize the server pool for minimum power consumption. DPM complements DRS by reducing the number of powered-on servers in the pool when there are periods of low resource utilization. It can automatically power-on capacity as needed when resource utilization ramps up.

To set up a DRS / DPM policy, follow these steps:

1. Log in as a user with the `EM_CLOUD_ADMINISTRATOR` role, and from the **Enterprise** menu, select **Cloud**, then select **Infrastructure Home**.
2. Right click on a VM Server Pool target in the left panel and select **Manage DRS/DPM Policies**. Click **Configure**. The Configure DRS/DPM General page appears.
3. Select the **Policy Type**. This can be:
 - **Distributed Resource Scheduler**: Select this policy type to optimize virtual machine resource utilization in a server pool.
 - **Distributed Power Management**: Select this policy type to increase the consolidation ratio to use fewer Oracle VM Servers during periods of relative low resource utilization.
4. Specify the **Time Period (Minutes)**. This is the time period for the policy job to run. This sets the policy job to run every n minutes, for example, 10 sets the policy job to run every 10 minutes. You can enter a number between 1 and 60.

5. Click **Add** in the Virtual Servers region to add one or more virtual server targets for which the policy is to be enabled.
6. Specify the Constraints for the Virtual Server CPU as follows:
 - **Enable:** Set this field to enable or disable logging of CPU performance and utilization.
 - **Threshold:** The maximum amount of CPU percentage usage allowed before the policy must be enacted. You can enter between 0 and 99.
7. Click **Next**. The Configure DRS/DPM Network page appears.
8. Select the **Enable** checkbox to indicate whether the policy is to be enabled on the network, and select the threshold at which the policy is to be enacted for the network.
9. Click **Apply**.

 **Note:**

Once the policy is created, it is enabled and applicable to all the virtual server pool targets that have been included in the policy. To disable the DRS/DPM policy, create a schedule based policy for the Oracle VM Server Pool target type and in the Policy Action field, select **Disable DRS/DPM** policies. See [Defining a Schedule-Based Policy](#) for more details on creating a schedule based policy. You can enable the policy by editing the Schedule Policy and select **Enable DRS** or **Enable DPM** as necessary.

6.9.1 Creating Automated DRS and DPM Policies

You can create automated DRS or DPM policies by following these steps:

1. Log in as a user with the `EM_CLOUD_ADMINISTRATOR` role and from the **Enterprise** menu, select **Cloud**, then select **Infrastructure Policies**.
2. From the **Create** menu, select **Schedule Policy**.
3. In the Create Schedule Policy page, enter a name and description for the policy.
4. Select Oracle VM Server Pool as the Target Type.
5. Select **Enable DRS** or **Enable DPM** Policy from the Policy Action field.
6. Specify the schedule and frequency for the policy and click **OK** to save the policy.
7. In the Cloud Policies page, select the policy you have created and click **Add** in the Associations region.
8. Select the Oracle VM Server Pool target with which the policy is to be associated and click **Select**.
9. The DRM or DPM policy is now automatically enabled for the selected target.

7

Setting Up the IaaS Self Service Portal

This chapter describes the process of setting up the Self Service Portal. It contains the following sections:

- [Setting Up the Self Service Portal](#)
- [Uploading Large Files on the Self Service Portal](#)

7.1 Setting Up the Self Service Portal

The Self Service Portal allows administrators to configure the cloud and perform various operations such as deciding the total amount of resources each user can reserve, quota for each user role, and so on. Users can log in to the Self Service Portal and identify the images they need, reserve resources (for example, compute power, storage, memory, and so on) and define policies specific to their system.

Note:

Click [here](#) to view a visual demonstration on how to enable the Self Service capability for the Cloud using Enterprise Manager Cloud Control 12c. You will see how to setup Self Service roles and users, allocating quota and privileges, publishing assemblies to the Self Service portal, and configuring metering and chargeback for the Cloud.

Before the Self Service Portal can be used, the user quota, roles for zone access, and software components must be defined.

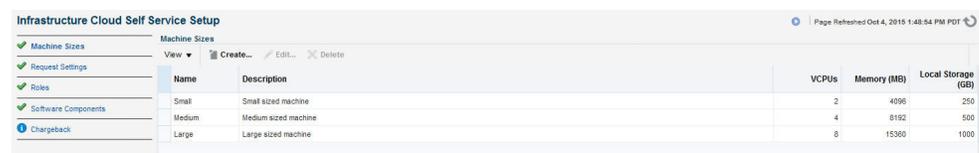
Prerequisites

- Enterprise Manager Cloud Control is set up to manage the cloud environment.
- The Enterprise Manager administrator has the privileges to set up the self service application. This user must have the `EM_SSA_ADMINISTRATOR` role. See [Defining Roles and Assigning Users](#) for details.

Follow this process to set up and configure the Self Service Portal.

1. From the **Setup** menu, select **Cloud**, then select **Infrastructure**. Click **Machine Sizes** in the left panel. Small, Medium, and Large machine sizes are available out-of-the-box.

Figure 7-1 Self Service Portal Setup - Machine Sizes



The screenshot shows the 'Infrastructure Cloud Self Service Setup' interface. On the left, there is a navigation menu with options: Machine Sizes (selected), Request Settings, Roles, Software Components, and Chargeback. The main area displays a table for 'Machine Sizes' with columns: Name, Description, VCPUs, Memory (MB), and Local Storage (GB). The table contains three rows: Small (Small sized machine, 2 VCPUs, 4096 MB, 250 GB), Medium (Medium sized machine, 4 VCPUs, 8192 MB, 500 GB), and Large (Large sized machine, 8 VCPUs, 15360 MB, 1000 GB). Above the table, there are controls for 'View', 'Create...', 'Edit...', and 'Delete'.

Name	Description	VCPUs	Memory (MB)	Local Storage (GB)
Small	Small sized machine	2	4096	250
Medium	Medium sized machine	4	8192	500
Large	Large sized machine	8	15360	1000

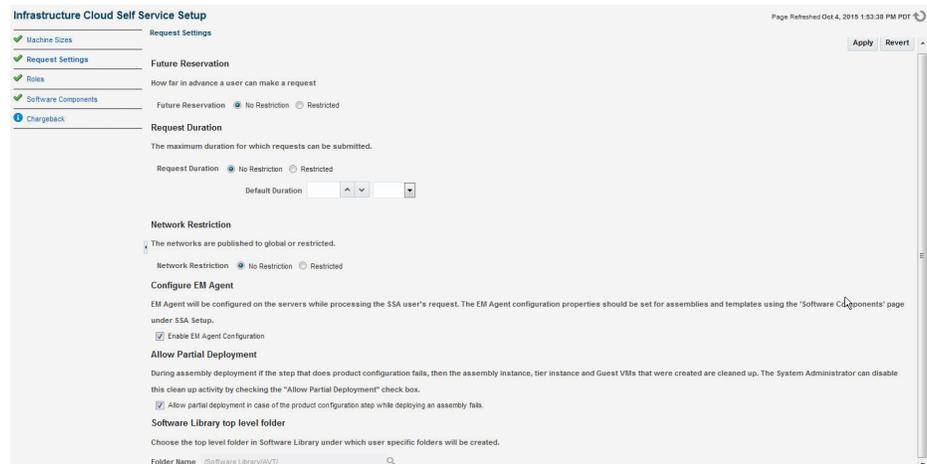
- To view a demo on setting up the self service portal, click the video link next to the Page Refreshed section of the page. Click **Create** to add a machine size. You are prompted for the Name (internal name of the machine size), description, number of VCPUs, amount of memory and local storage to be assigned to machines of this size. Click **Create** to add this machine size.
 - Select a machine size from the list and click **Edit**. You can configure the machine sizes by specifying the amount of memory, number of CPUs, and the local storage for each machine. While requesting a server, the SSA user can specify any of the machine sizes defined here.
2. Click **Request Settings** in the left panel to define request related policies. On this page, you can enter the following details:
- **Future Reservation:** Indicate how far in advance you can make a request.
 - **Request Duration:** The maximum duration for which requests should be made.
 - **Network Restriction:** Allows you to restrict the physical networks for each `EM_SSA_USER` role. If this feature is enabled, you can navigate to the Roles page and assign networks for each `EM_SSA_USER` role.
 - **Configure EM Agent:** Select the **Enable EM Agent Configuration** check box to configure the Management Agent on the servers while the self service user's request is being processed.

 **Note:**

If you have chosen to configure the Management Agent, you must ensure the following:

- Write permissions to the directory specified in the **Installation Base Directory** field must be available.
 - Write permissions to the `/home/oracle/agent` directory specified during assembly or template deployment must be available.
 - Necessary software components must be configured.
- **Allow Partial Deployment:** Select this option to enable partial deployment. By default, when a deployment fails, the assembly instance, tier instance, and the Guest VMs that have been created are automatically deleted. But if partial deployment is enabled, this clean up activity is disabled.
 - **Software Library Top Folder:** Select the top level folder in the Software Library in which user specific folders need to be created. This folder is used by the SSA users to store their assemblies, templates, and deployment plans.

Figure 7-2 Self Service Portal Setup - Request Settings



3. Click **ROLES** in the left panel to define the mappings between roles and other entities like zones, quota, and network profiles. The SSA administrator can control the quota that the SSA user can request which ensures that there is no over provisioning of cloud resources.

Figure 7-3 Self Service Portal Setup - Roles

Role Name	No of Servers	VCPUs	Memory (GB)	Local Storage (GB)	Archive to Library	Save Server on Expiry	Zones	Network Profiles	Override Global Request Settings	Future Reservation	Request Duration
SSA_ROLE	10	20	20	100	—	—	zone_149	☐	—	—	—

4. In the Roles page, click **Assign Quota to Role** to define quota at the role level. The quota assigned to a role is available to all users with that role. For example, if the Number of Servers for the `SSA_USER_ROLE1` is set to 5, all users with this role can have a maximum of 5 servers. The quota is the aggregate amount of resources that can be granted to each self service user belonging to a certain role. If the user has more than one role, his quota is calculated as the absolute maximum across the roles for each attribute value.
 - **Select Roles:** Click the torch icon to select a role for which the mapping is to be defined. The list of all the SSA roles appears.
 - **Select Zones:** Click the torch icon. All zones marked as Cloud Self Service Zones during zone creation are displayed here. Select a zone from the list and click **OK**.
 - **Number of Servers:** Maximum number of servers that can be reserved at any time. This number is across the zones. For example if the quota for a user is 5. Then, the total number of instances from all zones is 5. So the user can have 3 instances in zone 1 and 2 instances in zone 2, or all 5 instances in the same zone.
 - **Number of VCPUs:** Maximum number of VCPUs that can be allocated.
 - **Memory:** Maximum amount of memory that can be allocated.
 - **Local Disk:** Maximum amount of local storage that can be allocated.
 - **Additional Storage:** Maximum amount of additional storage that can be allocated.

- **Allow Archiving to Software Library:** Indicate whether the machine images can be archived in the Software Library after expiry. You can also select this option to save the machine image as a template when the guest virtual machine is stopped.
- **Select Networks:** This field is displayed only if Network Restriction has been enabled. Click the torch icon to select the physical networks that are to be assigned to all users in the role.
- **Select Network Profiles:** Select the network profile to assigned to the selected role. All deployments are done in a specific network defined by the network profile.

 **Note:**

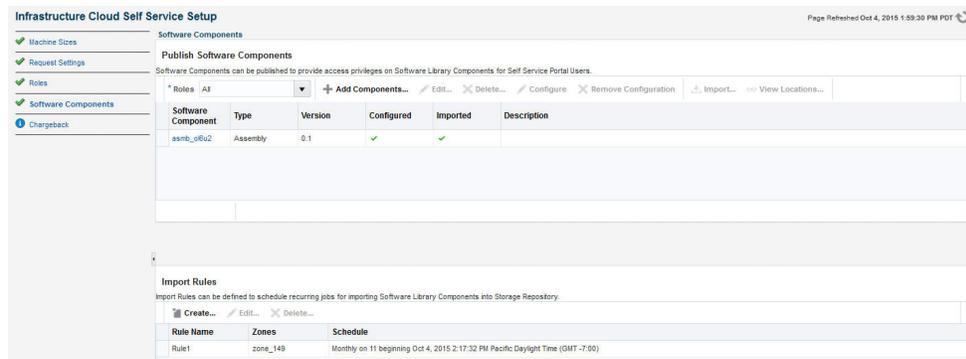
Network profiles that have been associated with networks in the selected zone are displayed. For more details on network profiles, see [Creating a Network Profile](#)

- **Override Global Request Settings:** Select this checkbox to override the request settings for the selected role. You can modify the Future Reservation, Request Duration, and configure the Management Agent.

Select a role and click **Edit**. You can modify the role mappings in the **Assign Quotas, Zones & Network Profiles to Role** page.

5. Click **Software Components** in the left panel to select the set of templates or assemblies that are accessible to the SSA users. You can publish the assemblies and templates to the SSA Portal and provide SSA users with access to these software components.

Figure 7-4 Self Service Portal Setup - Software Components



6. You can do the following on this page:
 - **Add Components:** Click **Add Components**. The Publish Assemblies / Templates to Roles page appears.

On this page, do the following:

- a. Click **Add**. Select the assembly or template from the list and click **Select**.
- b. Click **Add** in the Select Roles section. Select the role from the list and click **Select**.

- c. Click **Publish** to publish these software components to the SSA Portal. These software components are now available to the SSA users and can be deployed.

 **Note:**

You will see a list of assemblies or templates if they have been uploaded to the Software Library. See the *Enterprise Manager Cloud Control Administrator's Guide* for details on uploading components to the Software Library.

- **Import:** You can import the published assembly to a selected set of zones. Select the assembly and click **Import**. In the Select Zones page, select one or more zones and click **Save** to import the assembly to the selected zones.
- **Configure:** Select a software component and click **Configure** to configure the Management Agent.

 **Note:**

The Management Agent can be deployed only if the **Enable Agent Configuration** check box has been selected in the Request Settings page.

The Management Agent configuration details are displayed:

- **Installation Base Directory** (Mandatory): Specify the full path to the directory in which the Management Agent is to be installed. Ensure that the Installation Base Directory you specify in the response file is empty and has write permissions. This is a mandatory field.
- **Platform** (Mandatory): The platform for which you want to download the Management Agent software. This is a mandatory field.
- **Password** (Mandatory): Specify a password for registering the new Management Agents. By default, the communication between the Oracle Management Service and the Management Agent is secure and locked. Any new Management Agents that are registered must be authenticated. The password you specify here will be used to authenticate the new Management Agents.
- **Port** (Mandatory): Enter the port used for the Management Agent process. If no value is specified, then either 3872 or any free port between 1830 and 1849 will be used.
- **Additional Parameters:** You can add some options supported by agent installation. See the *Enterprise Manager Basic Installation Guide* for details.
- **SSH Timeout:** The timeout minutes for SSH.
- **Privilege Delegation Settings:** Run as root.
- **Tier Configuration:** Specify the product and network configuration time out values and the log file location.

Specify the details and click **OK** to configure the Management Agent.

- **Import Rules:** You can define rules to import published assemblies and templates to zones on a periodic basis based on a predefined schedule. Click **Create** in the Import Rules section. Enter a Rule Name, select a set of zones, a schedule for the import and click **Save**. The published assembly or template is imported to the selected server pools and zones on a regular basis.
7. Click **Chargeback** tab in the left panel. The Chargeback application allows the SSA Administrator to define a charge plan and assign the plan to a specific zone or target.
 8. Setting up the Chargeback Plan involves:
 - **Defining Extended Charge Plans:** Click **Configure Charge Plan**. You can edit the Base Charge Plan or create an Extended Charge Plan to customize the charge plan for a specified target type.
 - **Assigning Charge Plans:** Click **Configure Targets**. You can assign charge plans to a set of targets.
 - **Setting Up the Cost Center:** Click **Configure Cost Center**. You can setup cost centers to aggregate costs among groups of users.

For more details on setting up the chargeback plan, see [Chargeback Administration](#).

7.2 Uploading Large Files on the Self Service Portal

The `EM_SSA_USER` can upload software components to a library location. See [Viewing Library](#) for details. If the file to be uploaded is large, the `EM_SSA_USER` will see the following error message.

```
Error: The file is too large. Please add a smaller file,
```

To resolve this issue, you can use one of the following methods:

7.2.1 Setting the OMS Property Using `emctl`

To set the Oracle Management Service property, follow these steps:

1. Set the `oracle.sysman.emSDK.ui.trinidad.uploadedfilemaxdiskspace` OMS property to a value (in bytes) greater than the size of the file that is to be uploaded. For example, to set the value of the property to 3 GB,

```
$ORACLE_HOME/bin/emctl set property -name  
"oracle.sysman.emSDK.ui.trinidad.uploadedfilemaxdiskspace" -sysman_pwd sysman  
-value 3221225472
```

2. If the file to be uploaded is huge, the page may expire while the upload is still in progress (usually after 10 minutes). To avoid this, the `oracle.sysman.eml.maxInactiveTime` OMS property must be set to a value (in seconds) greater than the expected time for the upload to complete. If this property is set, you must restart the OMS to reflect the new property value.

7.2.2 Modifying the `web.xml` Configuration File

To modify the `web.xml` configuration file, follow these steps:

1. Locate the `web.xml` configuration file by navigating to the following location in the Oracle Management Service Home

```
./oms/sysman/archives/emgc/deployments/EMGC_DOMAIN/emgc.ear/em.war/WEB-INF/  
web.xml
```

If this directory structure is not present, navigate to the following location in the Oracle Management Service Home

```
./oms/sysman/archives/emgc/deployments/GCDomain/emgc.ear/em.war/WEB-INF/  
web.xml
```

2. Open the `web.xml` file and locate the following four lines. If these lines are not present in the `web.xml`, you must add them. Increase the size of the `<param_value>` parameter to a value larger than the size of the file to be uploaded.

```
<context-param>  
  
<param-name>org.apache.myfaces.trinidad.UPLOAD_MAX_DISK_SPACE</param-name>  
  
<param-value>40960000</param-value>  
  
</context-param>
```

```
<context-param>  
  
<param-name>org.apache.myfaces.trinidad.UPLOAD_MAX_FILE_SIZE</param-name>  
  
<param-value>40960000</param-value>  
  
</context-param>
```

3. A smaller chunk size increases performance during large file upload. By default, the chunk size would be 2 GB. Setting this to a smaller chunk size such as 500MB will optimize browser memory usage. The parameter for setting the chunk size is `org.apache.myfaces.trinidad.UPLOAD_MAX_CHUNK_SIZE`.

```
<context-param>  
  
<param-name> org.apache.myfaces.trinidad.UPLOAD_MAX_CHUNK_SIZE</param-name>  
  
<param-value>40960000</param-value>  
  
</context-param>
```

4. If the file to be uploaded is huge, the page may expire while the upload is still in progress (usually after 10 minutes). To avoid this, the OMS property `oracle.sysman.eml.maxInactiveTime` must be set to a value (in seconds) greater than the expected time for the upload to complete.

```
For example, set $ORACLE_HOME/bin/emctl set property -name  
oracle.sysman.eml.maxInactiveTime -value 3600
```

5. Restart the Oracle Management Service to reflect the updated settings.
6. While the file upload is in progress, the uploaded chunks are written in a default location on the OMS. This default location is usually a subdirectory of where the application is deployed on the WebLogic Server. This location can be configured by setting the parameter `org.apache.myfaces.trinidad.UPLOAD_TEMP_DIR` in the `web.xml` file to a custom location. If there are multiple users uploading files concurrently on the OMS, you must ensure that this location has enough disk space to accommodate all of this data. It is recommended that this location is on a different volume than the location on which the OMS is installed. This ensures that if the volume runs out of space, there is no impact on the OMS performance.

8

Using the IaaS Self Service Portal

This chapter provides instructions on using the Self Service Portal for IaaS. It contains the following sections:

- [Using the Self Service Portal to Request Server Resources](#)
- [Requesting Servers](#)
- [Viewing Requests](#)
- [Viewing Servers](#)
- [Viewing Storage](#)
- [Viewing Chargeback Details](#)
- [Viewing Library](#)
- [Viewing Policies](#)
- [Viewing Preferences](#)

Note:

Click [here](#) to view a visual demonstration on how to allow users to create new deployment requests through the Cloud Self Service Portal, manage requested deployments, track metering and chargeback information, and author and enforce Cloud policies using Enterprise Manager Cloud Control 12c.

8.1 Using the Self Service Portal to Request Server Resources

The Self Service Portal for IaaS provides a dashboard for business users and cloud consumers to request resources. It allows SSA users to request and manage resources, view the metering and usage of these resources, and define policies to manage the workload and deployment automatically. The SSA Portal allows users to:

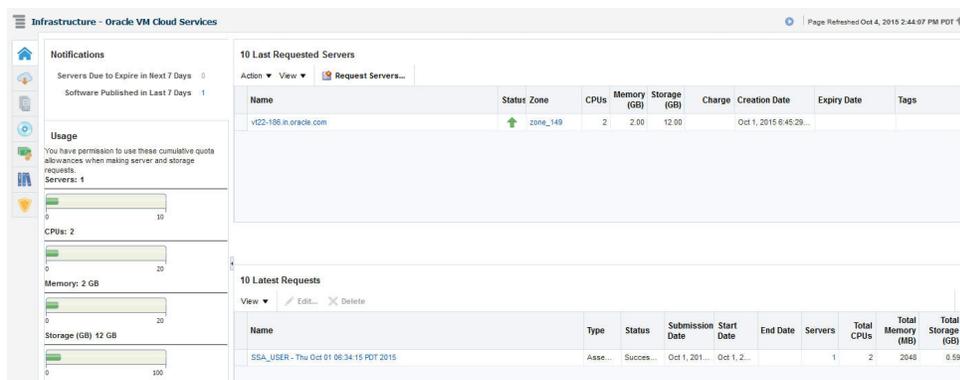
- Create new deployment requests
- Manage requested deployments
- Track metering and chargeback information
- Author and enforce cloud policies.

To use the Self Service Portal, follow these steps:

1. Log in as a user with the `EM_SSA_USER` role. The All Cloud Services page appears. Click on the Infrastructure - Oracle VM Cloud Services link.

2. The Infrastructure - Oracle VM Cloud Services Home page appears. Click on the video link next to the Page Refreshed section to view a demo on using the self service portal. The following details are displayed:
 - **Notifications:** Lists notifications related to machine expiry and new assemblies.
 - **Your Usage:** Lists the total quota allowances available for server and storage requests and quota that has been used.
 - **10 Last Requested Servers:** Lists the top 10 machines that you own in descending order of creation date. Click a Server Name to view the server details. See [Server Details Page](#) for more information.
 - **10 Latest Requests:** This section lists the top 10 requests which are sorted as follows:
 - Descending order of the End Date.
 - Descending order of the Creation Date.
 Click a Request Name to view the request details.

Figure 8-1 Self Service Portal



3. Click **Request Servers**. The New Server Request wizard appears. See [Requesting Servers](#) for details.

8.2 Requesting Servers

Follow this process if you need to request or reserve servers for a specific duration:

1. From the **Enterprise** menu, select **Cloud**, then select **Self Service Portal**.
2. On the Cloud Self Service Portal page, click **Request Servers** to create a new request for a virtual machine.
3. In the General page, enter a name for the request and select a zone in which the server is to be created.

Figure 8-2 New Server Request: General

4. Click the **Search** icon in the **Source** field. Select an assembly or template to be used for this request and enter the server name. For details on how to create an assembly component, see [Creating an Assembly Component](#). For details on how to create a template component, see [Creating a Template Component](#).

 **Note:**

- The source file that you select must be in the `.ova` format (for assemblies), and `.tgz` format (for templates).
- You can see only the assemblies and templates for which you have access (granted by the user with the `EM_SSA_ADMINISTRATOR` role),

5. You can optionally select a Deployment Plan to pre-fill values in the deployment flow from an existing saved or imported deployment plan.
6. Click **Next**. Depending on your selection, the configuration properties defined for the assembly or template are displayed. Click on a tier that you wish to configure.
7. Click on the **Server Configuration** tab. The following regions can be configured:
 - **General**
 - Enable High Availability: If you want to enable high availability for this server, select this check box.
 - Root Password: The root password to access the server.
 - Keymap: Select a key board type for the server.
 - Tags: You can specify tags that can be used to identify the servers. You can use these tags to search for servers in the My Servers page.
 - **Network:** The network interfaces for the server. Click **Add** to add a network interface card. In the Add a Network Interface Card, specify the name of the NIC card and click **OK**.

 **Note:**

You can use the **Edit** option to modify the IP Assignment of the NIC. This option can be performed only if:

- The NIC is a part of the assembly definition.
- The NIC does not have any assembly networks associated with it. For NICs associated with assembly networks, the IP Assignment can be changed only if the NICs have been assigned with a backend network.

To modify the QoS and Backend Network, click the **Configure Networks** in the top right hand corner of the page.

Note: If Network Restriction has been enabled by the self service administrator, the backend network cannot be edited.

On this page, you can configure the Network QoS and Backend Network to be associated with Assembly Network. All the NICs will be configured based on the Network QoS and Backend Network that have been assigned. Click **OK** to return to the previous page.

- **Server Size:** If the server size is large, medium, or small, you can modify the maximum memory and maximum number of CPUs that can be allocated to the server. If the server size is custom, you can specify the memory that can be allocated and the number of CPU cores to be assigned to the server.
 - **Storage:** The storage disks assigned to the server. This can be system defined or custom.
8. Click on the **Product Configuration** tab. This tab shows the properties of the products in the tier. You can choose to view All Properties or Required Properties. For each property, the default value and the current value is displayed. Select a property to modify the value if applicable.
 9. If a tier has more than one server, you can configure each server separately. Click the **Configure Individual Servers** link on the top right corner of the lower region. The Deployment Configuration: Configure Individual Servers page appears. You can modify the configuration of the individual server and click **Continue** to return to the New Server Request: Deployment Configuration page.
 10. Specify the schedule for the request and click **Next**.

 **Note:**

The schedule for the new server request is dependent on the schedule defined by the `EM_SSA_ADMIN` in the Self Service Portal Setup pages. See [Setting Up the Self Service Portal](#)

11. In the Review page, you can click **Finish** to submit the request or **Save as Deployment Plan**. If you select the **Save as Deployment Plan** option, the request will be saved as a Deployment Plan that can be used to record inputs that can be used to create new request.

8.3 Viewing Requests

The Requests tab lists all the requests made by the SSA user.

Figure 8-3 Requests

Name	Type	Status	Submission Date	Start Date	End Date	Servers	Total CPU	Total Memory (MB)	Total Storage (GB)
SSA_USER - Thu Oct 01 06:34:15 PDT 2015	Asse...	Succes...	Oct 1, 201...	Oct 1, 2...		1	2	2048	0.59

The name of the request, status, start and end date, type of request, number of servers, total CPU, and memory appears. Click a Name to drill down to the Request Details page which shows complete details about the request.

You can:

- **Edit a Request:** You can edit the following types of requests:
 - **Scheduled:** Select a request that is **Scheduled** and click **Edit** to modify the request configuration details. The Request Server wizard appears and you can modify the request server configuration as required. See [Requesting Servers](#) for details.
 - **Executed:** Select a request that has been executed successfully and click **Edit**. In the window that appears, specify a new End Date for the request and click **Edit** to edit the request.
- **Delete a Request:** Select a request that has been scheduled or executed to click Delete to delete the request.

8.4 Viewing Servers

Click the **Servers** tab to view a list of servers grouped according to the zone. On this page, the self service user can view the specific assembly and template deployments, the tiers, and the servers in each tier. You will see a list of servers that you have requested and can perform a search based on either the name of the server or the tag.

Figure 8-4 My Servers

Name	Type	Server Size	CPUs	Memory (GB)	Storage (GB)	Status	Expiry Date	Tags
zone_149	Zone							
asm2_0RiQ	Assembly Inst...							
v22-188.in.oracle.com	Server	Custom	2	2.0	12.00	↑		

You can drill down to the Assembly or Tier Instance Home page or click a server name to drill down to the Server Details page. From this page, you can perform the following actions:

- **Request Servers:** You can request or reserve servers for a specific duration. See [Requesting Servers](#) for details.
- **Assemblies:** You can start, stop, delete an assembly instance, and add tiers. Select an assembly instance from the list and from the **Actions** menu, select an appropriate option. See [Performing Assembly Operations](#).
- **Tiers:** You can start, stop, scale up, and scale down a tier instance. Select a tier instance from the list and from the **Actions** menu, select an appropriate option. See [Tier Operations](#).
- **Servers:** You can modify the configuration of the server, stop, start or restart a server, clone a server, save as template, suspend, resume, and launch a VNC Console. See [Server Operations](#).

8.4.1 Zone Details Page

The Zone Details page displays the details of all assemblies, tiers, and servers in the SSA Zone.

Figure 8-5 Zone Details Page

zone_149
My Servers > Zone: zone_149
Page Refreshed Oct 4, 2015 3:00:23 PM PDT

General
Zone zone_149 Tiers 0
Assemblies 1 Servers 1

Members

Name	Type	Server Size	CPUs	Memory (GB)	Storage (GB)	Status	Software installed	Expiry Date	Tags
asmb_08u2	Assembly insta...						N/A		
v22:186.in.oracle.com	Server	Custom	2	2.0	12.00	↑			

Requests

Name	Status	Submission Date	Start Date	End Date	Servers	Total CPUs	Total Memory (MB)	Total Storage (GB)
SSA_USER - Thu Oct 01 06:34:15 PDT 2015	Success...	Oct 1, 2015	Oct 1, 2015		1	2	2048	0.59

From this page, depending on the entity you select, the following options are available:

- [Requesting Servers](#)
- [Performing Assembly Operations](#)
- [Tier Operations](#)
- [Performing Server Operations](#)

You can click a tier instance, assembly instance, or a server link to drill down to the Details page.

8.4.2 Performing Assembly Operations

You can perform the following operations on an assembly instance:

- **Start:** Select an assembly instance and select **Start** from the **Actions** menu. A confirmation message is displayed. Click **Start** to submit the Start Assembly Instance job. You can start an assembly instance only if it has been stopped.
- **Stop:** Select an assembly instance and select **Stop** from the **Actions** menu. A confirmation message is displayed. Click **Stop** to submit the Stop Assembly Instance job. You can stop an assembly instance only if it has been started.
- **Delete:** Select an assembly instance and select **Delete** from the **Actions** menu. A confirmation message is displayed. Click **Delete** to submit the Delete Assembly Instance job.
- **Add Tier:** Select an assembly instance and select **Add Tier** from the **Actions** menu.

8.4.2.1 Assembly Details Page

This page displays the details of the SSA Assembly Instance.

Figure 8-6 Assembly Details Page

The screenshot shows the 'Assembly Details Page' for an assembly named 'asmb_o16u2'. The page is divided into three main sections: General, Members, and Requests.

General Information:

- Assembly: asmb_o16u2
- Zone: zone_149
- Total Servers: 1 (with a green up arrow icon)
- Creation Date: 01-10-15 00:38:34

Members Table:

Name	Type	Server Size	CPUs	Memory (GB)	Storage (GB)	Status	Software Installed	Expiry Date	Tags
v122-196.in.oracle.com	Server	Custom	2	2.0	12.00	↑	∞		

Requests Table:

Name	Status	Submission Date	Start Date	End Date	Servers	Total CPUs	Total Memory (MB)	Total Storage (GB)
SSA_USER - Thu Oct 01 06:34:15 PDT 2015	Success...	Oct 1, 201...	Oct 1, 2...		1	2	2048	0.59

It contains the following sections:

- **General:** This section displays the name of the assembly, the zone to which it belongs, the total number of servers or guest VMs deployed by the assembly, and the date on which the assembly was created.
- **Members:** A hierarchical view of the members in the assembly is displayed here. Click on a link to drill down to the member Home page.
- **Request:** This section lists all the requests corresponding to the assembly and its members. Click on a request link to drill down to the Request Details page.

You can perform operations such as **Start**, **Stop**, **Delete**, and **Add Tiers** on the assembly instance. Select the required option from the Assembly menu and click **OK** in the confirmation page to perform the selected operation.

8.4.3 Tier Operations

You can perform the following operations on an assembly tier instance:

- **Start:** Select a tier instance and select **Start** from the **Actions** menu. A confirmation message is displayed. Click **Start** to submit the Start Tier Instance job. You can start a tier instance only if it has been stopped.
- **Stop:** Select a tier instance and select **Stop** from the **Actions** menu. A confirmation message is displayed. Click **Stop** to submit the Stop Tier Instance job. You can stop an tier instance only if it has been started.
- **Scale Up:** You can scale up or add more servers to a tier instance. See [Scaling Up a Tier Instance](#).
- **Scale Down:** You can scale down or stop servers that are part of a tier. See [Scaling Down a Tier Instance](#).

8.4.3.1 Scaling Up a Tier Instance

A scalable tier allows creation of multiple servers and has a minimum and maximum limit. The scalability of the tier depends on how it is defined in the Assembly. See [Provisioning Guest Virtual Machines Using Oracle Virtual Assemblies \(OVA\)](#) for details. To scale up a tier instance, follow these steps:

1. Log in to Enterprise Manager as an user with the `EM_SSA_USER` role.
2. Click the **My Servers** tab, expand an assembly and click on a tier of the assembly.
3. In the Tier Instance Home page, click the **Scale Up** option from the Tier menu.
4. The Scale Up: General page appears. The name of the request, the assembly, zone, and number of instances appears. Click **Next** to continue.
5. In the Server Selection page, select the servers for the scale up operation. As a part of the Scale Up operation, either the existing shutdown servers of the tier are brought up and/or new servers are created to the Max Instance Number Limit if required.

If the Max Instance Number Limit of the tier is 4 and only 1 server has been created during the assembly deployment, the tier can be scaled up by 3 new servers. Click **Next** to continue.

6. If new servers are to be provisioned, you can modify their configuration in the Server Configuration page. The values are pre-filled with the values that specified during the deployment of the assembly. Modify the details if required and click **Next** to continue.

Note:

- If the tier is auto scalable, the Server Configuration page cannot be modified.
- If Network Restriction has been enabled (see [Setting Up Networks](#)), the backend network cannot be modified.

7. Specify the schedule for this operation and click **Next**.
8. Review the details and click **Finish** to scale up the tier.

8.4.3.2 Scaling Down a Tier Instance

You can scale down the servers belonging to a tier. To scale down a tier, follow these steps:

1. Log in to Enterprise Manager as an user with the `EM_SSA_USER` role.
2. Click the **My Servers** tab, expand an assembly and click on a tier of the assembly.
3. In the Tier Instance Home page, click the **Scale Down** option from the **Tier** menu.
4. In the Scale Down page, select the servers to be included in the Scale Down operation and click **OK**. The selected servers will be stopped and scaled down.

8.4.3.3 Tier Details Page

This page displays the details of the SSA Tier Instance. It contains the following sections:

- **General:** This section displays the name of the tier, the zone to which it belongs, the total number of servers or guest VMs deployed, and the date on which the tier was created.
- **Members:** A hierarchical view of the members in the tier is displayed here. Click on a link to drill down to the member Home page.
- **Request:** This section lists all the requests corresponding to the tier and its members. Click on a request link to drill down to the Request Details page.

You can perform operations such as **Start**, **Stop**, **Scale Up**, and **Scale Down** on the tier instance. Select the required option from the Tier menu and click **OK** in the confirmation page to perform the selected operation.

8.4.4 Performing Server Operations

You can perform the following operations for a server:

- **Modify Configuration:** Select the server to be modified and select **Modify Configuration** from the **Actions** menu. Note that the server must be in a **Stopped** status if the configuration is to be modified.
- **Clone:** Select the server to be cloned and select **Clone** from the Actions menu. See
- **Delete:** You can delete a server that is **Down** or **Suspended**. Select the server to be deleted and select **Delete** from the **Actions** menu. A confirmation message is displayed. Click **Delete** to submit the Delete Server Job.
- **Save as Template:** You can save a server that is **Down** or **Suspended** as a template for future use. Select the server and select **Save as Template** from the **Actions** menu. The Save as Template page appears. You can specify the following details:
 - **Template Name:** Enter a unique name for the template
 - **Request Name:** Enter a name for the Save as Template request.
 - **Keymap:** Select a keyboard type for the server.
 - **Configuration:** In this region, you can specify the default and maximum memory and number of CPUs.

Click **OK** to save as template.

- **Start:** Select a server that is **Stopped** and select **Start** from the **Actions** menu. A confirmation message is displayed. Click **Start** to submit the Start Server job to start the server.
- **Stop:** Select a server that is up and running and select **Stop** from the **Actions** menu. A confirmation message is displayed. Click **Stop** to submit the Stop Server job to stop the server.
- **Restart:** A server that is up and running can be restarted.
- **Suspend:** Select a server that is up and running and select **Suspend** from the **Actions** menu. A confirmation message is displayed. Click **Suspend** to submit the Suspend Server job.
- **Resume:** Select a server that is **Suspended** and select **Resume** from the **Actions** menu. A confirmation message is displayed. Click **Resume** to submit the Resume Server job to start the server.
- **Launch VNC Console:** Select this option from the **Actions** menu to launch a VNC Console. This option is available only if the server is up and running.

8.4.4.1 Modifying the Server Configuration

Select the server that is to be modified and select **Modify Configuration** from the **Actions** menu. The Modify Configuration page appears. You can modify the details such as Server Size, Keymap, Tags, Network, and Storage. Click **OK** to save the configuration.

Note:

If the server is up and running, you cannot modify the Maximum Memory, Maximum Number of CPUs, Network, and Storage. To modify these parameters, you must stop the server and then select the **Modify Configuration** option.

8.4.4.2 Cloning the Server

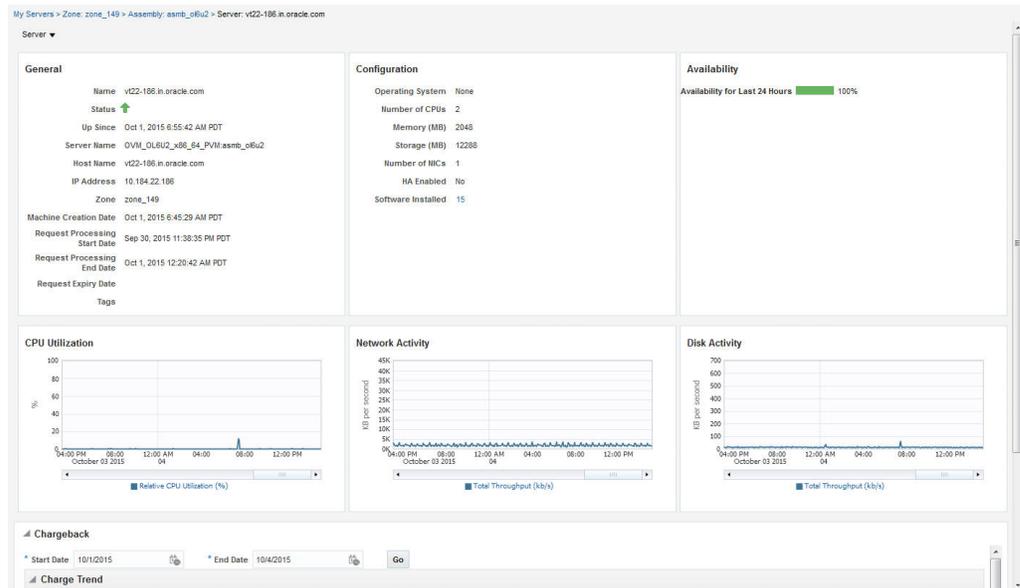
You can clone a server to create one or more servers. Select a server and select **Clone** from the **Actions** menu. The Clone Server Request: General page appears. Enter the name for the clone request. The name of the source server cloned and the zone in which the cloned server will appear is displayed. Click **Next** to continue to the Clone Server Request: Deployment Configuration page. In this page, you can specify the number of servers to be cloned and the resource configuration parameters. These parameters will be applicable to all the servers being cloned. Specify the schedule, review the details, and click **Finish** to submit the Clone Server operation.

8.4.4.3 Server Details Page

The Server Details page displays detailed information about the server. From this page, you can modify configuration, clone, stop, restart, suspend, resume, and launch VNC console.

This page contains the following sections:

Figure 8-7 Server Details Page



- **General:** Displays information like status of server, the associated zone, date from which it is available, and the expiry date.
- **Configuration:** Displays configuration details of the server such as number of CPUs, memory, storage, operating system, and other software installed on the server.
- **Availability:** Shows the availability status of the server over the last 24 hours.
- **Charts:** You can see the Availability chart that displays the status of the server for past 24 hours, and the CPU, Memory, and Storage Utilization charts.
- **Chargeback Details:** This section displays all the charge back break-up data for the server. The charge incurred will be calculated from the server requested date to the current date.

8.5 Viewing Storage

Click the **Storage** tab to view all the storage elements grouped by the Guest VMs with which they are associated. The Storage tab lists all the Servers owned by the EM_SSA_USER along with all the storage resources in tree format. The top level nodes represent the servers owned by the user and the sub nodes represent the storage disks that belong to the server. You can do the following:

- **Request Storage:** This action allows the user to add a shared or non-shared storage disk to a server. Select one or more servers and click **Request Storage**. Enter the Disk Name, Size, and Mode. Select the Shared Disk check box to add a shared disk. If you create a non-shared storage disk, it is available only for the server on which it is created. A shared storage disk can be assigned to other servers. If you select multiple servers, you can create only non-shared storage disks.
- **Assign Storage:** This action allows the user to assign shared storage disk to any other server owned by the EM_SSA_USER. Select a server and click **Assign Storage**.

The list of available shared storage disks are displayed. Select a disk from the list and click **OK** to assign the shared storage disk to the server.

- **Release Storage:** Select a server and click **Release Storage**. This action allows the user to release an existing shared or non-shared storage disks.

8.6 Viewing Chargeback Details

Click the **Chargeback** tab to view the chargeback details. The tab contains the following sections:

- **Charge Trend:** The Charge Trend shows the charges across a date range for various metrics. You can set a date range and click **Go** to recalculate charges.
- **Details:** This section shows charge details for the specified date range. You can reorder the data by selecting an option from the Detail Level drop-down menu. Click **Export** to export the details of the charge plan to a .csv file.
- **Charge Plans:** This section allows you to select a zone to see the charge plan in effect for the target type.
- **Oracle VM Guest (Default):** If you are using the Extended Charge Plan, the base plan for the Oracle Guest VM target type appears here.

8.7 Viewing Library

Click the **Library** tab to view the list of assemblies, templates, and deployment plans that you can access. You can choose to view:

- **Public:** The list published by the SSA Administrator for your role. The assemblies, templates and deployment plans on which you have view privileges. You will see the assemblies, templates, or deployment plans if the `EM_SSA_ADMINISTRATOR` has published them or if another `EM_SSA_USER` has made them shareable.
- **Private:** These include the assemblies, templates, and deployment plans that you own. Generally, an SSA user may not own assemblies but may own templates and deployment plans.

You can request servers from this page. See [Requesting Servers](#) for details.

You can upload software, share, delete, or stop sharing a software component that you own. Select a component from the list and click **Share**. Select one or more users with whom the entity is to be shared and click **Share**.

To unshare an entity, select a shared entity from the list and click **Stop Sharing**. The list of users with whom this component has been shared appears. Select one or users from the list and click **Stop Sharing**.

To upload software, click **Upload**. In the dialog box that appears, select the source file to be upload, enter a name and description, and specify the type (Assembly or Template) of component being uploaded. Click **Upload** to upload to software to My Library.

8.8 Viewing Policies

Click the **Policies** tab to view the list of policies that you have defined. You can create a new Performance or Schedule Based Policy or a Policy Group. For example, you

can define a policy to start an automatic scale up for a tier if the CPU Utilization is greater than 90 for 5 consecutive occurrences.

For more details on creating and using policies, see [About Cloud Policies](#).

8.9 Viewing Preferences

You can customize the self service portal settings by modifying the preferences. From the user menu on the top right corner of the page, select **Preferences**, then select **SSA Portal Settings**. Before you request resources using SSA, you can set up your user profile by specifying the following details:

- **General Preferences**
 - **Email Address:** The default email address to be used to receive notifications.
 - **Locale:** The default locale for receiving cloud notifications.
 - **Request Notifications:** Select this checkbox to receive notifications of different statuses of the request.
 - **Request Status:** If you select the **Request Notifications** checkbox, select the status for each you wish to receive notifications from the drop down list.
 - **Days Before the First / Second Notification:** If you select the Instance Expiry Notifications checkbox, specify the number of days before the first and second notifications are sent.
 - **Quota Notification:** If you select this checkbox, notifications are sent when the quota reaches a specified threshold.
 - **Quota Threshold (%):** If you have selected the **Quota Notification** checkbox, specify the quota threshold in this field.
 - **Self Service Portal:** Select the default Self Service Portal page that should appear when you log in to the Self Service Portal.

9

Administering and Monitoring an IaaS Cloud

This chapter describes the monitoring and administrative tasks that you can perform on the zones, virtual server pools, virtual servers and guest virtual machines within an IaaS Cloud.

It includes the following sections:

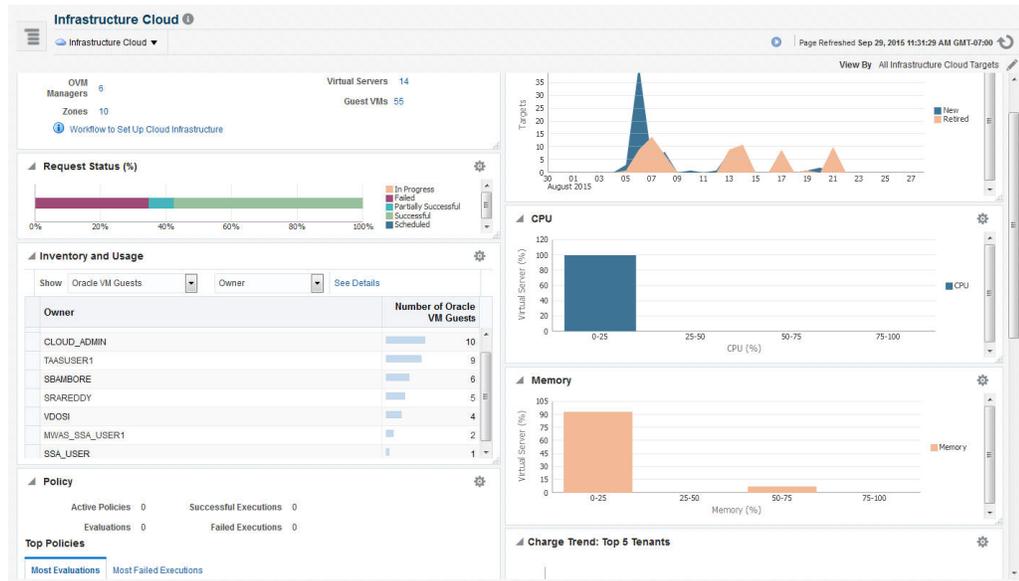
- [Viewing the Infrastructure Cloud Home Page](#)
- [Viewing the OVM Manager Home Page](#)
- [Viewing and Managing Members](#)
- [Managing Zones](#)
- [Virtual Server Pool Home Page](#)
- [Managing Virtual Servers](#)
- [Managing Guest Virtual Machines](#)
- [Deploying Guest Virtual Machines](#)
- [Viewing the Infrastructure Request Dashboard](#)

9.1 Viewing the Infrastructure Cloud Home Page

The Cloud target is available out of the box and represents the entire virtualization infrastructure monitored by Enterprise Manager Cloud Control. You can view and monitor the various targets in the data center from the Infrastructure Cloud Home page. To view the Infrastructure Cloud Home page, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**. The Infrastructure Cloud Home page shows the various targets such as zones, pools, and virtual servers, request status, policies, and so on. Click the video link to view a demo on setting up the cloud infrastructure.

Figure 9-1 Infrastructure Cloud Home



The Infrastructure Cloud Home page shows the following details:

- **General:** Shows the number of OVM Managers, zones, and servers, and guest virtual machines in the cloud and the status of each target. Select a link to drill down to the Members page.
- **Target Flux:** Shows the number of targets (Guest VMs, Oracle VM Managers, Zones, server pools, virtual servers) created and deleted over the last 30 days.
- **Request Status:** Shows the status of various requests and reservations. Click the graph to drill down to the Requests page.
- **CPU & Memory:** Shows the CPU and memory utilization by the virtual servers in the data center.
- **Software Library:** Shows the number of assemblies and templates available in the software library and how many have been deployed.
- **Policy:** Shows the status of the various policies that have been defined for the cloud. It shows the number of corrective actions that were executed and whether they were successful. Click the graph to drill down to the Policy Home page.
- **Overview of Incidents and Problems:** Shows the various incidents and policy violations that have occurred in the last 24 hours.
- **Charge Trend:** Shows the charge back break-up data across the cloud. It lists the top 5 requests that have incurred the highest cost.
- **Inventory and Usage:** Shows the inventory summaries for virtual servers, guest virtual machines, and assembly instances. Select an option from the Show drop down list to view the details. You can view the summary information in the context of different dimensions. For example, for Oracle VM Servers, you can view the number of virtual servers under each Oracle VM Manager, zone, virtual server pool, and so on.

Click on the bar charts to drill down multiple levels of inventory details. Click **See Details** to drill down to the Inventory and Usage Details page which provides detailed information on the selected target and associated inventory charts.

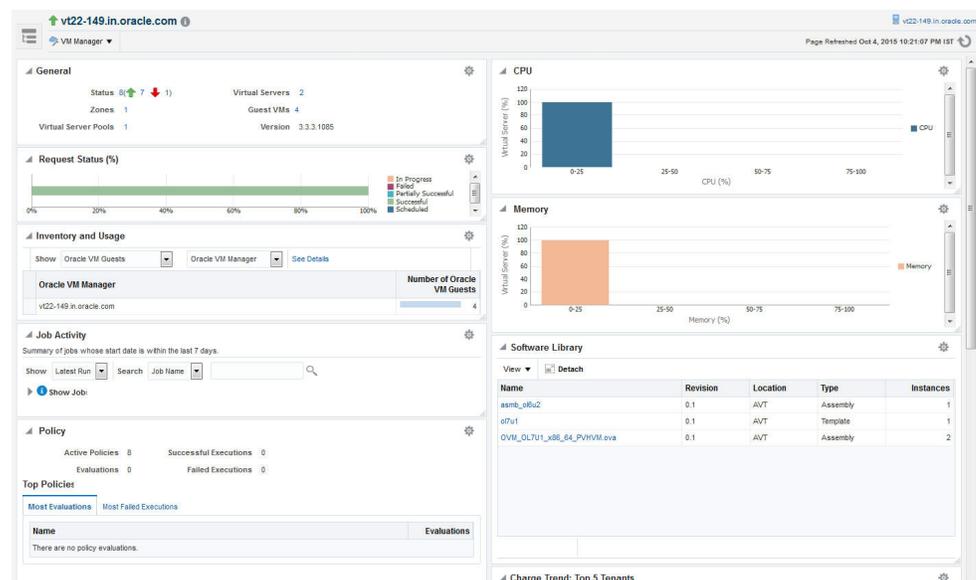
Before you can start monitoring a virtualization target, you must register the OVM Manager target. See [Registering the Oracle VM Manager](#) for details.

9.2 Viewing the OVM Manager Home Page

The OVM Manager provides the interface to monitor zones, virtual servers, virtual server pools, and guest virtual machines. A zone is a set of virtual server pools. Each virtual server pool contains one or more virtual servers and guest virtual machines. A virtual server pool cannot belong to more than one zone. To view the OVM Manager Home page, follow these steps:

1. From the Enterprise menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Click on an OVM Manager target from the left panel. The OVM Manager Home page shows the following details:

Figure 9-2 OVM Manager Home



- **General:** Shows the number of zones, and servers, and guest virtual machines under the OVM Manager and the status of each target. Click on a link to drill down to the Members page.
- **Request Status:** Shows the status of all requests for this OVM Manager. Click on the graph to drill down to the All Requests page.
- **Job Activity:** Shows the list of jobs started within the last 7 days.
- **Policy:** Shows the status of all the policies that have been defined for the OVM Manager. It shows the number of corrective actions that were executed and whether they were successful.

- **Overview of Incidents and Problems:** Shows all the incidents and problems reported on the OVM Manager and member targets.
 - **Inventory and Usage:** Shows the inventory summaries for virtual servers, guest virtual machines, and assembly instances. Select an option from the Show drop down list to view the details. You can view the summary information in the context of different dimensions. For example, for Oracle VM Servers, you can view the number of virtual servers under each Oracle VM Manager, zone, virtual server pool, and so on.

Click on the bar charts to drill down multiple levels of inventory details. Click **See Details** to drill down to the Inventory and Usage Details page which provides detailed information on the selected target and associated inventory charts.
 - **CPU & Memory:** Shows the CPU and memory utilization by the virtual servers under the OVM Manager.
 - **Software Library:** Shows the templates and assemblies that have been deployed.
 - **Charge Trend: Top 5 Tenants:** Shows the charge back break-up data across the OVM Manager. It lists the top 5 requests that have incurred the highest cost.
3. From the OVM Manager Home page, you can do the following:
- [Edit OVM Manager](#)
 - Synchronize OVM Manager
 - [Deregister OVM Manager](#)
 - [Create a Zone](#)
 - [Create a Virtual Server Pool](#)
 - [Discover a Virtual Server](#)
 - Manage Unowned Virtual Server
 - [Manage Networks](#)
 - [Manage Storage](#)
 - [Manage Storage Repository](#)
 - Manage YUM Repository
 - Manage NTP Configurations

9.3 Viewing and Managing Members

You can view and manage members for one or more virtualization targets on this page.

1. From the **Enterprise** menu select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on the **Infrastructure Cloud** menu, select **Members**, then select **Show All**.
3. The list of OVM Managers, Zones, Virtual Server Pools, Virtual Servers, and Guest Virtual Machines that can be managed from the Infrastructure Cloud appear.

4. You can:
 - a. Click on a target to drill down to its Home page.
 - b. Select a target and click on an option from the **Actions** menu. The actions you can perform vary based on the target you have selected.

 **Note:**

You can view and manage the members under a OVM Manager target, zone, virtual server pool, or virtual server. From the Infrastructure Cloud Home page, select the appropriate target (such as an OVM Manager, zone, virtual server pool, or virtual server) from the left panel. From the Infrastructure Cloud menu, select **Members**, then select **Show All**. The Members page for the selected target appears and you can perform various administrative activities on these targets.

9.4 Managing Zones

This section describes the following:

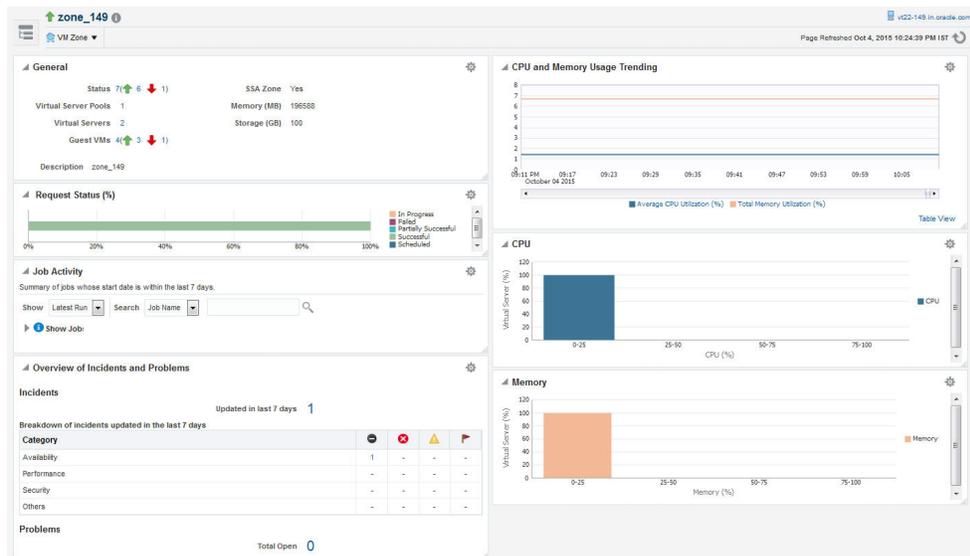
- [Viewing the Zone Home Page](#)
- [Creating or Editing a Zone](#)
- [Deleting a Zone](#)

9.4.1 Viewing the Zone Home Page

A zone is a logical grouping of resources like servers and storage entities. It is a logical entity used to organize the guest virtual machines exposed to the self service application user. Zones have metrics that show the aggregate utilization of the zone. To view the Zone Home page, follow these steps:

1. From the **Enterprise** menu select **Cloud**, then select **Oracle VM Infrastructure Home**. In the left panel, click on the zone to be viewed. The following details are displayed:

Figure 9-3 Zone Home



- **General:** Shows the number of virtual servers, virtual server pools, and guest virtual machines under this zone and the status of each target. Click on a link to drill down to the Members page.
- **Job Activity:** Shows the list of jobs started within the last 7 days.
- **Overview of Incidents and Problems:** Shows all the incidents and problems reported on the OVM Manager and member targets.
- **CPU and Memory Usage Trending:** Shows the average CPU and memory utilization over the last 30 days.
- **CPU and Memory:** Shows the CPU and memory utilization by the virtual servers and guest virtual machines in this zone.

9.4.2 Creating or Editing a Zone

A zone is a collection of virtual server pools which share storage. Follow these steps to create a zone:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select the OVM Manager target for which the zone is to be created, and click **Create Zone** from the OVM Manager menu.
3. In the Create Zone page, specify the zone name and description.
4. Indicate if this zone will be used by the self service users by checking the **Infrastructure Cloud Self Service Zone** check box.
5. Click **Add** in the Virtual Server Pool section to add one or more virtual server pools. See [Creating a Virtual Server Pool](#) for details.
6. Click **Create Zone** and click **OK**. After the successful completion of this job, the virtual server pools appear in the newly created zone on the Virtualization Central Home page.

 **Note:**

To edit an existing zone, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select a zone target from the left panel.
3. From the **Zone** menu, select **Target Setup**, then select **Edit VM Zone**.

9.4.3 Deleting a Zone

To delete a zone, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Click on a zone target from the left panel to navigate to the Zone Home page. From the **Zone** menu, select **Target Setup**, then select **Delete**. A confirmation message appears.
3. Click **OK** to delete the zone. Any virtual server pools that are members of this zone will now be moved under the OVM Manager target.

 **Note:**

If Chargeback has been enabled for the zone (or virtual server pools / guest virtual machines within the zone) being deleted, the metric data is automatically disabled when the target is deleted.

9.4.4 Deleting a Zone from Enterprise Manager

To delete a zone from Enterprise Manager, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Click on a zone target from the left panel to navigate to the Zone Home page. From the **Zone** menu, select **Target Setup**, then select **Delete from Enterprise Manager**. A confirmation message appears.
3. Click **OK** to delete the zone. The zone and the associated targets under this zone will be removed from Enterprise Manager. After synchronization, these targets will be added back to Enterprise Manager.

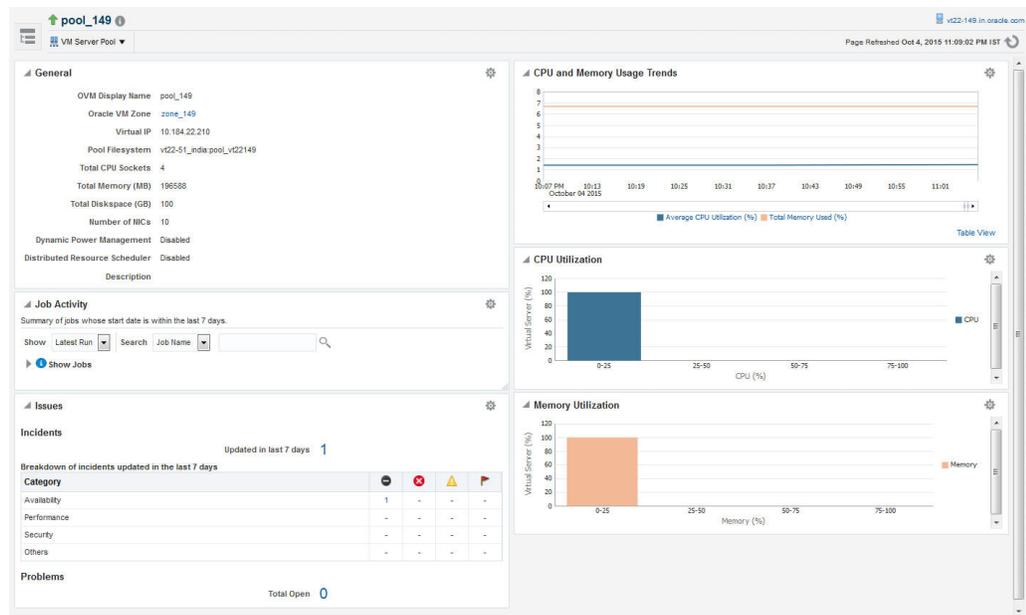
 **Note:**

If Chargeback has been enabled for the zone (or virtual server pools / guest virtual machines within the zone) being deleted, the metric data is automatically disabled when the target is deleted.

9.5 Virtual Server Pool Home Page

A virtual server pool is logically an autonomous region that contains one, or more virtual servers. A virtual server pool may or may not belong to a zone. However, it can belong to only one zone at a time. The following details are displayed:

Figure 9-4 Virtual Server Pool Home



- **General:** Shows details of the virtual server pool such as the zone to which it belongs, the number of CPUs, memory and storage, and number of NICs.
- **Job Activity:** Shows the list of jobs started within the last 7 days.
- **Issues:** Shows all the incidents and problems reported on the virtual server pool and member targets.
- **CPU and Memory Usage Trends:** Shows the average CPU and memory utilization by the virtual servers in the zone over the last 30 days.
- **CPU and Memory Utilization:** These charts show the CPU and memory utilization by all the virtual servers in the server pool.

9.6 Managing Virtual Servers

This section describes the following:

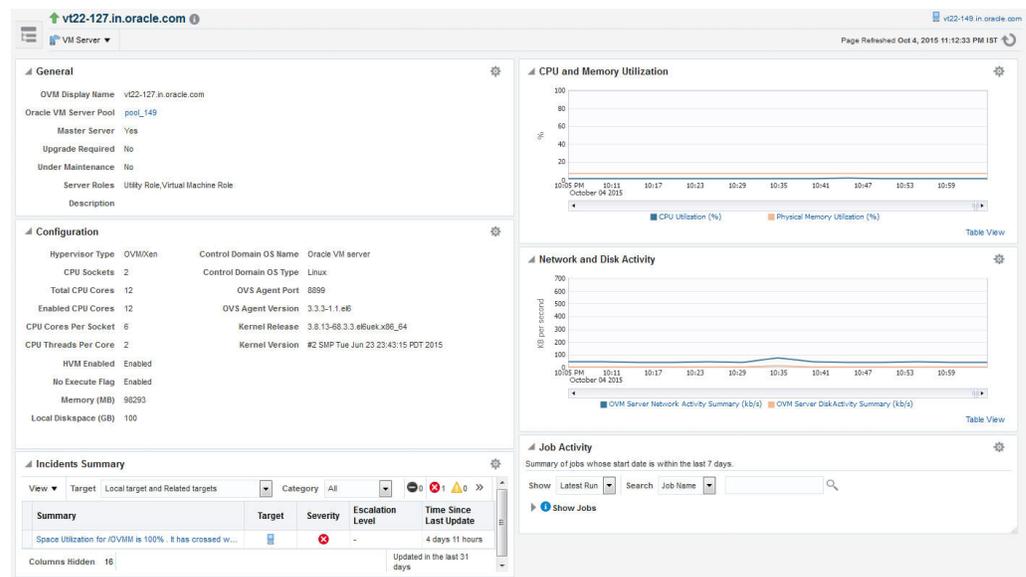
- [Virtual Server Home Page](#)
- [Editing a Virtual Server](#)
- [Upgrading a Virtual Server](#)
- [Starting and Stopping a Virtual Server](#)

- [Performing Maintenance on the Virtual Server](#)

9.6.1 Virtual Server Home Page

A virtual server is a generic term used to describe a physical machine which has virtualization software (hypervisor) running on it. A virtual server can belong to one and only one virtual server pool at a time. Guest virtual machines and resources are also associated with the server pools.

Figure 9-5 Virtual Server Home



The following regions are displayed:

- **General:** Shows details of the virtual server such as the virtual server pool it belongs to, whether the server needs to be upgraded, if it is under maintenance, and so on.
- **Job Activity:** Shows the list of jobs started within the last 7 days.
- **Configuration:** The virtual server configuration such as number of enabled CPU cores and processors, memory, diskspace, OVS Agent Port, and so on.
- **Network and Disk Activity:** The network and disk activity of the virtual server.

Note:

If you are using Oracle VM Manager 3.2.4, the Disk Activity is not shown in the graph.

- **CPU and Memory Utilization:** The CPU and memory utilization of the virtual server.
- **Incident Summary:** This region shows a list of incidents and problems reported on all the Guest VMs and related targets.

9.6.2 Editing a Virtual Server

To edit a virtual server, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. In the left panel, select the virtual sever that is to be edited. The Virtual Server Home page appears.
3. From the **Virtual Server** menu, select **Target Setup**, then select **Edit VM Server**. You can modify the description of the virtual server and the following fields:
 - **Configure IPMI:** Select the **Enable Server IPMI** checkbox to enable the Intelligent Platform Management Interface (IPMI). Selecting this option allows you to remotely power off a virtual server and send a wake on lan message to power on a virtual server without having to physically press the power button. If this checkbox is selected, you must enter the user name, password, and IP address of the IPMI.
 - **Server Role:** A server can be designated to perform utility or virtual machine functions by specifying the role which can be:
 - Utility Role: Servers with this role are used to perform non-virtual machine operations such as cloning, importing templates, creating repository, deleting assemblies and so on.
 - Virtual Machine Role: Servers with this role are used to run virtual machines. This role cannot be deselected if the virtual server already contains Guest VMs.
4. Click **OK** to confirm the changes.

9.6.3 Upgrading a Virtual Server

After the YUM Repository has been set up (see [Configuring the YUM Repository](#)), you must upgrade the virtual server to ensure that it has the latest updates. The virtual server must be in maintenance mode if it is to be upgraded.

To upgrade the virtual server, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a VM Server from the left panel and select **Upgrade**.
3. After the virtual server has been upgraded, the virtual server will be restarted.

9.6.4 Starting and Stopping a Virtual Server

You can start a virtual server that is in a **Stopped** state. To start a virtual server, follow these steps:

 **Note:**

Before you start the virtual server, you must ensure that the IPMI has been configured. See [Editing a Virtual Server](#).

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a virtual server target in the left panel and select **Start**. A confirmation message appears.
3. Click **OK** to start the virtual server.

You can stop a virtual server that is **Up**. To stop a virtual server, follow these steps:

1. Login to Enterprise Manager Cloud Control.
2. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
3. Right click on a virtual server target in the left panel and select **Stop**. A confirmation message appears.
4. Click **OK** to stop the virtual server.

9.6.5 Performing Maintenance on the Virtual Server

You can place a virtual server in maintenance mode to perform hardware and software maintenance. When a virtual server is placed in maintenance mode, any virtual machines running on the virtual server are automatically migrated to other virtual servers in the server pool, if they are available, otherwise they are stopped. The server pool roles being performed by the virtual server are also moved to other virtual servers in the server pool, if available. To place an Oracle VM Server into maintenance mode:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select a virtual server target from left panel.
3. Right click on a virtual server target from the left panel and select the **Start Maintenance**. The virtual server target is placed in blackout mode during maintenance.

When you have finished performing maintenance, click **Stop Maintenance** for it to rejoin the server pool.

9.7 Managing Guest Virtual Machines

This section describes the following:

- [Creating a Guest Virtual Machine](#)
- [Guest Virtual Machine Home Page](#)
- [Migrating a Guest Virtual Machine](#)
- [Starting and Shutting Down a Guest Virtual Machine](#)
- [Cloning a Guest Virtual Machine](#)

- [Editing a Guest Virtual Machine](#)
- [Saving a Guest Virtual Machine as a Template](#)
- [Deleting a Guest Virtual Machine](#)
- [Deleting a Guest Virtual Machine Only From Enterprise Manager](#)

9.7.1 Creating a Guest Virtual Machine

A guest virtual machine runs on a virtual server. You can create a guest virtual machine by using one of the following methods:

- Assemblies
- Templates
- Installation Media (ISO or PXE)

For more details on creating a Guest VMs, see [Deploying Guest Virtual Machines](#).

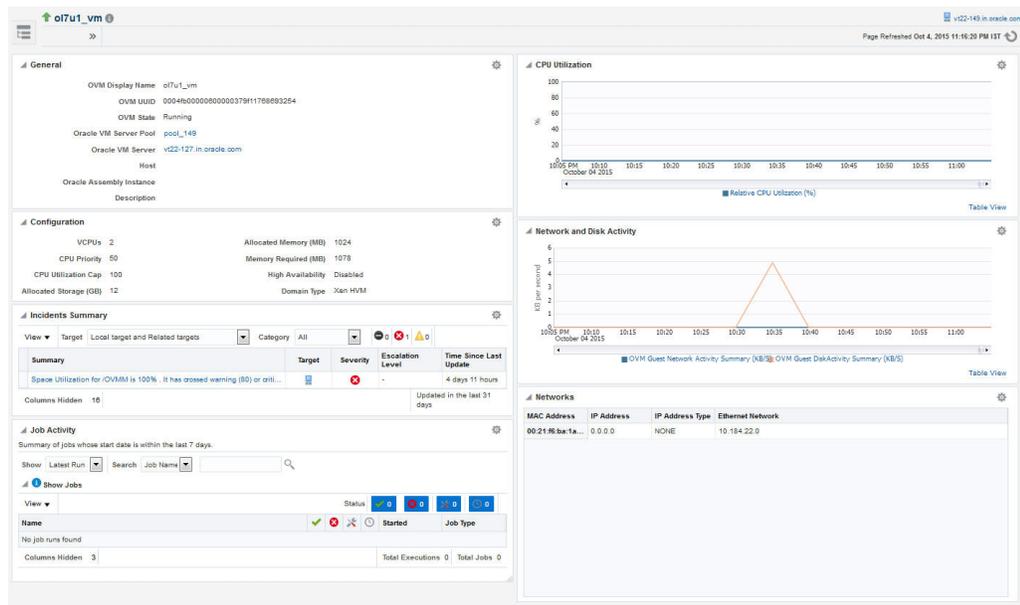
Before you create a guest virtual machine, you must have:

- Discovered a virtual server.
- Created a virtual server pool.
- Created the necessary components in the Software Library
- Deployed assemblies, templates, ISO images, or PXEs for creating virtual machines based on these.

9.7.2 Guest Virtual Machine Home Page

A guest virtual machine is the container running on top of a virtual server. Multiple guest virtual machines can run on a single virtual server.

Figure 9-6 Guest VM Home Page



The following regions are displayed:

- **General:** Shows details of the guest virtual machine such as the virtual server pool, and virtual server it belongs to, and a description.
- **Networks:** Displays the network configuration for the guest virtual machine.
- **CPU and Memory Utilization:** The CPU and memory utilization of the guest virtual machine.
- **Networks and Network Activity:** The networks in the guest virtual machine and the network throughput of the guest virtual machine.
- **Configuration:** The virtual server configuration such as number of virtual CPUs, CPU priority, allocated storage and memory, whether it is HA enabled, and the domain type.
- **Job Activity:** Shows the list of jobs started within the last 7 days.
- **Incidents Summary:** Shows the various alerts and policy violations that have occurred in the last 31 days.

From the Guest Virtual Machine Home page, you can do the following:

- [Edit a Guest VM](#)
- [Migrate a Guest VM](#)
- [Clone a Guest VM](#)
- [Start and Stop](#)
- [Reboot, Restart, Suspend, and Resume](#)

9.7.3 Migrating a Guest Virtual Machine

To migrate one or more guest virtual machines, do the following

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. From the **Infrastructure Cloud** menu, select **Members**, then select **Show All**.
3. Expand the list of targets displayed and select one or more guest virtual machines from the list. From the **Actions** menu, select **Guest VMs**, then select **Migrate**. The Migrate page appears. You can select the following:
 - Running Guest VMs
 - Stopped / Suspended Guest VMs.
4. Select one or more Guest VMs from these regions, and click **Submit**.

Note:

For running Guest VMs, the virtual server to which the guest virtual machine is to be migrated is auto selected by default. For stopped or suspended Guest VMs, the target server can be modified if required.

9.7.4 Starting and Shutting Down a Guest Virtual Machine

After a guest virtual machine has been created, you can start it or shut it down. When a guest virtual machine is running, you can pause or suspend it temporarily:

- [Starting a Guest Virtual Machine](#)topicid:guest_vm_start
- [Restarting a Guest Virtual Machine](#)
- [Stopping a Guest Virtual Machine](#)

9.7.4.1 Starting a Guest Virtual Machine

When a Guest VM has not been used for a while, it may be shut down to release system resources. To use the Guest VM, you must start it:

Prerequisites

The guest virtual machine must be **Down**.

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select the guest virtual machine target from the left panel.
3. Click **Start** from the guest virtual machine menu.

9.7.4.2 Restarting a Guest Virtual Machine

You may need to reboot or restart a virtual machine if operating system updates require you to restart the virtual machine, for example Microsoft Windows updates. To reboot a guest virtual machine:

Prerequisites

The guest virtual machine must be **Up**.

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a guest virtual machine target from the left panel and click **Restart**.

9.7.4.3 Stopping a Guest Virtual Machine

You may need to stop a Guest VM that is not being used to release system resources.

Prerequisites

The guest virtual machine must be **Up**.

To stop a guest virtual machine:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a guest virtual machine target from the left panel and click **Stop**.

9.7.4.4 Killing a Guest Virtual Machine

Killing a virtual machine is equivalent to performing a power off of a virtual machine, similar to unplugging the power cable from a physical machine. This is not the recommended method of shutting down a virtual machine, but may be used if the **Stop** command fails to shut down the virtual machine.

To kill a guest virtual machine:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a guest virtual machine target from the left panel and click **Kill**.

9.7.5 Cloning a Guest Virtual Machine

Prerequisites

- At least one virtual machine must exist and be in a state appropriate for cloning to proceed.
- You can clone a guest virtual machine to create one or more new virtual machines in the same server pool.

 **Note:**

If you are using the Enterprise Manager for Oracle Virtualization 12.1.0.3 (listed as Oracle Virtualization in Self Update) plug-in or above, you can clone running guest virtual machines if the virtual disks associated with them are thin cloneable.

To clone a guest virtual machine, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select a guest virtual machine target from the left panel.
3. Click **Clone** from the guest virtual machine menu.
4. In the Select Target and Source page, specify the Request Name.
5. In the Deployment Configuration page, you can modify the following:
 - **Guest VM:**
 - **Number of Guest VMs:** The number of guest virtual machine instances being cloned.
 - **Guest VM Naming:** Indicates whether the guest virtual machine names are to be automatically generated or if the names will be uploaded from a file.
 - **Guest VM Name:** Enter a name of the guest virtual machine being cloned. The guest virtual machine name cannot contain any special characters.
 - **General:**

- **Enable High Availability / Start VM After Creation:** Select the **Enable High Availability** and **Start VM After Creation** checkboxes to restart the guest virtual machine automatically after any outage.
 - **CPU Scheduling Priority:** Set the Priority of the virtual machine. You can select a high, medium, low, or custom priority for the virtual CPUs.
 - **CPU Scheduling CAP:** This parameter defines the percentage to which the virtual CPUs can receive scheduled time. You can select a high, medium, low, or a custom percentage of scheduled time for the virtual CPUs.
 - **Keymap:** The keyboard mapping that will be used by the guest virtual machine being cloned.
 - **Tags:** Specify one or more comma separated tags. These tags are used to logical group the virtual machines and can be used to search for one or more virtual machines that meet a certain criteria.
- **VM Size**
 - **VM Size:** The amount of memory to be allocated to the guest virtual machine. The virtual server should have sufficient memory to run the guest virtual machine. Otherwise, the guest virtual machine will be created, but will not be started. The size of the guest virtual machine (memory and CPU values).
 - **Memory:** Specify the memory allocated to guest virtual machine. For a running guest virtual machine, this can be increased up to the Max Memory.
 - **CPU Cores:** Specify the number of virtual CPUs for the guest virtual machine. For a running guest virtual machine, this can be increased upto the Max virtual CPU.
 - **Disk Configuration:** You can configure the storage type to specify the location of the disks of the new cloned Guest VM. You can use the Default type as specified by the server pool or select Override. If you select Override, you must specify the Storage QoS and click the Search icon in the Storage field to specify the Storage Type. In the Storage Type window, specify the following:
 - **Clone Target Type:** This can be Repository or Storage Array.
 - **Clone Target:** If you select Repository, select the storage location where the disk is to be created. If you select Storage Array, specify the type, which can be SAN or iSCSI storage server.
 - **Clone Type:** This can be Sparse or Non-Sparse Copy. A sparse copy is a disk image file of a physical disk, taking up only the amount of space actually in use; not the full specified disk size. A non-sparse copy is a disk image file of a physical disk, taking up the space equivalent to the full specified disk size, including empty blocks.
 - Apart from specifying the storage type, you can also add new disks for the Guest VM to be cloned. Click **Add New Disk** to create a new disk in repositories and connect it to the target Guest VM. Click **Attach Disk** to provide the existing disk in the repositories and connect it to the Guest VM.
6. Click **Next** to continue.
 7. On the Schedule page, specify whether the guest virtual machine is to be cloned immediately or later. Click **Next**.

8. On the **Review** page, review the configuration details and click **Submit** to run the cloning procedure.

9.7.6 Editing a Guest Virtual Machine

Note:

- If you edit a guest virtual machine that is **Up**, you cannot modify the server size, storage and network fields. To edit these values, you must stop or halt the guest virtual machine.
- You can create a new disk for a guest virtual machine which is **Down**, if Oracle VM Manager 3.1.1 and Enterprise Manager for Oracle Virtualization 12.1.0.2 plug-in have been installed. In other cases, existing disks are attached to the guest virtual machines.

To modify the configuration of a guest virtual machine, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select a guest virtual machine target from the left panel. From the **Guest VM** menu, select **Target Setup**, then select **Edit VM Guest**. The Guest VM Configuration page appears.
3. In the Hardware Configuration page, you can modify the following details:
 - **General:**
 - **VM Size:** The amount of memory to be allocated to the guest virtual machine. The virtual server should have sufficient memory to run the guest virtual machine. Otherwise, the guest virtual machine will be created, but will not be started. The size of the guest virtual machine (memory and CPU values).
 - **Memory:** Specify the memory allocated to guest virtual machine. For a running guest virtual machine, this can be increased upto the Max Memory.
 - **CPU Cores:** Specify the number of virtual CPUs for the guest virtual machine. For a running guest virtual machine, this can be increased upto the Max virtual CPU.
 - **CPU Scheduling Priority:** Set the Priority of the virtual machine. You can select a high, medium, low, or custom priority for the virtual CPUs.
 - **CPU Scheduling CAP:** This parameter defines the percentage to which the virtual CPUs can receive scheduled time. You can select a high, medium, low, or a custom percentage of scheduled time for the virtual CPUs.
 - **Network:** You can add delete virtual network interfaces. For more details, see [Setting Up Networks](#).
 - **Storage:** Select the desired storage configuration of your virtual machine, such as virtual disks and ISO file.

4. Click the **Other Configuration** tab.
 - **Attribute:** You can set the basic attributes of the guest virtual machine such as the description and the type of operating system to be used.
 - **High Availability:** If the **High Availability** checkbox is selected, the guest virtual machine will automatically restart after any outage.
 - **Boot Sequence:** Specify the boot sequence for the guest virtual machine. This is the boot order for the guest virtual machine and indicates if the guest virtual machine is forced to boot from disk, CDROM, or network.
 - **Advanced:**
 - **Keymap Name:** The name of the keyboard mapping that will be used by the guest virtual machine.
 - **Mouse Type:** The mouse type to be used for the guest virtual machine. This can be Default, PS2 Mouse, USB Mouse, or USB Tablet.
 - **Domain Type:** The domain type of the virtual machine. This can be:
 - Xen HVM:** Hardware virtualization, or fully virtualized. When you select this option you must supply an ISO file in a repository (in the Create Storage step of the wizard) from which to create the virtual machine.
 - Xen HVM, PV Drivers:** Identical to Xen HVM, but with additional paravirtualized drivers for improved performance of the virtual machine. This Domain Type is used to run Microsoft Windows guest operating systems with an acceptable performance level.
 - Xen PVM:** Enables you to select a location for the mounted ISO file from which to create the virtual machine. Before you create the virtual machine using the paravirtualized method, mount the ISO file on an NFS share, or HTTP or FTP server. You supply the location of the mounted ISO file in the Network Boot Path field in the Boot Options step of the wizard.
 - OVM/SPARC:** This domain type should be selected if the server pool and hypervisors use Oracle VM Server for SPARC as the hypervisor instead of Oracle VM Server for x86.
 - Unknown:** This hypervisor should be selected if the domain type is unknown.
 - **VM Start Policy:** Select the policy to be used to start the virtual machines. You can choose:
 - Start on Best Server:** The best server in the server pool is used to start the virtual machine.
 - Start on Current Server:** The virtual machine will be started on the same server on which it was created.
 - **Tags:** Specify one or more comma separated tags. These tags are used to logical group the virtual machines and can be used to search for one or more virtual machines that meet a certain criteria.

9.7.7 Saving a Guest Virtual Machine as a Template

You can save a guest virtual machine as a template and use the template for provisioning guest virtual machines.

To save a guest virtual machine as a template, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select a Guest VM target from the left panel. From the **Guest VM** menu, select **Target Setup**, then select **Save Guest VM as a Template**. The Save Guest VM as Template: Select Target and Source page appears.
3. The name of the guest virtual machine target that is to be saved as template is displayed.
4. In the Target Repository field, select the repository on which the guest virtual machine template is to be stored.
5. Specify a name for the template and click **Next**.
6. In the Save Guest VM as Template: Deployment Configuration page, you can modify the following details:
 - **General Configuration:**
 - **Memory and No. of CPU Cores:** Specify the Memory and No of CPU Cores (virtual CPUs) for the virtual machine. The number of processors is expressed in number of physical CPU cores, and is limited to 32. The memory and the number of processors that you can select is limited to the properties of the Virtual Machine Server. If you do not select a Virtual Machine Server however, you can set your desired value. You can modify the Max Virtual CPUs and Max Memory fields without restarting the Guest VM.
 - **CPU Scheduling Priority:** Set the Priority of the virtual machine. You can select a high, medium, low, or custom priority for the virtual CPUs.
 - **CPU Scheduling CAP:** This parameter defines the percentage to which the virtual CPUs can receive scheduled time. You can select a high, medium, low, or a custom percentage of scheduled time for the virtual CPUs.
 - **Storage:** Select the desired storage configuration of your virtual machine, such as virtual disks and ISO file.
 - **Tags:** Specify one or more comma separated tags. These tags are used to logical group the virtual machines and can be used to search for one or more virtual machines that meet a certain criteria.
 - **Disk:** Specify the storage type. You can use the Default type as specified by the server pool or select Override. If you select Override, you must specify the Storage QoS and click the Search icon in the Storage field to specify the Storage Type. In the Storage Type window, specify the following:
 - **Clone Target Type:** This can be Repository or Storage Array.
 - **Clone Target:** If you select Repository, select the storage location where the disk is to be created. If you select Storage Array, specify the type, which can be SAN or ISCSI storage server.
 - **Clone Type:** This can be Sparse or Non-Sparse Copy. A sparse copy is a disk image file of a physical disk, taking up only the amount of space actually in use; not the full specified disk size. A non-sparse copy is a disk image file of a physical disk, taking up the space equivalent to the full specified disk size, including empty blocks.

9.7.8 Deleting a Guest Virtual Machine

To delete a guest virtual machine, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Infrastructure Home**.
2. Click on a guest virtual machine target from the left panel to navigate to the Guest VM Home page. From the **Guest VM** menu, select **Target Setup**, then select **Delete**. A confirmation message appears.
3. Click **OK** to delete the guest virtual machine. The guest virtual machine must be down before it can be deleted. This option deletes the guest virtual machine permanently from Oracle VM Manager.

9.7.9 Deleting a Guest Virtual Machine Only From Enterprise Manager

To delete a guest virtual machine only from Enterprise Manager, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Infrastructure Home**.
2. Click on a guest virtual machine target from the left panel to navigate to the Guest VM Home page. From the **Guest VM** menu, select **Target Setup**, then select **Delete from Enterprise Manager**. A confirmation message appears.
3. Click **OK** to delete the guest virtual machine from the Enterprise Manager repository. This option does not delete the guest virtual machine from the Oracle VM Manager. You can use the **Synchronize** operation to restore the target to the Enterprise Manager repository. See [Synchronizing the Oracle VM Manager Targets](#) .

To permanently delete the guest virtual machine from the Enterprise Manager repository and the Oracle VM Manager, see [Deleting a Guest Virtual Machine](#).

9.8 Deploying Guest Virtual Machines

This section describes the various options that can be used to deploy guest virtual machines. It contains the following sections:

- [Getting Started](#)
- [Deployment Options](#)
- [Prerequisites](#)
- [Provisioning Guest Virtual Machines Using Oracle Virtual Assemblies \(OVA\)](#)
- [Provisioning a Guest Virtual Machine Using Oracle VM Templates](#)
- [Provisioning a Guest Virtual Machine Using an ISO Image](#)
- [Creating PXE Bootable Guest Virtual Machines](#)

9.8.1 Getting Started

This section helps you get started by providing an overview of the steps involved in provisioning virtualized systems. Consider this section to be a documentation map to understand the sequence of actions you must perform to successfully provision

virtualized systems. Click the reference links provided against the steps to reach the relevant sections that provide more information.

Table 9-1 Getting Started with Oracle VM Provisioning

Step	Description	Reference Link
Step 1	<p>Understanding the Deployment Options</p> <p>Understand the deployment plans offered by Enterprise Manager for deploying virtualization systems.</p>	To learn about the deployment options, see Deployment Options .
Step 2	<p>Meeting the Prerequisites</p> <p>Before you run the Deployment Procedure, you must meet the prerequisites, such as setting up the provisioning environment, applying mandatory patches, and creating the Software Library components.</p>	To learn about the prerequisites for provisioning guest virtual machines, see Prerequisites .
Step 3	<p>Selecting the Use Case</p> <p>This section covers a few use cases for the provisioning of guest virtual machines. Select the use case that best matches your requirements.</p>	<p>To provision a guest virtual machine using:</p> <ul style="list-style-type: none"> • Assemblies: See Provisioning Guest Virtual Machines Using Oracle Virtual Assemblies (OVA) • Templates: See Provisioning a Guest Virtual Machine Using Oracle VM Templates • ISO Images: See Provisioning a Guest Virtual Machine Using an ISO Image • PXE Boot: See Creating PXE Bootable Guest Virtual Machines

9.8.2 Deployment Options

Enterprise Manager provides the following deployment options for provisioning guest virtual machines:

- **Virtual Machine Provisioning Using Assembly:** Creates new guest virtual machines using an assembly component.
- **Virtual Machine Provisioning Using Template:** Creates new guest virtual machines using a template component.
- **Virtual Machine Provisioning Using ISO:** Creates a new guest virtual machine using an ISO image.
- **Virtual Machine Provisioning Using PXE:** Creates a new guest virtual machine using Preboot Execution Environment. The new guest virtual machines will be PXE-booted and they will get provisioned by way of networks.
- **Cloning a Virtual Machine:** Clones a guest virtual machine to one or more guest virtual machines.

9.8.3 Prerequisites

Before you run any deployment procedures, meet the infrastructure requirements described in this section.

- Mandatory Infrastructure Requirements as defined in the *Enterprise Manager Lifecycle Management Administrator's Guide*.
- Optional Infrastructure Requirements as defined in the *Enterprise Manager Lifecycle Management Administrator's Guide*.
- The assembly, template, or the ISO image to be deployed must be present as a Software Library component, or at an external HTTP or NFS location, or imported to the server pool shared location.

9.8.3.1 Creating and Storing Virtualization Components in the Software Library

This section describes the procedure to create the virtualization components in the Software Library. It includes the following:

- [Creating an Assembly Component](#)
- [Creating a Template Component](#)
- [Creating an ISO Component](#)
- [Creating a Virtual Disk](#)

9.8.3.1.1 Creating an Assembly Component

An assembly is a collection of virtual machine instances. When an assembly is deployed, a group of virtual machines or an **assembly instance** is created.

Prerequisites

- The Assembly Binary, a file with a `.ova` extension must be present on the Management Agent or on an external `http/ftp/nfs` location.

Follow this process to create a new assembly component:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Software Library**.
2. Select a folder on the Software Library page. From the Actions menu, select **Create Entity**, then select **Virtualization**. You can also right click on a folder and select the virtualization option from the context menu.
3. From the **Create Entity: Virtualization** pop-up window, choose **Assembly** from the Select Subtype drop down list.
4. In the Create Assembly: Describe page, enter the following details:
 - Name and description of the assembly.
 - In the Attachments section, click **Add** to attach any files relevant to the entity. Ensure that the file size is less than 2 MB.
 - In the Notes section, include information related to the entity like changes being made to the entity or modification history that you want to track and click **Add**.
5. Click **Next** to continue. In the Create Assembly: Upload Files page, select one or more files to be associated with the assembly. You can either:
 - **Upload Files:** You can upload files from a storage location in the Software Library. For Software Library to become usable, at least one upload file location must be configured. Select the **Upload Files** option. In the Specify

Destination section, click the **Browse** button in the Upload Location field. Two storage options are supported:

- **OMS Shared File System:** An OMS Shared File System location is required to be shared (or mounted) across all the Oracle Management Server (OMS) hosts. This option is ideal for UNIX systems.

For single OMS environments, you can configure the Software Library either on the host where the OMS is running or in a shared location, so that it is accessible to all the OMS hosts. For multiple OMS environments, Oracle recommends that you configure the Software Library in a shared location so that the storage is accessible through NFS mount points to all Oracle Management Servers in the environment

- **OMS Agent File System:** An OMS Agent File System location is a location that is accessible to one of the OMS host's Agent. This option is ideal for OMS installed on Windows hosts. By selecting this option for uploading files, you can avoid sharing a location between all participating OMS hosts.

Credentials must be set before using an OMS Shared File System or OMS Agent File System. For an OMS Shared File System, normal host credential must be set before configuring a storage location. However, for OMS Agent File System location configuration, a credential (preferred or named) has to be specified.

- **Refer Files:** Select this option if you want to use an external file location where the software library files are staged. Referenced File Locations support three storage options:
 - **HTTP:** An HTTP storage location represents a base URL which acts as the source of files that can be referenced. For example, the base URL `http://my.files.com/scripts` could be configured as an HTTP location for sourcing files such as `http://my.files.com/scripts/perl/installMyDB.pl` or `http://my.files.com/scripts/linux/stopMyDB.sh`.
 - **Agent:** A storage location is similar to the OMS Agent File System option, but can be any host monitored by an Management Agent. The Management Agent can be configured to serve the files located on that host. For example, the directory `/u01/binaries` on the Enterprise Manager Host `my.em.file.server` could be configured as an Agent location for sourcing files such as `/u01/binaries/rpms/myCustomDB.rpm` or `/u01/binaries/templates/myTemplate.tar.gz`
 - **NFS:** An NFS storage location represents an exported file system directory on a server. The server need not be an Enterprise Manager host target. For example, the directory `/exported/scripts` is exported on server `my.file.server` could be configured as an NFS location for sourcing files such as `/exported/scripts/generic/installMyDB.pl` or `/exported/scripts/linux/stopMyDB.sh` once mounted on a target host file system.

These locations require a named credential to be associated which will be used to access the files from the base location on the host through the Management Agent.

- **Specify Source:** You can add additional file storage locations.
 - To add a HTTP location that can be accessed through a HTTP URL, select HTTP from the Storage Type list and click **Add**. In the Add HTTP Location dialog box, enter a unique name and a HTTP location for the

- storage that you want to reference, and click **OK**. A new entry for the storage location is created, with details like Name, Location, and Status.
- To add a Management Agent location that has read-only privileges set on it, select Agent from the Storage Type list and click **Add**.
6. Click **Next**. In the Assembly Details page, you will see a set of predefined deployment profiles. You will also see the structure of the assembly and all the appliances in the assembly. Click **Next**.
 7. On the Review page, click **Save** to save the assembly component. Click **Upload** to upload the assembly component to the Software Library.

9.8.3.1.2 Creating a Template Component

Follow these steps to create a template component:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Software Library**.
2. Select a folder on the Software Library page. From the **Actions** menu, select **Create Entity**, then select **Virtualization**. You can also right click on a folder and select the virtualization option from the context menu.
3. Select the Subtype as **Template**.
4. In the Create Template: Describe page, enter the name and description of the template.
5. Select the Operating System Name, Type, and Virtualization Type. The Virtualization Type can be Para Virtualized, Hardware Virtualized or both. Select **Para Virtualized** if you want use machines that are not enabled for virtualization. Select **Hardware Virtualized** if you want to use machines that are enabled for virtualization.
 - **Para Virtualized:** A virtual machine with a kernel that is recompiled to be made aware of the virtual environment. Runs at near native speed, with memory, disk and network access optimized for maximum performance.
 - **Hardware Virtualized:** A virtual machine with an unmodified guest operating system. It is not recompiled for the virtual environment. There may be substantial performance penalties running as a hardware virtualized guest. Enables Microsoft Windows™ operating system to be run, as well as legacy operating systems. Hardware virtualization is only available on Intel VT or AMD SVM CPUs.
6. Click **Next** to continue. In the Create Template: Upload Files page, select one or more files to be associated with the assembly. You can:
 - **Upload Files:** You can upload files from a storage location in the Software Library. For the Software Library to become usable, at least one upload file location must be configured. Select the **Upload Files** option. In the Specify Destination section, click the **Browse** button in the Upload Location field. The following storage options are supported:
 - **OMS Shared File System:** An OMS Shared File System location is required to be shared (or mounted) across all the Oracle Management Service (OMS) hosts. This option is ideal for UNIX systems.

For single OMS environments, you can configure the Software Library either on the host where the OMS is running or in a shared location, so that it is accessible to all the OMS hosts. For multiple OMS environments,

Oracle recommends that you configure the Software Library in a shared location so that the storage is accessible through NFS mount points to all Oracle Management Servers in the environment

- **OMS Agent File System:** An OMS Agent File System location is a location that is accessible to one of the OMS host's Agent. This option is ideal for OMS installed on Windows hosts. By selecting this option for uploading files, you can avoid sharing a location between all participating OMS hosts.

Credentials must be set before using an OMS Shared File System or OMS Agent File System. For an OMS Shared File System, normal host credential must be set before configuring a storage location. However, for OMS Agent File System location configuration, a credential (preferred or named) has to be specified.

- **Refer Files:** Select this option if you want to use an external file location where the software library files are staged. Referenced File Locations support three storage options:
 - **HTTP:** An HTTP storage location represents a base URL which acts as the source of files that can be referenced. For example, the base URL `http://my.files.com/scripts` could be configured as an HTTP location for sourcing files such as `http://my.files.com/scripts/perl/installMyDB.pl` or `http://my.files.com/scripts/linux/stopMyDB.sh`.
 - **Agent:** A storage location is similar to the OMS Agent File System option, but can be any host monitored by the Management Agent. The Management Agent can be configured to serve the files located on that host. For example, the directory `/u01/binaries` on the Enterprise Manager Host `my.em.file.server` could be configured as an Agent location for sourcing files such as `/u01/binaries/rpms/myCustomDB.rpm` or `/u01/binaries/templates/myTemplate.tar.gz`
 - **NFS:** An NFS storage location represents an exported file system directory on a server. The server need not be an Enterprise Manager host target. For example, the directory `/exported/scripts` is exported on server `my.file.server` could be configured as an NFS location for sourcing files such as `/exported/scripts/generic/installMyDB.pl` or `/exported/scripts/linux/stopMyDB.sh` once mounted on a target host file system.

These locations require a named credential to be associated which will be used to access the files from the base location on the host through the Management Agent.

- **Specify Source:** You can add additional file storage locations.
 - To add a HTTP location that can be accessed through a HTTP URL, select HTTP from the Storage Type list and click **Add**. In the Add HTTP Location dialog box, enter a unique name and a HTTP location for the storage that you want to reference, and click **OK**. A new entry for the storage location is created, with details like Name, Location, and Status.
 - To add the Management Agent location that has read-only privileges set on it, select Agent from the Storage Type list and click **Add** and enter the required information in the Add Agent Location dialog box.
- 7. Click **Next**. In the Review page, review the details of the template and click **Save**. Click **Upload** to upload the template component to the Software Library. The template component will now appear as an entity in the Software Library page.

9.8.3.1.3 Creating an ISO Component

Follow these steps to create an ISO component:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Software Library**.
2. Select a folder on the Software Library page. From the **Actions** menu, select **Create Entity**, then select **Virtualization**. You can also right click on a folder and select the virtualization option from the context menu.
3. Select the Subtype as **ISO**.
4. In the Create ISO: Describe page, enter the name and description of the deployment plan.
5. Click **Next** to continue. In the Create ISO: Upload Files page, select one or more files to be associated with the assembly. You can either:
 - **Upload Files:** You can upload files from a storage location in the Software Library. For Software Library to become usable, at least one upload file location must be configured. Select the **Upload Files** option. In the Specify Destination section, click the **Browse** button in the Upload Location field. The following storage options are supported:

- **OMS Shared File System:** An OMS Shared File System location is required to be shared (or mounted) across all the Oracle Management Service (OMS) hosts. This option is ideal for UNIX systems.

For single OMS environments, you can configure the Software Library either on the host where the OMS is running or in a shared location, so that it is accessible to all the OMS hosts. For multiple OMS environments, Oracle recommends that you configure the Software Library in a shared location so that the storage is accessible through NFS mount points to all Oracle Management Servers in the environment

- **OMS Agent File System:** An OMS Agent File System location is a location that is accessible to one of the OMS host's Agent. This option is ideal for OMS installed on Windows hosts. By selecting this option for uploading files, you can avoid sharing a location between all participating OMS hosts.

Credentials must be set before using an OMS Shared File System or OMS Agent File System. For an OMS Shared File System, normal host credential must set before configuring a storage location. However, for OMS Agent File System location configuration, a credential (preferred or named) has to be specified.

- **Refer Files:** Select this option if you want to use a external file location where the software library files are staged. Referenced File Locations support three storage options:
 - **HTTP:** An HTTP storage location represents a base URL which acts as the source of files that can be referenced. For example, the base URL `http://my.files.com/scripts` could be configured as an HTTP location for sourcing files such as `http://my.files.com/scripts/perl/installMyDB.pl` or `http://my.files.com/scripts/linux/stopMyDB.sh`.
 - **Agent:** A storage location is similar to the OMS Agent File System option, but can be any host monitored by the Management Agent. The

Management Agent can be configured to serve the files located on that host. For example, the directory `/u01/binaries` on the Enterprise Manager Host `my.em.file.server` could be configured as an Agent location for sourcing files such as `/u01/binaries/rpms/myCustomDB.rpm` OR `/u01/binaries/templates/myTemplate.tar.gz`

- **NFS:** An NFS storage location represents an exported file system directory on a server. The server need not be an Enterprise Manager host target. For example, the directory `/exported/scripts` is exported on server `my.file.server` could be configured as an NFS location for sourcing files such as `/exported/scripts/generic/installMyDB.pl` OR `/exported/scripts/linux/stopMyDB.sh` once mounted on a target host file system.

These locations require a named credential to be associated which will be used to access the files from the base location on the host through the Management Agent.

- **Specify Source:** You can add additional file storage locations.
 - To add a HTTP location that can be accessed through a HTTP URL, select HTTP from the Storage Type list and click **Add**. In the Add HTTP Location dialog box, enter a unique name and a HTTP location for the storage that you want to reference, and click **OK**. A new entry for the storage location is created, with details like Name, Location, and Status.
 - To add an NFS shared location, select NFS from the Storage Type list and click **Add**. In the Add NFS Location dialog box, enter a unique name in the Name field for the storage. In NFS server field, provide a fully qualified domain name or the IP address of the hosted machine that has NFS services running on them. In the Location field, provide the shared location or directory path on the NFS server to define a storage location, then click **OK**. A new entry for the storage location is created in the table, with details like Name, Location, and Status.
 - To add a Management Agent location that has read-only privileges set on it, select Agent from the Storage Type list and click **Add**.
- 6. Click **Next**. In the Review page, review the details and click **Save**. Click **Upload** the ISO component to the Software Library. The ISO image will now appear as an entity in the Software Library page.

9.8.3.1.4 Creating a Virtual Disk

Follow these steps to create a virtual disk component:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Software Library**.
2. Select a folder on the Software Library page. From the **Actions** menu, select **Create Entity**, then select **Virtualization**. You can also right click on a folder and select the virtualization option from the context menu.
3. Select the Subtype as **Virtual Disk**.
4. In the Virtual Disk: Describe page, enter the name and description of the deployment plan.
5. Click **Next** to continue. In the Create Virtual Disk: Upload Files page, select one or more files to be associated with the assembly. You can either:

- **Upload Files:** You can upload files from a storage location in the Software Library. For Software Library to become usable, at least one upload file location must be configured. Select the Upload Files option. In the Specify Destination section, click the **Browse** button in the Upload Location field. The following storage options are supported:

- **OMS Shared File System:** An OMS Shared File System location is required to be shared (or mounted) across all the Oracle Management Server (OMS) hosts. This option is ideal for UNIX systems.

For single OMS environments, you can configure the Software Library either on the host where the OMS is running or in a shared location, so that it is accessible to all the OMS hosts. For multiple OMS environments, Oracle recommends that you configure the Software Library in a shared location so that the storage is accessible through NFS mount points to all Oracle Management Servers in the environment

- **OMS Agent File System:** An OMS Agent File System location is a location that is accessible to one of the OMS host's Agent. This option is ideal for OMS installed on Windows hosts. By selecting this option for uploading files, you can avoid sharing a location between all participating OMS hosts.

Credentials must be set before using an OMS Shared File System or OMS Agent File System. For an OMS Shared File System, normal host credential must set before configuring a storage location. However, for OMS Agent File System location configuration, a credential (preferred or named) has to be specified.

- **Refer Files:** Select this option if you want to use an external file location where the software library files are staged. Referenced File Locations support three storage options:
 - **HTTP:** An HTTP storage location represents a base URL which acts as the source of files that can be referenced. For example, the base URL `http://my.files.com/scripts` could be configured as an HTTP location for sourcing files such as `http://my.files.com/scripts/perl/installMyDB.pl` or `http://my.files.com/scripts/linux/stopMyDB.sh`.
 - **Agent:** A storage location is similar to the OMS Agent File System option, but can be any host monitored by the Management Agent. The Agent can be configured to serve the files located on that host. For example, the directory `/u01/binaries` on the Enterprise Manager Host `my.em.file.server` could be configured as an Agent location for sourcing files such as `/u01/binaries/rpms/myCustomDB.rpm` or `/u01/binaries/templates/myTemplate.tar.gz`
 - **NFS:** An NFS storage location represents an exported file system directory on a server. The server need not be an Enterprise Manager host target. For example, the directory `/exported/scripts` is exported on server `my.file.server` could be configured as an NFS location for sourcing files such as `/exported/scripts/generic/installMyDB.pl` or `/exported/scripts/linux/stopMyDB.sh` once mounted on a target host file system.

These locations require a named credential to be associated which will be used to access the files from the base location on the host through the Management Agent.

- **Specify Source:** You can add additional file storage locations.

- To add a HTTP location that can be accessed through a HTTP URL, select HTTP from the Storage Type list and click **Add**. In the Add HTTP Location dialog box, enter a unique name and a HTTP location for the storage that you want to reference, and click **OK**. A new entry for the storage location is created, with details like Name, Location, and Status.
 - To add an Agent location that has read-only privileges set on it, select Agent from the Storage Type list and click **Add**.
6. Click **Next**. In the Review page, review the details of the virtual disk and click **Save**. Click **Upload** to upload the virtual disk component to the Software Library. The virtual disk component will now appear as an entity in the Software Library page.

9.8.4 Provisioning Guest Virtual Machines Using Oracle Virtual Assemblies (OVA)

An assembly is a packaging of a multi-tier application stack, which when deployed results in the creation of a set of related virtual machines representing every tier of the application stack. For example, a Siebel assembly can contain the Siebel mid-tier and a database. It can be deployed such that it creates 2 virtual machines for a 2-node Siebel mid-tier and 1 virtual machine running the database.

The deployment of the assembly is based on the policies/constraints defined in the assembly definition. The initial placement of virtual machines will be based on the storage, network and computational resources. Once an assembly is deployed, additional instances can be added (scale up) or removed (scale down) based on application demand. When an assembly is deployed, an assembly instance is created. An assembly instance is a collection of dependent virtual machines, which is created after an assembly is deployed. The composition of the assembly instance is dynamic in nature, as any subsequent scale-up or scale-down operations will change the membership. An assembly instance contains one or more tiers, each tier further comprising of virtual machines and or tiers.

Follow this process to deploy an assembly and create the virtual machines.

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a Zone, VM Server Pool, or VM Server target and select **Deploy Assembly**.

Figure 9-7 Assembly Deployment: Instance Details

Assembly Deployment : Instance Details Back Step 1 of 5 Next Cancel

Destination
Select the Destination target on which Guest VM(s) is/are to be deployed.

Target core_149
Target Type Oracle VM Zone

Source
Select Source image for deployment
Deployment Plans allows the recording of inputs and using them later while performing deployments using standard source images and values.

Use Deployment Plan
Deployment Plan
Image asmr_oru2

Details
Request Name ASSEMBLY_DEPLOYMEN
Assembly Instance Name assembly_149
 Allow Partial Deployment
TIP If this option is enabled, and the deployment process fails, you must manually delete any newly created Guest VMs.

Assembly Content
Select Tiers/VM Modes in the Assembly that are to be deployed.

Node Name	Start Order	Deploy
OVML_OU6U2_V8R_64_PVM	0	<input checked="" type="checkbox"/>

- On the Assembly Deployment: Instance Details page, specify the following:
 - Target:** Select the server pool on which the guest virtual machines are to be deployed.
 - Source:** You can select either of the following options:
 - Deployment Plan:** If you select the **Use Deployment Plan** check box, you can select a deployment plan (if available) with predefined configurations. The deployment plan will be used when the assembly is deployed. (image is selected automatically when the deployment plan is selected)
 - Image:** The assembly component to be used for this deployment. This can either be a component present in the Software Library, or at an external location. If it is stored in an external location, specify the NFS or HTTP location where the component is stored. For example, `http://myvm_server/assembly` OR `file://myvm_server/assembly`.
 - Details:**
 - Request Name:** This is the name of the assembly deployment request.
 - Assembly Instance Name:** The name to be assigned to the assembly instance.
 - Allow Partial Deployment:** Select this option to enable partial deployment. By default, when a deployment plan fails, all virtual machines that have been created are automatically deleted. But if partial deployment is enabled, virtual machines are not deleted even if the deployment has failed.
 - Assembly Content:** You can disable an assembly tier or a node from being deployed. By default, all nodes and tiers in the selected component are automatically deployed. To disable a node or tier from being deployed, unselect the **Deploy** checkbox in the table.

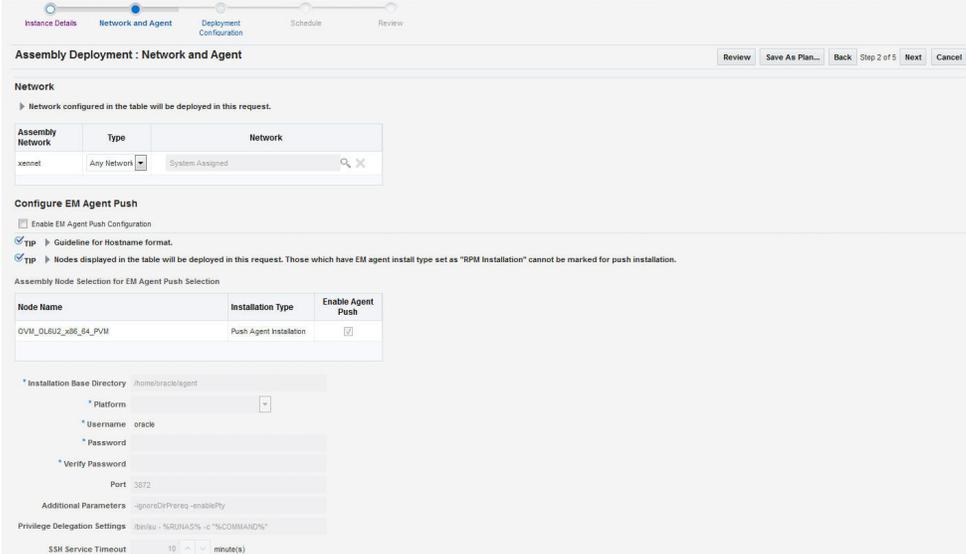
 **Note:**

- A tier or a node can be disabled for deployment if the minimum number of instances for the node or tier is set to **0** in the **ovf** metadata file.
- If you choose to use a deployment plan where a tier or a node has been enabled for deployment, that node or tier cannot be disabled.

4. Click **Next**. In the Deploy Assembly: Network and Agent page, specify the physical public and private networks to be used for the assembly instance. A public network is used for external traffic. In a private network, the guest virtual machines can communicate only within a predefined network set up by the Cloud Administrator.

Assembly network refers to the logical network defined in the OVF metadata file and the network defined here is the actual physical network to which it is to be mapped. If you do not choose to associate the network explicitly, the mappings are automatically assigned.

Figure 9-8 Assembly Deployment: Network and Agent



Assembly Deployment : Network and Agent

Network

Network configured in the table will be deployed in this request.

Assembly Network	Type	Network
xennet	Any Network	System Assigned

Configure EM Agent Push

Enable EM Agent Push Configuration

TIP Guideline for Hostname format.

TIP Nodes displayed in the table will be deployed in this request. Those which have EM agent install type set as "RPM Installation" cannot be marked for push installation.

Assembly Node Selection for EM Agent Push Selection

Node Name	Installation Type	Enable Agent Push
OVF_OLEU2_x86_64_PV#I	Push Agent Installation	<input checked="" type="checkbox"/>

* Installation Base Directory: /home/oracle/agent

* Platform: [Dropdown]

* Username: oracle

* Password: [Text Field]

* Verify Password: [Text Field]

Port: 3872

Additional Parameters: ignoreDirPrereq_enablePty

Privilege Delegation Settings: /bin/sh - %SUNAS% -c "%COMMAND%"

SSH Service Timeout: 10 minutes

5. Click on the **Browse** icon in the Network field. Specify if the network should be allocated by the system or selected manually.
6. If you want to install the Management Agent on an assembly tier (collection of Guest VMs) or selected guest virtual machines, check the **Enable EM Agent Push Configuration** check box. You can then select the tiers and / or the guest virtual machines on which the Management Agent is to be installed using the Agent Push approach in the Assembly Node Selection for the EM Agent Push Selection table.
 - **Node Name:** The name of the assembly tier on which the Management Agent is to be deployed.
 - **Installation Type:** The type of installation which can be Push Agent Installation, No Agent Installation, and RPM Installation.

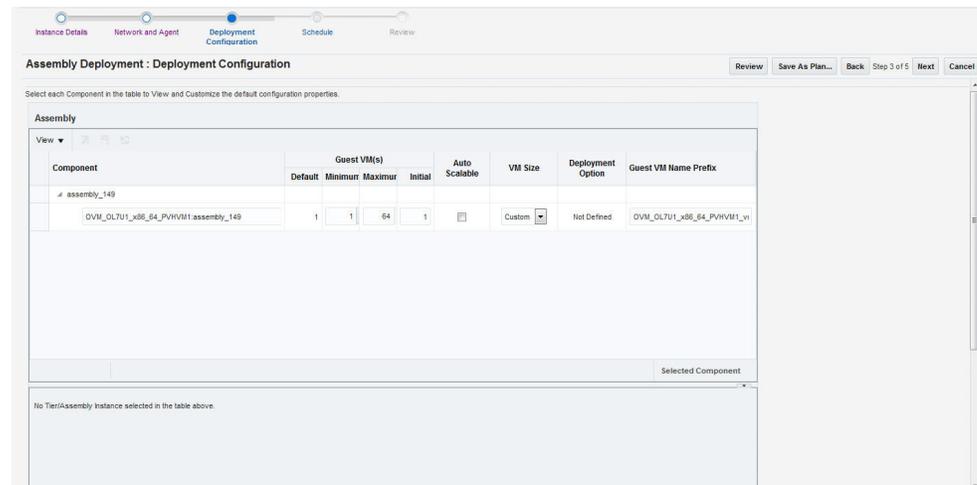
- **Enable Agent Push:** This checkbox is enabled only if the Enable EM Agent Push Configuration checkbox has been selected. Select this checkbox to select the tiers on which the Management Agent is to be installed by way of the Agent Push approach.

In a selected tier, you can also choose the guest virtual machines on which the Management Agent is to be installed.

 **Note:**

- If you select Push Agent Installation, you can specify the guest virtual machines that need to be enabled or disabled in the Miscellaneous tab.
- For tiers that have the Management Agent as a product (as part of the binary package), the **Enable Agent Push** checkbox is disabled and only RPM Installation is available. In this case, you can specify the Management Agent details in the Product Configuration tab of the selected tier.

7. After you have specified the options to configure the Management Agent, enter the following details:
 - **Installation Base Directory:** This is the parent directory on the remote host where the Oracle home of the Management Agent is created.
 - **Platform:** The operating system on which the Management Agent is to be installed.
 - **User:** The name of the Oracle Install user is displayed here.
 - **Port:** The port used by the Management Agent for communication.
 - **Password:** This field is mandatory for PS5 assemblies if the **Enable Agent Push Configuration** checkbox has been selected.
 - **Privilege Delegation Settings:** Run as root.
 - **SSH Service Timeout:** The timeout settings for SSH.
 - **Additional Parameters:** Specify additional parameters to be used during the installation of the Management Agent. This field is pre-populated with the entry `-ignoreDirPrereq -enablePty` to ignore the prerequisite checks during installation.
8. Click **Next** to go to the Deploy Assembly: Deployment Configuration page.

Figure 9-9 Assembly Deployment: Deployment Configuration

The following details are displayed:

- **Component:** The assembly component that is being deployed.
 - **Guest VMs:** The default number of guest virtual machines as specified in the deployment profile appears. Specify the minimum and maximum number of guest virtual machines that are to be created.
 - **Auto Scalable:** Select this check box to indicate that the tier instances can be auto scaled based on their policies.
 - **VM Size:** The amount of memory to be allocated to the guest virtual machine. The virtual server should have sufficient memory to run the guest virtual machine. Otherwise, the guest virtual machine will be created, but will not be started. The size of the guest virtual machine (memory and CPU values).
 - **Deployment Option:** The deployment for this assembly instance.
 - **Guest VM Name Prefix:** This string will be used as a prefix in the guest virtual machine name. When a guest virtual machine is created using the Enterprise Manager, guest virtual machine names will be prefixed by the virtual machine name prefix you provide here and a number.
9. Select the assembly component to view and customize the default configuration properties.
 - **Product Configuration:** This tab shows the properties of the products in the assembly. You can choose to view All Properties or Required Properties. For each property, the default value and the current value is displayed. Select a property to modify the value if applicable.
 - **Miscellaneous:** You can create one or more anti-affinity groups. An anti-affinity group is a group of virtual machines cannot run on the same server. Click **Add** and enter the Group Name and select the guest virtual machines that are to be part of the anti-affinity group.
 10. Click a row in the table to select the tier you want to configure. There are 3 tabs that can be configured for each tier in the assembly: **Guest VM Configuration**, **Product Configuration**, and **Miscellaneous**.

11. Let us look at the first tab: **Guest VM Configuration**. This tab allows you to modify the resource configuration parameters for all guest virtual machine instances of the selected assembly tier. The following parameters can be configured:

- **Guest VM Configuration:**

- **Enable High Availability:** If you want to enable high availability for this guest virtual machine, select this check box. If this option is enabled, the virtual server is shut down or restarted, the guest virtual machine is migrated to or restarted on another virtual server.

 **Note:**

High availability must be enabled both on the virtual server pool and on the guest virtual machine. If it is not enabled on both, high availability is disabled.

- **CPU Scheduling Priority:** Specify the priority of a guest virtual machine to access the physical CPUs, while competing with other guest virtual machines on the same virtual server. The higher the priority, the higher the stake of the guest virtual machine in claiming CPU cycles.
- **CPU Scheduling Cap (%):** Restricts the amount of physical CPU that a guest virtual machine can use. Use this to constrain guest virtual machine resource allocation.
- **Root Password:** Specify the operating system root password to log in to the guest virtual machine once it is up and running.
- **Keymap:** The keyboard mapping that will be used by the guest virtual machine being cloned.
- **Tags:** Specify one or more tags for the virtual machine. These tags are used to logical group the virtual machines and can be used to search for one or more virtual machines that meet a certain criteria.
- **Memory (in MB):** The amount of memory to be allocated to the guest virtual machine. The virtual server should have sufficient memory to run the guest virtual machine. Otherwise, the guest virtual machine will be created, but will not be started.
- **CPUs:** The number of CPU cores to assign to this guest virtual machine. This will show up as virtual CPU (VCPU) configuration parameter for the guest virtual machine.
- **Disk:** Specify the storage type. You can use the **Default** type as specified by the server pool or select **Override**. If you select **Override**, you must specify the Storage QoS and click the **Search** icon in the Storage field to specify the Storage Type. In the Storage Type window, specify the following:

Clone Target Type: This can be Repository or Storage Array.

Clone Target: If you select Repository, select the storage location where the disk is to be created. If you select Storage Array, specify the type, which can be SAN or iSCSI storage server.

Clone Type: This can be Sparse or Non-Sparse Copy. A sparse copy is a disk image file of a physical disk, taking up only the amount of space

actually in use; not the full specified disk size. A non-sparse copy is a disk image file of a physical disk, taking up the space equivalent to the full specified disk size, including empty blocks.

- **Disk:** Every guest virtual machine is created with at least one disk. You can specify additional disks and their sizes. These disks will be added to the guest virtual machine. After the guest virtual machine is created, log in to the guest virtual machine and reformat and mount the additional disks. Click **Add** to add a storage device (disk).

Specify the name of the hard disk, its size, and QoS Priority Class. You can enable the disk I/O priority by setting an appropriate QoS Priority Class. The priority class ranges from 0 to 7. The priority class 0 has the highest priority, and 7 the lowest. Select the Shared Disk check box to share this disk between multiple guest virtual machines. You can enable the disk I/O priority by setting an appropriate QoS Priority Class. The priority class ranges from 0 to 7. The priority class 0 has the highest priority, and 7 the lowest.

- **NIC:** Specify the network interfaces for this guest virtual machine. The minimum value is 1 and maximum is 8. Click **Add** to add a network interface and specify the following details:

Name: Enter a name for the network resource.

Network: Assembly Network / Backend network.

Network Type: Specify if the network type is Internet Routable, Non Internet Routable, or a predefined set of IP addresses.

IP Assignment: Select the protocol to be used to assign the IP address. This can be DHCP, Network Profile, or None.

The configuration parameters you specify here will be applied to all the guest virtual machine instances of the selected node. If you want to specify a different configuration for a guest virtual machine instance, click the Guest VM Instances option. In the Deployment Configuration: GuestVM Instance page, you can select a guest virtual machine instance from the View list and specify configuration parameters for that instance.

12. The next tab is Product Configuration. This tab shows the properties of the products in the tier. You can choose to view **All Properties** or **Required Properties**. For each property, the default value and the current value is displayed. Select a property to modify the value if applicable.
13. The next tab is the Miscellaneous tab.
 - **Miscellaneous:** Specify the following details:
 - **Log File Location:** Specify the directory in which the log files are to be stored.
 - **Timeout Settings:** Specify the timeout settings for the Product Configuration and Network Configuration. The default value is 60 minutes and this value can be modified for each Oracle VM Manager target. The timeout value specifies how long Enterprise Manager should wait for either Product Configuration or Network Configuration to be completed before proceeding with the assembly deployment.
1. If a tier has more than one Guest VM Instance, you can configure each Guest VM Instance separately. Select the tier for each Guest VM Instance has to be separately configured. Click the **Guest VM Instances** link on the top right corner of the lower region. The Deployment Configuration: Configure Guest VM Instance

page appears. Click **Edit VM Name** to modify the name of the Guest VM Instance, specify a new name and click **OK**. You can modify the configuration of the Guest VM and click **Continue** to return to the Assembly Deployment: Deployment Configuration page.

2. Click **Next**. In the Assembly Deployment: Schedule page, specify the Start and End Date for the assembly deployment. The Start Date is the date on which the request is being submitted and the End Date is the date on which the assembly deployment instances are retired. Click **Next**.
3. Click **Next**. The Assembly Deployment: Review page appears. Review the details entered so far. You can save as a plan that can be used later. Click **Save as Plan**, specify a name, and description for the plan. Select the folder in which the deployment plan is to be saved and click **OK**. Note that the deployment plan is stored as a software library component but can be created only through this procedure or by a Cloud API that generates a default deployment plan for an assembly.
4. Click **Submit** to submit the job. From the **Enterprise** menu, select **Job**, then select **Activity** to view the Job Activity page. This page shows the details of the submitted job. You can click on the Name link to view more details.

To view details of the deployment request, from the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Request Dashboard**. See [Viewing the Infrastructure Request Dashboard](#) for details.

 **Note:**

To ensure that Enterprise Manager has been configured correctly to push a 12c Management Agent automatically on the guest virtual machines when the assembly deployed, you must change the agentpush entry in the `<OMS_ORACLE_HOME>/sysman/prov/agentpush/agentpush.properties` file as follows:

From: `oracle.sysman.prov.agentpush.pdpShellOutEnabled=true`

To: `oracle.sysman.prov.agentpush.pdpShellOutEnabled=false`

After this change has been made, you must restart the Oracle Management Service.

9.8.5 Provisioning a Guest Virtual Machine Using Oracle VM Templates

You can create one or more virtual machines by deploying a template. The deployment of the template is based on the constraints defined while the template was created. Typically, a template can contain an operating system, basic configuration (number of CPUs, memory, disk size), and preinstalled applications. The initial placement of virtual machines will be based on the storage, network and computational resources. Once a template is deployed, additional instances can be added (scale up) or removed (scale down) based on application demand.

 **Note:**

Enterprise Manager supports deployment of legacy Oracle VM 2.2 style Templates. These templates are available in the .tgz file format. Guest virtual machines are created when these templates are deployed, but you need to manually login to the VNC console of the newly created virtual machines to complete the network and product configuration. Also, unlike for Oracle Virtual Assemblies (.ova file format), Enterprise Manager does not automatically push the Management Agent for Oracle VM 2.2 Templates (.tgz file format).

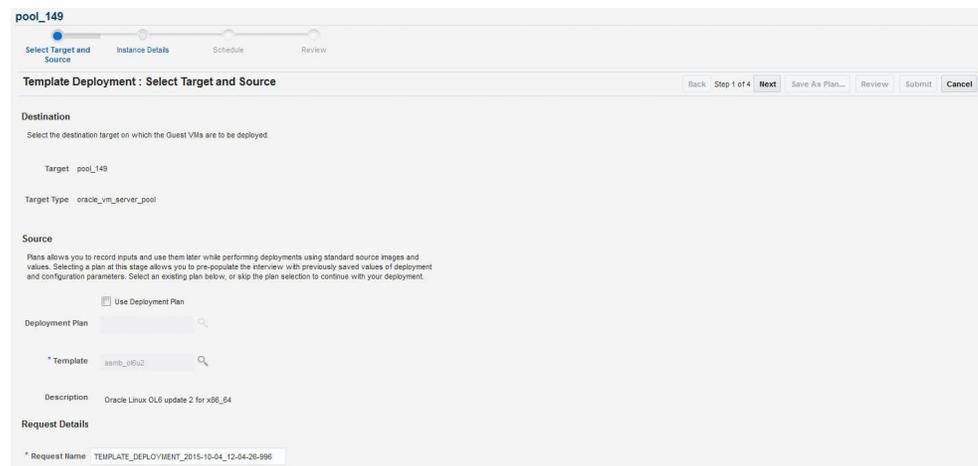
Prerequisites

- Enterprise Manager Cloud Control is set up to manage the cloud environment.
- The template is available to the zone and you have sufficient privileges to deploy it. There are sufficient resources available in the zone for successful deployment.

Follow this process to deploy a template:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a virtual server pool target and select **Deploy Template**.

Figure 9-10 Template Deployment - Select Target and Source



3. On the Select Target and Source page, select the following:
 - Select the target machine on which the guest virtual machine is to be created.
 - In the Source section, you can select either of the following options:
 - **Deployment Plan:** If you select the **Use Deployment Plan** check box, you can select a deployment plan (if available) with predefined configurations. Selecting a plan at this stage allows you to prepopulate the interview with previously saved values of deployment and configuration parameters.
 - **Template:** The template component to be used for this deployment. This can either be a component present in the Software Library, or at an external location. If it is stored in an external location, specify the NFS or HTTP location

where the component is stored. For example, `http://myvm_server/template` or `file://myvm_server/template`.

4. Click **Next**. The Template Deployment: Instance Details page appears.

Figure 9-11 Template Deployment - Instance Details

The screenshot displays the 'Template Deployment: Instance Details' page for a pool named 'pool_149'. The page is divided into several sections:

- Guest VM:**
 - 'Guest VM(s)': 1 (with a 'Configure Each Guest VM Instance' link).
 - 'Guest VM Naming': 'Generate Guest VM Names using prefix' is selected.
 - 'Guest VM Name': 'OVN_0L7U1_x08_64_PV'.
- General:**
 - 'Enable High Availability': (unchecked).
 - 'Start VM After Creation': (checked).
 - 'CPU Scheduling Priority': Medium.
 - 'CPU Scheduling Cap (%)': High.
 - 'Keymap': en-us (English, United State).
 - 'Tags': (empty field).
- VM Size:**
 - 'VM Size': Custom.
 - 'Max. Memory (in MB)': 2048.
 - 'Number of CPU Cores': 2.
 - 'Memory (in MB)': 2048.
 - 'Number of CPU Cores': 2.
- Disk:**
 - 'Storage Type': Default.
 - Table:

Disk Name	Size	Type	Disk QoS
8bd0d5120b94...	12288	Local	Not Enabled
- NIC:**
 - Table:

Name	Network Type	Network	MAC Address
eth0	Any Network Ty...	System Assigned	

This page contains the following sections:

- **Guest VM**
 - **Guest VM:** Number of guest virtual machines to be deployed. Click **Configure Each Guest VM Instance** if you want to configure each guest virtual machine instance individually.
 - **Guest VM Naming:** You can choose either of the following options:
 - Generate Guest VM Names Using Prefix:** This string will be used as a prefix in the guest virtual machine name. When a guest virtual machine is created using the Enterprise Manager, guest virtual machine names will be prefixed by the virtual machine name prefix you provide here and a number.
 - Upload Guest VM Names from File:** If you select this option, you can Browse and upload a file with user defined guest virtual machine names. The guest virtual machine name cannot contain any special characters.
- **General Configuration**
 - **Enable High Availability:** If you want to enable high availability for this guest virtual machine, select this check box. If this option is enabled, the virtual server is shut down or restarted, the guest virtual machine is migrated to or restarted on another virtual server.

 **Note:**

High availability must be enabled both on the virtual server pool and on the guest virtual machine. If it is not enabled on both, high availability is disabled.

- **Start VM After Creation:** Specify whether the guest virtual machine should be started automatically after it is created.
- **CPU Scheduling Priority:** Specify the priority of a guest virtual machine to access the physical CPUs, while competing with other guest virtual machines on the same virtual server. Higher the priority, higher is the stake of the guest virtual machine in claiming CPU cycles.
- **CPU Scheduling Cap (%):** Restricts the amount of physical CPU that a guest virtual machine can use. Use this to constrain guest virtual machine resource allocation.
- **Keymap:** The keyboard mapping that will be used by the guest virtual machine being cloned.
- **Tags:** Specify one or more tags for the virtual machine. These tags are used to logical group the virtual machines and can be used to search for one or more virtual machines that meet a certain criteria.
- **Memory (in MB):** The amount of memory to be allocated to the guest virtual machine. The virtual server should have sufficient memory to run the guest virtual machine. Otherwise, the guest virtual machine will be created, but will not be started.
- **CPU Cores:** The number of CPU cores to assign to this guest virtual machine. This will show up as virtual CPU (VCPU) configuration parameter for the guest virtual machine.
- **VM Size:** The amount of memory to be allocated to the guest virtual machine. The virtual server should have sufficient memory to run the guest virtual machine. Otherwise, the guest virtual machine will be created, but will not be started. The size of the guest virtual machine (memory and CPU values). Select the VM Size which can be Custom or Medium. If you select Custom, specify the Memory size and the number of CPUs.
- **NIC:** Specify the network interfaces for this guest virtual machine. The minimum value is 1 and maximum is 8. Click **Add** to add a network interface and specify the following details:
 - **Name:** Enter a name for the network resource.
 - **Network Type:** Specify if the network type is Internet Routable, Non Internet Routable, or a predefined set of IP addresses.
 - **IP Assignment:** Select the protocol to be used to assign the IP address.
- **Disk:**

The list of available disks appears in the Disk section. Click **Add** to add an additional storage. In the Add Storage Device window, enter the name of the disk and its size. Indicate if it is a shared disk and specify the priority of a guest virtual machine to access the physical CPUs, while competing with other guest virtual machines on the same virtual server. Higher the priority, higher is the stake of the guest virtual machine in claiming CPU cycles.

5. Click **Next** and **Review** the details entered so far.
6. **Review** the details entered so far. You can save as a plan that can be used later. Click **Save as Plan**, specify a name, and description for the plan. Select the folder in which the deployment plan is to be saved and click **OK**. If you do not wish to save the deployment procedure, click **Submit** to submit the job. From the Enterprise menu, select **Job**, then select **Activity** to view the Job Activity page. This page shows the details of the submitted job. You can click on the Name link to view more details.

To view details of the deployment request, from the Enterprise menu, select Cloud, then select Oracle VM Infrastructure Request Dashboard. See [Viewing the Infrastructure Request Dashboard](#) for details.

9.8.6 Provisioning a Guest Virtual Machine Using an ISO Image

ISO images are imported into Enterprise Manager from installation media. You can create one or more virtual machines by deploying an ISO image.

Prerequisites

- Enterprise Manager Cloud Control is set up to manage the cloud environment.
- The ISO image is available to the zone and you have sufficient privileges to deploy the image. There are sufficient resources available in the zone for successful deployment.
- The Domain Type of the guest virtual machine being deployed must be set to HVM (hardware virtualized).

Follow this process to deploy an ISO image:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Right click on a virtual server pool target and select **Deploy ISO**.
3. On the Select Target and Source page, the server pool target on which the ISO image is to be deployed appears. In the Destination section, you can select either of the following:
 - **Deployment Plan:** If you select the Use Deployment Plan check box, you can select a deployment plan (if available) with predefined configurations. Selecting a plan at this stage allows you to pre-populate the interview with previously saved values of deployment and configuration parameters.
 - **ISO:** The ISO image to be used for this deployment. This can either be a component present in the Software Library, or at an external location. If it is stored in an external location, specify the NFS or HTTP location where the component is stored. For example, `http://myvm_server/image` or `file://myvm_server/image`.
4. Enter the name of the request and click **Next** to continue. The ISO Deployment: Deployment Configuration page appears.
5. This page contains the following sections:
 - **Guest VM**
 - **Guest VM:** Number of guest virtual machines to be deployed. Click **Configure Each Guest VM Instance** if you want to configure each guest virtual machine instance individually.

- **Guest VM Naming:** You can choose either of the following options:

Generate Guest VM Names Using Prefix: This string will be used as a prefix in the guest virtual machine name. When a guest virtual machine is created using the Enterprise Manager, guest virtual machine names will be prefixed by the virtual machine name prefix you provide here and a number.

Upload Guest VM Names from File: If you select this option, you can Browse and upload a file with user defined guest virtual machine names. The guest virtual machine name cannot contain any special characters.

- **General Configuration**

- **Enable High Availability:** If you want to enable high availability for this guest virtual machine, select this check box. If this option is enabled, the virtual server is shut down or restarted, the guest virtual machine is migrated to or restarted on another virtual server.

 **Note:**

High availability must be enabled both on the virtual server pool and on the guest virtual machine. If it is not enabled on both, high availability is disabled.

- **Start VM After Creation:** Specify whether the guest virtual machine should be started automatically after it is created.
- **CPU Scheduling Priority:** Specify the priority of a guest virtual machine to access the physical CPUs, while competing with other guest virtual machines on the same virtual server. Higher the priority, higher is the stake of the guest virtual machine in claiming CPU cycles.
- **CPU Scheduling Cap (%):** Restricts the amount of physical CPU that a guest virtual machine can use. Use this to constrain guest virtual machine resource allocation.
- **VM Size:** The amount of memory to be allocated to the guest virtual machine. The virtual server should have sufficient memory to run the guest virtual machine. Otherwise, the guest virtual machine will be created, but will not be started. The size of the guest virtual machine (memory and CPU values). Select the VM Size which can be Custom or Medium. If you select Custom, specify the Memory size and the number of CPUs.
- **NIC:** Specify the network interfaces for this guest virtual machine. The minimum value is 1 and maximum is 8. Click **Add** to add a network interface and specify the following details:
 - **Name:** Enter a name for the network resource.
 - **Network Type:** Specify if the network type is Internet Routable, Non Internet Routable, or a predefined set of IP addresses.
 - **IP Assignment:** Select the protocol to be used to assign the IP address.
- **Disk:**

The list of available disks appears in the Disk section. Click **Add** to add an additional storage. In the Add Storage Device window, enter the name of the disk and its size. Indicate if it is a shared disk and specify the priority of a

guest virtual machine to access the physical CPUs, while competing with other guest virtual machines on the same virtual server. Higher the priority, higher is the stake of the guest virtual machine in claiming CPU cycles.

6. Click **Next**. In the Schedule page, specify when the ISO image is to be deployed and click **Next**.
7. **Review** the details entered so far. You can save as a plan that can be used later. Click **Save as Plan**, specify a name, and description for the plan. Select the folder in which the deployment plan is to be saved and click **OK**. If you do not wish to save the deployment procedure, click **Submit** to submit the plan and complete the process.

9.8.7 Creating PXE Bootable Guest Virtual Machines

One of the key requirements of provisioning is the hardware server's ability to boot over the network instead of a diskette or CD-ROM. There are several ways computers can boot over a network, and Preboot Execution Environment (PXE) is one of them. PXE is an open industry standard supported by a number of hardware and software vendors. A detailed document on PXE specification can be found at <http://www.pix.net/software/pxeboot/archive/pxespec.pdf>.

You can create a network bootable (PXE boot) virtual machine that has the minimum configuration information, then start the virtual machine through Preboot Execution Environment (PXE) over a network later to install the guest operating system.

Prerequisites

- Enterprise Manager Cloud Control is set up to manage the cloud environment.
- There are sufficient resources available in the zone for successful deployment.

Follow this process to deploy an ISO image:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Home**.
2. Select a Virtual Server Pool target. Select **Deploy PXE** from the Virtual Server Pool menu.
3. On the Select Target and Source page, select the following:
 - Select the target machine on which the guest virtual machines are to be deployed.
 - Select the deployment plan to be used while creating PXE bootable guest virtual machines. The Deployment Plan contains pre-configured values and configuration parameters. This is an optional field.
4. Click **Next**. In the General Configuration page, enter the following details:
 - Name of the guest virtual machine to be deployed. If you are deploying more than one guest virtual machine, you can use a prefix or upload a file with user defined guest virtual machine names.
 - Number of guest virtual machines to be deployed. Click **Configure Each Guest VM Instance** if you want to configure each guest virtual machine instance individually.
 - Select the VM Size which can be Custom or Medium. If you select Custom, specify the Memory size and the number of CPUs.

- Specify the priority of a guest virtual machine to access the physical CPUs, while competing with other guest virtual machines on the same virtual server. Higher the priority, higher is the stake of the guest virtual machine in claiming CPU cycles.
 - Specify the cap to restrict the amount of physical CPU that a guest virtual machine can use.
 - CPU Cores: The number of CPU cores to assign to this guest virtual machine. This will show up as virtual CPU (VCPU) configuration parameter for the guest virtual machine.
 - Keymap: The keyboard mapping to be used for the guest virtual machine.
 - Memory (in MB): The amount of memory to be allocated to the guest virtual machine. The virtual server should have sufficient memory to run the guest virtual machine. Otherwise, the guest virtual machine will be created, but will not be started.
 - CPU Cores: The number of CPU cores to assign to this guest virtual machine. This will show up as virtual CPU (VCPU) configuration parameter for the guest virtual machine.
 - In the NIC Configuration section, you can specify the number of virtual network interfaces for this guest virtual machine. The minimum value is 1 and the maximum value is 8. You can add one or more network interfaces or edit existing ones.
 - Enterprise Manager Cloud Control provides a VNC console to the newly created guest virtual machine. This is the VNC password to access the VNC console.
 - Select a Domain Type for the virtual machine:
 - **xen_hvm** (hardware virtualization, or fully virtualized): Enables you to select an ISO file from which to create the virtual machine.
 - **xen_pvm** (para-virtualized): Enables you to select a location for the mounted ISO file from which to create the virtual machine. Before you create the virtual machine using the paravirtualized method, mount the ISO file on an NFS share, or HTTP or FTP server. The ISO file must be available in the relevant repository.
 - **xen_hvm_pv_drivers**: Identical to **xen_hvm** but with additional paravirtualized drivers for improved performance of the virtual machine. This Domain Type is used to run Windows guest operating systems with an acceptable performance level.
 - Select the **Enable High Availability** option if you want the guest virtual machine to run automatically on a different virtual server if the earlier virtual server shuts down.
 - Select the **Start VM After Creation** check box to indicate whether the machine should automatically be started after it is created.
 - The list of available disks appears in the Disk section. Click **Add** to add an additional storage.
5. Click **Next**. In the Schedule page, specify when the PXE bootable guest virtual machines are to be created and click **Next**.
 6. Review the details entered so far and click **Submit** to create the PXE bootable guest virtual machines.

9.9 Viewing the Infrastructure Request Dashboard

The SSA Administrator can use the Request Dashboard to track the status of requests and reservations. The SSA administrator can view the requests across all zones for all users. The requests the SSA user can view depends on his zone and his instance level privileges.

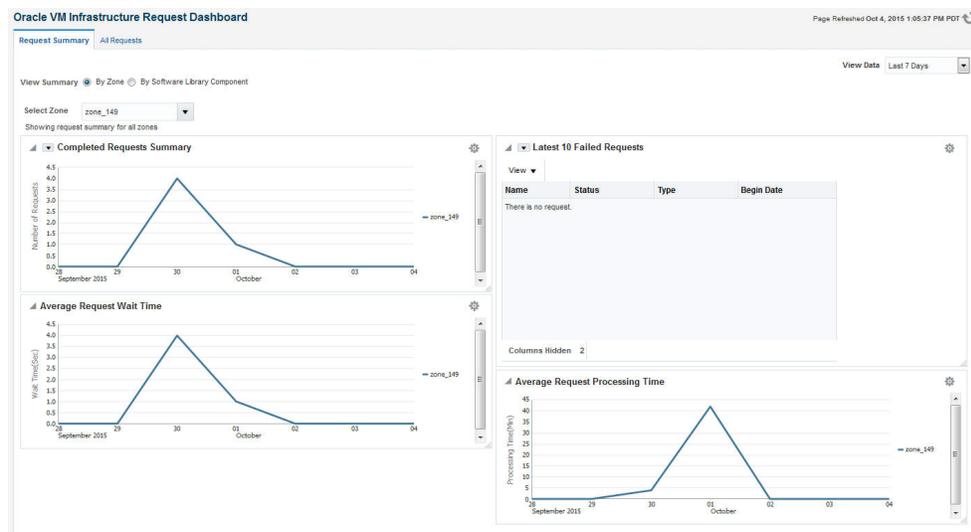
Prerequisites

- Enterprise Manager Cloud Control is set up to manage the cloud environment.
- Appropriate self service users have been defined in the LDAP directory.
- Requests and reservations for resources have been submitted.

To view the Infrastructure Request Dashboard, follow these steps:

1. From the Enterprise menu, select **Cloud**, then select **Oracle VM Infrastructure Request Dashboard**. The Infrastructure Cloud Requests Dashboard appears.

Figure 9-12 Infrastructure Requests Dashboard



2. The following charts are displayed:
 - Latest 10 Failed and Pending Requests
 - Oldest 10 Running Requests
 - Request Summary - Failed, Successful, and Partially Successful Requests
 - Average Request Wait Time (Zone)
 - Average Request Wait Time (Assemblies and Templates)
 - Average Request Processing Time (Zone)
 - Average Request Processing Time (Assemblies and Templates)
3. Click on the **View All Requests** tab to go to the All Cloud Requests page.
4. In this page, you can search for one of the following:

- Request Name: The name of the request.
 - Request Type: The type of request that you want to view. This can be Assembly Deployment, Template Deployment, ISO Deployment, PXE Deployment, Clone Guest VM, Update Guest VM.
 - Requesting Application: The application making the request. You can view only Self Service requests from this dashboard.
 - Status: The status of the request such as Successful, Canceled, Scheduled, Error Ending, and so on.
5. For each request type you select, you can view the Request Name, Request Type, Created By, Status, Begin Date, End Date, Memory, CPU, VMs, and so on. You can also select a request and click **Delete** to remove the request.
 6. Click on a **Request Name** link to drill down to the Request Details page.

9.9.1 Request Details Page

The Request Details page shows the details of the selected request. The name of the request, type, the OVM Manager associated with the request, status, date on which it was created, and so on are displayed.

- **General:** This section displays the name of the request, request type, target name, and other details.
- **Deployment:** This section shows the name of the requests and the targets that have been deployed. Click on request link to drill down to the Job Details page. Click on a target link to drill down to the Home page of the target.

9.9.2 Viewing the Assembly / Tier Instance Page

To view the Home page for the assembly or tier instance, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Oracle VM Infrastructure Request Dashboard**.
2. The Infrastructure Request Dashboard page appears. Click the **All Requests** link in the Requests table.
3. In the All Requests page, click on an assembly deployment request name in the table. The Assembly Deployment page appears. Click on the **Deployment** tab. The assembly instance that has been deployed is displayed.
4. Click on the Assembly Instance link. The following page appears.

Figure 9-13 Assembly Instance

The screenshot displays the Oracle Assembly Instance dashboard with the following sections:

- General:** Assembly: OVM_OL7U1_x86_64_PVHVM.ova(0.1), Deployed On: zone_149, Total Guest VMs: 1, Date of Creation: 2015-09-30 02:52:10, Owner: GK_CLOUD_ADMIN, Discovered Target, Deployed On Exalogic: No.
- Status:** 2 Members, 1 n/a. Most Affected Members (Last 24 Hours) table:

Name	Type	Key Member	Status	Availability (%)
OVM_OL7U1_x86_64_PVHVM_Lvm0@ol7u1_wrhnet			↑	100
- Overview of Incidents and Problems:** Incidents updated in last 7 days: 0. Breakdown of incidents updated in the last 7 days table:

Category	Incidents
Availability	0
Performance	0
Security	0
Others	0

 Problems: Total Open: 0.
- Members:** Table with columns: Name, Type, Status.

Name	Type	Status
ol7u1_wrhnet	Oracle Assembly Instance	n/a
OVM_OL7U1_x86_64_PVHVM1@ol7u1_wrhnet	Oracle Tier Instance	n/a
OVM_OL7U1_x86_64_PVHVM_Lvm0@ol7u1_wrhnet	Oracle Guest VM	↑
- Anti-Affinity Groups:** Table with columns: Name, Selected Guest VMs. No data to display.
- Requests:** Table with columns: Name, Request Type, Target, Status, Submitted Date.

Name	Request Type	Target	Status	Submitted Date
ASSEMBLY_DE...	Assembly Deplo...	zone_149	Successful	2015-09-

- **General:** This section shows the name of the assembly, the target on which it was deployed, the total number of Guest VMs, the date on which it was created, and the owner of this assembly instance.
- **Status:** The status of the most affected members over the last 24 hours is displayed. Click on a Name link to drill down to the target Home page.
- **Issues Overview:** Shows the various incidents and policy violations that have occurred in the last 24 hours.
- **Affinity Relations:** The rules that have been defined for the assembly or tier are displayed here. For example, you can define rules to specify whether two guest VMs can exist together on the same server or server pool, rules to ensure that two guest VMs must exist on the same server, and so on.
- **Members:** The members in this instance, their status, and the installed software is displayed.
- **Requests:** The name of the request specified during deployment. Click on the link to navigate to the Deployment page.

Part IV

Setting Up and Using Oracle Compute

This section contains the following chapters:

- [Meeting the Prerequisites](#)
- [Using Oracle Compute](#)

10

Meeting the Prerequisites

This chapter lists the prerequisites that must be met before you can discover and manage an Oracle Public Cloud Machine target in Enterprise Manager. It covers the following sections:

- [Verifying or Installing the Virtual Infrastructure \(VI\) Plug-in](#)
- [Understanding Users in Oracle Public Cloud Machine](#)

10.1 Verifying or Installing the Virtual Infrastructure (VI) Plug-in

By default, the Virtual Infrastructure (VI) plug-in is included with your installation of Enterprise Manager. To verify that this plug-in is installed:

1. From the **Setup** menu, select **Extensibility** and then **Plug-ins**.
2. Expand the **Servers, Storage and Network** folder.
3. Verify that the minimum Oracle Virtual Infrastructure plug-in version 13.2.1.0.0 appears in the list.

If the plug-in is not installed, then you must download and install it. See [Deploying the Enterprise Manager for Virtual Infrastructure Plug-in](#) for details [Deploying the Enterprise Manager for Virtual Infrastructure Plug-in](#).

10.1.1 Deploying the Enterprise Manager for Virtual Infrastructure Plug-in

Much of the functionality available in Enterprise Manager Cloud Control is made available through plug-ins. As its name implies, a plug-in is a component or module that can be plugged into an existing Enterprise Manager installation to extend its management and monitoring capabilities.

You can deploy the Enterprise Manager for Virtual Infrastructure plug-in by using one of the following methods:

- If you have not yet installed Enterprise Manager, or have not yet upgraded to the latest Enterprise Manager release, you can deploy the plug-ins as part of the installation or upgrade process. You will select the **Advanced Install** mode and in the Select Plug-ins screen, select the plug-ins that you wish to install.
- If you already have Enterprise Manager Cloud Control 13c installed, you must download the needed plug-ins to the Software Library. You can then deploy the plug-ins to your Oracle Management Service (OMS).

See the [Enterprise Manager Cloud Control Administrator's Guide](#) for instructions on downloading and deploying the plug-ins.

10.2 Understanding Users in Oracle Public Cloud Machine

The following types of users are available:

- **Cloud Administrator:** A cloud administrator can create other cloud administrators. The cloud administrators are created in the /cloud tenant namespace. The cloud administrator is responsible for maintaining the entire rack and has access to all tenants.
- **Tenant Administrator:** A default tenant administrator for a tenant is automatically created when a tenant is created. Cloud administrators can create other tenant administrators for a tenant depending on the requirements to manage the tenant users and the resources. Tenant Administrators have access to only those in which they are created.
- **Tenant User:** Cloud Administrators or Tenant Administrators can create Tenant Users. Tenant users have privileged access only to a particular tenant.

10.2.1 Cloud Administrator Tasks

The primary task of a cloud administrator is to setup the infrastructure for Oracle Compute Cloud Service and manage the overall cloud infrastructure. The infrastructure for self service consists of setting up the following:

- **Setting Up Tenants:** Tenants are entities that are allocated with quotas of the system resources. Tenant users are authorized to use the compute, storage, and memory resources of the tenant. You can create tenants with default or custom quota. Tenants created with default quota can use the resources without any limit. Or you can define CPU, memory, and storage resources for the tenant in the custom quota option. You can opt to oversubscribe the tenant CPU by defining the fraction in which the CPU resource must be oversubscribed.
- **Setting Up Networks:** When you create tenants, two security domains, namely Public and Private Security Domain are created. The public security domain is for deployment of networks for communication between the Compute nodes and entities external to the Oracle Public Cloud Machine. The private security domain is for deployment of networks for communication within the tenant. As a cloud administrator, you must set up public networks and service networks for use by the instances.
- **Setting Up Users:** By default, a tenant administrator is created when a tenant is created. Cloud administrator can grant tenant administrator role to some of the tenant users. Tenant Administrators can create Tenant Users, manage the users, instances, and private networks for instances.
- **Setting Up Tenant Resources:** Manage the tenant resources and decide upon vCPU oversubscription. Manage the tenant quota as the requirement for the resources increases and decreases.
- **Monitoring Hardware Components:** Monitor the hardware components such as compute node status, temperature, and hardware resources to ensure that they are maintained for cloud resources.
- **Monitoring Cloud Resources:** Monitor the cloud infrastructure resources for any incidents and ensure that the tenants have enough resources to host the instances.

10.2.2 Tenant Administrator Tasks

A default tenant administrator is created automatically when a tenant is created. The cloud administrator can create more tenant administrators as required to manage the tenant. The tasks of a tenant administrator include:

- Creating tenant users
- Creating IPoIB tenant networks
- Uploading templates
- Managing storage volumes

The tenant administrator has all the permissions as that of a tenant user to create and manage orchestrations, and instances. For detailed information on the tenant administrator operations, refer to the *Oracle Public Cloud Machine Using Oracle Compute Cloud Service on OPCM*.

10.2.3 Tenant User Tasks

The tenant user has privileged access to the tenancy to which the user belongs and can perform the following tasks:

- Provision resources
- Request orchestrations

For detailed information on the tenant user operations, refer to the Using Oracle Compute Cloud Service on Oracle Public Cloud Machine Guide.

10.3 Creating Users and Roles

You must create Tenant Administrator and Tenant User roles and map them to an OPCM target. To create an Enterprise Manager user role, follow these steps:

1. Log into Enterprise Manager as SYSMAN (or any user with the EM_CLOUD_ADMINISTRATOR role)
2. From the **Setup** menu, select **Security**, and then select **Roles**.
3. Click **Create** on the Roles page.
4. In the Create Role: Properties page, enter the name and description for the Tenant Administrator or Tenant User role and click **Next**.
5. Select the EM_SSA_USER role from the available roles list and move to the selected roles list.

At this point, you can choose to directly navigate to the last page, complete the role creation process and use the Role Mappings page (see [Mapping Enterprise Manager User Roles to Oracle Compute User Roles](#) for details) to assign the Oracle Compute Site Target Privileges.

Alternatively, you can click **Next** and continue with the rest of the steps in the wizard to assign the Oracle Compute Site Target Privileges manually.

6. In the Target Privileges step, click **Add** at the bottom left corner.

7. In the Search and Add Targets window, select the **Target Type** as Oracle Compute Site.
The Oracle Compute Sites that have been registered in Enterprise Manager are listed.
8. Select the Oracle Compute site to which you want to map the user role and click **Select**.
9. Select **Advanced Privilege Settings** option in the bottom of the Target Privileges page.
10. For each Oracle Compute site target selected, edit the **Aggregate Privileges**.
11. Select the following actions:

Table 10-1 Users and Roles

Tenant Administrator	Tenant User
User Management	N/A
Image Management	Image Management
Instance Management	Instance Management

12. For the EM_SSA_USER role, select **Manage Target Privilege Grants** and unselect the **View** option.
13. Click **Next** in the following steps of the wizard and click **Finish** to create the Enterprise Manager role.

10.4 Mapping Enterprise Manager User Roles to Oracle Compute User Roles

You can associate an Enterprise Manager role with an Oracle Compute role. To define a role mapping, follow these steps:

1. Log in as SYSMAN (or any user with the EM_CLOUD_ADMINISTRATOR role).
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. From the **Oracle Cloud** menu, select **Getting Started**, then click on the **Setup** link next to the Infrastructure - Oracle Compute service family in the left panel.
4. Click **Role Mappings**. In the Role Mappings page, from the drop down list, select the Oracle Compute Site in which the role mappings are to be defined.
5. Click **Create**. In the Create Role Mapping window, select the Enterprise Manager role and the Oracle Compute role with which it should be associated and click **Add** to create the role mapping.

Note:

You must match your Tenant administrator EM role with the Tenant Administrator Compute role, and your Tenant User EM role with your Tenant User Compute role.

11

Discovering an Oracle Public Cloud Machine

This chapter describes the process for discovering and adding the Oracle Public Cloud Machine as a target that can be monitored and managed by Enterprise Manager. It also covers the steps for adding (or registering) the associated Oracle Compute Site as a target.

- [Deploying a Shared Management Agent to the Privileged Control VMs](#)
- [Discovering the Oracle Public Cloud Machine Target](#)
- [Registering the Oracle Compute Site](#)
- [Discovering the Oracle Cloud Service Infrastructure Targets](#)
- [What You See After Discovery](#)

11.1 Deploying a Shared Management Agent to the Privileged Control VMs

Before you can discover the Oracle Public Cloud Machine target, you must deploy a shared Management Agent to the two privileged control VMs installed by default in the Oracle Public Cloud Machine rack. These VMs have access to the Ethernet admin network, and are needed by Management Agents monitoring hardware targets.

- [Deploying a Management Agent to the First Privileged Control VM](#)
- [Deploying the Management Agent to the Second Privileged Control VM](#)

11.1.1 Deploying a Management Agent to the First Privileged Control VM

To deploy a Management Agent to the first privileged control VM in the Oracle Public Cloud Machine rack:

1. Log into Oracle Compute node 2 as the oracleadmin user.
2. Identify the first control VM. To do so, run the following command:

```
discover -f shellvars |grep controlvm |grep Eth-admin
```

Note:

The control VM information is also provided when running the PCMA tool.

The command will return the IP addresses of the two privileged control VMs; for example:

```
rack_0_control_vm_controlvm1_Eth-admin=10.000.000.01
rack_0_control_vm_controlvm2_Eth-admin=10.000.000.02
```

After getting the IP Address, resolve and get the host name.

 **Note:**

If the control VM2 on your rack is not accessible from outside the rack using this IP, then you can use the Ethernet-over-InfiniBand (EoIB) management IP/ hostname. To get this information:

```
discover -f shellvars |grep controlvm |grep EoIB-oms
rack_0_control_vm_controlvm1_EoIB-oms=10.000.000.01
rack_0_control_vm_controlvm2_EoIB-oms=10.000.000.02
```

3. Log in to the first privileged control VM as the root user.
4. From the **Setup** menu in Enterprise Manager, select **Add Target**, then **Add Targets Manually**.
5. On the Add Targets Manually page, select the **Add Host Targets** option, then click **Add Host** as shown in
6. On the Add Target page, click **Add** ().
7. Enter the host name of the first privileged control VM (for example, host1.example.com) and select **Linux x86-64** from the Platform drop-down menu.
Click **Next**.
8. On the Installation Details page, enter the following agent installation details:
 - a. **Installation Base Directory:** Enter `/opt/emagent` in this field. This directory is the location where you want to install the Management Agent. Make sure that the directory you specify here is empty. If the directory does not exist, then the wizard will create it automatically.
 - b. **Instance Directory:** Enter `/opt/emagent_instance/` in this field. This directory is the location where you want to store Management Agent-related configuration files. You must deploy shared Agents using this Management Agent, then make sure the directory location you enter is **not** a shared location.
 - c. **Named Credential:** Select the named credential for the oracle user. The permissions of the oracle user were set earlier when you ran the visudo command in step 4. This named credential is used for connecting from the OMS to the control VM using SSH and for installing the Management Agent.

If you need to create a new credential, follow the instructions in [Setting a New Named Credential](#).
 - d. **Privileged Delegation Setting:** By default, this field is pre-populated with the settings to allow for the named credential to use the sudo command. If this field is blank, then enter the following information in the field:

```
/usr/bin/sudo -u %RUNAS% %COMMAND%
```

- e. **Port:** By default, 3872 is pre-filled in text input box. If this field is blank, then enter **3872**. This value is the port on which the Management Agent can communicate with the OMS.

Click **Next**.

9. On the Review page, verify that the information you have entered is correct, as shown in figure 11–3 below:

Click **Deploy Agent**.

10. On the Add Host page, Enterprise Manager performs the necessary tasks to deploy the agent, including a set of prerequisite checks.

Click **Refresh** to refresh the page details. The Agent Details area shows the success or failure of each step. Any failure or other error message regarding agent deployment is displayed.

Allow for approximately 5 minutes to complete the deployment.

11. Click **Done**. The Add Targets Manually page will reload to *Deploying the Management Agent to the Second Privileged Control VM*.
12. After you have added the host to the shared again and clicked **Done**, the Add Targets Manually page will reload to proceed with the next step to *Discovering the Oracle Public Cloud Machine Target*.

Note:

Additional Configuration

- Run the following commands on the Management Agent monitoring the Oracle Compute targets:

```
<AGENT_INST_HOME>/bin/emctl setproperty agent -allow_new -  
name _disableLoadDPFromCache -value true
```

```
<AGENT_INST_HOME>/bin/emctl setproperty agent -allow_new -  
name agentJavaDefines -value "-Xmx512M -  
XX:MaxPermSize=96M"
```

Restart the Management Agent.

11.1.1.1 Setting a New Named Credential

Select the named credential that can be used for connecting to the remote hosts using SSH and installing the Management Agent. On the Installation Details, click the plus () to add a new named credential for the oracle user. In the Create new Named Credential pop-up, enter the following information:

1. **User Name:** This user name is set on the host. This user name will require the appropriate permissions in order to run the root scripts.
2. **Password/Confirm Password:** Enter the password of the user name for the host. Enter the password again to confirm.
3. **Run Privilege:** Make sure that **None** is the value.

4. **Save As:** Select this option and enter a name to save the credentials. This name will appear as the Named Credential in Enterprise Manager. Click **OK** to save the new named credential.

11.1.2 Deploying the Management Agent to the Second Privileged Control VM

After you have deployed the Management Agent to the first privileged control VM, you will deploy it to the second.

1. After you click **Done** from the Add Host page, the Add Target Manually page displays. You can also access this page from the Setup menu. Select **Add Target**, then **Add Targets Manually**.
2. On the Add Targets Manually page, select the **Add Host Targets** option, then click **Add Host**.
3. On the Add Target page, click **Add** ()
4. Enter the host name of the second privileged control VM (for example, host1.example.com) and select **Linux x86-64** from the Platform drop-down menu.

Click **Next**.

5. On the Installation Details page, expand the Deployment Type section (Figure 11–5) and select **Add Host to Shared Agent**. This will install a new Management Agent using a shared Oracle home of an existing Management Agent. This option is enabled only when all the hosts selected on the Hosts and Platform screens belong to the same platform.

Then, click the search icon () to select a target.

6. On the Installation Details page, enter the following agent installation details:
 - a. **Oracle Home:** Once you select the target, the default location (/opt/emagent) of the shared Management Agent is populated in this field.
 - b. **Instance Directory:** Enter /opt/emagent_instance in this field. This is the directory location where the Management Agent-related configuration files will be stored. You must deploy Shared Agents using this Management Agent, then make sure the directory location you enter is not a shared location.
 - c. **Named Credential:** Select the named credential that you created in [Setting a New Named Credential](#). This named credential is used for connecting from the OMS to the control VM using SSH and for installing the Management Agent.
 - d. **Privileged Delegation Setting:** By default, this field is pre-populated with the settings to allow for the named credential to use the sudo command. If this field is blank, then enter the following information in the field:

```
/usr/bin/sudo -u %RUNAS% %COMMAND%
```

- e. **Port:** By default, 3872 is pre-filled in text input box. If this field is blank, then enter **3872**. This value is the port on which the Management Agent can communicate with the OMS.

Click **Next**.

7. On the Review page, verify that the information you have entered is correct. Click **Deploy Agent**.
8. On the Add Host page, Enterprise Manager performs the necessary tasks to deploy the agent, including a set of prerequisite checks.

Click **Refresh** to refresh the page details. The Agent Details area shows the success or failure of each step. Any failure or other error message regarding agent deployment is displayed.

Allow for approximately 5 minutes to complete the deployment.
9. After you have added the host to the shared again and clicked **Done**, the Add Targets Manually page will reload to proceed with the next step to [Discovering the Oracle Public Cloud Machine Target](#).

11.2 Discovering the Oracle Public Cloud Machine Target

After the Management Agent has been deployed, the next step is to discover the Oracle Public Cloud Machine target:

1. After you click **Done** from the Add Host page, the Add Target Manually page displays. You can also access this page from the **Setup** menu. Select **Add Target**, then **Add Targets Manually**.
2. On the Add Targets Manually page, select the **Add Targets Using Guided Process** option. Select **Oracle Public Cloud Machine** from Target Types, and click **Add Using Guided Process**.
3. On the Discovery Inputs page, enter the following information:
 - **Name:** Enter a name for the Oracle Public Cloud Machine target.
 - **Agent:** Select the Management Agent to use for the Oracle Public Cloud Machine discovery. Click the search icon () to search for the Management Agent. Select a target name from the search pop-up and click **Select**.

Note:

Select the Management Agent on the privileged control VM here.

- **SSH Authentication** (optional): Enter an SSH key passphrase for the oracle Management Agent user. This is used to enable Enterprise Manager to collect monitoring data.
- **SNMP Authentication:** Enter the community name configured for SNMP communication. This will be used to collect the monitoring data from switches and PDUs.
- **PDU Monitoring:** Select the Discover and monitor Power Distribution Units checkbox to enable monitoring of these units.
- **Ethernet Switch Monitoring:** If you select the Discover and monitor ethernet switch checkbox, you must provide the iOS ethernet switch credentials. This will be used to collect monitoring data from the ethernet switch.

Click **Next**.

4. Enterprise Manager begins the finding targets process. Allow for approximately 5 minutes to complete.
5. In the Targets and Agents Assignment area on the Discovery Review page, the Monitoring Agent value is pre-populated. You can enter a Backup Monitoring Agent location.
6. Click **Submit**. Enterprise Manager begins the saving targets process. Allow for approximately 5 minutes to complete.

A confirmation pop-up will appear once the targets are saved. Click **Close** to continue to the next step for [Registering the Oracle Compute Site](#).

11.3 Registering the Oracle Compute Site

To register the Oracle Compute Site, follow these steps:

1. From the **Setup** menu, select **Add Target**, then **Add Targets Manually**.
2. On the Add Targets Manually page, select **Add Non-Host Targets Using Guided Process**, then select **Oracle Compute Site** from the Type menu.
3. Click **Add Using Guided Process** and continue with the steps below.
4. On the Register Oracle Compute Site page, add the following **Site Details** information:
 - **Target Name:** The name to be used for the Oracle Compute site being created.
 - **Monitoring Agent:** Select your local OMS agent.
 - **Service Manager Endpoint URL:** Enter the PSM URL provided by Oracle Cloud Operations.
Leave the other fields blank.
5. Add the following **Credentials** information:
 - **Endpoint URL:** Enter the Compute API endpoint provided by Oracle Cloud Operations (`https://<endpoint URL IP>`) This is the URL to which you submit HTTP requests or commands. To discover the Oracle Compute target, you must ensure that the Oracle Compute Site security certificate has been added to the Monitoring Agent keystore.
 - **User Name:** The user name (`/cloud/monitor`) required to access the Endpoint URL.
 - **Password:** The password required to access the Endpoint URL. Click **Test Connection** to test the site credentials.
6. In the **Other Credentials** information (*optional*):
 - **SNMP V3 Credentials:** Leave this field blank.
7. Click **Continue**. The Oracle Compute site is discovered along with the targets in the following hierarchy:
 - Oracle Compute Cluster
 - Oracle Server
 - Oracle Virtual Platform
 - Oracle VM Instance

- Oracle Compute Orchestration

To view the Oracle Compute Site Home page after the Oracle Compute site has been discovered, from the **Targets** menu, select **All Targets**, then click on the Oracle Compute Site target under **Groups, Systems, and Services**. The newly added Oracle Compute Site will now be listed.

11.3.1 Importing the Site Certificate

When using Enterprise Manager and a Secure Socket Layer (SSL) protocol to discover and monitor the Oracle Compute Site, the Secure Certificate must be imported before a secure communication link can be established. The Management Agent (running on the first privileged control VM) maintains a Java Keystore (JKS) truststore containing certificates of Certification Authorities (CAs) that it can trust or self signed certificates when establishing a secure connection.

The JKS Agent truststore is available at the following location:

```
$ORACLE_HOME/sysman/config/montrust/AgentTrust.jks
```

where ORACLE_HOME is the Management Agent instance home.

To download the certificate (CA Certificate or Root Certificate), follow these steps:

1. Open a browser window and enter the site URL in the address window.
2. Expand by clicking on **I Understand the Risk** and click **Add Exception**.
3. Under **Certificate Status** click the **View** button on the right hand side.
4. Click the **Details** tab. In the left hand side bottom column, click **Export**.
5. Save the certificate at your desired location with desired filename.

After downloading the certificate, you must update the Agent truststore (AgentTrust.jks). If a signed certificate from a self signed CA is being used on the Oracle Compute site, then the Root CA certificate for this must be added to JKS Agent truststore so that Management Agent can discover and monitor these Oracle Compute sites. To update the AgentTrust.jks, enter the following command:

```
emctl secure add_trust_cert_to_jks -password <password> -  
trust_certs_loc <loc> -alias <alias>
```

where:

- `password` is the password for the AgentTrust.jks (if not specified, you will be prompted for the password at the command line)
- `trust_certs_loc` is the location of the certificate file to be imported.
- `alias` is the alias of the certificate to be imported.

For example: `emctl secure add_trust_cert_to_jks -password welcome -
trust_certs_loc /home/asaral/certs/emdev1_nimbula.crt -alias emdev1_nimbula`

11.4 Discovering the Oracle Cloud Service Infrastructure Targets

Prerequisites

- The Management Agent must be deployed to the Privileged Control VM1 as the Master Agent.
- The Oracle Public Cloud Machine target (See [Discovering the Oracle Public Cloud Machine Target](#)) and the Oracle Compute Site (See [Registering the Oracle Compute Site](#)) must have been discovered.

To discover Oracle Cloud Service Targets running on an Oracle Public Cloud Machine rack, follow these steps:

1. Login to the First Privileged Control VM as oracle user and change directory to `<Agent Base directory in Control VM1>/plugins/oracle.sysman.vi.discovery.plugin_13.2.1.0.0/scripts/exalogicDiscovery`.
2. Edit the `AGENT_HOME` environment variable and specify the location of the home directory of agent running in Control VM1.
3. Open the `properties/em_discover.properties` file and specify the location of the private and public key files (`PRIVATE_KEY_FILE`, `PUBLIC_KEY_FILE`). The private and public keys must be the same as the keys provided during Private/public keys must be same as that of the keys provided while setting up the PCMA tool.
4. Open the `properties/inputparams.properties` file and edit the passwords for the administration users.

 **Note:**

It is recommended that the passwords are stored as blank values in the `inputparams.properties` file.

5. Modify the Oracle Management Service URL property in the `inputparams.properties` file (property: `EMCLI_OMS_URL`).
6. Login as oracle user and run the `opcm_targets_discovery.sh` script which does the following:
 - Downloads and sets up `emcli` in the control vm1.
 - Extracts relevant rack and target information using Exaware Discovery. The results are found in the `properties/em_discover.properties` file.
 - Deploys the Management Agent to all other control VMs as the shared agent.
 - Discovers all OPC services (TAS DC, TAS Central, SIM, PSM, Internal OTD, External OTD and Infra DBs).
 - Sets up a job (`VIDECOUPLEDPROV_AUTO%`) in Enterprise Manager for SDI decoupled provisioning. The scheduled job discovers the ICS instances created in Oracle Public Cloud as ICS and ICS POD targets.
7. Discovery of the some of the Oracle Cloud Services targets may fail if the `adminuri` returned from the Exaware discovery is incorrect. This can be corrected by editing the `properties/em_discover.properties` file as follows:
 - Edit the `properties/em_discover.properties` file and correct the `wls_psm_direct_ext_adminuri`, `tas_central_direct_ext_adminuri`, `tas_dc_direct_ext_adminuri`, and `wls_sim_direct_ext_adminuri` properties.
 - Run the `opcm_targets_discovery.sh` script again.

8. Navigate to the Oracle Public Cloud Machine System page to verify if all the discovered services appear on the page.

 **Note:**

You can run the script again if required. When run for the second time, the script will skip the services that have already been discovered.

11.5 What You See After Discovery

After your Oracle Public Cloud Machine is installed and configured using ECU, the state of the machine is as follows:

- Compute Nodes

All nodes are re-imaged with the OPCM Base Image, or Oracle Linux for nodes tagged as physical. The first two compute nodes are assigned as dedicated management nodes. All the control instances are provisioned on these two nodes as part of the cloud services installation.

- Infrastructure Components

All discovered services appear under the Control Infrastructure tab of the OPCM System and also on the home page of the OPCM Control System:

Services appear only after the instructions in [Discovering the Oracle Cloud Service Infrastructure Targets](#) are performed successfully.

The following components are installed:

- Infrastructure Database
- Shared IdM
- TAS
- Cloud UI
- SDI
- Grill
- Load Balancing tier
- ICS Management VM
- PSM
- Network
 - An Ethernet management network connects to the interfaces of the compute nodes, switching components, and storage nodes.
 - InfiniBand partitions configured for six infrastructure service networks created by ECU.
 - Network Time Protocol (NTP) is configured on all hardware components.
- Storage
 - DNS configured on storage nodes.
- Log Viewer

The following log sources are integrated into this unified log viewer:

- Logs from various WebLogic service domains.
- Grill server logs located at `/var/log/chef.log`.

For more details about the Log Viewer, see **Enabling Log Viewer**.

- Control infrastructure
 - The following tenants are created for cloud infrastructure and services:

Tenants	Description
control-ibe	N/A
control-inf	The tenant in which the Privileged Control and Infrastructure Database instances run.
control-lbi	N/A
cloud	The cloud administrator and cloud monitor are created in this tenant to manage the entire cloud resources and Oracle Compute Cloud Services.
internalLB	For hosting instances that handle service requests between infrastructure components of the cloud services
mcs	N/A

- The following control instances are created and running on the two management nodes:

Control Instances	Description
cipc-1 and cipc-2	Two Privileged Control Instances. The instance hosts the OMS agent, Dataguard Observer, DNS forwarder, and ELLC tools.
cidb-1 and cidb-2	Two Control Infrastructure Database Instances. The database is deployed for the requirements of the Infrastructure Components.
cipsm-1 and cipsm-2	Control instances for Oracle Cloud PaaS Engine for Java Cloud Service
cilbi-1 and cilbi-2	Control Infrastructure Load Balancer Internal. The internal Load Balancer is used for internal communication between the services within Oracle Public Cloud Machine.
cilbe-1 and cilbe-2	Control Infrastructure Load Balancer External. The external Load Balancer is used for communication outside the Oracle Public Cloud Machine rack.
cigrill-1	Control Infrastructure Grill Server. Grill provides the core tooling and infrastructure related to the instantiation and configuration of service instances and the lifecycle of those instances.

Control Instances	Description
cisim-iam-1, cisim-ohs-2, cisimoid-1	Control Infrastructure SIM. The instances host the Shared IdM that provides identification, authentication, and authorization of all infrastructure components for platform services.
cisdi-1	Control Infrastructure SDI. The instance hosts the components to assist in the management of the cloud services.
csics-1	Messaging Cloud Service

12

Setting Up the Infrastructure for Oracle Compute

This chapter describes how to set up and configure an Oracle Compute Site for self service users in Enterprise Manager. It contains the following sections:

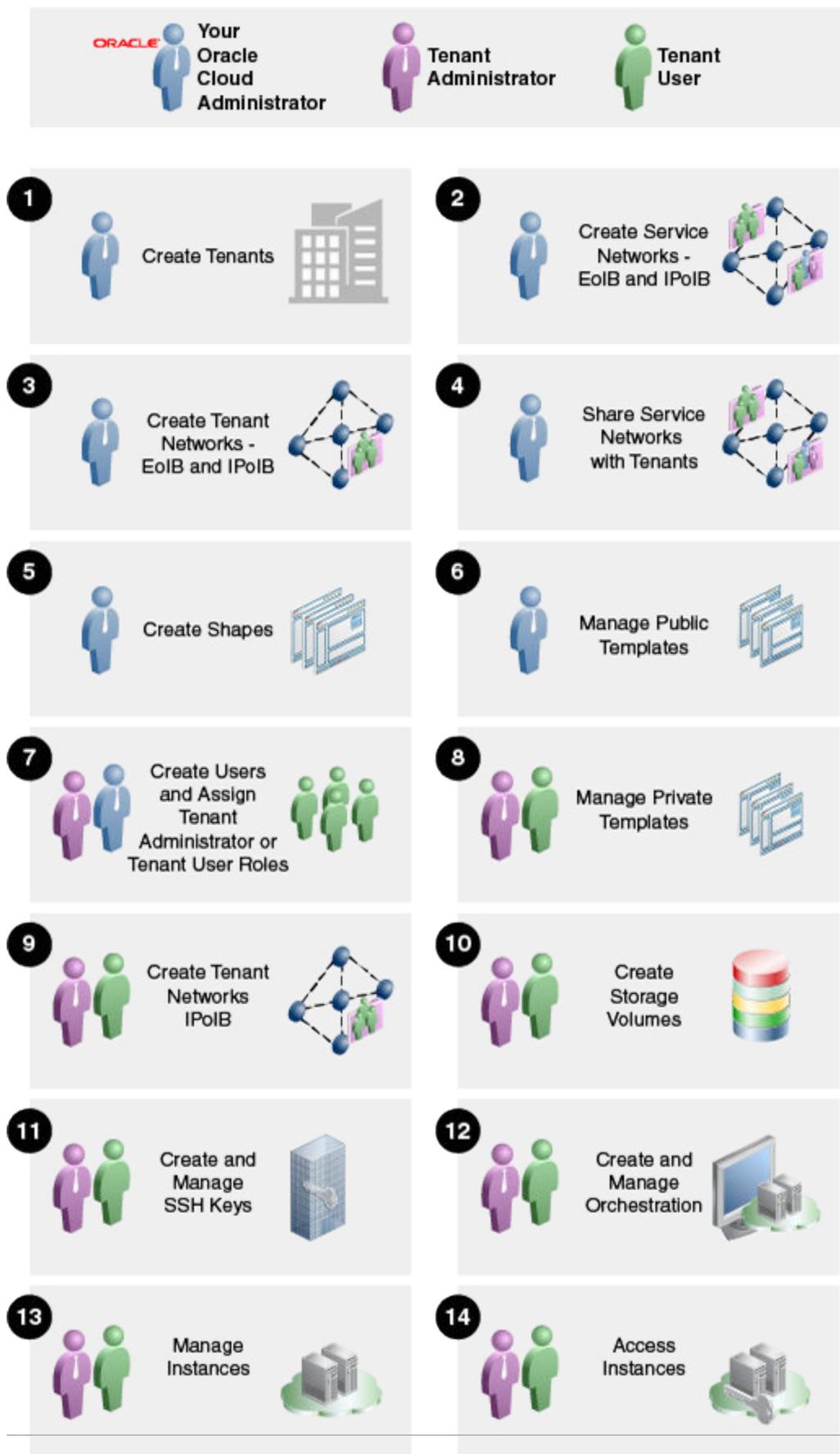
- [Oracle Compute Cloud Service Workflow](#)
- [Terminology](#)
- [Setting Up the Oracle Compute Site](#)
- [Creating a Tenant](#)
- [Introduction to Networks](#)
- [Creating a Storage Volume](#)
- [Creating a Shape](#)
- [Defining Quotas](#)
- [Managing Oracle Compute Templates](#)
- [Creating an Orchestration Template](#)
- [Configuring Request Settings](#)

12.1 Oracle Compute Cloud Service Workflow

Oracle Compute Cloud Service is the infrastructure service provided with the Oracle Public Cloud Machine. You must follow the workflow to set up the cloud infrastructure and provide the services to your users.

A typical workflow for setting up the infrastructure and using the Compute Cloud Service is shown below:

Figure 12-1 Oracle Compute Cloud Service Workflow



12.2 Terminology

The following table lists some important Oracle Compute terms and definitions.

Table 12-1 Terms and Definitions

Term	Definition
Node	A node is a physical server (Hypervisor) in an Oracle Compute cluster.
Cluster	The Oracle Compute infrastructure is modeled around server pools or cluster. A cluster can contain three or more nodes.
Site	A site is a location running one or more Oracle Compute clusters.
Instance	An instance is a guest virtual machine.
Tenant	Every client organization or customer that participates in Multi-Tenancy enabled server or service as consumer is called as Tenant. A tenant is the context within which system objects such as users and machine images are created. A tenant can be an organization, a department within an organization, or even a single person. At least one tenant needs to be created per site.
User	A user is an entity that can make requests. Each user is associated with one tenant. User names are unique for a tenancy, and tenant names are unique within the system as a whole.
Shape	A virtual machine's shape refers to a definition of the number of CPUs assigned to the virtual machine, the amount of RAM made available to it, and the relative amount of I/O it processes. Shapes are used to characterize combinations of these resources so that end-users can specify resource requirements for placement of their instances.
Image List	An image list is a list of machine images. Machine images can be added to an image list to create a versioned selection of related machine images recording the versions of the image over its lifetime.
Infiniband	InfiniBand offers point-to-point bidirectional serial links intended for the connection of processors with high-speed peripherals such as disks. On top of the point to point capabilities, InfiniBand also offers multicast operations. In an Oracle Public Cloud Machine, all the components are inter-connected by Infiniband network.

Table 12-1 (Cont.) Terms and Definitions

Term	Definition
Oracle Compute Template	An Oracle Compute template is a copy of a virtual hard disk with an installed operating system used to launch a virtual machine instance. It is a whole disk image (including a partition table and a kernel) stored in a tar archive, compressed with gzip.
Orchestration	Orchestration is the automated management of your system components for high availability, monitoring, and persistence. An orchestration is comprised of a set of identical VMs, storage, and other required components that are tied together to create into a single, manageable collection.
Launch Plan	A launch plan defines the configuration settings for one or more VM instances.

12.3 Setting Up the Oracle Compute Site

After you have discovered the Oracle Compute site as an Enterprise Manager target, you must configure it for self service users by defining tenants, configuring shapes, quota, templates, and so on.

To set up the Oracle Compute site, follow these steps:

1. Create tenant administrators and users. See [Creating a Tenant](#) for details.
2. Configure shapes. See [Creating a Shape](#) for details.
3. Define quotas. See [Defining Quotas](#) for details.
4. Upload Oracle Compute templates. See [Managing Oracle Compute Templates](#) for details.
5. Set up an orchestration template. See [Creating an Orchestration Template](#) for details.
6. Configure request settings. See [Configuring Request Settings](#) for details.

12.3.1 Creating a Tenant

A tenant (or a customer) is the context or framework within which system objects such as users and templates are created. In an enterprise, a tenant can be an organization, a department within an organization, or even a single person. Each Oracle Compute site must contain at least one tenant.

Before you create a tenant, you must do the following:

- Estimate the resource quotas to be allocated for the tenant
- Identify the tenant users and tenant administrators

The quota for the vCPUs, memory, and storage resources can be defined during the tenant creation process. If the tenant does not have the required resources, then the Tenant Users cannot create and run instances in the tenant.

The cloud administrator can create one or more tenants in a selected Oracle Compute site. Each tenant can be associated with one or more tenant administrators and tenant users.

To create a tenant, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. From the **Oracle Cloud** menu, select **Getting Started**, then click on the **Setup** link next to the Infrastructure - Oracle Compute service family in the left panel.
4. Click **Tenancy Management** and select an Oracle Compute Site from the drop down list. Tenants that have already been created for the selected site are listed.
5. Click **Create**. The Create Tenant window appears.

Figure 12-2 Create Tenant

Add image Create Tenant

6. Enter the name, password, description, and e-mail address of the tenant administrator.
7. In the Enable Access to Service Networks region, select one or all of the following:

- OMS Service Name: Select this option to enable VM instances created by the tenant to be monitored by Enterprise Manager.
 - Instance Storage Service Network: Select this option to enable VM instances created by the tenant to access the ZFS storage pool.
 - Service Manager Network: Select this option to enable access to the Platform Service Manager network.
8. In the Quota region, you can select:
- Default: If you select this option, the default quota will be assigned to this tenancy.
 - Custom: If you select this option, you can define a custom quota that will be available to the tenancy. You can specify the following criteria:
 - Templates: Specify the number of images and the size.
 - Oracle Compute: Specify the number of VM instances, number of vCPUs, and total memory that will be available to all users in this tenancy. You can also set quotas on the number of instances allowed by specifying restrictions which can be comma separated key value pairs. For example, if you specify `os_license=20`, the number of VM instances launched off machine images with `os_license` as attribute key cannot be greater than 20.
 - Storage: Specify the storage volume size that will be available to all users in this tenancy.
 - Network: Specify the number of IP addresses that can be reserved from the VNET that is available to the tenancy.
9. Click **Create**. The newly created tenant will appear on the Tenancy Management page and the quota created for the tenant will appear on the User Management: Quotas page. See Defining the Quota for details. After the tenant has been created, the cloud administrator or the self service administrator can create tenant administrators and tenant users under each tenancy.

12.3.2 Creating a Shape

A shape refers to the characteristics of a virtual machine that include the number of CPUs assigned to the virtual machine, the amount of RAM available, and the relative number of I/O processes. Each shape is combination of these characteristics and can be used by tenant users while requesting virtual machines. While defining a shape, you need to consider the capacity of your machines and the anticipated workload of the instances.

To create a shape, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. From the **Oracle Cloud** menu, select **Getting Started**, then click on the **Setup** link next to the Infrastructure - Oracle Compute service family in the left panel.
4. Click **Shape Management** and select an Oracle Compute Site from the drop down list. Shapes that have already been created for the selected site are listed.

Figure 12-3 Creating a Shape

Name	CPU	Memory(MB)
oc4m	16	122880
oc7	32	122880
oc3m	8	61440
oc5m	32	245760
oc3	2	7680
oc5	8	30720
oc4	4	15360
ikoShape	2	8096
small_dup	1	4096

5. Click **Create**. The Create Compute Machine window appears. Enter the name, description, number of CPUs, memory, and the relative number of IO processes that can be allocated to the virtual machine.
6. Click **Create**. The newly created shape will appear on the Shape Management page.

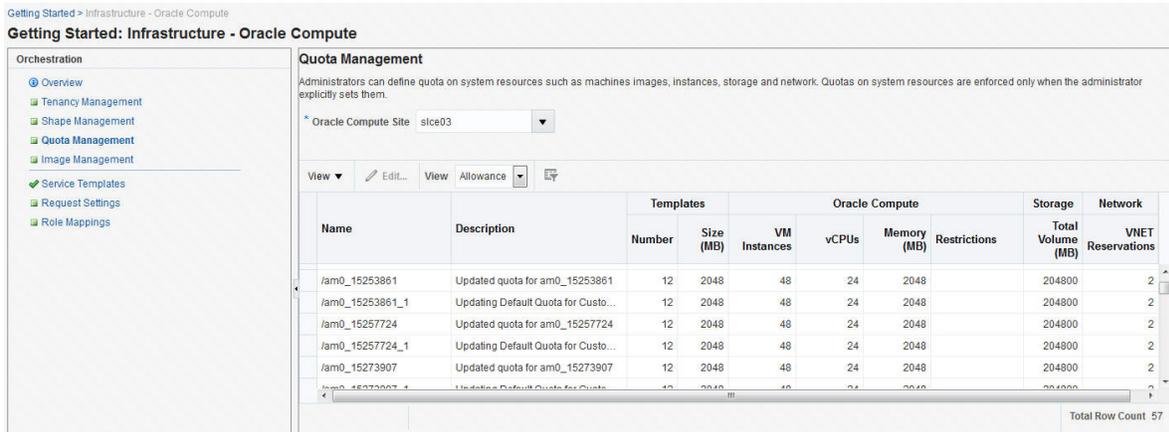
12.3.3 Defining Quotas

The administrator (cloud administrator or self service administrator) can define quota on system resources such as templates, instances, storage and networks. Quotas on system resources are enforced only when the administrator explicitly sets them. When a tenant is created, if a custom quota setting is not defined, the default quota setting is assigned to the tenant. Any quota settings defined while creating the tenant can be modified on the User Management: Quotas page.

To edit a quota setting, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home** and navigate to the Oracle Compute Site Home page.
3. From the **Oracle Compute Site** menu, select **User Management**, then select **Quota**. The User Management: Quotas page appears. The quota settings assigned to each tenant are displayed. You can choose to view the quota by Usage or by Allowance by selecting the appropriate option from the **View** drop down list.

Figure 12-4 Managing Quota



4. Select a quota that you wish to modify and click **Edit**. The Edit Quota window appears.
5. You can modify the description of the quota and the following criteria:
 - **Templates:** Specify the number of images and the size.
 - **Oracle Compute:** Specify the number of VM instances, number of vCPUs, and total memory that will be available to all users in this tenancy. You can also set quotas on the number of instances allowed by specifying restrictions which can be comma separated key value pairs. For example, if you specify `os_license=20`, the number of VM instances launched off machine images with `os_license` as attribute key cannot be greater than 20.
 - **Storage:** Specify the storage volume size that will be available to all users in this tenancy.
 - **Network:** Specify the number of IP addresses that can be reserved from the VNET that is available to the tenancy.
6. Click **Edit** to modify the quota and return to the User Management: Quotas page.

12.3.4 Managing Oracle Compute Templates

An Oracle Compute template is a copy of a virtual hard disk with an installed operating system used to launch a virtual machine instance. It is a whole disk image (including a partition table and a kernel) stored in a tar archive, compressed with gzip. Templates can be versions of Linux (such as Red Hat or Ubuntu), Microsoft Windows, or other operating systems.

To upload a template, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home** and navigate to the Oracle Compute Site Home page.
3. From the **Oracle Compute Site** menu, select **Image Management**. You will see a list of templates that have been uploaded either from the Software Library or from a local disk.

Figure 12-5 Image Management

Getting Started: Infrastructure - Oracle Compute

Image Management
Create, update and delete Oracle Compute Templates. A template is a copy of virtual hard disk with an installed operating system used to launch an instance. The template must be a whole disk image (including a partition table and kernel) stored in a tar archive, compressed with gzip.

Oracle Compute Site:

Upload Delete Configure Agent... Remove Agent Configuration View All

Name	Attributes	Quota	Uploaded Size (MB)	Total Size (MB)	Decompressed Size (MB)	Agent Configure
/elcontrol/public/Auto_Snapshot		/elcontrol	1683	1683	11264	✗
/JPS/public/snap1		/JPS	1447	1447	11264	✗
/JPS/public/snap12		/JPS	1447	1447	11264	✗
/oracle/public/ewrt			0	0	5120	✗
/oracle/public/linux_5_12.2.1.0.0_64			1531	1531	10240	✗
/oracle/public/linux_6_12.2.1.0.0_64			1499	1499	11264	✗

Total Row Count 11

- Click **Upload**. The Template Management: Upload Template window appears. While uploading the image, the Template Scope can be:
 - Public:** The image will be available to all the users. If you select this option, enter the name of the image in the Name field.
 - Tenant:** The image will be available only to users belonging to the selected tenancy. If you select this option, select the Tenant in the Name drop down field and specify the name of the template. The image will be available to all users in the selected tenancy.
- Specify any additional attributes that will be used when the service instance is provisioned.
- In the Select Template field, select the image that is to be uploaded. The image you upload can either be present in your local disk or from the Software Library.
- Click **Upload** to upload the template. The newly uploaded image will appear on the Image Management: Compute Templates page with the following details:
 - Name:** The name of the image. If the image is available to all users, the format of the name is `/oracle/public/<image_name>`. If the image is available only to users belonging a selected tenancy, the format is `<tenant_name>/public/<image_name>`.
 - Attributes:** Any user defined attributes that were specified when the image was uploaded.
 - Quota:** The quota specified for the image.
 - Uploaded Size:** The size of the image that has been uploaded.
 - Total Size:** The total size of the image.
 - Decompressed Size:** the size of the image in its decompressed state.
 - Agent Configured:** Indicates if the Management Agent has been configured for this image. See Configuring the Management Agent.

12.3.4.1 Configuring the Management Agent

You can specify the details of the Management Agent that is to be associated with an image list. To configure the agent, follow these steps:

- Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMIN` role.

2. From the **Enterprise** menu, select **Cloud**, then select **Compute Home**. The Compute Cloud page appears.
3. From the Oracle Compute Cloud menu, select **Resource Providers** and click on an Oracle Compute Site from the list. The Oracle Compute Cloud page appears.
4. From the **Oracle Compute Cloud** menu, select **Image Management**. The Image Management page with a list of templates is displayed.
5. Select a template from the list and click **Configure Agent**. Specify the following details:
 - Agent Configuration Type: Select Fresh or Shared.
 - Installation Base Directory: If you selected **Fresh**, specify the base directory on the host machine on which the Management Agent is to be installed.
 - Shared Agent: If you selected **Shared** as the Agent Configuration Type, enter the name of the shared agent.
 - Oracle Home: If you have selected Shared as the Agent Configuration Type, specify the location of the shared Oracle Home of the existing Management Agent.
 - Platform: Select the platform on which it is to be installed.
 - Instance Directory: Specify the Instance Directory for the Oracle Home.
 - Username & Password: Specify the credentials required to access the agent.
 - SSH Timeout: The SSH timeout period for Guest Virtual Machine communication during deployment.
 - Privilege Delegation Settings: Specify any privilege delegation settings.
6. Click **OK** to configure the agent and return to the previous page.

12.3.5 Creating an Orchestration Template

Prerequisites

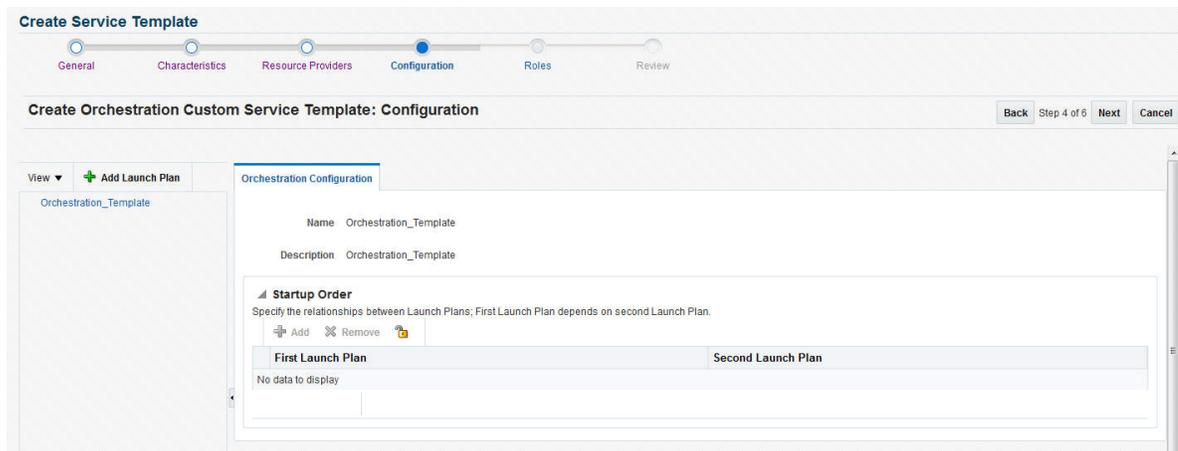
- One or more Oracle Compute sites must have been discovered.
- One or more Oracle Compute templates must be available.

Orchestration is the automated management of your system components for high availability, monitoring, and persistence. An orchestration ties together the components you create into a single, manageable collection. For example, with orchestration you can associate networks, network security, and storage with the instantiation of a virtual machine. The administrator can create one or more orchestration service templates. These orchestration templates can then be used by tenant users to create Oracle Compute service instances. Each orchestration template can contain one or more launch plans (See [Creating a Launch Plan](#)). To create an orchestration template, follow these steps:

1. Log in as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. From the **Oracle Cloud** menu, select **Getting Started**, then click on the **Setup** link next to the Infrastructure - Oracle Compute service family in the left panel.
4. Click **Service Templates**, then click **Create**. The Create Service Template window appears.

5. Select the Orchestration service type, then select Orchestration Custom Service Template and click **Create** to launch the Create Orchestration Custom Service Template wizard.
6. Enter the name and description for the template and click **Next**.
7. In the Characteristics page, enter the target properties such as contact, cost center, lifecycle status, and so on. These properties or characteristics will be applied to the instance as target properties when the service instance is created. Click **Next**.
8. In the Resource Providers page, click **Add** and select an Oracle Compute Site into which the service instances are to be provisioned.
9. Click **Next**. The Configuration page appears.

Figure 12-6 Creating an Orchestration Template



An Orchestration Template can be associated with one or more launch plans. Click Add Launch Plan to create a new launch plan. See [Creating a Launch Plan](#) for details.

10. After defining one or more launch plans, you can configure the relationship between the launch plans by selecting the order in which the launch plans are to be executed. Select the Orchestration Template link on the left panel. In the Orchestration Configuration page, click Add in the Startup Order region and select the order for the launch plans. Click **Next**.
11. In the Roles page, click **Add** and select the roles to which the service template is to be available. Click **Next**.
12. In the Review page, review the template details and click **Submit** to create the Orchestration template.

12.3.5.1 Creating a Launch Plan

A launch plan defines the configuration settings for one or more VM instances. To create a launch plan, follow these steps:

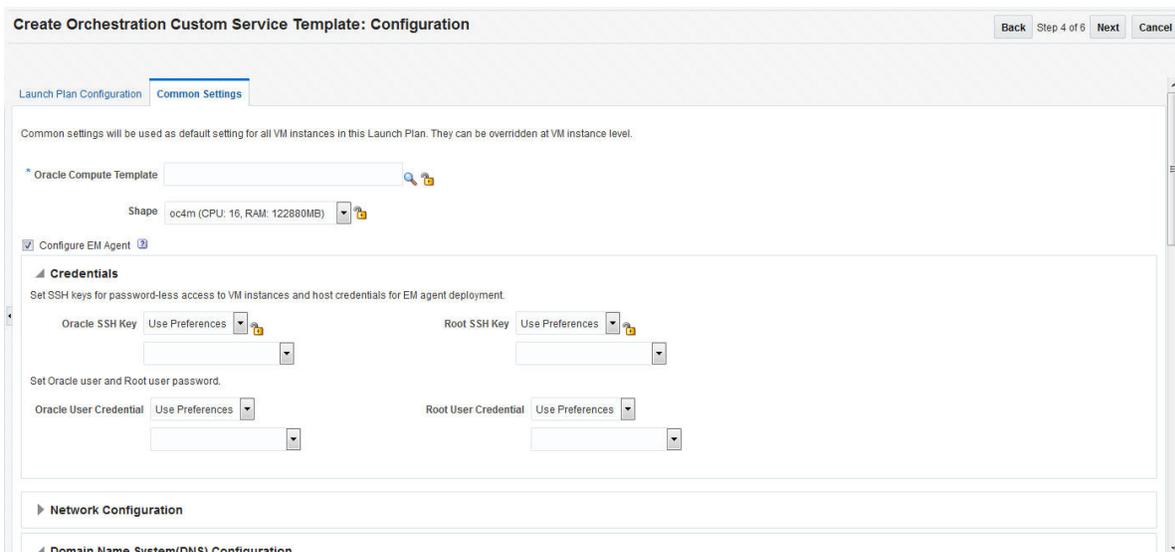
1. In the Launch Plan window, enter a name for the launch plan and click **Add**. The launch plan name you entered appears under the Orchestration Template header

in the launch panel. Click on the launch plan name to specify the configuration details.

2. Click the **Launch Plan Configuration** tab and enter the following details:
 - High Availability: You can specify a high availability policy for an orchestration, which affects how the orchestration is managed by the system. This can be:
 - No High Availability: If you choose this option, the orchestration components are neither restarted nor monitored.
 - Active: The components defined by the orchestration are restarted if they stop unexpectedly due to causes such as power failure and node disconnection.
-  **Note:**

A component will not be restarted if it is stopped due to an operator error such as an instance relaunch or an invalid image list or shape. In this case, the status of an orchestration will reflect the error, but the components will not be recreated. The reported operator error must be fixed and the orchestration restarted.
- Monitor: The components are not restarted, they are only monitored.
 - Deploy on Different Nodes: Select this check box to deploy the launch plan on different nodes.
 3. Click the **Common Settings** tab to define the default settings that will be used for all VM instances in this launch plan. The default setting can be overridden at the VM instance level.

Figure 12-7 Common Settings



Specify the following details:

- Oracle Compute Template: A template is a copy of virtual hard disk with an installed operating system used to launch an instance. The template must be a whole disk image (including a partition table and kernel) stored in a tar archive, compressed with gzip. Click the Search icon and select a template from the list. If you click the Lock icon to lock the template, the tenant administrator or tenant user cannot change the template while provisioning the service instance.
- Shape: A shape is a combination of CPU, memory, and IO which define the characteristics of a virtual machine. Select a shape from the drop down list. If you click the Lock icon to lock the shape, the shape cannot be changed by the tenant administrator or tenant user while provisioning the service instance.
- Configure EM Agent: Select this checkbox to add EoIB and IPoIB storage networks to the network table.
- Credentials: You can set the SSH key credentials for password-less access to VM instances and host credentials for deploying the Management Agent. You can use:
 - Oracle SSH Key: If SSH key credentials have been set, and can be used as preferred credentials, select Use Preferences and choose the credential set from the drop down box. If you select Enter Key, you must specify the SSH public and private key pair required to access the VM instances. If you select Key is in a file, click Browse and select the public / private key from a file.
 - Root SSH Key: If SSH key credentials have been set for the host, and can be used as preferred credentials, select Use Preferences and choose the credential set from the drop down box. If you select Enter Key, you must specify the SSH public and private key pair required to access the VM instances. If you select Key is in a file, click Browse and select the public / private key from a file.
 - Oracle User: If you select Use Preferences, choose the preferred credentials from the drop down box. If you select Enter Password, you must enter the password for the Oracle user. Root User: If you select Use Preferences, choose the preferred credentials from the drop down box. If you select Enter Password, you must enter the password for the root user.
- Network Configuration: Click Add to select one or more network interfaces that will be associated with the VM instances. A network can be an IPoIB or EoIB network. In the Select Network window, you can choose:
 - Tenant Networks: These are networks configured for each tenant to communicate with other servers.
 - Service Networks: These are networks configured to communicate with other service providers such as ZFSSA or Exadata systems.
- For external network interfaces, you can select one or all of the following:
 - Default Gateway: The selected network will be configured as the default gateway network.
 - Symmetric Routing: If this option is selected, the reply packets are routed through the same network interface on which the vNet IP packets were received.
 - After adding the network, select the network and click the **Lock** icon to lock the network configuration.

- Domain Name System (DNS) Configuration: Specify the DNS configuration for the network.
 - Servers: Enter a comma separated list of DNS servers for the selected network.
 - Search Domains: Enter a comma separated list of DNS Search Domains for the selected network.
 - Network Information Service (NIS) Configuration
 - NIS Domain Name: Enter the NIS Domain Name for the selected VM instance.
 - Network Information Services (NIS) Server: Click Add to add an NIS server. Enter the name and IP address of the NIS server and click Add to add the NIS server.
 - Storage Configuration: You can associate one or more storage volumes to the VM instances that are to be created. Click Create. In the Create Storage Volumes window, enter the name of the storage volume, size, the number of volumes to be created and click Add. You can then click the Lock icon and lock of the storage volume.
 - Advanced Configuration: You can optionally specify additional attributes for the VM instances. Click Add to add a key and value for the attribute.
4. After you have created the launch plan, you can add one or more VM instances that can use the launch plan. Select the launch plan you have created and click **Add VM Instance**. In the Add VM Instance window, specify the name and number of VM instances to be created. If you are adding more than one instance, the name you specify will be used as a prefix to generate a unique name for each VM instance.
 5. You can define configuration settings at the instance level and override the settings defined at the launch plan level. To define instance level specific configuration settings, select the VM instance from the left panel. The Oracle VM Instance Configuration page appears. To define instance level settings, select the **Override Common Settings** checkbox to override the default launch plan level settings. Select the Oracle Compute Template, Shape, and specify the Network, and Storage Configuration.
 6. In the Advanced Configuration region, you can optionally specify additional attributes. Click **Add**. In the Add Attributes window, specify the key and value for the attribute. In the Tags field, you can enter tags to identify the instance deployment request.
 7. In the Optional Network Configuration region, you can specify additional configuration parameters for the network defined in the Network Configuration region. You can specify a list of DNS servers, configure the network as the default gateway network, and configure the VM instance as a provider on the underlying selected service network.

12.3.6 Configuring Request Settings

You can configure the request settings by specifying when a request can be made, its duration, and so on. To configure request settings, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.

2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Request Settings**.
3. You can specify the following settings:
 - **Future Reservation**: How far in advance can a request be made.
 - **Request Archive Retention**: Period for which archived requests are stored before they are automatically deleted by the system.
 - **Request Duration**: Maximum duration for which requests can be made.
 - **Service Instance Share Settings**: You can choose to share the service instance with other users or roles by selecting either of the following checkboxes.
 - Enable SSA User to share service instances with other Users
 - Enable SSA User to share service instances with Roles

 **Note:**

By default, service instances are not shared with users or roles.

4. Click **Apply**.

Request settings can be defined for all services or a specific service family, service type or role. The most restrictive value of request settings is taken from all matched values. "No Restriction" on a level means the setting is not applied at this level and will not be considered in evaluating final value.

Share Service Instance Settings are taken from the highest enabled level. For example, if sharing is enabled for All Services, then sharing is allowed for all users regardless of any lower level settings. To turn off sharing for the Middleware family, you must first disable sharing at the All Services level, then disable sharing for the Middleware family and enable sharing for the other families. Any modified settings must be saved before making another selection. Any changes not yet applied will be discarded.

12.4 Creating Networks

This section covers the following:

- [Introduction to Networks](#)
- [Creating and Managing Service Networks](#)
- [Creating and Managing Tenant Networks](#)
- [Managing Infrastructure Networks](#)

12.4.1 Introduction to Networks

An Oracle Public Cloud Machine includes compute nodes, a storage appliance, switches, and other equipment needed to connect the compute nodes to your network. The network connections allow the servers to be administered remotely, enable clients to connect to the compute nodes, and enable client access to the storage appliance.

In this release, Oracle Compute Service is extended to support InfiniBand networking. The network isolation is brought in by the following ways in the cloud infrastructure:

- Network isolation within the tenants. When you create tenants, private and public security domains are created. The private security domain is used for isolated communication within the tenant of the OPCM rack. The public security domain is used for isolated communication between the tenant and the Ethernet infrastructure outside the OPCM rack through NM2 Gateway. In both the public and private security domain, the communication is isolated only within that particular tenant and the security domain of that tenant.
- The service network created for instances to access the service provider ensures that the communication is allowed only between the service provider and the service consumer or between the service providers. The service network connectivity is not allowed for communication between the service consumers.

The networking formats that are supported are virtual Ethernets (vEthernets), flat networks, Network Address Translation (NAT), and network services cluster. A vEthernet is a virtual OSI Layer 2 network with VLAN support. vEthernets can facilitate isolation for networks for instances run by specific departments or business units. vEthernets in Oracle Compute have a one-to-one mapping with VLANs on the switching infrastructure and are typically associated with business units or departments. A flat network is a single IP routed domain, where any IP address is routable to any other. Protection of instances comes from security lists – software firewall on the Hypervisor. For isolation between virtual machines on such a network, Oracle Compute enforces security policy on the hypervisors themselves using security lists.

You can create the following types of networks:

- Tenant networks
- Service networks

12.4.2 Creating and Managing Service Networks

Service networks are created in Oracle Public Cloud Machine to provide shared services across multiple tenants. The shared services include access to storage, network, and other engineered systems. An example of external service provider is a ZFS storage appliance that provides storage shared across tenants.

An InfiniBand partition is allocated for a service network. The compute nodes of the cluster can be defined as Providers or Consumers. The providers are given full membership to the InfiniBand partition. Whereas, the consumers are given limited membership to the InfiniBand partition. Through this service network, the consumers can communicate with the providers but cannot communicate with each other. Providers are usually common services such as storage whose services must be available to more than one tenant.

Each service network is automatically allocated with an InfiniBand partition and no two service networks share the partition. Service networks are created by cloud administrators.

There are two types of service networks:

- IPoIB Service Networks: The IPoIB service network is used for communication with a service provider within OPCM or connected directly to the InfiniBand fabric

such as Exadata. For example, shared storage from the Oracle ZFS Storage Appliance.

- **EoIB Service Networks:** The EoIB service network is used for communication with a service provider located outside OPCM.

12.4.2.1 Creating an EoIB Service Network

A service network provides a certain service to the user. Service networks are required for a common service that needs to be available to more than one tenant. For example, ZFS appliance providing an access to shared storage. An InfiniBand Partition key (pkey) is allocated to the service network. The partition key is allocated from the range of available pkeys specified in the site.conf properties file during installation. Service network partition is always provisioned with Full membership for the service providers and a limited membership for the service consumers.

To create a EoIB service network, follow these steps:

1. Log in to Enterprise Manager as a user with the EM_CLOUD_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Networking**, then select **Service Networks**. From the **Actions** menu, select **Create Service** and enter the following details:
 - Name of the network: The network is automatically created in the /cloud/public/tenant namespace
 - Select the network type as EoIB
 - Select whether you want to add all the compute nodes as provider nodes for this service network.
 - Provider Nodes: Select the checkbox to add all existing nodes to the list of provider nodes for the service network.

If selected, you can share the service network with provider true in the vnet access object, allowing instances to be provider on the service network in the specific tenant.
 - Description: Enter a description of the service network.
5. You can optionally provide a description of the network for your reference..
6. Click **Create** to create the service network and return to the Networks page.

12.4.2.1.1 Creating an EoIB vEthernet for Service Network

The EoIB vEthernet is always created in the /<tenant>/public/ namespace of the tenant. The vEthernet uses the InfiniBand partition associated with the tenant for the specified service network. vEthernet describes the Ethernet level configuration for the selected service network. You must provide the tenant name and switchport configuration details to create a vEthernet.

To create an EoIB vEthernet, follow these steps:

1. Log in to Enterprise Manager as a user with the EM_CLOUD_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Networking**, then select **Service Networks**. From the **Actions** menu, select **Create EoIB vEthernet** and enter the following details:
 - Name of the tenant and a name for the vEthernet. The name of the vEthernet is defined as /<tenant_name>/public/<vethernet_name>. The tenant name is required as to determine which InfiniBand partition must be associated with the service network. EoIB uses the tenant's InfiniBand partition assigned to public security domain.
 - Enter the VLAN identifier that is used to tag the network. The VLAN ID ranges from 2 to 4095.
 - Select the port for the HA pair Switch names.
5. You can optionally provide a description of the network for your reference.
6. Click **Create** to create the EoIB vEthernet for a service network.

12.4.2.1.2 Creating an EoIB Subnet

To create an EoIB subnet, follow these steps:

1. Log in to Enterprise Manager as a user with the EM_CLOUD_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Networking**, then select **Tenant Networks**.
5. Select the tenant in which you want to create the EoIB network. From the **Actions** menu, select **Create EoIB Subnet**. Enter the following details:

- Name: Enter the name of the tenant administrator user.
- vEthernet Name: Enter the vEthernet name.
- CIDR: Enter the IP address for the subnet in the CIDR (Classless Inter-Domain Routing) format. A CIDR address includes the standard 32-bit IP address and it indicates how many bits are used for the prefix.

For example, an address of 206.13.1.48/25 indicates that the first 25 bits are used to identify the unique network. The remaining bits are available to identify the specific host. The network you specify must not be used by another EoIB network.

- Gateway: Enter the IP address of the gateway.
- Ethernet Interface Index: Select this checkbox if you want to provide index numbers for vNets created.
- Description: Enter a description of the EoIB network.

- IP Ranges: Click **Add** to add an IP address range in the format IP-IP. For example, 10.242.2.211-10.242.2.215.
6. Click **Create** to create the EoIB subnet and return to the Networks page.

12.4.2.2 Creating IPoIB Service Networks

IPoIB Service Networks are used to allow communication between service consumers and service providers over InfiniBand within OPCM or between Engineered Systems or external ZFS appliance interconnected using InfiniBand. The IPoIB service network is used for communication with a service provider within OPCM or connected directly to the InfiniBand fabric such as Exadata. For example, shared storage from the Oracle ZFS Storage Appliance.

To create an IPoIB service network, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the Oracle Compute Site menu, select **Networking**, then select **Service Networks**. From the Actions menu, select **Create Service Networks** and enter the following details:
 - Name of the network. The network is automatically created in the `/cloud/public/tenant` namespace.
 - Select the network type as IPoIB.
 - Select whether you want to add all the instances as provider node for this service network. If selected, you can share the service network with provider true in the vnet access object, allowing instances to be provider on the service network in the specific tenant.
 - You can optionally provide a description of the network for your reference.
5. Click **Create** to create the service network.

12.4.2.2.1 Creating an IPoIB Subnet

A virtual network represents an IP subnet and defines an IP address range. It is deployed in the scope of a tenant or a service network. Create the IPoIB subnet specifying the IPoIB service or tenant network, IP address of the subnet in CIDR (Classless Inter-Domain Routing) format, and the IP address range.

To create an IPoIB service network, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Networking**, then select **Service Networks**. Select the corresponding IPoIB network. From the **Actions** menu, select **Create IPoIB Subnet**.

5. In the Create IPoIB Subnet page, enter the name and description for the IPoIB subnet.
6. Select the vEthernet from which the IPoIB subnet will be derived.
7. Select whether the CIDR for the IP address is defined directly or it must be derived from the Global IP Pool.

If CIDR/IP Range is selected, then enter the CIDR for the IP address. Click **Add** under IP Ranges and enter the IP range.

If the IP subnet is derived from the Global IP Pool, then enter the number of IP addresses that are required from the IP pool.

8. Click **Create** to create the IPoIB subnet.

12.4.2.2.2 Connecting to an Engineered System

You can connect the Oracle Public Cloud Machine to an Exadata server using the Infiniband fabric. To connect to an engineered system, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Networking**, then select **Service Networks**. From the **Actions** menu, select **Connect Engineered System** and enter the following details:
 - Name: The name of the tenancy.
 - Partition Key: An InfiniBand partition defines a group of InfiniBand nodes that are allowed to communicate with one another. You can use InfiniBand partitions to increase security by implementing network isolation on Oracle Public Cloud Machine's InfiniBand fabric. In addition, you can associate InfiniBand nodes with specific VLANs. A partition key is a unique ID assigned to an InfiniBand partition. Specify an external partition key that is to be associated with the service network. The partition key you specify must not be used by a different service network.
 - Foreign Partition: If this checkbox is selected, a service network that is associated with an externally defined partition key is created.
 - Provider Nodes: Select this checkbox to add provider nodes.
 - Description: Enter a description of the service network.
5. Click **Create** to create the service network and return to the Networks page.

12.4.3 Creating and Managing Tenant Networks

A tenant network provides an isolated or protected environment for deployment of virtual networks and VMs that interact with these virtual networks. In an Oracle Public Cloud Machine, a tenant is a base construct that defines two isolated domains – public and private. Each domain has an InfiniBand partition key assigned to it.

The public domain is used for deploying vlan-tagged virtual networks for enabling communication between the compute nodes and entities external to OPCM that run on

Ethernet. The private domain is used for deploying IB private networks for inter-compute node communications. You can create an:

- EoIB network: Public tenant network
- IPoIB network: Private tenant network

12.4.3.1 Creating an EoIB Network

EoIB ((Ethernet over Infiniband) networks are deployed on the public security domain and are associated with a VLAN. EoIB is used for components inside the Oracle Public Cloud Machine machine rack to communicate with components external to the rack. You can deploy multiple EoIB virtual networks on the public security domain of the tenant. These networks are not isolated from each other. Only the cloud administrator can create and manage EoIB networks as these networks subnets are defined outside the Oracle Public Cloud Machine.

To create an EoIB network, follow these steps:

1. Log in to Enterprise Manager as a user with the EM_CLOUD_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an Oracle Compute Site to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Networking**, then select **Tenant Networks**.
5. Select the tenant in which you want to create the EoIB network. From the **Actions** menu, select **Create EoIB vEthernet**.
6. Enter the following details:
 - Name: Enter the name of the tenant administrator user.
 - vLAN: Specify the VLAN ID (range 2 to 4095) for this network.
 - Description: Enter a description of the EoIB network.
 - Switch Ports: Select the switch port from the drop down list.
7. Click **Create** to create the EoIB network. The newly created network will appear on the Networks page.

12.4.3.2 Creating an EoIB Subnet

To create an EoIB subnet, follow these steps:

1. Log in to Enterprise Manager as a user with the EM_CLOUD_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Networking**, then select **Tenant Networks**.

5. Select the tenant in which you want to create the EoIB network. From the **Actions** menu, select **Create EoIB Subnet**. Enter the following details:
 - Name: Enter the name of the tenant administrator user.
 - vEthernet Name: Enter the vEthernet name.
 - CIDR: Enter the IP address for the subnet in the CIDR (Classless Inter-Domain Routing) format. A CIDR address includes the standard 32-bit IP address and it indicates how many bits are used for the prefix.

For example, an address of 206.13.1.48/25 indicates that the first 25 bits are used to identify the unique network. The remaining bits are available to identify the specific host. The network you specify must not be used by another EoIB network.
 - Gateway: Enter the IP address of the gateway.
 - Ethernet Interface Index: Select this checkbox if you want to provide index numbers for vNets created.
 - Description: Enter a description of the EoIB network.
 - IP Ranges: Click **Add** to add an IP address range in the format IP-IP. For example, 10.242.2.211-10.242.2.215.
6. Click **Create** to create the EoIB subnet and return to the Networks page.

12.4.3.3 Creating an IPoIB Subnet

IPoIB networks are deployed on the private security domain. Multiple IPoIB virtual networks can be deployed on a security domain of the tenant. These IPoIB networks are not isolated from each other and can be created for each tenant. To create an IPoIB subnet, follow these steps:

1. Log in to Enterprise Manager as a user with the EM_CLOUD_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Networking**, then select **Tenant Networks**.
5. Select the tenant in which you want to create the EoIB network. From the **Actions** menu, select **Create IPoIB Subnet**.
 - Name: Enter the name of the tenant administrator user.
 - Creation Mode: This can be CIDR / IP Range or Global IP.
 - CIDR: Enter the IP address for the subnet in the CIDR (Classless Inter-Domain Routing) format. A CIDR address includes the standard 32-bit IP address and it indicates how many bits are used for the prefix.

For example, an address of 206.13.1.48/25 indicates that the first 25 bits are used to identify the unique network. The remaining bits are available to identify the specific host. The network you specify must not be used by another EoIB network.

- Global IP: An IP Pool is a pool of public IP ranges made up of one or more IP Pool entries. If global IP pool is enabled in the site configuration, specify the global IP pool address number. If this number is specified, the IP address is allocated from a global pool of IP addresses.
 - Gateway: Enter the IP address of the gateway.
 - Ethernet Interface Index: Select this checkbox if you want to provide index numbers for the vNets created.
 - Description: Enter a description of the EoIB network.
 - IP Ranges: Click **Add** to add an IP address range in the format IP-IP. For example, 10.242.2.211-10.242.2.215.
6. Click **Create** to create the IPoIB subnet and return to the Networks page.

12.4.3.3.1 Editing an IPoIB Subnet

To edit the IPoIB subnet, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Networking**, then select the IPoIB subnet that you wish to edit. The following details are displayed:
 - Name
 - CIDR
 - Number of IP Addresses
 - IP Ranges
 - Total: The total number of usable IP addresses.
 - Reserved: The number of allocated IP addresses.
 - Used: The number of IP addresses that have been used by the instance.
 - Failed Allocations: The number of IP address allocations that have failed since the VNet was created or updated.
5. Click **Add** in the IP Reservation region to add one or more IP reservations. In the Create IP Reservation window, enter the name and IP address for the reservation and click **OK**.
6. Select **Edit** from the **Actions** menu. In the Update IPoIB Subnet page, you can edit the Number of IP Addresses, Ethernet Interface Index, and Description. Click **Edit** to update the details and return to the previous menu.

12.4.4 Managing Infrastructure Networks

Infrastructure service networks are service networks that are created when the Oracle Public Cloud Machine is configured. These networks are used to provide network access to leverage some of the basic services available on the Oracle Public Cloud Machine. These are the control networks that are jointly used by the customer deployed instances and the Oracle Public Cloud Machine.

The following infrastructure networks are created on the switches and zfs storage (except for the EoIB networks):

- IPoIB Management: This network is used for Oracle Compute pxe services and flexboot is configured for this partition.
- IPoIB Storage: Used for all Oracle Compute related ZFS access from Dom0.
- IPoIB Instance Storage: Used for control VMs (read/write) and client VMs (read only) to access ZFS storage.
- EoIB Management Network: Used for Oracle Compute API service access and Control VMs.
- Default: IPoIB default partition (0x7FF).

12.5 Creating a Storage Volume

A storage pool represents a single logical storage space (an NFS export) on a storage server. The name of the storage pool, the total size (physical) of the storage pool, the amount of space used, the path and the properties of the storage pool are displayed.

A storage volume object is a single volume that can be attached to an instance. On this page, the name of the storage volume, status, size, Oracle Virtual Servers with which it is associated, and its properties are displayed. To create a storage volume, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.
4. From the **Oracle Compute Site** menu, select **Storage** to view the Storage Pool Home page. In the Storage Pool region, the name of the storage pool, size, status, path, and properties or characteristics of the pool are displayed.
5. The storage volumes in the Oracle Compute site are displayed. A storage volume object is a single volume that can be attached to an instance. Each volume has a size that is available to all users in the selected tenancy. The storage volume can be shared across multiple instances. Click **Create** to create a new storage volume.
6. In the Create Storage Volume window, enter the name (in the format `<tenant_name/public/<storage_vol_name>`), size, description, and optionally select a template for the volume. Click **OK** to create the storage volume.

12.5.1 Creating a Storage Volume Snapshot

You can take a snapshot or a copy of a storage volume and make the copy available to users belonging to another tenancy. To create a storage volume snapshot, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
3. Click on the **Oracle Compute Site** link in the left panel. The list of Oracle Compute sites that have been registered are displayed. Click on an **Oracle Compute Site** to drill down to the Oracle Compute Site Home page.

4. From the **Oracle Compute Site** menu, select **Storage** to view the Storage Pool Home page. The name of the storage pool, size, status, path, and properties or characteristics of the pool are displayed.
5. The storage volumes in the Oracle Compute site are displayed. Select a storage volume from the list and click **Snapshot**.
6. In the Snapshot Storage Volume window, select a target tenant name in the Target Volume drop down field, and enter the name of the snapshot, specify the size, and a description for the snapshot. Click **OK** to create the snapshot and return to the Storage page.

12.6 Monitoring the Oracle Compute Targets

This chapter describes the data that can be viewed and monitored on the Oracle Compute target home pages. It contains the following sections:

- [Monitoring an Oracle Compute Site](#)
- [Monitoring an Oracle VM Instance](#)
- [Monitoring an Oracle Compute Cluster](#)
- [Monitoring an Oracle Virtual Platform](#)
- [Monitoring an Oracle Server](#)

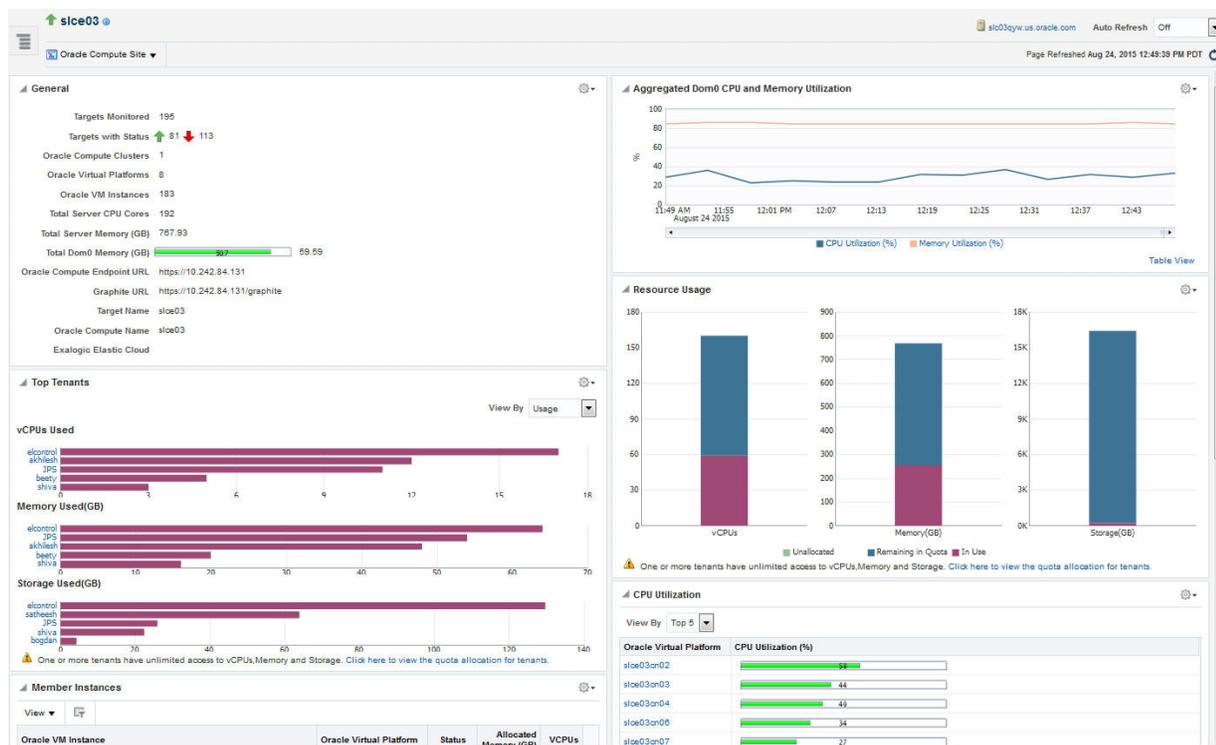
12.6.1 Monitoring an Oracle Compute Site

An Oracle Compute Site is a location running Oracle Compute Director with one or more clusters, each containing three or more Oracle Compute nodes.

To view the Oracle Compute Site Home Page:

1. Select **All Targets** from the **Targets** menu.
2. In the Search panel on the left hand side, click **Oracle Compute Site** under **Groups, Systems, and Services**. The list of Oracle Compute Sites that have been discovered are displayed.
3. Click on the Target Name link to drill down to the target home page.

Figure 12-8 Oracle Compute Site Home Page



This page contains the following regions:

Note:

This page displays metrics from Domain-0 (Control Domain) only.

- General:** This region shows the following details:
 - Number of targets being monitored
 - Aggregated status of all the targets
 - Number of clusters, virtual platforms, VM instances, and total number of CPU cores in the site
 - Total server memory
 - Total Dom0 memory available
 - Oracle Compute Endpoint URL
 - Graphite URL to monitor the Oracle Compute targets.
 - Oracle Public Cloud Machine target if it has been discovered.
- Aggregated Dom0 CPU and Memory Utilization:** This region shows the aggregated CPU, and memory utilization of all the targets in the site.
- Top Tenants:** This region shows the top tenants in the site. From the **View By** drop down list, you can select:

- Usage: Shows the top usage by tenants in the site across vCPUs, memory, and storage. Click on the Tenant Name link to drill down to the Tenant Home page.
- Allowance: Shows the number of vCPUs, memory, and storage allocated to the top tenants in the site. Click on the Tenant Name to drill down to the Tenant Home page.

 **Note:**

This region will appear only if you the preferred credentials you specify are for a user with the EM_CLOUD_ADMINISTRATOR role.

- **Resource Usage:** This region shows how the physical resources are allocated to the tenants in terms of quota and the actual usage. Click on the quota allocation link to drill down to the Quota Home page.
- **Member Instances:** Lists all the member instances in the Oracle Compute site. For each member instance, the name of the Oracle VM Instance, the Oracle Virtual Platform, status, allocated memory, and number of vCPUs is displayed. You can use the query by example feature to filter the list of members displayed. Click on the Oracle VM Instance or the Oracle Virtual Platform link to drill down to the respective home pages.
- **Aggregated Dom0 CPU and Memory Utilization:** This chart shows the aggregate CPU and memory utilization by all targets in this site over the last 24 hours.
- **CPU Utilization:** This region shows the relative CPU utilization by each cluster. You can choose to view all the clusters or view the top 1 or 5 clusters.
- **Memory Utilization:** This region shows the memory utilization by each cluster. You can choose to view all the clusters or view the top 1 or 5 clusters.
- **Incidents and Problems:** This region shows any incidents or problems that have occurred over the last 7 days.
- **Jobs:** This region shows a summary of jobs whose start date is within the last 7 days.

From the Oracle Compute Site menu, the following options are available:

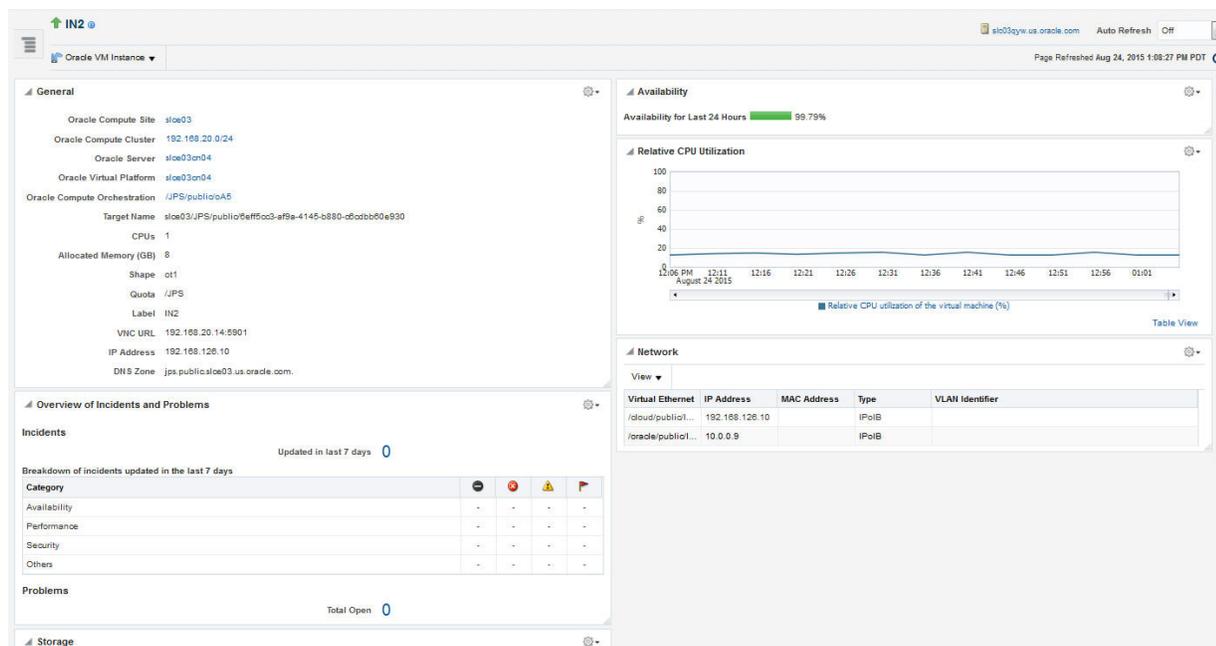
- Networking: See [Introduction to Networks](#)
- Storage: See [Creating a Storage Volume](#)
- User Management
 - Tenants: See [Creating a Tenant](#)
 - Users: See [Creating Users and Roles](#)
 - Quota: See [Defining Quotas](#)
- Image Management: See [Managing Oracle Compute Templates](#)
- Shape Management: See [Creating a Shape](#)

12.6.2 Monitoring an Oracle VM Instance

An Oracle VM Instance is an instantiation of a machine image running as a virtual machine. Instances have attributes such as allocated RAM, number of CPUs available, and attached network interfaces. Instances are created via an orchestration that specifies the desired set of hosts, which image lists they are to be launched from and placement relationships that exist between them.

To view the Oracle VM Instance Home page, click on the **Oracle VM Instance** link on the Oracle Compute Site Home page.

Figure 12-9 Oracle VM Instance Home Page



This page contains the following regions:

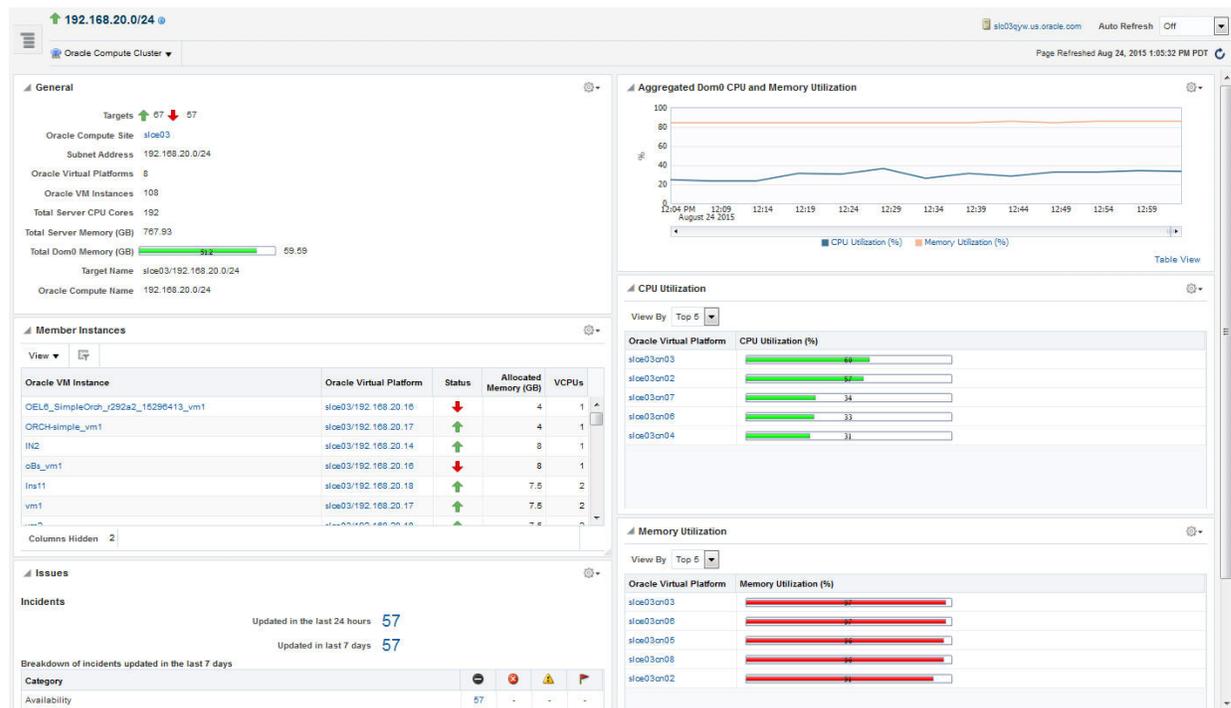
- **General:** This region shows the Oracle Compute Site, Oracle Compute Cluster, Oracle Server, and Oracle Virtual Platform in which the instance is running. You can click on the link to drill down to any of the home pages. It also shows the target name, number of CPUs, allocated memory, shape, quota (if set), VNC URL, IP address, and the DNS zone.
- **Availability:** Shows the availability of the instance over the last 24 hours.
- **Relative CPU Utilization:** Shows the relative CPU utilization by the virtual machine.
- **Overview of Incidents and Problems:** This region lists any incidents and problems that have occurred over the last 7 days.
- **Network:** Lists the name of the network interface and the MAC address.
- **Storage:** Lists any storage volumes that are present.

12.6.3 Monitoring an Oracle Compute Cluster

An Oracle Compute cluster is a group of at least three physical nodes running Oracle Compute software on the same Ethernet domain. In a typical multi-cluster configuration, a router links two or more subnets and broadcast domains, one per cluster. One or more clusters make a site.

To view the Oracle Compute Cluster Home page, click on an **Oracle Compute Cluster** link in the Oracle Compute Site Home page.

Figure 12-10 Oracle Compute Cluster Home Page



This page contains the following regions:

Note:

This page displays metrics from Domain-0 (Control Domain) only.

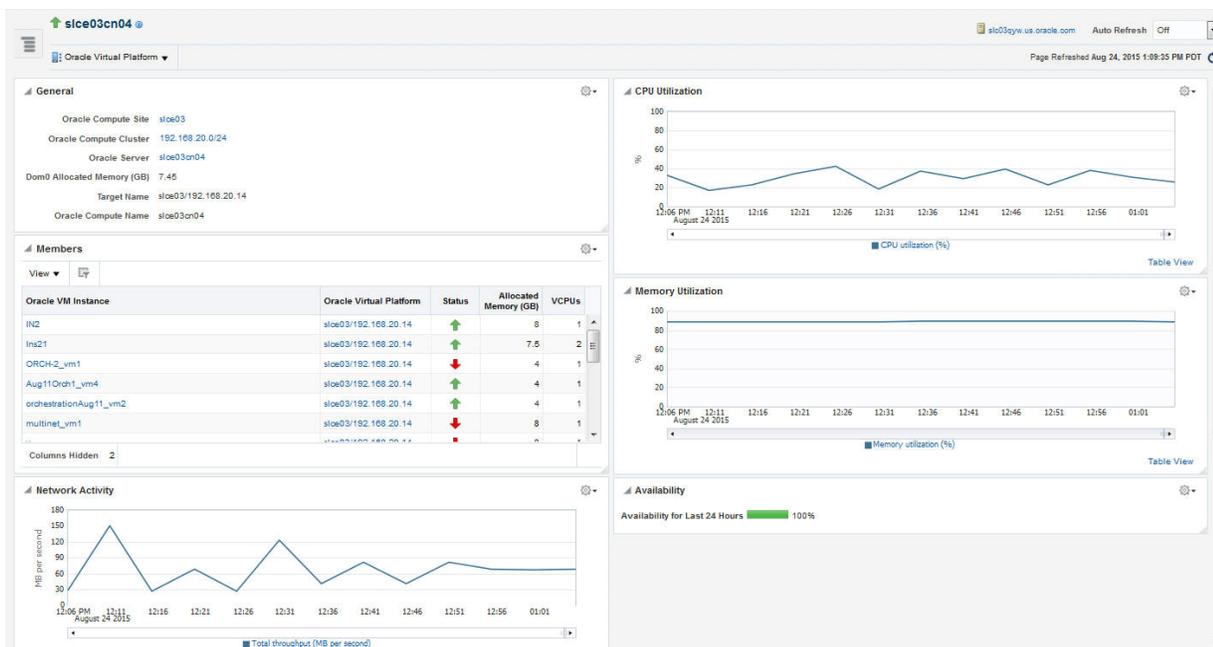
- **General:** This region shows the aggregated status of all the targets in the cluster, the Oracle Compute Site to which this cluster belongs, the number of virtual platforms and VM instances in the cluster, the total number of CPU cores, the total server memory, the total Dom0 memory available, and the target name.
- **Aggregated Dom0 CPU and Memory Utilization:** This region shows the aggregated CPU and memory utilization over the last 1 hour.

- **Member Instances:** Lists the Oracle VM instances in the cluster. Click on the Oracle VM Instance or Oracle Virtual Platform link to drill down to respective home pages.
- **CPU Utilization:** This region shows the CPU utilization by each virtual platform in the cluster. You can choose to view all or the top 5 virtual platforms. Click on the Oracle Virtual Platform link to drill down to the home page.
- **Memory Utilization:** This region shows the memory utilization by each virtual platform in the cluster. You can choose to view all or the top 5 virtual platforms. Click on the Oracle Virtual Platform link to drill down to the home page.
- **Incidents and Problems:** This region shows any incidents or problems that have occurred over the last 7 days.

12.6.4 Monitoring an Oracle Virtual Platform

Click on an **Oracle Virtual Platform** link on the Oracle Compute Cluster Home page to drill down to this page.

Figure 12-11 Oracle Virtual Platform Home Page



This page contains the following regions:

- **General:** This region displays the name of the Oracle Compute Site and Oracle Compute Cluster to which the Oracle Virtual Platform belongs. You can click on any of these links to drill down to the respective home page. It also shows the Dom0 allocated memory, the target name, and the Oracle Compute name.
- **CPU Utilization:** This region shows the CPU utilization by the virtual platform over the last 24 hours.
- **Members:** This region lists all VM instances that are running on this virtual platform, their status, and the memory allocated to each virtual server. Click on the

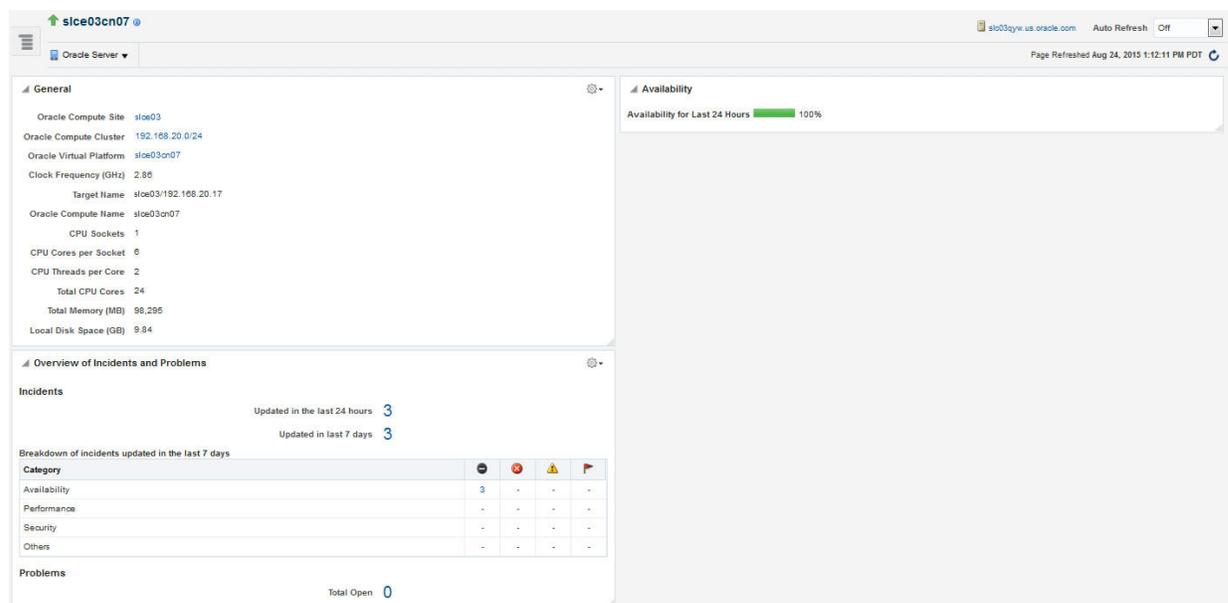
Oracle VM Instance or Oracle Virtual Platform links to drill down to the respective home pages.

- **Memory Utilization:** This region shows the memory utilization by the virtual platform over the last 24 hours.
- **Network Activity:** This region shows the network activity by the virtual platform over the last 24 hours.
- **Overview of Incidents and Problems:** This region shows any incidents or problems associated with the Oracle Server target.
- **Availability:** The chart in this region shows the status of the target over the last 24 hours.

12.6.5 Monitoring an Oracle Server

Click on an **Oracle Server** link in the Oracle Virtual Platform Home page to drill down to this page.

Figure 12-12 Oracle Server Home Page



This page contains the following regions:

- **General:** This region shows the Oracle Compute Site, Oracle Compute Cluster, and the Oracle Virtual Platform in which the server is present. It also shows the clock frequency, target name, number of CPU sockets, number of CPU cores per socket, number of CPU threads per core, total number of CPU cores, the total memory, and the local disk space.
- **Availability:** The chart in this region shows the status of the target over the last 24 hours.
- **Overview of Incidents and Problems:** This region shows any incidents or problems associated with the Oracle Server target.

13

Managing and Monitoring the OPCM Target

This chapter describes how to manage and monitor the OPCM hardware.

The following sections are provided:

- [Refreshing the Oracle Public Cloud Machine Target](#)
- [Displaying and Using the OPCM Dashboard](#)
- [Visualizing Relationships Between Software and Hardware Components](#)
- [Analyzing the Impact of Component Failures](#)
- [Viewing Host Targets on the OPCM Rack](#)
- [Viewing Application Deployments in the OPCM Target](#)
- [Viewing WebLogic Domains Hosted on the OPCM Target](#)
- [Viewing Coherence Cluster Targets](#)
- [Creating Reports in Enterprise Manager](#)
- [Enabling Log Viewer](#)
- [Converting an Exalogic Target to an Oracle Public Cloud Machine](#)

13.1 Refreshing the Oracle Public Cloud Machine Target

You should consider refreshing the system whenever you upgrade the OPCM Rack, for example, from a quarter to half. You should also consider refreshing when you discover Oracle VM Manager or ZFS targets after the OPCM system is discovered. To refresh the OPCM target, follow these steps:

1. From the Targets menu, select **Oracle Public Cloud Machine**.
2. From the list of targets, click the Oracle Public Cloud Machine target you want to view.
3. From the **Oracle Public Cloud Machine** menu, choose **Refresh System**.
Cloud Control displays a Discovery Inputs page with the fields pre-populated.
Click **Next** to start the discovery action or **Cancel** to cancel.
4. On the Review page, click **Submit** to start the refresh action or **Cancel** to cancel. Once Submit is clicked, a progress dialogue appears that shows a confirmation:
Once the operation is complete, the dialog will close and Cloud Control will update to show all OPCM targets.

13.2 Displaying and Using the OPCM Dashboard

Use the Dashboard to view status information about software and hardware targets in the OPCM:

- [Using the Software Tab](#)
- [Using the Hardware Tab](#)
- [Using the Resources Utilization Tab](#)
- [Using the Control Infrastructure Tab](#)

To display and use the Dashboard, follow these steps:

1. From the Targets menu, select **Oracle Public Cloud Machine**.
2. From the list of targets, click the OPCM target you want to view. The dashboard displays the details.
3. You can return to this page at any time by choosing **Home** from the **Oracle Public Cloud Machine** target menu.
4. You can display General Information about the target by choosing **Target Information** from the **Oracle Public Cloud Machine** target menu.

13.2.1 Using the Software Tab

Use the **Software** tab on the OPCM dashboard to display status information including alerts and key performance metrics of the following targets:

- Application Deployments - see [Viewing Application Deployments in the OPCM Target](#)
- WebLogic Domains - see [Viewing WebLogic Domains Hosted on the OPCM Target](#)
- Coherence Clusters - see [Viewing Coherence Cluster Targets](#)
- Hosts - see [Viewing Host Targets on the OPCM Rack](#)

The Software tab displays an Incident section in the table for each element, such as Application Deployments or WebLogic Domains, that shows alerts on which you can drill down for more information.

The Software tab displays large numbers of software targets that are members of the OPCM system. You can use the inter-region filtering option to conduct a page level search. For example, if the search is performed for an Oracle WebLogic Domain, the Applications region is also filtered to show all the applications deployed on the WebLogic servers that are members of the searched WebLogic domain. Similarly the Host region is filtered to show hosts that are hosting the WebLogic servers that are part of the searched WebLogic domain.

13.2.1.1 Viewing Application Deployments in the OPCM Target

Use the Application Deployments page to view details about the applications hosted on the hosts running on the OPCM target.

To view application deployments, follow these steps:

1. From the OPCM target home page, select **Application Deployments** to display the Applications Deployment page.
2. You can choose to show All Domains or filter by specific domains by choosing the domain from the Show menu.
3. You can drill down to specific applications, targets, domains, or dependencies by clicking on its related value in each row.
4. You can filter the list of applications by choosing a value from the Status drop-down. You can select from Up, Down, Unknown, Blackout, and All.
5. You can change the column appearance of the table by clicking **View** and choosing which Columns to display, expanding or collapsing rows, or scrolling to the first or last row. You can also reorder columns.
6. You can use the Topology tab to display a pictorial view of the Application Deployments in various relational configurations.

13.2.1.2 Viewing WebLogic Domains Hosted on the OPCM Target

You can use Enterprise Manager to view details about the domains hosted on the virtual machines running on the OPCM target. To view WebLogic domains, follow these steps:

1. From the OPCM target home page, select **WebLogic Domains** and then select **Summary** to display the WebLogic Domains page. By default, the Topology view is displayed:
2. On this page you can view a chart that shows the status of the WebLogic Domains and displays the percentage of domains that are up and down. You can also view server information that shows the Server Status and alert and policy violation information for each.

Select the **Summary** tab to display additional details about the selected WebLogic Domain.

13.2.1.3 Viewing Coherence Cluster Targets

You can use Enterprise Manager Cloud Control to view details about the Coherence targets that comprise the OPCM target. To display Coherence Clusters in Cloud Control, follow these steps:

1. From the OPCM target home page, select **Coherence Clusters**.
2. You can view a chart that shows the status of the Coherence Clusters and displays the percentage of clusters that are up and down.
3. You can drill down to specific values for each cluster such as Alerts and Policy Violations along with Node information.
4. You can filter the list of clusters by choosing a value from the Status drop-down. You can select from Up, Down, Unknown, Blackout, and All.
5. You can change the column appearance of the table by clicking **View** and choosing which Columns to display. You can also reorder columns.
6. The Coherence Clusters page displays two charts showing the Top Nodes With Lowest Available Memory and Caches With Lowest Hit To Get Ratio. You can drill down to specific node information by clicking on the Node name below the Top Nodes With Lowest Available Memory chart.

7. The Nodes table displays information about each Node, including Host and several metric values such as Memory Available, Gets, and Puts.
8. The Applications table displays information about applications such as Local Attribute Cache, Clustered Session Cache, and other metrics. You can drill down to specific information about each application by clicking the Application name.

13.2.2 Using the Hardware Tab

From the Hardware tab, you can view information about the hardware and infrastructure of the OPCM. You can view information such as Temperature and Status, as well as a Hardware Schematic depicting the current state of the hardware.

The Hardware tab displays the number of hardware units in each category along with their status in the Overview section. It also shows the Incidents associated with the hardware. The Rack Hardware schematic shows the position of each hardware component on the rack. You can use the Incidents section to monitor hardware issues that arise and then drill down to the Incident Manager page by clicking the **Incident Summary** for more details about the incident.

You can use the Hardware tab to view information such as Temperature (by turning on the **Temperature** option at the top of the Rack Schematic) and Status, as well as a Hardware Schematic depicting the current state of the hardware.

13.2.3 Using the Resources Utilization Tab

On the Resources Utilization tab, each box represents a compute node:

- The size of the box represents the average CPU utilization of a compute node over the last 24 hours.
- The color of the box indicates the average memory utilization of compute node over the last 24 hours.
- Large boxes indicate compute nodes with high average CPU utilization.
- Red color indicates high average memory utilization.

Hover on the boxes to get memory and CPU details.

13.2.4 Using the Control Infrastructure Tab

Use the Control Infrastructure tab for details about each discovered service in the rack.

13.3 Visualizing Relationships Between Software and Hardware Components

Use Enterprise Manager Cloud Control to visualize relationships among software and hardware components. To see the routing topology among these components, follow these steps:

1. From the **Targets** menu, select **Oracle Public Cloud Machine**.
2. From the list of targets, click the OPCM target you want to view.
3. From the OPCM menu, select **Routing Topology**.

4. On the Routing Topology page, you can view the relationships between software and hardware components.

13.4 Analyzing the Impact of Component Failures

You can analyze the impact of component failures in an Oracle Public Cloud Machine by following the steps below. In this example, you will access an InfiniBand Switch component:

1. From the **Targets** menu, select **Oracle Public Cloud Machine**.
2. From the list of targets, click the OPCM target you want to view.
3. From the Target Navigation panel, expand the OPCM rack icon, then expand the InfiniBand Switch folder. Select an Infiniband Switch you want to view to display the InfiniBand Switch page.

13.5 Viewing Host Targets on the OPCM Rack

You can view details about the host targets hosted on the physical and virtual machines running on the OPCM target. To display the hosts information, follow these steps:

1. From the OPCM target home page, select **Hosts** to display the Hosts page:
2. You can view a chart that shows the status of the hosts and displays the percentage of hosts that are up and down.
3. You can view information about the Middleware Targets that lists the Type, Status, CPU Utilization percentage, Memory Utilization percentage, and Incident statistics along with Configuration Changes.
4. You can view charts showing the CPU Utilization percentage based on time and similarly, Memory Utilization based on time.

13.6 Viewing Application Deployments in the OPCM Target

Use the Application Deployments page to view details about the applications hosted on the hosts running on the OPCM target.

To view application deployments, follow these steps:

1. From the OPCM target home page, select **Application Deployments** to display the Applications Deployment page.
2. You can choose to show All Domains or filter by specific domains by choosing the domain from the Show menu.
3. You can drill down to specific applications, targets, domains, or dependencies by clicking on its related value in each row.
4. You can filter the list of applications by choosing a value from the Status drop-down. You can select from Up, Down, Unknown, Blackout, and All.
5. You can change the column appearance of the table by clicking **View** and choosing which Columns to display, expanding or collapsing rows, or scrolling to the first or last row. You can also reorder columns.

6. You can use the Topology tab to display a pictorial view of the Application Deployments in various relational configurations.

13.7 Viewing WebLogic Domains Hosted on the OPCM Target

You can use Enterprise Manager to view details about the domains hosted on the virtual machines running on the OPCM target. To view WebLogic domains, follow these steps:

1. From the OPCM target home page, select **WebLogic Domains** and then select **Summary** to display the WebLogic Domains page. By default, the Topology view is displayed:
2. On this page you can view a chart that shows the status of the WebLogic Domains and displays the percentage of domains that are up and down. You can also view server information that shows the Server Status and alert and policy violation information for each.

Select the **Summary** tab to display additional details about the selected WebLogic Domain.

13.8 Viewing Coherence Cluster Targets

You can use Enterprise Manager Cloud Control to view details about the Coherence targets that comprise the OPCM target. To display Coherence Clusters in Cloud Control, follow these steps:

1. From the OPCM target home page, select **Coherence Clusters**.
2. You can view a chart that shows the status of the Coherence Clusters and displays the percentage of clusters that are up and down.
3. You can drill down to specific values for each cluster such as Alerts and Policy Violations along with Node information.
4. You can filter the list of clusters by choosing a value from the Status drop-down. You can select from Up, Down, Unknown, Blackout, and All.
5. You can change the column appearance of the table by clicking **View** and choosing which Columns to display. You can also reorder columns.
6. The Coherence Clusters page displays two charts showing the Top Nodes With Lowest Available Memory and Caches With Lowest Hit To Get Ratio. You can drill down to specific node information by clicking on the Node name below the Top Nodes With Lowest Available Memory chart.
7. The Nodes table displays information about each Node, including Host and several metric values such as Memory Available, Gets, and Puts.
8. The Applications table displays information about applications such as Local Attribute Cache, Clustered Session Cache, and other metrics. You can drill down to specific information about each application by clicking the Application name.

13.9 Creating Reports in Enterprise Manager

You can create the following reports in Enterprise Manager:

- Oracle BI Instance Performance -- This report covers all BI instances running on the selected OPCM rack. First a list of all WebLogic domains associated with the selected rack is read, then all oracle_ias_farm targets associated with those WebLogic domains are determined and then the list of all BI instances associated with those oracle_ias_farm targets are identified.
- Oracle Internet Directory Performance -- This report covers all OID servers running on the selected OPCM rack. First a list of all WebLogic domains associated with the selected OPCM rack is read, then all oracle_ias_farm targets associated with those WebLogic domains are determined and then the list of all OID servers associated with those oracle_ias_farm targets are identified.
- Oracle Service Bus Performance -- This report covers all OSB servers running on the selected OPCM rack. First a list of all WebLogic domains associated with the selected OPCM rack is read and then all OSB server targets associated with those WebLogic domains through 'r;farm' association are identified. This report has two sections under each OSB server – Top Business Services and Top Proxy Services. These sections show the top five business services and the top five proxy services respectively. The top five services are determined based on the decreasing order of max value of throughput (for example, messages per minute) metric for each service during the selected period.
- SOA Infrastructure Performance -- This report covers all SOA Infrastructure targets running on the selected OPCM rack. First a list of all WebLogic domains associated with the selected OPCM rack is read and then all SOA Infrastructure targets associated with those WebLogic domains through 'r;farm' association are identified. The SOA Infra Engine related charts cover only the following four engine types - bpel, bpmn, mediator and workflow.
- Oracle WebLogic Server Performance -- This report covers all WebLogic servers running on the selected OPCM rack. The list of all WebLogic domains associated with the selected OPCM rack is read. The report is divided into sections based on different WebLogic domains. For each domain, the top five servers are shown in the charts for each metric. The top five servers for each metric are determined by decreasing order of max value for the metric for each server in the selected period.
- Compliance Summary -- This report give a brief summary about the compliance standards evaluated for the middleware targets like WebLogic server, domains, clusters, host, and so on, running on the OPCM system. The report shows the list of top ten least compliant WebLogic domains and host and Compliance Standard Summary.
- Compliance Details -- This report give details on about the compliance standards evaluated for middleware targets like WebLogic domains, servers, clusters, hosts, and so on, running on the OPCM system. The reports show the top ten least compliant WebLogic domains and host and a detailed list on compliance rules violated for the middleware targets.

The Reports menu item is visible in the **Oracle Public Cloud Machine** target menu if BIP is configured with Enterprise Manager. If BIP is not configured, the menu item does not appear.

To create reports, follow these steps:

1. From the **Targets** menu, select **Oracle Public Cloud Machine**.
2. From the list of targets, click the Oracle Public Cloud Machine target for which you want to create reports.

3. From the **Oracle Public Cloud Machine** menu, choose **Reports** and then select the report you want to create from the menu.

13.10 Enabling Log Viewer

The Log Viewer has been integrated for OPCM System and OPCM Control.

From the OPCM System home page, a Log Viewer page is now included that shows an integrated log view of all WebLogic-based service logs and Grill server logs. To access this page from the OPCM System home page target menu or from the OPCM Control target menu, select **Logs**, then **View Log Messages**.

The following log sources are integrated into this unified log viewer:

- Logs from various WebLogic service domains.
- Grill server logs located at `/var/log/chef.log`.

13.11 Converting an Exalogic Target to an Oracle Public Cloud Machine

To convert an existing Exalogic target to an Oracle Public Cloud Machine, follow these steps:

1. From the **Targets** menu, select **Exalogic / Virtual** target.
2. Click on the menu and select **Convert to Oracle Public Cloud Machine**.
3. In the Discovery page, deselect the **Discover Ethernet Switches** checkbox.
4. Mark the SNMP Community String as **Public** and click **Next**.
5. Click **Finish** to convert the Exalogic target.

14

Using Oracle Compute

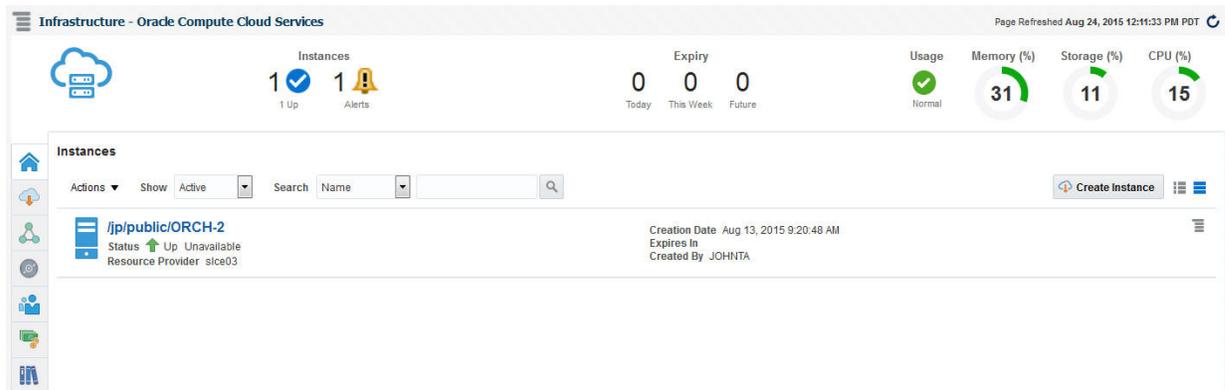
This chapter provides self service users with instructions on using the Oracle Compute Self Service Portal to request, monitor, and manage Oracle Compute instances. It contains the following sections:

- [Using the Oracle Compute Self Service Portal](#)
- [Creating a New Orchestration](#)
- [Viewing the Orchestration Details](#)
- [Creating Storage Volumes](#)
- [Managing the Library](#)
- [Discovering an Orchestration](#)

14.1 Using the Oracle Compute Self Service Portal

To navigate to the Oracle Compute Self Service Portal page, login as a user with the EM_SSA_USER role. The Self Service Portal page is displayed. Select **Infrastructure - Oracle Compute** from the drop down list. The following page appears:

Figure 14-1 Oracle Compute Self Service Portal



It contains the following tabs:

- **Home:** The Home page lists the following details:
 - **Instances:** This region shows the list of instances that have been created and the status indicating whether they are Up or Down.
 - **Notifications:** Lists notifications such as orchestrations that have not been discovered, number of service offerings published in the last 7 days, and so on.

- **Expiry:** Shows instances due to expire today, this week, or in the future.
 - **Usage:** Click the **Usage** icon to view the total quota (servers and memory) used so far by the self service user, including all the services that the user has created. Your quota includes both the number of Oracle VM instances, CPUs, memory, and storage across all your instances.
 - **Services:** This region shows the list of Oracle VM instances owned by the self service user. For each service, the name of the service, the status, service type, resource provider, and date on which it was created, and the date on which it is scheduled to expire is displayed. You can also see the services for which you have granted privileges. You can do the following:
 - * **Create a New Instance:** To create an orchestration, click **Create Instance**. See [Creating a New Orchestration](#).
 - * **View a Service:** Click on the Name link to drill down to the VM Instance Home page.
 - * **Delete a Service:** Select a service from the table and click **Delete**. A confirmation message is displayed. Click **Yes** to delete the instance.
 - * **Extend:** Select a service and click Extend to extend the lifecycle of the instance.
 - * **Start a Service:** Select a service instance from the table and click **Start**. A request is submitted to start the service.
 - * **Stop a Service:** Select a service instance from the table and click **Stop**. A confirmation message is displayed. Click **Yes** to submit a request to stop the service.
 - * **History:** Select a service instance and click **History** to view the history of operations performed on the service instance.
 - * **Discover:** Select this option to discover any orchestrations and promote them as service instances.
 - * **Grant:** You can grant view or full privileges over the service instance to other users or roles. See [Granting and Revoking Privileges](#).
 - * **Revoke Privileges:** You can revoke privileges you have granted to other users or roles.
 - **Requests:** This page shows a list of Start Orchestration, Discover Orchestration, and Service Deletion requests. For each request, the status, type, start date, and submission date of the request is displayed. Select columns from the View menu to view more details about the request. You can select a scheduled request and click Reschedule to reschedule the request. To delete a scheduled request, select the request and click Cancel. If a request that is scheduled such as Create gets canceled, all other associated requests are also canceled.
- **Storage:** See [Creating Storage Volumes](#)
 - **Library:** See [Managing the Library](#)

14.2 Creating a New Orchestration

To create a set of Oracle VM instances with a customized configuration, you must create a new orchestration by following these steps:

1. Click **Request New Service** in the Infrastructure Oracle Compute Self Service Portal page.

 **Note:**

When you log in for the first time, you must set the Oracle Compute Credentials. Click the **Preferences** link the top right corner of the page. The Preferences window appears. Click on the Infrastructure: Oracle Compute link in the left panel. Click **Set** in the Oracle Compute Site Credential region and enter the username and password required to access the Oracle Compute Site. Optionally, you can specify the host credentials for deploying the Management Agent.

2. Select the **Orchestration Service Template** from the Service Catalog. The Request Orchestration wizard appears.

Figure 14-2 Request Orchestration: General Page

3. Select the Oracle Compute Site in which the VM instances are to be created.
4. Enter a name for the orchestration and specify a description.
5. If any orchestration has been saved either as a deployment plan or as a JSON file, you select it here. If no saved orchestrations are available, click **Next** to continue. The Deployment Configuration page appears.
6. On this page, you can specify the configuration for the different components of your orchestration using one or more launch plans. A launch plan defines the configuration settings for one or more VM instances. In the Launch Plan window, enter a name for the launch plan and click **Add**. The launch plan name you entered appears under the Orchestration Template header in the launch panel.
7. Click on the **Launch Plan Configuration** tab. Enter the following details:
 - **High Availability:** You can specify a high availability policy for an orchestration, which affects how the orchestration is managed by the system. This can be:
 - No High Availability: If you choose this option, the orchestration components are neither restarted nor monitored.
 - Active: The components defined by the orchestration are restarted if they stop unexpectedly due to causes such as power failure and node disconnection.

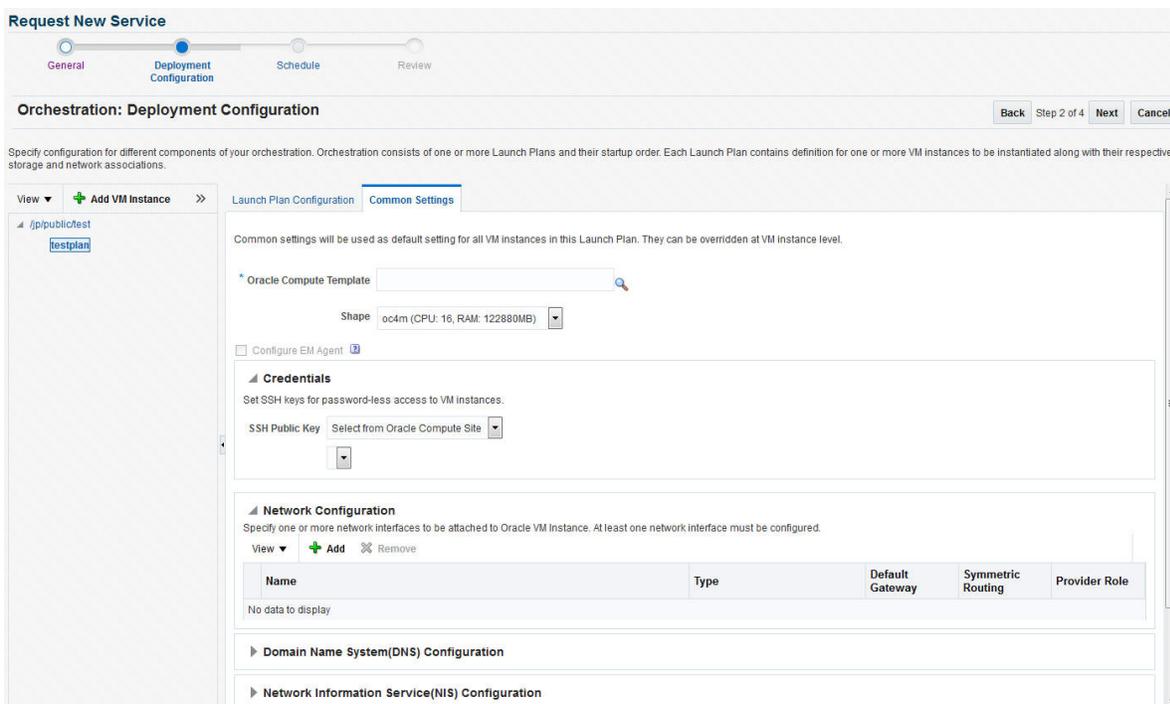
 **Note:**

A component will not be restarted if it is stopped due to an operator error such as an instance relaunch or an invalid template list or shape. In this case, the status of an orchestration will reflect the error, but the components will not be recreated. The reported operator error must be fixed and the orchestration restarted.

- Monitor: The components are not restarted, they are only monitored.
 - **Deploy on Different Nodes:** Select this check box to deploy the launch plan on different nodes.
8. Click on the **Common Settings** tab to define the default settings that will be used for all VM instances in this launch plan. The default setting can be overridden at the VM instance level.

Specify the following details:

Figure 14-3 Request Orchestration: Deployment Configuration



- **Oracle Compute Template:** A template is a copy of virtual hard disk with an installed operating system used to launch an instance. The template must be a whole disk template (including a partition table and kernel) stored in a tar archive, compressed with gzip. Click the **Search** icon and select a template from the list.
- **Shape:** A shape is a combination of CPU, memory, and IO which define the characteristics of a virtual machine. Select a shape from the drop down list.

- **Configure EM Agent:** This checkbox will be disabled if the self service user does not have access to the EoIB OMS and IPoIB instance storage networks that are required to deploy the management agent on virtual machines.
 - **Credentials:** You can set the SSH key credentials for password-less access to VM instances and host credentials for deploying the Management Agent. You can use:
 - **Oracle SSH Key:** If SSH key credentials have been set, and can be used as preferred credentials, select **Use Preferences** and choose the credential set from the drop down box. If you select **Enter Key**, you must specify the SSH public and private key pair required to access the VM instances. If you select **Key is in a file**, click **Browse** and select the public / private key from a file.
 - **Root SSH Key:** If SSH key credentials have been set for the host, and can be used as preferred credentials, select **Use Preferences** and choose the credential set from the drop down box. If you select **Enter Key**, you must specify the SSH public and private key pair required to access the VM instances. If you select **Key is in a file**, click **Browse** and select the public / private key from a file.
 - **Oracle User:** If you select Use Preferences, choose the preferred credentials from the drop down box. If you select Enter Password, you must enter the password for the Oracle user.
 - **Root User:** If you select Use Preferences, choose the preferred credentials from the drop down box. If you select Enter Password, you must enter the password for the root user.
 - **Network Configuration:** Click **Add** to select one or more network interfaces that will be associated with the VM instances. A network can be an IPoIB or EoIB network. In the Select Network window, you can choose:
 - **Tenant Networks:** These are networks configured for each tenant to communicate with other servers within OPCM or outside.
 - **Service Networks:** These are networks configured to communicate with other service providers such as ZFSSA or Exadata systems.
 - **Storage Configuration:** You can associate one or more storage volumes to the VM instances that are to be created. Click **Create**. In the Create Storage Volumes window, enter the name of the storage volume, size, select the storage properties, and the number of volumes to be created and click **Add**.
 - **Advanced Configuration:** You can optionally specify additional attributes for the VM instances. Click **Add** to add a key and value for the attribute.
9. After you have created the launch plan, you can add one or more VM instances that can use the launch plan. Select the launch plan you have created and click **Add VM Instance**. In the Add VM Instance window, specify the name and number of VM instances to be created. If you are adding more than one instance, the name you specify will be used as a prefix to generate a unique name for each VM instance. You can define configuration settings at the instance level and override the settings defined at the launch plan level

To define instance level specific configuration settings, select the VM instance from the left panel. The Oracle VM Instance Configuration page appears. To define instance level settings, select the Override Common Settings checkbox to override the default launch plan level settings. Select the Oracle Compute Template, Shape, Network, and Storage Configuration.

10. In the Advanced Configuration region, you can optionally specify additional attributes. Click **Add**. In the Add Attributes window, specify the key and value for the attribute. In the Tags field, you can enter tags to identify the instance deployment request. In the Optional Network Configuration region, you can specify additional configuration parameters for the network defined in the Network Configuration region. You can specify a list of DNS servers, configure the network as the default gateway network, and configure the VM instance as a provider on the underlying selected service network. Click **Next**.
11. The Review page appears. Review the information entered so far and click **Submit** to submit the orchestration request or click **Save as Deployment Plan** to save the orchestration as a deployment plan that can be used for other orchestrations.

14.3 Viewing the Orchestration Details

To view the orchestration details, click on the **Name** link in the Services region of the Infrastructure - Oracle Compute Self Service Portal page.

Figure 14-4 Oracle Compute Orchestration Page

The screenshot shows the Oracle Compute Orchestration page for a target named 'slice03/jp/public/ORCH-2'. The 'General' section displays the following details:

- Oracle Compute Site: slice03
- Target Name: slice03/jp/public/ORCH-2
- State: ready
- Launch Plans: 1
- CPUs: 1
- Allocated Memory (GB): 4

The 'VM Instances' section contains a table with the following data:

Name	Status	State	Shape	Template	VNC URL	IP Address
ORCH-2_vm1	↑	running	small (CPU: 1, RAM: 4GB)	/oracle/public/linux_12.2.1.0.0_64	192.168.20.17:5...	192.168.96.172...

This page contains the following regions:

- **General:** This region shows the name of the Oracle Compute Site, the target name, the number of launch plans, CPU, and allocated memory.
- **VM Instances:** Lists the VM instances in the launch plan and the configuration for each VM instance which includes the status, shape, template, VNC URL, and IP address. Click on the VM Instance link to drill down to the VM Instance Home page. If the VM instance is up and running, select the VM Instance and click **Shutdown** to shut down the instance. If the VM instance is down, click **Restart** to restart the instance.

You can perform the following operations on this page:

- Start

- Stop
- Update
- Shutdown

14.3.1 Viewing the Oracle VM Instance Home Page

To view this page, click on the **Name** link in the VM Instances region in the Oracle Compute Orchestration Details page.

Figure 14-5 Oracle VM Instance Home Page

The screenshot displays the Oracle VM Instance Home Page for instance **ORCH-2_vm1**. The page is divided into several sections:

- General:** Shows Oracle Compute Site (sloc03), Target Name, State (running), CPUs (1), Allocated Memory (4 GB), Shape (small), Label (ORCH-2_vm1), IP Address (192.168.98.172), VNIC URL, SSH Key (0), and Availability for Last 24 Hours (99.93%).
- Relative CPU Utilization:** A line graph showing CPU utilization over time from 11:26 AM to 12:20 PM on August 24, 2015. The utilization is consistently near 0%.
- Network:** A table listing attached networks.

Name	Type	IP Address	Hostname	Primary Hostname	Default Gateway	Symmetric Routing	Provider Role
/jpl/public/om1	IPoIB	192.168.98.172		<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>
/oracle/public/IPoIB-virt-admin	IPoIB	10.0.0.19		<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Storage:** A section for attaching and detaching storage volumes. It shows a table with columns for Volume Name, Size (GB), and Status. Currently, no data is displayed.
- Snapshot:** A section for creating snapshots. It shows a table with columns for Name, Machine Image, and State. Currently, no snapshots are displayed.

This page shows the detailed information for the VM instance. The name of the Oracle Compute Site with which this instance is associated, the number of CPUs, allocated memory, storage, networks, relative CPU utilization, and so on are displayed. You can do the following:

- **Attach Storage:** Use this option to attach storage to the VM instance. Select one or more storage volumes and specify an index for each volume. The index value must be between 1 and 10. Click **Attach** to attach the storage volume to the VM instance.
- **Detach Storage:** Select one or more storage volumes from the list and click **Detach** to detach storage from the VM instance.
- **Edit VM Instance:** Select this option to modify the shape and network configuration for the VM instance.

14.4 Viewing the Service Networks

The service networks that are available are listed here. The subnet, type, description, CIDR, and IP address range is displayed.

14.5 Creating IPoIB Subnets for Tenant Networks

IPoIB networks are deployed on the private security domain. Multiple IPoIB virtual networks can be deployed on a security domain of the tenant. These IPoIB networks are not isolated from each other and can be created for each tenant.

To create an IPoIB subnet, follow these steps:

1. Select the Tenant Networks box and click **Create**. Enter the following details:
 - Name: Enter the name of the tenant administrator user.
 - vEthernet Name: Click the Search icon and select the vEthernet from the list.
 - Creation Mode: This can be CIDR / IP Range or Global IP.
 - CIDR: Enter the IP address for the subnet in the CIDR (Classless Inter-Domain Routing) format. A CIDR address includes the standard 32-bit IP address and it indicates how many bits are used for the prefix.

For example, an address of 206.13.1.48/25 indicates that the first 25 bits are used to identify the unique network. The remaining bits are available to identify the specific host. The network you specify must not be used by another EoIB network.
 - Global IP: An IP Pool is a pool of public IP ranges made up of one or more IP Pool entries. If global IP pool is enabled in the site configuration, specify the global IP pool address number. If this number is specified, the IP address is allocated from a global pool of IP addresses.
 - Ethernet Interface Index: Select this checkbox and specify the ethernet interface index number.
 - Description: Enter a description of the EoIB network.
 - IP Ranges: Click Add to add an IP address range in the format IP-IP. For example, 10.242.2.211-10.242.2.215.
2. Click **Create** to create the IPoIB subnet and return to the Networks page.

14.6 Creating Storage Volumes

1. Click on the **Storage** icon to view the Storage Volumes page. A storage volume object is a single volume that can be attached to an instance. On this page, the name of the storage volume, status, size, and its properties are displayed.
2. Click **Create Volume**. In the Create Storage Volume window, the name of the storage volume is displayed. Enter the size, description, and select a template for the volume. Click **OK** to create the storage volume.
3. You can take a snapshot or a copy of a storage volume and make the copy available to users belonging to another tenancy.
4. Select a storage volume from the list and click **Snapshot Volume**. In the Snapshot Storage Volume window, select a target tenant name in the Target Volume drop down field, and enter the name of the snapshot, specify the size, and a description for the snapshot.
5. Click **OK** to create the snapshot and return to the Storage page.

14.7 Managing the Library

This page lists the templates and saved deployment plans that are available to the tenant user. Click the **Library** icon to access this page.

Figure 14-6 Oracle Compute Self Service Portal: Library

The screenshot shows the Oracle Compute Self Service Portal Library page. At the top, there are navigation tabs for 'Infrastructure - Oracle Compute Cloud Services' and 'Library'. The Library page is divided into 'Templates' and 'Deployment Plans'. The 'Templates' section shows a list of templates with the following columns: Name, Upload Size (MB), Total Size (MB), Decompressed (MB), Quota, Agent Configured, and Attributes. The templates listed are:

Name	Upload Size (MB)	Total Size (MB)	Decompressed (MB)	Quota	Agent Configured	Attributes
/oracle/public/ewrt	0	0	5120	5120	✗	
/oracle/public/linux5_12.2.1.0.0_64	1531	1531	10240	10240	✗	
/oracle/public/linux6_12.2.1.0.0_64	1499	1499	11264	11264	✗	
/oracle/public/gqqw	0	0	5120	5120	✗	
/oracle/public/gqwwq	0	0	5120	5120	✗	
/oracle/public/test	0	0	5120	5120	✗	

For each template, the name, attributes, quota assigned, and the size of the template is displayed. You can choose to view all the templates, templates available to public, or templates available for the selected tenancy.

14.7.1 Uploading a Template

A template is a copy of virtual hard disk with an installed operating system used to launch an instance. The template must be a whole disk image (including a partition table and kernel) stored in a tar archive, compressed with gzip. To upload a template, follow these steps:

1. Click **Upload**. The Template Management: Upload Template window appears. While uploading the template, the Template Scope can be:
 - **Public**: The template will be available to all the users. If you select this option, enter the name of the template in the Name field.
 - **Tenant**: The template will be available only to users belonging to the selected tenancy. If you select this option, select the Tenant in the Name drop down field and specify the name of the template. The template will be available to all users in the selected tenancy.
2. Specify any additional attributes that will be used when the service instance is provisioned.
3. In the Select Template field, select the template that is to be uploaded. The template you upload can either be present in your local disk or from the Software Library.

4. Click **Upload** to upload the template. The newly uploaded template will appear with the following details:
 - **Name:** The name of the template. If the template is available to all users, the format of the name is `/oracle/public/<template_name>`. If the template is available only to users belonging a selected tenancy, the format is `<tenant_name>/public/<template_name>`.
 - **Attributes:** Any user defined attributes that were specified when the template was uploaded.
 - **Quota:** The quota specified for the template.
 - **Uploaded Size:** The size of the template that has been uploaded.
 - **Total Size:** The total size of the template.
 - **Decompressed Size:** The size of the template in its decompressed state.
 - **Agent Configured:** Indicates if the Management Agent has been configured for this template.

14.7.2 Deleting a Template or a Deployment Plan

To delete a template:

1. Select the template from the list in the Library region and click **Delete**.
2. A confirmation message is displayed. Click **Delete** to confirm.
3. Click the Deployment Plans radio button to view the deployment plans that have been saved for later deployment.
4. Select a plan and click **Delete** and click **OK** to confirm the deletion.

14.8 Discovering an Orchestration

You can use this option to discover any orchestrations that have been created externally without using Enterprise Manager.

To discover an orchestration, follow these steps:

1. From the Actions menu, select Discover, then select Orchestration.
2. A confirmation message is displayed. Click Submit to discover the orchestrations.
3. A Discover Orchestration request is submitted and you can monitor the progress.

15

Oracle Compute REST APIs

This chapter describes the different REST APIs and covers the following:

- [Using the REST API Tool](#)
- [Overview of REST Resources](#)
- [Supported Use Cases](#)
- [References](#)

15.1 Using the REST API Tool

To use the REST API tool, follow these steps:

1. Use REST tool (for example Chrome's Postman plugin) to visit the Oracle Compute web service. The Oracle Compute web service entry is `https://hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure`. Before you call the API, you must use a trusted Enterprise Manager certificate.
2. Set the authorization header, using Basic Auth, enter the Enterprise Manager username and password, and click Refresh Header.
3. Set the Accept or Content-Type header value to `application/json` to perform the request.

The following table describes the REST HTTP methods you can use for OPCM objects:

Table 15-1 Rest HTTP Methods

Method	Description
POST	Creates an object by using the JSON-formatted data in the request body.
GET	Retrieves information about the object/s specified in the request URI.
PUT	Updates the attributes of an object by using the JSON-formatted data in the request body.
DELETE	Deletes the object specified in the request URI.

15.2 Overview of REST Resources

This section provides an overview of the REST resources.

Table 15-2 REST Resources for Target Type

Target Type	URL
Oracle Compute Site	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites
Cluster	/em/websvcs/restful/extws/virtualization/infrastructure/v1/clusters
Virtual Platform	/em/websvcs/restful/extws/virtualization/infrastructure/v1/virtualplatforms
Virtual Server	/em/websvcs/restful/extws/virtualization/infrastructure/v1/virtualservers
Physical Server	/em/websvcs/restful/extws/virtualization/infrastructure/v1/physicalservers
Orchestration	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services

Table 15-3 Network Resources of Site

Network Resource	URL
ServiceNetwork	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/servicenetworks
vEthernet	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/vethernets
Subnet	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/vnets
IP Reservation	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/vnetreservations
Subnet Access	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/vnetaccess

Table 15-4 Storage Resources of Site

Storage Resource	URL
StoragePool	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/storagepools
StorageVolume	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/storagevolumes

Table 15-5 Tenancy and Image Management Resources of Site

Resource	URL	Supported Operations	Comments
Tenant	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/tenants	GET, POST, PUT	N/A
User	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/users	GET, POST, PUT, DELETE	N/A
Quota	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/quotas	GET, POST, PUT, DELETE	N/A
Image Templates	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/templates	GET, DELETE	N/A
Image Templates	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<SITE_ID>/templates/swlib	POST	API to add templates through the software library using the software library component URN.
Software Library Components	/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/swlibcomponents	GET	To get the component URN of uploaded software library components.

The cloud framework resources used to create and view service requests, service offerings, service types, and service instances that are required in orchestration.

Table 15-6 Cloud Framework Resources

CFW Resource	URL	Supported Operations	Comments
Service Type	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicetypes/	GET	Not required for Orchestration but required to get the Service types. Look for ORACLE_NIMBULA_ORCHESTRATION_SERVICE.
Services	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/	GET, POST	POST is used to create services (in this case orchestration). GET is used to retrieve service information like GUID that is required for POST requests.

Table 15-6 (Cont.) Cloud Framework Resources

CFW Resource	URL	Supported Operations	Comments
Service Metadata	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/ v2/services/ {serviceguid}/ metadata	GET	Need to invoke this to get the Orchestration job parameters, and use them to build the request json to invoke Create Service.(POST of Services)
Service Instances	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/ v2/serviceinstances/	GET	Gets all the instances for the logged in User, and is used to get the instance guid.
Service Instances	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/ v2/serviceinstances/ {instanceguid}	GET, PUT	GET instance details.PUT is used to execute the action on the Service Instance (requires action id)
Service Actions	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/ v2/serviceinstances/ {instanceguid}/ actions/em/websvcs/ restful/extws/ cloudservices/ssa/cfw/ v2/serviceinstances/ {instanceguid}/actions/ {actionid}	GET	GET returns all the actions with action ids on the Service Instance.GET returns the action inputs needed to invoke the Action on the Service Instance.
Service Requests	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/ v2/servicerequests	GET	Gets the service requests.
Service Request	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/ v2/servicerequests/ {requestid}	GET, PUT, DELETE	GET gets the service request details.PUT reschedules the request.DELETE deletes the request.

15.3 Supported Use Cases

The supported use cases are:

- [Orchestration Use Cases](#)
- [Service Network Use Cases](#)
- [vEthernet Use Cases](#)
- [Subnet Use Cases](#)
- [IP Reservation Use Cases](#)
- [Subnet Access Use Cases](#)

- [Storage Volume Use Cases](#)
- [Tenancy Use Cases](#)
- [User Use Cases](#)
- [Quota Use Cases](#)
- [Template Use Cases](#)

15.3.1 Orchestration Use Cases

The orchestration use cases are:

- [Creating an Orchestration](#)
- [Performing an Orchestration Action](#)

15.3.1.1 Creating an Orchestration

To create an orchestration, you must make a set of calls using the CFW resources by following these steps:

1. Call the Services to GET the Service GUID.

URL: Refer the CFW table and prefix the `https://Hostname:port` to the url as follows:

```
https://<hostname:port>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
services/
```

Input: None

Output:

```
{ "name": "Services", "type": "Service", "totalResults": 2, "cfwItems": [ { "id": "1", "name": "ORACLE_NIMBULA_ORCHESTRATION_TEMPLATE", "displayName": "Orchestration", "guid": "0E1D6A8E12B70BB5E05303B7F00AE6C0", "serviceType": "ORACLE_NIMBULA_ORCHESTRATION_SERVICE", "serviceFamily": "NIMBULA_INFRASTRUCTURE", "description": "Create a set of Oracle VM instances with customized configuration for multi-tier applications", "meta": "https://<hostname:port>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/0E1D6A8E12B70BB5E05303B7F00AE6C0/metadata", "canonicalLink": { "href": "https://<hostname:port>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/0E1D6A8E12B70BB5E05303B7F00AE6C0" } }, { "id": "2", "name": "ORACLE_NIMBULA_SIMPLE_ORCHESTRATION_TEMPLATE", "displayName": "Simple Orchestration", "guid": "0E1D6A8E12BA0BB5E05303B7F00AE6C0", "serviceType": "ORACLE_NIMBULA_ORCHESTRATION_SERVICE", "serviceFamily": "NIMBULA_INFRASTRUCTURE", "description": "Create one or more Oracle VM instances with default configuration and minimum inputs", "meta": "https://<hostname:port>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/0E1D6A8E12BA0BB5E05303B7F00AE6C0/metadata", "canonicalLink": { "href": "https://<hostname:port>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/0E1D6A8E12BA0BB5E05303B7F00AE6C0" } }, "canonicalLink": { "href": "https://<hostname:port>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services", "selfLink": { "href": "https://<hostname:port>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services" } } ] }
```

2. Use the meta link from the above output to get the metadata for the service to form the input.

URL: Specify the service metadata using the GUID from output in Step 1.

Input: None

Output:

```
{ "configurations": [ { "name": "requestId", "type": "STRING", "description": "Cloud Framework Request ID", "required": false, "secret": false }, { "name": "orch_plan_swlib_urn", "type": "STRING", "description": "Orchestration Plan Software Library Component URN", "required": false, "secret": false }, { "name": "orch_plan", "type": "LARGEDATA", "description": "Orchestration Plan", "required": false, "secret": false }, { "name": "site_name", "type": "STRING", "description": "Oracle Nimbula Site", "required": true, "secret": true } ], "canonicalLink": { "href": "<hostname:port>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/0E1D6A8E12B70BB5E05303B7F00AE6C0/metadata"}, "selfLink": { "href": "https://<hostname:port>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/0E1D6A8E12B70BB5E05303B7F00AE6C0/metadata"}, "instanceName": "<user-input>" }
```

To build the orch_plan.xml, refer to the XSD in [Section 5.4, "References"](#).

3. Invoke the Create Orchestration Service Instance by building the input using the response parameters from Step 2.

URL: Use Services URL with POST

Input: Using the orchestration plan (orch_plan) as the input, build the XML using the values corresponding to the site like (Image List Name , Shape Name, Network, Storage, and so on). Repeat the same for all the ObjectPlans and specify the appropriate site_name value.

XML

```
{ "offeringId": "0E1D6A8E12BA0BB5E05303B7F00AE6C0",
  "name": "/cloud/public/OrchtestUi", "instanceName": "/cloud/public/OrchtestUi",
  "configurations": [ { "name": "orch_plan", "value": "<?xml version=&quot;1.0&quot; encoding=&quot;windows-1252&quot; standalone=&quot;yes&quot;?>
<ns2:ConfigurationData xmlns:ns2=&quot;http://www.oracle.com/sysman/vi/VIDeploymentPlan&quot; version=&quot;0.0.2&quot; ><Type>NimbulaImage</Type><PassThroughMode>false</PassThroughMode><OrchestrationDeploymentNamePrefix=&quot;/cloud/public/OrchtestUi&quot; ><InstallEMAgent>false</InstallEMAgent><ObjectPlanDependencyList/><ObjectPlanList><ObjectPlan label=&quot;Lp1&quot; ><Type>launchplan</Type><HAPolicy value=&quot;none&quot; /><ObjectMemberList><ObjectMember xmlns:xsi=&quot;http://www.w3.org/2001/XMLSchema-instance&quot; xsi:type=&quot;ns2:LaunchPlanMemberType&quot; ><NumberOfInstances>1</NumberOfInstances><ImageList>/oracle/public/linux5_12.2.1.0.0_64</ImageList><ImageListEntry>1</ImageListEntry><DeploymentTarget><Name>slce03</Name><Type>oracle_nimbula_site</Type></DeploymentTarget><DefaultConfiguration><Label>Lp1</Label><ImageList >/oracle/public/linux5_12.2.1.0.0_64</ImageList><Shape><Name>mini</Name><Id>small</Id></Shape><Account/><Quota><Name>quota</Name></Quota><Priority>priority</Priority><Tags></Tags><PlacementRequirements></PlacementRequirements><HaEnabled>false</HaEnabled><Virtio>false</Virtio><Nics><NetworkInterface name=&quot;net0&quot; fromDefinition=&quot;false&quot; ><VethernetId>/elcontrol/public/vnet-IPoIB-private</VethernetId></NetworkInterface></Nics><Disks/><Attributes/></DefaultConfiguration><Instances><VirtualMachine name=&quot;vml&quot; customConfigured=&quot;false&quot; ><InstallEMAgent>true</InstallEMAgent><CustomConfiguration><Label>vml</Label><ImageList>/oracle/public/linux5_12.2.1.0.0_64</ImageList><Shape><Name>mini</Name><Id>mini</Id></Shape><Account/><Quota><Name>quota</Name></Quota><Priority>priority</Priority><Tags></Tags><PlacementRequirements></PlacementRequirements><HaEnabled>false</HaEnabled><Virtio>false</Virtio><Nics><NetworkInterface name=&quot;net0&quot; fromDefinition=&quot;false&quot; ><Vnet>/elcontrol/public/vnet-IPoIB-private</Vnet></NetworkInterface></Nics><Disks
```

```
<diskname="disk1" fromDefinition="false" />
</Disk>
</Disks>
<Attributes>
</CustomConfiguration>
</VirtualMachine>
</Instances>
<AffinityRelationshipList />
</ObjectMember>
</ObjectMemberList>
</ObjectPlan>
</ObjectPlanList>
</OrchestrationDeployment>
</ns2:ConfigurationData>
},
{"name": "site_name", "value": "nimbsite1"}
}]}
```

Output: Service Request Id if the request is successful. If unsuccessful, use the Service Request URL to check the service request status.

15.3.1.2 Performing an Orchestration Action

Performing an orchestration action involves the following steps:

1. Get the Instance ID.

URL: Use the GET on Service Instances URL and append `?expanded=true` -
`/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?expanded=true`

Input: None

Output:

```
{
  "name": "Service Instances",
  "type": "Service Instance",
  "totalResults": 1,
  "canonicalLink": {
    "href": "https://hostname:port/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances"
  },
  "cfwItems": [
    {
      "name": "del_2",
      "guid": "51087FBC61473C5477167DAAB6BD1871",
      "serviceFamily": "NIMBULA_INFRASTRUCTURE",
      "serviceType": "ORACLE_NIMBULA_ORCHESTRATION_SERVICE",
      "status": "STATUS_UP",
      "canonicalLink": {
        "href": "https://hostname:port/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/51087FBC61473C5477167DAAB6BD1871"
      }
    }
  ]
}
```

2. Get the ID of the action to be performed.

URL: Invoke Service Actions using GET

`https://hostname:port/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/51087FBC61473C5477167DAAB6BD1871/actions`

Input: None

Output:

```
{
  "name": "Actions",
  "type": "Action",
  "totalResults": 8,
  "cfwItems": [
    {
      "id": "2",
      "name": "DELETE",
      "displayName": "Delete Orchestration",
      "description": "Delete Nimbula Orchestration"
    },
    {
      "id": "4",
      "name": "START",
      "displayName": "Start Orchestration",
      "description": "Start Oracle Compute Orchestration"
    },
    {
      "id": "5",
      "name": "STOP",
      "displayName": "Stop Orchestration",
      "description": "Stop Oracle Compute Orchestration"
    },
    {
      "id": "6",
      "name": "SHUTDOWNORCHESTRATION",
      "displayName": "Shutdown Orchestration",
      "description": "Shutdown Oracle Nimbula Orchestration"
    },
    {
      "id": "7",
      "name": "RESTARTORCHESTRATION",
      "displayName": "Restart Orchestration",
      "description": "Restart Oracle Nimbula Orchestration"
    },
    {
      "id": "8",
      "name": "DESTROYORCHESTRATION",
      "displayName": "Destroy Orchestration",
      "description": "Destroy Oracle Nimbula Orchestration"
    },
    {
      "id": "9",
      "name": "UPDATEORCHESTRATION",
      "displayName": "Update Orchestration",
      "description": "Update Oracle Nimbula Orchestration"
    },
    {
      "id": "10",
      "name": "SNAPSHOT",
      "displayName": "Snapshot VM Instance",
      "description": "Snapshot VM Instance"
    }
  ],
  "canonicalLink": {
    "href": "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/51087FBC61473C5477167DAAB6BD1871/actions"
  },
  "selfLink":
}
```

```
k":{"href":"/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/51087FBC61473C5477167DAAB6BD1871/actions"}}
```

3. Get the inputs for the action

URL: Invoke GET on Service Actions URL using the Action Id from the output in Step 2.

```
/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/E8E4395513C2B72F01D91E6DB46D1701/actions/2
```

Input: None

Output:

```
{ "id": "2", "name": "DELETE", "displayName": "Delete
Orchestration", "description": "Delete Oracle Compute
Orchestration", "actionInputs":
[ { "name": "requestId", "type": "STRING", "description": "Cloud Framework Request
ID", "displayName": "requestId", "required": false, "secret": false },
{ "name": "instance_guids", "type": "VECTOR", "description": "Orchestration Target
GUIDs", "displayName": "instance_guids", "required": false, "secret": false },
{ "name": "instance_names", "type": "VECTOR", "description": "Orchestration Target
Names", "displayName": "instance_names", "required": true, "secret": false } ], "canonical
Link": { "href": "http://hostname:port/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/serviceinstances/E8E4395513C2B72F01D91E6DB46D1701/
actions/2" }, "selfLink": { "href": "http://hostname:port/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/serviceinstances/E8E4395513C2B72F01D91E6DB46D1701/
actions/2" } }
```

4. Invoke the action. Prepare the Input for the action from the above output. As the above case requires four input parameters to perform this action, the request must contain the four elements {"actionId":2,"configurations":

```
{ "name": "requestId", "value": "7" }, { "name": "site_name", "value": "site1" },
{ "name": "instance_names", "value": [ "/hr/public/simple1" ] },
{ "name": "instance_guids", "value": [ "AC7F041E430A8B913D13B1F47E652580" ] }
```

URL: Use PUT to invoke the action.

```
/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/E8E4395513C2B72F01D91E6DB46D1701
```

Input:

```
{ "actionId": 2, "configurations": [ { "name": "requestId", "value": "7" },
{ "name": "site_name", "value": "site1" }, { "name": "instance_names", "value": [ "/hr/
public/simple1" ] } ] }
```

Output:

```
{ "requests": [ { "id": "4", "actionName": "DELETE", "canonicalLink":
{ "href": "https://hostname:port/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicerequests/4" } } ] }
```

Check the status of the service request using the Service Request GET URL.

15.3.2 Service Network Use Cases

The service network use cases are:

- [Create Service Network](#)

- [Update Service Network](#)
- [Delete Service Network](#)

15.3.2.1 Create Service Network

Description: Post IPoIB service network JSON data.

Method: POST

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/servicenetworks`

Input:

```
{
  "name": "/cloud/public/svcnet",
  "type": "IPoIB",
  "description": "svcnet",
  "foreign_partition": false,
  "num_provider_nodes": 1
}
```

Output/Response:

```
{
  "name": "/cloud/public/svcnet",
  "id": "/cloud/public/svcnet",
  "type": "ipoib",
  "description": "svcnet",
  "pkey": "0x1027",
  "pkeyFromPool": false,
  "infranet": false,
  "numProviderNodes": 1,
  "foreignPartition": false,
  "externalReferece": "http://10.128.25.146/svcnet/cloud/public/svcnet",
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/83E2FB6A3B5688FFA9E76AB78CF7762C/servicenetworks/cloud/public/svcnet",
      "rel": "canonical"
    }
  ]
}
```

15.3.2.2 Update Service Network

Description: PUT the JSON data to the Service Network's URL. The name in the JSON data must be the same as the name in the PUT URL.

Method: PUT

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/servicenetworks/cloud/public/svcnet`

Input:

```
{
  "name": "/cloud/public/svcnet",
  "id": "/cloud/public/svcnet",
  "type": "eoib",
  "description": "svcnet - updated",
  "pkey": "0x1028"
}
```

Output/Response:

```
{
  "name": "/cloud/public/svcnet",
  "id": "/cloud/public/svcnet",
  "type": "eoib",
  "pkey": "0x1028",
  "pkeyFromPool": false,
  "infranet": false,
  "foreignPartition": false,
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/
83E2FB6A3B5688FFA9E76AB78CF7762C/servicenetworks/cloud/public/svcnet/cloud/public/
svcnet",
      "rel": "canonical"
    }
  ]
}
```

15.3.2.3 Delete Service Network

Description: Send a DELETE request to the Service Network's URL.

Method: DELETE

URL:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/servicenetworks/cloud/public/svcnet

Input: None

Output/Response: None

Status Returned: Status 204 No Content

15.3.3 vEthernet Use Cases

The vEthernet use cases are:

- [Create EoIB vEthernet](#)
- [Update EoIB vEthernet](#)
- [Delete EoIB vEthernet](#)

15.3.3.1 Create EoIB vEthernet

Description: Post vEthernet JSON data.

Method: POST

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/vethernets`

Input:

```
{
  "name": "/cloud/public/eoibveth",
  "description": "test",
  "svcnet": "/cloud/public/svcnet",
  "type": "eoib",
  "id": 101,
  "switchports": {
    "denp07sw-ib03": [
      "0A-ETH-1"
    ],
    "denp07sw-ib02": [
      "0A-ETH-1"
    ]
  }
}
```

Output/Response:

```
{
  "name": "/cloud/public/eoibveth",
  "id": "/cloud/public/eoibveth",
  "type": "eoib",
  "description": "test",
  "account": "/cloud/default",
  "svcnet": "/cloud/public/svcnet",
  "switchports": [
    "\"denp07sw-ib03\" : [\"0A-ETH-1\"]",
    "\"denp07sw-ib02\" : [\"0A-ETH-1\"]"
  ],
  "infranet": false,
  "externalReferece": "db://bnet/vethernet/cloud/public/eoibveth",
  "vlanId": 101,
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vethernets/cloud/public/eoibveth",
      "rel": "canonical"
    }
  ]
}
```

15.3.3.2 Update EoIB vEthernet

Description: PUT the the JSON data to the vEthernet' s URL. The 'description', 'svcnet', 'id', and 'switchports' are editable. The name in the JSON data must be the same as the name in the PUT URL.

 **Note:**

You can see the difference from the json format of the POST request. In this case, the `vlanId` attribute is used instead of the `id` attribute in the POST request.

Method: PUT

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/vethernets/cloud/public/eoibveth`

Input:

```
{
  "name": "/cloud/public/eoibveth",
  "description": "test3",
  "svcnet": "/cloud/public/svcnet",
  "type": "eoib",
  "vlanId": 103,
  "switchports": [
    "\"denp07sw-ib02\" : [\"0A-ETH-1\"]",
    "\"denp07sw-ib03\" : [\"0A-ETH-1\"]"
  ]
}
```

Output/Response:

```
{
  "name": "/cloud/public/eoibveth",
  "id": "/cloud/public/eoibveth",
  "type": "eoib",
  "description": "test3",
  "account": "/cloud/default",
  "svcnet": "/cloud/public/svcnet",
  "switchports": [
    "\"denp07sw-ib03\" : [\"0A-ETH-1\"]",
    "\"denp07sw-ib02\" : [\"0A-ETH-1\"]"
  ],
  "infranet": false,
  "externalReferece": "db://bnet/vethernet/cloud/public/eoibveth",
  "vlanId": 103,
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vethernets/cloud/public/eoibveth/cloud/public/eoibveth",
      "rel": "canonical"
    }
  ]
}
```

15.3.3.3 Delete EoIB vEthernet

Description: Send a DELETE request to the vEthernet's URL.

Method: DELETE

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/vethernets/cloud/public/eoibveth`

Output/Response: Status 204 No Content

15.3.4 Subnet Use Cases

The subnet use cases are:

- [Create EoIB Subnet](#)
- [Create IPoIB Subnet](#)
- [Update Subnet](#)
- [Delete Subnet](#)

15.3.4.1 Create EoIB Subnet

Description: Post EoIB Subnet JSON data.

Method: POST

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnets`

Output/Response:

```
{
  "name": "/cloud/public/eoibsubnet",
  "id": "/cloud/public/eoibsubnet",
  "description": "/cloud/public/eoibsubnet",
  "gateway": "10.242.80.1",
  "account": "/cloud/default",
  "infranet": false,
  "vethernet": "/cloud/public/eoibveth",
  "cidr": "10.242.80.0/21",
  "ipranges": [
    "10.242.84.132",
    "10.242.84.133"
  ],
  "ethIndex": -1,
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnets/cloud/public/eoibsubnet",
      "rel": "canonical"
    }
  ]
}
```

15.3.4.2 Create IPoIB Subnet

Description: Post IPoIB Subnet JSON data.

Creating an IPoIB Subnet in Global IP mode.

URL:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnets

Input:

```
{  
  
  "name": "/cloud/public/ipoibsubnet_ip",  
  "vethernet": "/cloud/public/ipoibveth", //choose an IPoIB vEthernet  
  "description": "/cloud/public/ipoibsubnet global ip mode",  
  "global_ip_num": 10  
}
```

Output/Response:

```
{  
  "name": "/cloud/public/ipoibsubnet_ip",  
  "id": "/cloud/public/ipoibsubnet_ip",  
  "description": "/cloud/public/ipoibsubnet global ip mode",  
  "account": "/cloud/default",  
  "infranet": false,  
  "vethernet": "/cloud/public/ipoibveth",  
  "cidr": "192.168.96.112/28",  
  "ipranges": [  
    "192.168.96.113-192.168.96.126"  
  ],  
  "global_ip_num": 14,  
  "ethIndex": -1,  
  "links": [  
    {  
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnets/cloud/public/ipoibsubnet_ip",  
      "rel": "canonical"  
    }  
  ]  
}
```

Creating IPoIB Subnet in CIDR mode**URL:**

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnets

Input

```
{  
  
  "name": "/cloud/public/ipoibsubnet_cidr",  
  "vethernet": "/cloud/public/ipoibveth", //choose an IPoIB vEthernet  
  "description": "/cloud/public/ipoibsubnet CIDR mode",  
  "cidr": "192.168.220.1/24",  
  "ipranges": [  
    "192.168.220.2",  
    "192.168.220.20"  
  ]  
}
```

Output/Response:

```
{  
  "name": "/cloud/public/ipoibsubnet_cidr",
```

```

"id": "/cloud/public/ipoibsubnet_cidr",
"description": "/cloud/public/ipoibsubnet CIDR mode",
"account": "/cloud/default",
"infranet": false,
"vethernet": "/cloud/public/ipoibveth",
"cidr": "192.168.220.1/24",
"ipranges": [
"192.168.220.2",
"192.168.220.20"
],
"ethIndex": -1,
"links": [
{
"href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnets/cloud/public/ipoibsubnet_cidr",
"rel": "canonical"
}
]
}

```

15.3.4.3 Update Subnet

Description: PUT the JSON data to the Subnet' s URL. The description, global_ip_num, cidr, gateway, ipranges, and vethernet fields are editable. The name in the JSON data must be the same as the name in the PUT URL..

Method: PUT

URL:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnets/cloud/public/ipoibsubnet_ip

Input:

```

{
"name": "/cloud/public/ipoibsubnet_ip",
"vethernet": "/cloud/public/ipoibveth", //choose an IPoIB vEthernet
"description": "/cloud/public/ipoibsubnet global ip mode - Updated",
"global_ip_num": 15
}

```

Output/Response:

```

{
"name": "/cloud/public/ipoibsubnet_ip",
"id": "/cloud/public/ipoibsubnet_ip",
"description": "/cloud/public/ipoibsubnet global ip mode - Updated",
"account": "/cloud/default",
"infranet": false,
"vethernet": "/cloud/public/ipoibveth",
"cidr": "192.168.96.128/27",
"ipranges": [
"192.168.96.129-192.168.96.158"
],
"global_ip_num": 30,
"ethIndex": -1,
"links": [
{
"href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnets/cloud/public/ipoibsubnet_ip/cloud/public/ipoibsubnet_ip",

```

```

"rel": "canonical"
}
]
}

```

15.3.4.4 Delete Subnet

Description: Send a DELETE request to the Subnet URL.

Method: DELETE

URL:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnets/cloud/public/ipoibsubnet_ip

Output/Response: Status 204 No Content

15.3.5 IP Reservation Use Cases

1. Create IP Reservation

Description: Post IP reservation JSON data.

Method: POST

URL:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnetreservations

Input:

```

{
  "name": "/<tenant>/public/192_168_220_2",
  "ip": "192.168.220.2",
  "vnet": "/cloud/public/ipoibsubnet_cidr" //choose a subnet
}

```

Output/Response:

```

{
  "name": "/satheesh/public/192_168_220_2",
  "id": "/satheesh/public/192_168_220_2",
  "used": false,
  "quota": "/satheesh",
  "ip": "192.168.220.2",
  "vnet": "/cloud/public/ipoibsubnet_cidr",
  "externalReferece": "http://10.88.235.144/vnetreservation/satheesh/public/192_168_220_2",
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnetreservations/satheesh/public/192_168_220_2",
      "rel": "canonical"
    }
  ]
}

```

2. Delete IP Reservation

Description: Send a DELETE request to the IP Reservation URL.

Method: DELETE

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/vnetaccess/<tenant>/public/vnetaccess_cidr`

Output/Response: Status 204 No Content

15.3.6 Subnet Access Use Cases

1. Create Subnet Access

Description: Post Subnet Access JSON data.

Method: POST

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnetaccess`

Input:

```
{
  "name": "/<tenant>/public/vnetaccess_cidr",
  "vnet": "/cloud/public/ipoibsubnet_cidr", //choose a subnet
  "provider": true
}
```

Output/Response:

```
{
  "name": "<tenant>",
  "id": "<tenant>",
  "provider": true,
  "vnet": "/cloud/public/ipoibsubnet_cidr",
  "externalReferece": "http://10.88.235.144/vnetaccess/satheesh/public/vnetaccess_cidr",
  "links": [
    {
      "href": "<tenant>",
      "rel": "canonical"
    }
  ]
}
```

2. Delete Subnet Access

Description: Send a DELETE request to the Subnet Access URL.

Method: DELETE

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/vnetreservations/<tenant>/public/192_168_220_2`

Output/Response: Status 204 No Content

15.3.7 Storage Volume Use Cases

1. Create Storage Volume

Description: Post Storage Volume JSON data.

Method: POST

URL:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/storagevolumes

Input:

```
{  
  
  "name": "/<tenant>/public/storage/volume1",  
  "description": "test volume",  
  "size": "1G"  
  
}
```

Output/Response:

```
{  
  "name": "/<tenant>/public/storage/volume1",  
  "properties": [  
    "/oracle/public/storage/default"  
  ],  
  "id": "/<tenant>/public/storage/volume1",  
  "size": 1073741824,  
  "description": "test volume",  
  "status": "Initializing",  
  "imageListEntryVersion": -1,  
  "externalReferece": "http://10.88.235.144/storage/volume/<tenant>/public/storage/volume1",  
  "bootable": false,  
  "links": [  
    {  
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/storagevolumes/<tenant>/public/storage/volume1",  
      "rel": "canonical"  
    }  
  ]  
}
```

2. Delete Storage Volume

Description: Send a DELETE request to the Storage Volume URL

Method: DELETE

URL:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/<site_id>/storagevolumes/<tenant>/public/storage/volume1

Output/Response: Status 204 No Content

15.3.8 Tenancy Use Cases

1. List Tenant

Description: This is a GET request that lists all the tenants for a particular site. The output is displayed in two formats:

- application/json: This lists all the tenants with all their attributes in a JSON format.
- application/discovery+json: This lists the names of all the tenants. This is to keep the EM REST services in line with Oracle Compute.

Method: GET

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/tenants`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`

Input: No input required for a REST GET request. Set the content type header of the request as application/json or application/discovery+json.

Output/Response: All the tenants for the Oracle Compute Site are returned in a json format.

```
{
  "items": [
    {
      "name": "cloud",
      "id": "cloud",
      "description": "Cloud administration tenant",
      "externalReferece": "https://10.242.84.131/tenant/cloud",
      "links": [
        {
          "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/tenants/cloud",
          "rel": "canonical"
        }
      ]
    },
    {
      "name": "lrgemcloud_nimbula_14275824",
      "id": "lrgemcloud_nimbula_14275824",
      "description": "Edit a tenant",
      "email": "user_management@example.com",
      "externalReferece": "https://10.242.84.131/tenant/lrgemcloud_nimbula_14275824",
      "links": [
        {
          "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/tenants/lrgemcloud_nimbula_14275824",
          "rel": "canonical"
        }
      ]
    },
    {
      "name": "lrgemcloud_nimbula_14277240",
      "id": "lrgemcloud_nimbula_14277240",
```

```

        "description": "Edit a tenant",
        "email": "user_management@example.com",
        "externalReferece": "https://10.242.84.131/tenant/lrgemcloud
        _nimbula_14277240",
        "links": [
            {
                "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/
                2C9C90E1A5A5084C2BBA23BE5DC04D43/tenants/lrgemcloud_nimbula_14277240",
                "rel": "canonical"
            }
        ]
    }
}
}
}

```

2. Get a Tenant

Description: This is a GET request that returns a specific tenant listed in the URL.

Method: GET

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/tenants/{tenantName}`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`
- tenantName: Name of the tenant to be returned

Input: No input required for a REST GET request. Set the content type header of the request as `application/json`.

Output/Response: Requested tenant will be returned in JSON format.

```

{
  "name": "cloud",
  "id": "cloud",
  "description": "Cloud administration tenant",
  "externalReferece": "https://10.242.84.131/tenant/cloud",
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/
      2C9C90E1A5A5084C2BBA23BE5DC04D43/tenants/cloud/",
      "rel": "canonical"
    }
  ]
}

```

3. Create a Tenant

Description: This is a POST request to create a tenant with the given input in JSON format.

Method: POST

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/tenants/`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`
- tenantName: Name of the tenant to be returned

Input: JSON representation of the tenant object as EM REST service. Set the content type and accept header of the request as application/json.

```
{
  "name": "TestTenant",
  "description": "Cloud administration tenant",
  "password": "EXAlogic_123",
  "email": "test@oracle.com"
}
```

Output/Response: Created tenant will be returned in JSON format.

```
{
  "name": "TestTenant",
  "id": "TestTenant",
  "description": "Cloud administration tenant",
  "externalReferece": "https://10.242.84.131/tenant/cloud",
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/tenants/TestTenant/",
      "rel": "canonical"
    }
  ]
}
```

4. Update a Tenant

Description: This is a PUT request to update a tenant with the given input in the JSON format.

Method: PUT

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/tenants/tenantName`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`
- tenantName: Name of the tenant to be updated

Input: JSON representation of the tenant object as EM REST service. Set the content type and accept header of the request as application/json.

```
{
  "name": "TestTenant",
  "description": "Cloud administration tenant",
  "password": "EXAlogic_123",
}
```

Output: Updated tenant will be returned in JSON format.

```
{ "name": "TestTenant", "id": "TestTenant", "description": "Cloud administration
tenant updated", "externalReferece": "https://10.242.84.131/tenant/cloud",
"links": [ { "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/
sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/tenants/TestTenant/", "rel":
"canonical" } ] }
```

15.3.9 User Use Cases

1. List User

Description: This is a GET request that lists all the users for a particular site. The output is displayed in two formats:

- application/json: This lists all the users with all their attributes in a JSON format.
- application/discovery+json: This lists the names of all the users. This is to keep the EM REST services in line with Oracle Compute.

Method: GET

URL:

`https://<hostnameport>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/users`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`

Input: No input required for a REST GET request. Set the content type header of the request as application/json or application/discovery+json.

Output/Response: All the users for the Oracle Compute Site are returned in a json format.

```
{
  "items": [
    {
      "id": "/user1/administrator",
      "username": "/user1/administrator",
      "groups": [
        "/user1/admin"
      ],
      "role": "/user1/admin",
      "email": "user1@oracle.com",
      "customer": "user1",
      "blackListed": false,
      "externalReferece": "https://10.242.84.131/user/user1/administrator",
      "fullname": "Administrator",
      "links": [
```

```

        {
            "href": "/em/websvcs/restful/extws/virtualization/
infrastructure/v1/sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/usersnull",
            "rel": "canonical"
        }
    ]
},
{
    "id": "/lrgemcloud_nimbula_14276642/administrator",
    "username": "/lrgemcloud_nimbula_14276642/administrator",
    "groups": [
        "/lrgemcloud_nimbula_14276642/admin"
    ],
    "role": "/lrgemcloud_nimbula_14276642/admin",
    "email": "user2@oracle.com",
    "customer": "lrgemcloud_nimbula_14276642",
    "blackListed": false,
    "externalReferece": "https://10.242.84.131/user/
lrgemcloud_nimbula_14276642/administrator",
    "fullname": "Administrator",
    "links": [
        {
            "href": "/em/websvcs/restful/extws/virtualization/
infrastructure/v1/sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/usersnull",
            "rel": "canonical"
        }
    ]
}
}

```

2. Get a User

Description: This is a GET request that returns a specific user listed in the URL.

Method: GET

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/users/{userName}`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualizaion/infrastructure/v1/sites/`
- userName: Name of the user to be returned

Input: No input required for a REST GET request. Set the content type header of the request as `application/json`.

Output/Response: Requested user will be returned in JSON format.

```

{
    "id": "/user2/administrator",
    "username": "/user2/administrator",
    "groups": [
        "/user2/admin"
    ],
}

```

```

"role": "/user2/admin",
"email": "userabc@oracle.com",
"customer": "user2",
"blackListed": false,
"externalReferece": "https://10.242.84.131/user/alokak/administrator",\\
"fullname": "Administrator core",
"links": [
  {
    "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/
sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/users/alokak/administrator",
    "rel": "canonical"
  }
]
}

```

3. Create a User

Description: This is a POST request to create a user with the given input in JSON format.

Method: POST

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/users/`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`
- userName: Name of the user to be returned

Input: JSON representation of the user object as EM REST service. Set the content type and accept header of the request as `application/json`.

```

{
  "username": "/user2/testuser",
  "customer": "user2",
  "blacklisted": false,
  "fullname": "Test User",
  "role": "/cloud/users",
  "password": "EXAlogic_123",
  "email": "tuser@oracle.com"
}

```

Output/Response: Created user will be returned in JSON format.

```

{
  "id": "/user2/testuser",
  "username": "/user2/testuser",
  "groups": [
    "/user2/users"
  ],
  "role": "/user2/users",
  "email": "tuser@oracle.com",
  "customer": "user2",
  "blackListed": false,
  "externalReferece": "https://10.242.84.131/user/user2/testuser",\\
}

```

```

    "fullname": "Test User",
    "links": [
      {
        "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/
sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/users/user2/testuser",
        "rel": "canonical"
      }
    ]
  }
}

```

4. Update a User

Description: This is a PUT request to update a user with the given input in the JSON format.

Method: PUT

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/users/userName`

- **hostname:** OMS host name
- **port:** OMS HTTPS port
- **SITE_ID:** The Site ID is returned when site resource is accessed using

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`

- **userName:** Name of the user to be updated

Input: JSON representation of the tenant object as EM REST service. Set the content type and accept header of the request as application/json.

```

{
  "username": "/user2/testuser",
  "customer": "user2",
  "blacklisted": false,
  "fullname": "Test User",
  "role": "/cloud/users",
  "password": "EXAlogic_123",
  "email": "tuser123@oracle.com"
}

```

Output/Response: Updated tenant will be returned in JSON format.

```

{
  "id": "/user2/testuser",
  "username": "/user2/testuser",
  "groups": [
    "/user2/users"
  ],
  "role": "/user2/users",
  "email": "tuser123@oracle.com",
  "customer": "user2",
  "blackListed": false,
  "externalReferece": "https://10.242.84.131/user/user2/testuser",
  "fullname": "Test User",
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/
sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/users/user2/testuser",
      "rel": "canonical"
    }
  ]
}

```

```

    }
  ]
}

```

5. Delete a User

Description: This is a DELETE request to delete a specific user requested in the URL.

Method: DELETE

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/users/userName`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using
`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`
- userName: Name of the user to be updated

Input: No input required for a REST DELETE request.

Output/Response: No Output for REST DELETE request. A response code of 206 (No Content) is returned.

15.3.10 Quota Use Cases

1. List Quota

Description: This is a GET request that lists the quota allocated for a particular site. The output is displayed in two formats:

- application/json: This lists all the quotas with all their attributes in a JSON format.
- application/discovery+json: This lists the names of all the quotas. This is to keep the EM REST services in line with Oracle Compute.

Method: GET

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/quotas`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using
`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`

Input: No input required for a REST GET request. Set the content type header of the request as application/json or application/discovery+json.

Output/Response: All the quotas for the Oracle Compute Site are returned in a json format.

```

{
  "items": [
    {
      "name": "/user3",
      "id": "/user3",
      "usage": {
        "vnet": {
          "vnetreservations": 0
        },
        "nat": {
          "ipreservations": 0
        },
        "compute": {
          "instances": 1,
          "instance_restrictions": [
            "{}"
          ],
          "ram": 2048,
          "cpus": 1
        },
        "machineimage": {
          "number": 0,
          "megabytes": 0
        },
        "nds": {
          "megabytes": 0
        }
      },
      "description": "Edit a quota named quota1",
      "allowance": {
        "vnet": {
          "vnetreservations": 10
        },
        "nat": {
          "ipreservations": 10
        },
        "compute": {
          "instances": 20,
          "instance_restrictions": [
            "{\"os_license\":\"200\"}"
          ],
          "ram": 20000,
          "cpus": 10
        },
        "machineimage": {
          "number": 12000,
          "megabytes": 8048
        },
        "nds": {
          "megabytes": 1160000
        }
      },
      "externalReferece": "https://10.242.84.131/quota/user3", \\
      "links": [
        {
          "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/quotas/user3",
          "rel": "canonical"
        }
      ]
    }
  ]
}

```

```

]
},
{
  "name": "/lrgemcloud_nimbula_14279598",
  "id": "/lrgemcloud_nimbula_14279598",
  "usage": {
    "vnet": {
      "vnetreservations": 0
    },
    "nat": {
      "ipreservations": 0
    },
    "compute": {
      "instances": 0,
      "instance_restrictions": [
        "{}"
      ],
      "ram": 0,
      "cpus": 0
    },
    "machineimage": {
      "number": 0,
      "megabytes": 0
    },
    "nds": {
      "megabytes": 0
    }
  },
  "description": "Default quota for \"lrgemcloud_nimbula_14279598\"",
  "allowance": {
    "vnet": {
      "vnetreservations": null
    },
    "nat": {
      "ipreservations": null
    },
    "compute": {
      "instances": null,
      "instance_restrictions": [
        "{}"
      ],
      "ram": null,
      "cpus": null
    },
    "machineimage": {
      "number": null,
      "megabytes": null
    },
    "nds": {
      "megabytes": null
    }
  },
  "externalReferece": "https://10.242.84.131/quota/lrgemcloud_nimbula_14279598",
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/quotas/lrgemcloud_nimbula_14279598",
      "rel": "canonical"
    }
  ]
}

```

```

    ]
  }
}

```

2. Get a Quota

Description: This is a GET request that returns a specific quota listed in the URL.

Method: GET

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/quotas/{quotaName}`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`

- quotaName: Name of the quota to be returned

Input: No input required for a REST GET request. Set the content type header of the request as application/json.

Output/Response: Requested quota will be returned in JSON format.

```

{
  "name": "/user3",
  "id": "/user3",
  "usage": {
    "vnet": {
      "vnetreservations": 0
    },
    "nat": {
      "ipreservations": 0
    },
    "compute": {
      "instances": 1,
      "instance_restrictions": [
        "{}"
      ],
      "ram": 2048,
      "cpus": 1
    },
    "machineimage": {
      "number": 0,
      "megabytes": 0
    },
    "nds": {
      "megabytes": 0
    }
  },
  "description": "Edit a quota named quota1",
  "allowance": {
    "vnet": {
      "vnetreservations": 10
    },
    "nat": {
      "ipreservations": 10
    },
  },
}

```

```

    "compute": {
      "instances": 20,
      "instance_restrictions": [
        {"os_license": "\"200\""}
      ],
      "ram": 20000,
      "cpus": 10
    },
    "machineimage": {
      "number": 12000,
      "megabytes": 8048
    },
    "nds": {
      "megabytes": 1160000
    }
  },
  "externalReferece": "https://10.242.84.131/quota/user3", \\
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/2C9C90E1A5A5084C2BBA23BE5DC04D43/quotas/user3",
      "rel": "canonical"
    }
  ]
}

```

3. Update Quota

Description: This is a PUT request to update the quota with the given input in the JSON format.

Method: PUT

URL:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/quotas/quotaName

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using <https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/>
- quotaName: Name of the quota to be updated

Input: JSON representation of the tenant object as EM REST service. Set the content type and accept header of the request as application/json.

```

{
  "name": "/test",
  "description": "Test Quota updated",
  "allowance": {
    "vnet": {
      "vnetreservations": 10
    },
    "nat": {
      "ipreservations": 10
    },
    "compute": {
      "instances": 20,
      "instance_restrictions": [

```

```

        {"os_license":"200"}"
    ],
    "ram": 20000,
    "cpus": 10
  },
  "machineimage": {
    "number": 12000,
    "megabytes": 8048
  },
  "nds": {
    "megabytes": 1160000
  }
}
}
}

```

Output/Response: Updated quota will be returned in JSON format.

```

{
  "name": "/test",
  "id": "/test",
  "usage": {
    "vnet": {
      "vnetreservations": 0
    },
    "nat": {
      "ipreservations": 0
    },
    "compute": {
      "instances": 1,
      "instance_restrictions": [
        "{}"
      ],
      "ram": 2048,
      "cpus": 1
    },
    "machineimage": {
      "number": 0,
      "megabytes": 0
    },
    "nds": {
      "megabytes": 0
    }
  },
  "description": "Test Quota Updated",
  "allowance": {
    "vnet": {
      "vnetreservations": 10
    },
    "nat": {
      "ipreservations": 10
    },
    "compute": {
      "instances": 20,
      "instance_restrictions": [
        {"os_license":"200"}"
      ],
      "ram": 20000,
      "cpus": 10
    },
    "machineimage": {
      "number": 12000,

```

```

        "megabytes": 8048
      },
      "nds": {
        "megabytes": 1160000
      }
    },
    "externalReferece": "https://10.242.84.131/quota/test", \\
    "links": [
      {
        "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/
2C9C90E1A5A5084C2BBA23BE5DC04D43/quotas/test",
        "rel": "canonical"
      }
    ]
  }
}

```

4. Delete Quota

Description: This is a DELETE request to delete a specific quota requested in the URL.

Method: DELETE

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/quotas/quotaName`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`
- quotaName: Name of the quota to be deleted.

Input: No input required for a REST DELETE request.

Output/Response: No Output for REST DELETE request. A response code of 206 (No Content) is returned.

15.3.11 Template Use Cases

1. List Templates

Description: This is a GET request that lists all the templates for a particular site. The output is displayed in two formats:

- application/json: This lists all the templates with all their attributes in a JSON format.
- application/discovery+json: This lists the names of all the templates. This is to keep the EM REST services in line with Oracle Compute.

Method: GET

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/templates/`

- hostname: OMS host name

- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`

Input: No input required for a REST GET request. Set the content type header of the request as `application/json` or `application/discovery+json`.

Output/Response: All the quotas for the Oracle Compute Site are returned in a json format.

```
{
  "totalResults": 5,
  "count": 5,
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/93B97C5E7E352676A3284D80F23714BF/templates",
      "rel": "canonical"
    }
  ],
  "items": [
    {
      "id": "/oracle/public/oel_public",
      "name": "/oracle/public/oel_public",
      "links": [
        {
          "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/93B97C5E7E352676A3284D80F23714BF/templates/oracle/public/oel_public",
          "rel": "canonical"
        }
      ],
      "fileLocation": "https://10.242.84.131:444/machineimage/oracle/public/oel_public",
      "state": "available",
      "attributes": {
        "OS": "Linux_x86"
      },
      "sizes": {
        "uploadedSizeinBytes": 376848450,
        "totalSizeInBytes": 376848450,
        "decompressedSizeInBytes": 5905612288
      }
    },
    {
      "id": "/satheesh/public/oel_tenant",
      "name": "/satheesh/public/oel_tenant",
      "links": [
        {
          "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/93B97C5E7E352676A3284D80F23714BF/templates/satheesh/public/oel_tenant",
          "rel": "canonical"
        }
      ],
      "fileLocation": "https://10.242.84.131:444/machineimage/satheesh/public/oel_tenant",
      "state": "available",
      "attributes": {
```

```

        "OS": "Linux_x86"
    },
    "quota": "/satheesh/21053780-d23c-489b-9fd7-9b9779e642f1",
    "sizes": {
        "uploadedSizeinBytes": 376848450,
        "totalSizeInBytes": 376848450,
        "decompressedSizeInBytes": 5905612288
    }
},
}
}

```

2. Get a Template

Description: This is a GET request that returns a specific template listed in the URL.

Method: GET

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/templates/{templateName}`

- **hostname:** OMS host name
- **port:** OMS HTTPS port
- **SITE_ID:** The Site ID is returned when site resource is accessed using

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`

- **templateName:** Name of the template to be returned

Input: No input required for a REST GET request. Set the content type header of the request as application/json.

Output/Response: Requested quota will be returned in JSON format.

```

{
  "id": "/oracle/public/oel_public",
  "name": "/oracle/public/oel_public",
  "links": [
    {
      "href": "/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/93B97C5E7E352676A3284D80F23714BF/templates/oracle/public/oel_public",
      "rel": "canonical"
    }
  ],
  "fileLocation": "https://10.242.84.131:444/machineimage/oracle/public/oel_public",
  "state": "available",
  "attributes": {

```

```
"OS": "Linux_x86"  
  
},  
  
"sizes": {  
  
"uploadedSizeinBytes": 376848450,  
  
"totalSizeInBytes": 376848450,  
  
"decompressedSizeInBytes": 5905612288  
  
}  
  
}
```

3. Delete a Template

Description: This is a DELETE request to delete a specific template requested in the URL.

Method: DELETE

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/templates/templateName`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`
- templateName: Name of the template to be deleted.

Input: No input required for a REST DELETE request.

Output/Response: No Output for REST DELETE request. A response code of 206 (No Content) is returned.

4. Upload a Template

Description: This is a POST request to upload a template using software library with a given input in JSON format.

Method: POST

URL:

`https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/{SITE_ID}/templates/swlib`

- hostname: OMS host name
- port: OMS HTTPS port
- SITE_ID: The Site ID is returned when site resource is accessed using `https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/`
- templateName: Name of the template to be deleted.

Input: JSON representation of the tenant object as EM REST service. Set the content type and accept header of the request as application/json

```
{
  "name": "/oracle/public/test2",
  "urn": "oracle:defaultService:em:provisioning:1:cmp:Cloud:Nimbula Template:
1A4754B40A0E061CE053179AF40A2898:0.1",
  "sizes": {
    "total": 376848450
  },
  "attributes": {
    "OS": "Linux_x86"
  }
}
```

Output/Response: A job is submitted and a job id is returned in JSON format. {"job_id\":"1A57035ED0D819A1E053179AF40A4A85\"}"

To get the component urn (urn) field in the above json, make sure the software library components have been uploaded and run the REST API:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/swlibcomponents

5. Register and Deregister a Site

The Oracle Compute site can be registered using POST method to "/sites/" namespace with a JSON represents the site information, then a job will be submitted to register the site.

For example:

https://<hostname:port>/em/websvcs/restful/extws/virtualization/infrastructure/v1/sites/

```
{
  "site_target_name": "Demo",
  "endpoint_url": "https://10.242.84.131",
  "agent_url": "https://<hostname:port>/emd/main/",
  "monitoring_cred_username": "/cloud/administrator",
  "monitoring_cred_password": "EXAlogic_123",
  "graphite_url": "https://10.242.84.131/graphite",
}
```

A job id will be returned such as {"job_id\":"139600CD1BC11B59E053481DF50A6F62\"}"

Add an image (Register Site)

The table below displays the JSON format used for registering the site.

Table 15-7 JSON format used for registering the site

Property	Description
site_target_name	The target name for the site.
endpoint_url	Nimbula site's URL.
agent_url	The url for the agent monitoring the target.
slave_agent_url	The failover monitoring agent to be used as the standby agent. You can specify a list of agents in a JSON array format as follows: ["url1","url2"].

Table 15-7 (Cont.) JSON format used for registering the site

Property	Description
monitoring_cred_username	The monitoring credentials user name for the Oracle Compute site.
monitoring_cred_password	The monitoring credentials password for the Oracle Compute site.
graphite_url	The graphite URL.
graphite_username	The graphite credentials user name.
graphite_password	The graphite credentials password.
graphite_site_prefix	The graphite prefix string.
snmp_cred_type	The SNMP credentials type. The available values are V1, V2, and V3.
snmp_community_string	The SNMP community string available when snmp_cred_type is V1 or V2.
snmp_username	The user name for the SNMP credentials available when the snmp_cred_type is V3.
snmp_authpassword	The SNMP authorization password available when the snmp_cred_type is V3.
snmp_authprotocol	The SNMP authorization protocol (MD5 or SHA) available when the snmp_cred_type is V3.
snmp_privpassword	The SNMP privacy password available when the snmp_cred_type is V3.

The Oracle Compute Site can be de-registered using the Delete option. A job will be submitted to de-register the site. For example:{"job_id": "10D4FDE1874E201BE053461DF50A5760"}A job id will be returned.

15.4 References

Use the XSD below to build the orchestration plan (orch_plan.xml).

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.oracle.com/sysman/vi/VIDeploymentPlan"
  xmlns="http://www.oracle.com/sysman/vi/VIDeploymentPlan"
  elementFormDefault="unqualified"
  xmlns:Q1="http://www.oracle.com/vi/RequestSchema"
  xmlns:xml="http://www.w3.org/XML/1998/namespace">
  <xsd:simpleType name="CPUSchedulingPriorityType">
    <xsd:annotation>
      <xsd:documentation>CPU Scheduling priority for the Guest VM.</
xsd:documentation>
    </xsd:annotation>
    <xsd:union>
      <xsd:simpleType id="CPUSchedulingPriorityPreDefinedType">
        <xsd:restriction base="xsd:string">
          <xsd:enumeration value="Low"/>
          <xsd:enumeration value="Intermediate"/>
          <xsd:enumeration value="High"/>
        </xsd:restriction>
      </xsd:simpleType>
    </xsd:union>
  </xsd:simpleType>
</xsd:schema>
```

```

        </xsd:simpleType>
        <xsd:simpleType id="CPUSchedulingPriorityCustomType">
            <xsd:restriction base="xsd:string">
                <xsd:pattern value="[1]?[0,1,2,3,4,5,6,7,8,9]?
[0,1,2,3,4,5,6,7,8,9]" />
            </xsd:restriction>
        </xsd:simpleType>
    </xsd:union>
</xsd:simpleType>
<xsd:simpleType name="CPUCapType">
    <xsd:annotation>
        <xsd:documentation>CPU Scheduling Cap for the Guest VM.</
xsd:documentation>
    </xsd:annotation>
    <xsd:union>
        <xsd:simpleType id="CPUCapTypePreDefinedType">
            <xsd:restriction base="xsd:string">
                <xsd:enumeration value="Low"/>
                <xsd:enumeration value="Intermediate"/>
                <xsd:enumeration value="High"/>
            </xsd:restriction>
        </xsd:simpleType>
        <xsd:simpleType id="CPUCapCustomType">
            <xsd:restriction base="xsd:string">
                <xsd:pattern value="[1]?[0,1,2,3,4,5,6,7,8,9]?
[0,1,2,3,4,5,6,7,8,9]" />
            </xsd:restriction>
        </xsd:simpleType>
    </xsd:union>
</xsd:simpleType>
<xsd:complexType name="StaticNetworkConfigurationType">
    <xsd:annotation>
        <xsd:documentation>Static network configuration for the network
            interface.</xsd:documentation>
    </xsd:annotation>
    <xsd:sequence>
        <xsd:element name="ipAddress" type="xsd:string" maxOccurs="1"
            minOccurs="1">
            <xsd:annotation>
                <xsd:documentation>IP Address.</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="hostName" type="xsd:string" maxOccurs="1"
            minOccurs="0">
            <xsd:annotation>
                <xsd:documentation>Fully Qualified Host
                    Name.</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="subnetMask" type="xsd:string" maxOccurs="1"
            minOccurs="0">
            <xsd:annotation>
                <xsd:documentation>Subnet Mask.</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="defaultGateway" type="xsd:string" maxOccurs="1"
            minOccurs="0">
            <xsd:annotation>
                <xsd:documentation>Default Gateway.</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
    </xsd:sequence>
</xsd:complexType>

```

```

        <xsd:element maxOccurs="unbounded" minOccurs="0" name="nameServer"
            type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>Name Server.</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="VirtualMachineListType">
    <xsd:sequence>
        <xsd:element maxOccurs="unbounded" minOccurs="0"
            name="VirtualMachine" type="VirtualMachineType"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="BaseVirtualMachineType">
    <xsd:attribute name="name" type="xsd:string" use="optional"/>
</xsd:complexType>
<xsd:complexType name="LocalDiskType">
    <xsd:sequence>
        <xsd:element name="storageVolumeId" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>Id of the storage volume attached to the
                    instance.</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="index" type="xsd:int">
            <xsd:annotation>
                <xsd:documentation>Index of the storage
                    attachment.</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
    </xsd:sequence>
    <xsd:attribute name="name" type="xsd:string" use="required">
        <xsd:annotation>
            <xsd:documentation>Name of the Disk. Will be ignored if
                Deployment is of type
                ImageListDeploymentType.</xsd:documentation>
        </xsd:annotation>
    </xsd:attribute>
    <xsd:attribute name="fromDefinition" type="xsd:boolean">
        <xsd:annotation>
            <xsd:documentation>Denotes if the disk is specified in some
                metadata file associated with the binary
                being used to deploy. Will be ignored if
                Deployment is of type
                ImageListDeploymentType.</xsd:documentation>
        </xsd:annotation>
    </xsd:attribute>
</xsd:complexType>
<xsd:complexType name="NewDiskType">
    <xsd:sequence>
        <xsd:element name="Name" type="xsd:string">
        </xsd:element>
        <xsd:element name="SizeInGB" type="xsd:long">
        </xsd:element>
        <xsd:element name="Properties" type="xsd:string" maxOccurs="unbounded"
minOccurs="0">
        </xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="DiskListType">

```

```

<xsd:complexContent>
  <xsd:choice>
    <xsd:sequence>
      <xsd:element maxOccurs="unbounded" minOccurs="1" name="disk"
        type="LocalDiskType"/>
    </xsd:sequence>
    <xsd:sequence>
      <xsd:element name="newDisk" type="NewDiskType" minOccurs="1"
maxOccurs="unbounded" />
    </xsd:sequence>
  </xsd:choice>
</xsd:complexContent>
</xsd:complexType>
<xsd:simpleType name="VirtualizationTType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="HVM"/>
    <xsd:enumeration value="PVM"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="HardwareConfigurationType">
  <xsd:annotation>
    <xsd:documentation>Hardware configuration for the guest
      vm.</xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:element name="Label" type="xsd:string"></xsd:element>
    <xsd:element name="ImageList" type="xsd:string"></xsd:element>
    <xsd:element name="ImageListEntry" type="xsd:string"></xsd:element>
    <xsd:element name="Shape" type="ShapeType" maxOccurs="1"
      minOccurs="1"></xsd:element>
    <xsd:element name="Account" type="AccountType"></xsd:element>
    <xsd:element name="Quota" type="QuotaType"></xsd:element>
    <xsd:element name="Priority" type="xsd:string"></xsd:element>
    <xsd:element name="Tags" type="xsd:string">
      <xsd:annotation>
        <xsd:documentation>Comma separated list of Strings that
          will be used as Tags.</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="PlacementRequirements" type="xsd:string"
      maxOccurs="1" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>Comma separated list of Strings that
          will be used as Placement Requirement
          tags.</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="HaEnabled" type="xsd:boolean"></xsd:element>
    <xsd:element name="Virtio" type="xsd:boolean"></xsd:element>
    <xsd:element name="sshKeys" type="xsd:string">
      <xsd:annotation>
        <xsd:documentation>Comma separated strings of SSH
          Keys</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="RootSSHCredential" type="SSHCredentialType"></
xsd:element>
    <xsd:element name="OracleSSHCredential" type="SSHCredentialType"></
xsd:element>

```

```

<xsd:element name="Nics" type="NICListType" minOccurs="0"
             maxOccurs="1">
  <xsd:annotation>
    <xsd:documentation>Container for configuration of network
      interface cards for the Guest VM.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="Nis" type="NISType" minOccurs="0"
             maxOccurs="1">
  <xsd:annotation>
    <xsd:documentation>Container for configuration of network
      NIS for the Guest VM.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element maxOccurs="1" minOccurs="0" name="Disks"
             type="DiskListType">
  <xsd:annotation>
    <xsd:documentation>Container for configuration of local
      disks for the Guest VM.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="Attributes" type="AttributeListType"
             maxOccurs="1" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>Keymap configuration for the Guest
      VM</xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
<xsd:complexType name="ConfigurationDataType">
  <xsd:sequence>
    <xsd:element name="Type" type="PlanType">
      <xsd:annotation>
        <xsd:documentation>Specify the Plan type i.e if this is
          meant for Image deployment or Assembly
          deployment.</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="PassThroughMode" type="xsd:boolean">
      <xsd:annotation>
        <xsd:documentation>This value should be set to true when
          Pass-Through behaviour is desired i.e
          when the native Oracle Compute Launch
          Plan or OVAB Plan is passed for
          deployment.</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="CreatingUser" type="xsd:string"></xsd:element>
    <xsd:element name="CreatingApplication" type="xsd:string"></xsd:element>
    <xsd:choice>
      <xsd:element name="AssemblyDeployment"
        type="AssemblyDeploymentConfigDataType"/>
      <xsd:element name="ImageDeployment"
        type="ImageDeploymentConfigDataType"/>
      <xsd:element name="OrchestrationDeployment"
        type="OrchestrationDeploymentConfigDataType"/>
    </xsd:choice>
  </xsd:sequence>
  <xsd:attribute name="version" type="PlanVersionType" use="required">

```

```
<xsd:annotation>
  <xsd:documentation>Deployment Plan Version attribute is
                        introduced in PS2 release. Older plans will
                        not have this attribute or if user adds it
                        then the version must be 0.0.1 for plans
                        from releases older than
                        PS2.</xsd:documentation>
</xsd:annotation>
</xsd:attribute>
<xsd:attribute name="name" type="xsd:string"></xsd:attribute>
</xsd:complexType>
<xsd:complexType name="ProvisioningRequestType">
  <xsd:sequence>
    <xsd:choice>
      <xsd:element name="AssemblyDeployment"
                  type="AssemblyDeploymentConfigDataType"/>
      <xsd:element name="ImageDeployment"
                  type="ImageDeploymentConfigDataType"/>
    </xsd:choice>
  </xsd:sequence>
  <xsd:attribute name="PlanVersion" type="PlanVersionType" use="optional">
    <xsd:annotation>
      <xsd:documentation>Deployment Plan Version attribute is
                        introduced in PS2 release. Older plans will
                        not have this attribute or if user adds it
                        then the version must be 0.0.1 for plans
                        from releases older than
                        PS2.</xsd:documentation>
    </xsd:annotation>
  </xsd:attribute>
</xsd:complexType>
<xsd:complexType name="EditRequestType"/>
<xsd:complexType name="CloningRequestType"/>
<xsd:complexType name="SnapshotRequestType"/>
<!-- xsd:complexType name="ScalingRequestType"></xsd:complexType -->
<xsd:complexType name="AssemblyDeploymentConfigDataType">
  <xsd:annotation>
    <xsd:documentation>Represents the configuration data associated
                      with the deployment of an assembly.</xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:element name="SourceBinary" type="SourceBinaryDataType"
                maxOccurs="1" minOccurs="0"/>
    <xsd:element name="DeploymentTarget" type="DeploymentTargetData"/>
    <xsd:element name="AcceptedAllEULAs" type="xsd:boolean"
                minOccurs="1">
      <xsd:annotation>
        <xsd:documentation>Flag to specify if all the EULAs are
                          accepted by the user for
                          deployment.</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="InstallEMAgent" type="xsd:boolean" maxOccurs="1"
                minOccurs="1">
      <xsd:annotation>
        <xsd:documentation>Flag to specify if EM Agent has to be
                          installed by the user for
                          deployment.</xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="DisableCleanup" type="xsd:boolean" maxOccurs="1">
```

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        minOccurs="1">
    <xsd:annotation>
        <xsd:documentation>Flag to specify if Cleanup of virtual
            machines to be disabled in case of
            failure.</xsd:documentation>
    </xsd:annotation>
</xsd:element>
<xsd:element name="sshKeys" type="xsd:string">
    <xsd:annotation>
        <xsd:documentation>Comma separated strings of SSH
            Keys</xsd:documentation>
    </xsd:annotation>
</xsd:element>
<xsd:element name="EMAgentConfig" type="EMAgentConfigType"/>
<xsd:element name="AssemblyNetworkConfig"
    type="AssemblyNetworkConfigListType" minOccurs="1"
    maxOccurs="1">
    <xsd:annotation>
        <xsd:documentation>List of mappings for the assembly
            networks (defined in assembly meta-data)
            and corresponding network on the
            target.</xsd:documentation>
    </xsd:annotation>
</xsd:element>
<!-- xsd:choice -->
<!-- xsd:element name="VirtualSystemCollectionConfig"
type="VirtualSystemCollectionConfigType">
    <xsd:annotation> <xsd:documentation> Configuration of a virtual
system collection
    (root node in the assembly), and its child nodes (if any). </
xsd:documentation>
    </xsd:annotation> </xsd:element -->
<xsd:choice>
    <xsd:element name="VirtualSystemCollectionConfig"
        type="VirtualSystemCollectionConfigType"
        maxOccurs="1" minOccurs="1">
        <xsd:annotation>
            <xsd:documentation>Configuration of a virtual system
                collection (root node in the
                assembly), and its child nodes (if
                any).</xsd:documentation>
        </xsd:annotation>
    </xsd:element>
    <xsd:element name="VirtualSystemConfig"
        type="VirtualSystemConfigType" maxOccurs="1"
        minOccurs="1">
        <xsd:annotation>
            <xsd:documentation>Configuration of a virtual
                system(root node in the
                assembly).</xsd:documentation>
        </xsd:annotation>
    </xsd:element>
    <xsd:element name="PassThroughData" type="PassThroughDataType"></
xsd:element>
</xsd:choice>
<xsd:element name="IsExalogicDeployment" type="xsd:boolean"
    minOccurs="0" default="false">
    <xsd:annotation>
        <xsd:documentation>Flag to specify if deployemnt is an
            Exalogic Assembly Deployment.</
xsd:documentation>

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        </xsd:annotation>
    </xsd:element>
    <xsd:element name="OvabDeployerUserEmCredGuid" type="xsd:string"
        minOccurs="0" maxOccurs="1"/>
</xsd:sequence>
<xsd:attribute name="assemblyInstanceName" type="xsd:string"
    use="required">
    <xsd:annotation>
        <xsd:documentation>Name with which the assembly instance will
            be created. Should be unique throughout the system for the
            target type oracle_assembly_instance.</xsd:documentation>
    </xsd:annotation>
</xsd:attribute>
</xsd:complexType>
<xsd:complexType name="ImageDeploymentConfigDataType">
    <xsd:sequence>
        <xsd:choice>
            <xsd:annotation>
                <xsd:documentation>Imagelist deployment can be done in two
                    ways. Either specify the Default
                    Configuration and all the other elements
                    or only specify the PassThroughData. The
                    PassThroughData is used to specify the
                    native Oracle Compute Launch
                    Plan.</xsd:documentation>
            </xsd:annotation>
            <xsd:element name="DefaultConfiguration"
                type="HardwareConfigurationType"/>
            <xsd:element name="PassThroughData" type="PassThroughDataType">
                <xsd:annotation>
                    <xsd:documentation>
                        Use CDATA to specify the native Oracle Compute
                        Launch Plan.
                        <![CDATA[ Launch Plan goes here  ]]>
                    </xsd:documentation>
                </xsd:annotation>
            </xsd:element>
        </xsd:choice>
        <xsd:element name="SourceBinary" type="SourceBinaryDataType"
            minOccurs="0"/></xsd:element>
        <xsd:element name="DeploymentTarget" type="DeploymentTargetData"
            minOccurs="0"/></xsd:element>
        <xsd:element name="Instances" type="VirtualMachineListType"
            minOccurs="0"/>
        <xsd:element name="InstallEMAgent" type="xsd:boolean" minOccurs="0"/></
xsd:element>
        <xsd:element name="EMAgentConfig" type="EMAgentConfigType"
            minOccurs="0"/></xsd:element>
        <xsd:element name="RelationshipList" type="RelationshipListType"
            minOccurs="0"/></xsd:element>
    </xsd:sequence>
    <xsd:attribute name="namePrefix" type="xsd:string"/>
    <xsd:attribute name="numberOfInstances" type="xsd:int" use="required"/>
</xsd:complexType>
<xsd:complexType name="NISType">
    <xsd:complexContent>
        <xsd:sequence>
            <xsd:element name="Domain" type="xsd:string" minOccurs="1"
maxOccurs="1"/>
            <xsd:element name="Servers" type="NISServersListType" minOccurs="1"
maxOccurs="1"/>

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        </xsd:sequence>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="NISServersListType">
    <xsd:sequence>
        <xsd:element name="NISServers" type="NISServerType" minOccurs="0"
maxOccurs="unbounded"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="NISServerType">
    <xsd:sequence>
        <xsd:element name="Name" type="xsd:string" minOccurs="1" maxOccurs="1"/>
        <xsd:element name="Ip" type="xsd:string" minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="NICListType">
<xsd:complexContent>
    <xsd:sequence maxOccurs="8">
        <xsd:element name="NetworkInterface" type="NICConfigurationType"
maxOccurs="8" minOccurs="1"/>
    </xsd:sequence>
</xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="NICConfigurationType">
    <xsd:sequence>
        <xsd:choice>
            <xsd:element name="Vnet" type="xsd:string"/>
            <xsd:element name="VnetReservation" type="xsd:string"/>
        </xsd:choice>
        <xsd:choice>
            <xsd:element name="Vethernet" type="xsd:string"/>
            <xsd:element name="VethernetId" type="xsd:string"/>
        </xsd:choice>
        <xsd:element name="Options" type="NICOptionsType" minOccurs="0"
maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="name" type="xsd:string" use="required">
        <xsd:annotation>
            <xsd:documentation>Network Interface name.</xsd:documentation>
        </xsd:annotation>
    </xsd:attribute>
    <xsd:attribute name="fromDefinition" type="xsd:boolean">
        <xsd:annotation>
            <xsd:documentation>Denotes if the Network Interface is already
                defined in some metadata file associated
                with the binary.</xsd:documentation>
        </xsd:annotation>
    </xsd:attribute>
</xsd:complexType>
<xsd:complexType name="NICOptionsType">
    <xsd:sequence>
        <xsd:element name="Hostname" type="xsd:string" minOccurs="0"
maxOccurs="1"/>
        <xsd:element name="Primary" type="xsd:boolean" minOccurs="0"
maxOccurs="1" default="false"/>
        <xsd:element name="Dns" type="NICDnsType" minOccurs="0" maxOccurs="1"/>
        <xsd:element name="Default_Gateway" type="xsd:boolean" minOccurs="0"
maxOccurs="1" default="false"/>
        <xsd:element name="Provider" type="xsd:boolean" minOccurs="0"
maxOccurs="1" default="false"/>
        <xsd:element name="Network_Route" type="NetworkRouteType" minOccurs="0"

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maxOccurs="1"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="NICDnsType">
    <xsd:sequence>
        <xsd:element name="Servers" type="xsd:string" minOccurs="1"
maxOccurs="1"/>
        <xsd:element name="Search_Domains" type="xsd:string" minOccurs="1"
maxOccurs="1"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="NetworkRouteType">
    <xsd:sequence>
        <xsd:element name="RoutingRulesList" type="RoutingRulesListType"
minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="RoutingRulesListType">
    <xsd:sequence>
        <xsd:element name="RoutingRules" type="RoutingRuleType" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="RoutingRuleType">
    <xsd:sequence>
        <xsd:element name="Type" type="xsd:string" minOccurs="1" maxOccurs="1"/>
        <xsd:element name="Name" type="xsd:string" minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="VirtualMachineType">
    <xsd:sequence>
        <xsd:element name="InstallEMAgent" type="xsd:boolean"></xsd:element>
        <xsd:element name="EMAgentConfig" type="EMAgentConfigType"></xsd:element>
        <xsd:element name="CustomConfiguration"
            type="HardwareConfigurationType" maxOccurs="1"
            minOccurs="0"/>
    </xsd:sequence>
    <xsd:attribute name="name" type="xsd:string"/>
    <xsd:attribute name="customConfigured" type="xsd:boolean"
        use="required">
        <xsd:annotation>
            <xsd:documentation>Set this flag to True when the VM's Hardware
                configuration is overridden. By default the
                flag is not set which implies that the
                configuration is based on the default
                HardwareConfiguration.</xsd:documentation>
        </xsd:annotation>
    </xsd:attribute>
</xsd:complexType>
<xsd:complexType name="ProductConfigurationSectionType">
    <xsd:sequence>
        <xsd:element name="Properties" type="ProductPropertyListType"
            maxOccurs="1" minOccurs="0"/>
        <xsd:element name="Version" type="xsd:string"></xsd:element>
        <xsd:element name="FullVersion" type="xsd:string"></xsd:element>
        <xsd:element name="ProductURL" type="xsd:string"></xsd:element>
        <xsd:element name="Vendor" type="xsd:string"></xsd:element>
        <xsd:element name="VendorURL" type="xsd:string"></xsd:element>
        <xsd:element name="EMAgent" type="xsd:boolean"></xsd:element>
    </xsd:sequence>
    <xsd:attribute name="productName" type="xsd:string" use="required"/>

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        <xsd:attribute name="description" type="xsd:string"/>
    </xsd:complexType>
    <xsd:complexType name="ProductPropertyListType">
        <xsd:sequence>
            <xsd:element name="Property" type="ProductPropertyType"
                maxOccurs="unbounded" minOccurs="1"/>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="ProductsListType">
        <xsd:annotation>
            <xsd:documentation>Configuration for various products in the node.</
xsd:documentation>
        </xsd:annotation>
        <xsd:sequence>
            <xsd:element name="Product" type="ProductConfigurationSectionType"
                maxOccurs="unbounded" minOccurs="1"/>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="ScalabilityConfigurationType">
        <xsd:annotation>
            <xsd:documentation>Scalability configuration for the virtual
system. If none is specified, default will be applied
using the assembly
meta-data.</xsd:documentation>
        </xsd:annotation>
        <xsd:sequence>
            <xsd:element name="minNum" type="xsd:int" maxOccurs="1"
                minOccurs="1">
                <xsd:annotation>
                    <xsd:documentation>Minimum number of instances to be
deployed.</xsd:documentation>
                </xsd:annotation>
            </xsd:element>
            <xsd:element name="maxNum" type="xsd:int" maxOccurs="1"
                minOccurs="1">
                <xsd:annotation>
                    <xsd:documentation>Maximum number of instances to be
deployed.</xsd:documentation>
                </xsd:annotation>
            </xsd:element>
            <xsd:element name="deploy" type="xsd:boolean" maxOccurs="1"
                minOccurs="1">
                <xsd:annotation>
                    <xsd:documentation>Whether instance to be
deployed.</xsd:documentation>
                </xsd:annotation>
            </xsd:element>
            <xsd:element name="HaEnabled" type="xsd:boolean" maxOccurs="1"
                minOccurs="1">
                <xsd:annotation>
                    <xsd:documentation>Whether HA enabled.</xsd:documentation>
                </xsd:annotation>
            </xsd:element>
            <xsd:element name="initial" type="xsd:int" maxOccurs="1"
                minOccurs="1">
                <xsd:annotation>
                    <xsd:documentation>Initial number of instances to be
deployed.</xsd:documentation>
                </xsd:annotation>
            </xsd:element>
            <xsd:element name="autoScalable" type="xsd:boolean">

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```
<xsd:annotation>
  <xsd:documentation>Flag to specify if the node will have
                        auto-scaling enabled. If the node is
                        auto-scaling, it is required to specify
                        configuration for all the child nodes
                        (limited by the max number
                        instances).</xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="vmNamePrefix" type="xsd:string">
  <xsd:annotation>
    <xsd:documentation>Name prefix to be used for child
                        instances.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
<xsd:element name="ConfigurationData" type="ConfigurationDataType">
  <xsd:annotation>
    <xsd:documentation>Place holder element for various types of
                        request config data.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:complexType name="StoragerequestType"/>
<xsd:complexType name="VirtualSystemCollectionConfigType">
  <xsd:annotation>
    <xsd:documentation>Configuration of a virtual system collection
                        (root node in the assembly), and its child nodes
                        (if any).</xsd:documentation>
  </xsd:annotation>
  <xsd:complexContent>
    <xsd:extension base="BaseNodeConfigType">
      <xsd:sequence>
        <xsd:element name="VirtualSystemConfig"
                      type="VirtualSystemConfigType"
                      maxOccurs="unbounded" minOccurs="0"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="VirtualSystemConfigType">
  <xsd:annotation>
    <xsd:documentation>Configuration of a virtual system, and its child
                        instances (if multiple instances are
                        deployed).</xsd:documentation>
  </xsd:annotation>
  <xsd:complexContent>
    <xsd:extension base="BaseNodeConfigType">
      <xsd:sequence>
        <xsd:element name="ScalabilityConfiguration"
                      type="ScalabilityConfigurationType"
                      minOccurs="0" maxOccurs="1">
          <xsd:annotation>
            <xsd:documentation>Scalability configuration for
                                the virtual system. If none is specified, default
                                will be applied using the assembly
                                meta-data.</xsd:documentation>
          </xsd:annotation>
        </xsd:element>
        <xsd:element name="HardwareConfiguration"
                      type="HardwareConfigurationType" minOccurs="0">

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        maxOccurs="1">
        <xsd:annotation>
            <xsd:documentation>Common hardware configuration
                for the guest vm (and its instances,
                if any).</xsd:documentation>
        </xsd:annotation>
    </xsd:element>
    <xsd:element name="Instances"
        type="ChildVirtualSystemConfigType"
        minOccurs="0" maxOccurs="unbounded">
        <xsd:annotation>
            <xsd:documentation>Instances for the deployment.
                Only required if multiple
                instances are being deployed for
                the virtual system, and its not
                marked to be auto-scalable.
            </xsd:documentation>
        </xsd:annotation>
    </xsd:element>
</xsd:sequence>
<xsd:attribute name="targetName" type="xsd:string"
    use="required">
    <xsd:annotation>
        <xsd:documentation>Name to be assigned for the target
            in deployment. If the node has multiple instances of
            deployments, this will be the tier instance name,
            otherwise, the guest vm name.</xsd:documentation>
    </xsd:annotation>
</xsd:attribute>
<xsd:attribute name="vmInstance" type="xsd:boolean"></xsd:attribute>
<xsd:attribute name="followsMaster" type="xsd:boolean"></
xsd:attribute>
    <xsd:attribute name="agentInstallationType"
        type="EMAgentInstallationType"></xsd:attribute>
    <xsd:attribute name="agentPushInstallationEnabled"
        type="xsd:boolean"></xsd:attribute>
    </xsd:extension>
</xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="ChildVirtualSystemCollectionConfigType">
    <xsd:annotation>
        <xsd:documentation>Configuration for a child instance of virtual
            system deployment.</xsd:documentation>
    </xsd:annotation>
    <xsd:complexContent>
        <xsd:extension base="VirtualSystemCollectionConfigType">
            <xsd:attribute name="targetName" type="xsd:string">
                <xsd:annotation>
                    <xsd:documentation>Target name for the tier instance
                        target that will be created.
                    </xsd:documentation>
                </xsd:annotation>
            </xsd:attribute>
        </xsd:extension>
    </xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="BaseNodeConfigType">
    <xsd:annotation>
        <xsd:documentation>Common configuration applicable to virtual
            system and virtual system collection.</xsd:documentation>
    </xsd:annotation>

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```
<xsd:sequence>
  <xsd:element name="deploymentOption" type="xsd:string" minOccurs="0"
    maxOccurs="1">
    <xsd:annotation>
      <xsd:documentation>Deployment option to be used for
        configuring the assembly. The default
        values from the default option will be
        picked, unless the user over-rides
        them.</xsd:documentation>
    </xsd:annotation>
  </xsd:element>
  <xsd:element name="ProductConfiguration" type="ProductsListType"
    minOccurs="0" maxOccurs="1">
    <xsd:annotation>
      <xsd:documentation>Configuration for various products in
        the node.</xsd:documentation>
    </xsd:annotation>
  </xsd:element>
</xsd:sequence>
<xsd:attribute name="id" type="xsd:string" use="required">
  <xsd:annotation>
    <xsd:documentation>Unique identifier for the node in assembly
      meta-data.</xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
</xsd:complexType>
<xsd:simpleType name="QosPriorityType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="0"/>
    <xsd:enumeration value="1"/>
    <xsd:enumeration value="2"/>
    <xsd:enumeration value="3"/>
    <xsd:enumeration value="4"/>
    <xsd:enumeration value="5"/>
    <xsd:enumeration value="6"/>
    <xsd:enumeration value="7"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="ChildVirtualSystemConfigType">
  <xsd:annotation>
    <xsd:documentation>Configuration of a virtual system (child node of
      a virtual system having multiple
      deployments).</xsd:documentation>
  </xsd:annotation>
  <xsd:complexContent>
    <xsd:extension base="BaseNodeConfigType">
      <xsd:sequence>
        <xsd:element name="HardwareConfiguration"
          type="HardwareConfigurationType">
          <xsd:annotation>
            <xsd:documentation>Hardware configuration for the
              guest vm.</xsd:documentation>
          </xsd:annotation>
        </xsd:element>
      </xsd:sequence>
      <xsd:attribute name="targetName" type="xsd:string"
        use="required">
        <xsd:annotation>
          <xsd:documentation>Name with which the guest vm target
            will be created for this
            instance.</xsd:documentation>
        </xsd:annotation>
      </xsd:attribute>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
</xsd:sequence>
```

```

        </xsd:annotation>
    </xsd:attribute>
    <xsd:attribute name="followsMaster" type="xsd:boolean"/>
    <xsd:attribute name="agentInstallationType"
        type="EMAgentInstallationType"></xsd:attribute>
    <xsd:attribute name="agentPushInstallationEnabled"
        type="xsd:boolean"></xsd:attribute>
</xsd:extension>
</xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="AssemblyNetworkConfigListType">
    <xsd:annotation>
        <xsd:documentation>List of mappings for the assembly networks
            (defined in assembly meta-data) and
            corresponding network on the target.
        </xsd:documentation>
    </xsd:annotation>
    <xsd:sequence>
        <xsd:element name="AssemblyNetwork" type="AssemblyNetworkType"
            minOccurs="0" maxOccurs="unbounded">
            <xsd:annotation>
                <xsd:documentation>Mapping for the assembly network
                    defined in assembly meta-data) and
                    corresponding network on the
                    target.</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="AssemblyNetworkType">
    <xsd:attribute name="name" type="xsd:string">
        <xsd:annotation>
            <xsd:documentation>Name of the assembly network.</xsd:documentation>
        </xsd:annotation>
    </xsd:attribute>
    <xsd:attribute name="backendNetwork" type="xsd:string">
        <xsd:annotation>
            <xsd:documentation>Backend network on the target.</xsd:documentation>
        </xsd:annotation>
    </xsd:attribute>
</xsd:complexType>
<xsd:complexType name="DeploymentTargetData">
    <xsd:sequence>
        <xsd:element name="Name" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>EM Target Name</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="Id" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>EM Target GUID</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="Uri" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>Oracle Compute Target
                    URI</xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="Type" type="DeploymentTargetType"></xsd:element>
    </xsd:sequence>

```

```
</xsd:complexType>
<xsd:simpleType name="DeploymentTargetType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="oracle_nimbula_site"/>
    <xsd:enumeration value="oracle_nimbula_cluster"/>
    <xsd:enumeration value="oracle_nimbula_node"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="EMAgentConfigType">
<xsd:complexContent>
  <xsd:sequence>
    <xsd:element name="PlatformCode" type="xsd:int"/></xsd:element>
    <xsd:element name="InstallBaseDirectory" type="xsd:string"/></xsd:element>
    <xsd:element name="InstanceDirectory" type="xsd:string"/></xsd:element>
    <xsd:element name="Port" type="xsd:int"/></xsd:element>
    <xsd:element name="InstallUserName" type="xsd:string"/></xsd:element>
    <xsd:element name="InstallUserPassword" type="xsd:string"/></xsd:element>
    <xsd:element name="InstallUserPasswordGuid" type="xsd:string"/></
xsd:element>
    <xsd:element name="RootHostCredential" type="HostCredentialType"/></
xsd:element>
    <xsd:element name="OracleHostCredential" type="HostCredentialType"/></
xsd:element>
    <xsd:element name="AdditionalParams" type="xsd:string"/></xsd:element>
    <xsd:element name="SshTimeoutInMinutes" type="xsd:int"/></xsd:element>
    <xsd:element name="PrivilegeDelegationSettings" type="xsd:string"/></
xsd:element>
    <xsd:element name="SshKey" type="xsd:string"/></xsd:element>
    <xsd:element name="SshKeyGuid" type="xsd:string"/></xsd:element>
    <xsd:element name="RootSSHCredential" type="SSHCredentialType"/></
xsd:element>
    <xsd:element name="OracleSSHCredential" type="SSHCredentialType"/></
xsd:element>
  </xsd:sequence>
</xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="StorageTarget">
  <xsd:attribute name="name" type="xsd:string"/>
  <xsd:attribute name="type" type="StorageTargetType"/>
</xsd:complexType>
<xsd:simpleType name="StorageTargetType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="DEFAULT"/>
    <xsd:enumeration value="STORAGE_REPOSITORY"/>
    <xsd:enumeration value="STORAGE_ARRAY"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="ModeType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="Read-Write"/>
    <xsd:enumeration value="Read-Only"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="IPAssignmentModeType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="Dhcp"/>
    <xsd:enumeration value="Static"/>
    <xsd:enumeration value="Network Profile"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="EMAgentInstallationType">
```

```

    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="Push Agent Installation"/>
      <xsd:enumeration value="RPM Installation"/>
      <xsd:enumeration value="No Agent Installation"/>
    </xsd:restriction>
  </xsd:simpleType>
<xsd:complexType name="StorageQoSType">
  <xsd:attribute name="name" type="xsd:string"/></xsd:attribute>
</xsd:complexType>
<xsd:complexType name="ProductPropertyType">
  <xsd:sequence>
    <xsd:element name="Name" type="xsd:string"/></xsd:element>
    <xsd:element name="Description" type="xsd:string"/></xsd:element>
    <xsd:element name="Required" type="xsd:boolean"/></xsd:element>
    <xsd:element name="Value" type="xsd:string"/></xsd:element>
    <xsd:element name="ValueGuid" type="xsd:string"/></xsd:element>
    <xsd:element name="Secret" type="xsd:boolean"/></xsd:element>
  </xsd:sequence>
  <xsd:attribute name="id" type="xsd:string"/></xsd:attribute>
</xsd:complexType>
<xsd:simpleType name="PlanVersionType">
  <xsd:restriction base="xsd:string">
    <xsd:pattern value="[0-9]{1,4}\.[0-9]{1,4}\.[0-9]{1,4}">
      <xsd:annotation>
        <xsd:documentation>i.e. x.y.z where x, y, and z are "small"
          integers</xsd:documentation>
      </xsd:annotation>
    </xsd:pattern>
  </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="RelationshipDataType">
  <xsd:sequence>
    <xsd:element name="Type" type="RelationshipType">
      <xsd:annotation>
        <xsd:documentation/></xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="FirstServerName" type="xsd:string"/></xsd:element>
    <xsd:element name="SecondServerName" type="xsd:string"/></xsd:element>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="RelationshipListType">
<xsd:complexContent>
  <xsd:sequence>
    <xsd:element name="Relationship" type="RelationshipDataType"
      maxOccurs="unbounded" minOccurs="0"/></xsd:element>
  </xsd:sequence>
</xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="AttributeListType">
<xsd:complexContent>
  <xsd:sequence>
    <xsd:element name="Attribute" type="AttributeType"
      maxOccurs="unbounded" minOccurs="0"/></xsd:element>
  </xsd:sequence>
</xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="AttributeType">
  <xsd:sequence>
    <xsd:element name="Name" type="xsd:string"/></xsd:element>
    <xsd:element name="Value" type="xsd:string"/></xsd:element>
  </xsd:sequence>

```

```

        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="ImageListType">
        <xsd:sequence>
            <xsd:element name="Name" type="xsd:string"></xsd:element>
            <xsd:element name="Id" type="xsd:string"></xsd:element>
            <xsd:element name="Entry" type="xsd:string"></xsd:element>
            <xsd:element name="UseDefaultEntry" type="xsd:boolean"></xsd:element>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="ShapeType">
    <xsd:complexContent>
        <xsd:sequence>
            <xsd:element name="Name" type="xsd:string"></xsd:element>
            <xsd:element name="Id" type="xsd:string"></xsd:element>
        </xsd:sequence>
    </xsd:complexContent>
    </xsd:complexType>
    <xsd:complexType name="QuotaType">
        <xsd:sequence>
            <xsd:element name="Name" type="xsd:string"></xsd:element>
            <xsd:element name="Type" type="xsd:string"></xsd:element>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="AccountType">
        <xsd:sequence>
            <xsd:element name="Name" type="xsd:string"></xsd:element>
            <xsd:element name="Id" type="xsd:string"></xsd:element>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="BackendNetworkType">
        <xsd:sequence>
            <xsd:element name="Name" type="xsd:string"></xsd:element>
            <xsd:element name="Id" type="xsd:string"></xsd:element>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:simpleType name="PlanType">
        <xsd:restriction base="xsd:string">
            <xsd:enumeration value="NimbulaImage"></xsd:enumeration>
            <xsd:enumeration value="NimbulaAssembly"></xsd:enumeration>
        </xsd:restriction>
    </xsd:simpleType>
    <xsd:complexType name="PassThroughDataType">
        <xsd:annotation>
            <xsd:documentation>Element to specify the pass-through data.
Example: Oracle Compute Launch Plan , OVAB Deployment Plan</xsd:documentation>
        </xsd:annotation>
        <xsd:sequence>
            <xsd:element name="planData" type="xsd:string">
                <xsd:annotation>
                    <xsd:documentation>Use CDATA to add the pass-through
data.</xsd:documentation>
                </xsd:annotation>
            </xsd:element>
        </xsd:sequence>
    </xsd:complexType>
    <xsd:simpleType name="RelationshipType">
        <xsd:restriction base="xsd:string">
            <xsd:enumeration value="same_node"></xsd:enumeration>
            <xsd:enumeration value="different_node"></xsd:enumeration>
            <xsd:enumeration value="same_cluster"></xsd:enumeration>
        </xsd:restriction>
    </xsd:simpleType>

```

```

        <xsd:enumeration value="different_cluster"></xsd:enumeration>
    </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="SourceBinaryDataType">
    <xsd:sequence>
        <xsd:element name="Name" type="xsd:string"></xsd:element>
        <xsd:element name="Type" type="SourceBinaryType"></xsd:element>
        <xsd:element name="Version" type="xsd:string"></xsd:element>
        <xsd:choice>
            <xsd:element name="AssemblyBinary"
                type="AssemblyBinaryDataType"></xsd:element>
            <xsd:element name="ImageListBinary"
                type="ImageListBinaryDataType"></xsd:element>
        </xsd:choice>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="AssemblyBinaryDataType">
    <xsd:sequence>
        <xsd:element name="Name" type="xsd:string"></xsd:element>
        <xsd:element name="Id" type="xsd:string"></xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="ImageListBinaryDataType">
    <xsd:sequence>
        <xsd:element name="Name" type="xsd:string"></xsd:element>
        <xsd:element name="Id" type="xsd:string"></xsd:element>
        <xsd:element name="Entry" type="xsd:string"></xsd:element>
        <xsd:element name="DefaultEntry" type="xsd:string"></xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:simpleType name="SourceBinaryType">
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="IMAGELIST"></xsd:enumeration>
        <xsd:enumeration value="ASSEMBLY"></xsd:enumeration>
    </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="OrchestrationDeploymentConfigDataType">
    <xsd:sequence>
        <xsd:element name="Account" type="xsd:string"></xsd:element>
        <xsd:element name="InstallEMAgent" type="xsd:boolean"></xsd:element>
        <xsd:element name="EMAgentConfig" type="EMAgentConfigType"></xsd:element>
        <xsd:element name="ObjectPlanDependencyList"
            type="ObjectPlanDependencyListType"></xsd:element>
        <xsd:choice>
            <xsd:annotation>
                <xsd:documentation>Orchestration deployment can be done in
                    two ways. Either specify the Default
                    Configuration and all the other elements
                    or only specify the PassThroughData. The
                    PassThroughData is used to specify the
                    native Nimula Orchestration
                    Plan.</xsd:documentation>
            </xsd:annotation>
            <xsd:element name="ObjectPlanList" type="ObjectPlanListType"></
xsd:element>
            <xsd:element name="PassThroughData" type="PassThroughDataType">
                <xsd:annotation>
                    <xsd:documentation>
                        Ue CDATA to specify the native Orchestration Plan.
                        <![CDATA[ Orchestration Plan goes here ]]>
                    </xsd:documentation>
                </xsd:annotation>
            </xsd:element>
        </xsd:choice>
    </xsd:sequence>
</xsd:complexType>

```

```

        </xsd:annotation>
    </xsd:element>
</xsd:choice>
</xsd:sequence>
<xsd:attribute name="namePrefix" type="xsd:string"></xsd:attribute>
<xsd:attribute name="description" type="xsd:string"></xsd:attribute>

</xsd:complexType>
<xsd:complexType name="ObjectPlanDependencyListType">
<xsd:complexContent>
    <xsd:sequence>
        <xsd:element name="ObjectPlanDependency"
            type="ObjectPlanDependencyDataType"
            maxOccurs="unbounded" minOccurs="0"></xsd:element>
    </xsd:sequence>
</xsd:complexContent>
</xsd:complexType>
<xsd:complexType name="ObjectPlanDependencyDataType">
    <xsd:sequence>
        <xsd:element name="Type" type="ObjectPlanDependencyType">
            <xsd:annotation>
                <xsd:documentation></xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="ObjectPlanName" type="xsd:string"></xsd:element>
        <xsd:element name="ToObjectPlanName" type="xsd:string"></xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:simpleType name="ObjectPlanDependencyType">
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="depends"></xsd:enumeration>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="ObjectPlanType">
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="account"></xsd:enumeration>
        <xsd:enumeration value="dns/key"></xsd:enumeration>
        <xsd:enumeration value="dns/record"></xsd:enumeration>
        <xsd:enumeration value="dns/reservation"></xsd:enumeration>
        <xsd:enumeration value="dns/zone"></xsd:enumeration>
        <xsd:enumeration value="ip/reservation"></xsd:enumeration>
        <xsd:enumeration value="launchplan"></xsd:enumeration>
        <xsd:enumeration value="permission/object"></xsd:enumeration>
        <xsd:enumeration value="permission/user"></xsd:enumeration>
        <xsd:enumeration value="orchestration"></xsd:enumeration>
        <xsd:enumeration value="storage/volume"></xsd:enumeration>
        <xsd:enumeration value="storageattachment"></xsd:enumeration>
        <xsd:enumeration value="secapplication"></xsd:enumeration>
        <xsd:enumeration value="seciplist"></xsd:enumeration>
        <xsd:enumeration value="seclist"></xsd:enumeration>
        <xsd:enumeration value="secrule"></xsd:enumeration>
        <xsd:enumeration value="vethernet"></xsd:enumeration>
        <xsd:enumeration value="vservice/*"></xsd:enumeration>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="HAPolicyType">
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="active"></xsd:enumeration>
        <xsd:enumeration value="monitor"></xsd:enumeration>
        <xsd:enumeration value="none"></xsd:enumeration>
    </xsd:restriction>

```

```

</xsd:simpleType>
<xsd:complexType name="HA">
<xsd:attribute name="value" type="HAPolicyType"></xsd:attribute>
</xsd:complexType>
<xsd:complexType name="ObjectPlanListType">
  <xsd:sequence>
    <xsd:element name="ObjectPlan" type="ObjectPlanDataType"
      maxOccurs="10"></xsd:element>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="ObjectPlanDataType">
  <xsd:sequence>
    <xsd:element name="Type" type="ObjectPlanType"></xsd:element>
    <xsd:element name="HAPolicy" type="HA"></xsd:element>
    <xsd:element name="ObjectMemberList" type="ObjectMemberListType"></
xsd:element>
    <xsd:element name="GlobalObjectMember"
      type="AbstractObjectMemberType"></xsd:element>
  </xsd:sequence>
  <xsd:attribute name="label" type="xsd:string"></xsd:attribute>
</xsd:complexType>
<xsd:complexType name="ObjectMemberListType">
  <xsd:sequence>
    <xsd:element name="ObjectMember" type="AbstractObjectMemberType"
      maxOccurs="unbounded" minOccurs="1"></xsd:element>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="AbstractObjectMemberType" abstract="true">
  <xsd:annotation>
    <xsd:documentation>This is an abstract type that has to be extended
      by implementing member types for different kinds
      of objects eg. launchplan, storage
      etc.</xsd:documentation>
  </xsd:annotation>
</xsd:complexType>

<xsd:complexType name="LaunchPlanMemberType">
  <xsd:annotation>
    <xsd:documentation>This is the implementation of
      AbstractObjectMemberType corresponding to object
      of type launchplan. Similar implementations for
      other objects should be used for other
      cases.</xsd:documentation>
  </xsd:annotation>
  <xsd:complexContent>
    <xsd:extension base="AbstractObjectMemberType">
      <xsd:sequence>
        <xsd:element name="InstallEMAgent" type="xsd:boolean"></
xsd:element>
        <xsd:element name="EMAgentConfig" type="EMAgentConfigType"></
xsd:element>
        <xsd:element name="NumberOfInstances" type="xsd:string" ></
xsd:element>
        <xsd:element name="ImageList" type="xsd:string"></xsd:element>
        <xsd:element name="ImageListEntry" type="xsd:string"></
xsd:element>
        <xsd:element name="DeploymentTarget"
type="DeploymentTargetData"></xsd:element>
        <xsd:element name="DefaultConfiguration"
type="HardwareConfiguration"></xsd:element>

```

```

        <xsd:element name="Instances" type="VirtualMachineListType"></
xsd:element>
        <xsd:element name="AffinityRelationshipList"
            type="RelationshipListType"></xsd:element>
    </xsd:sequence>
    <xsd:attribute name="namePrefix" type="xsd:string"></xsd:attribute>
</xsd:extension>
</xsd:complexContent>
</xsd:complexType>

<xsd:complexType name="SSHCredentialType">
    <xsd:annotation>
        <xsd:documentation>SSH Credentials specifying username, public and
            private keys or credential reference GUID
        </xsd:documentation>
    </xsd:annotation>
    <xsd:choice>
        <xsd:sequence>
            <xsd:element name="Username" type="xsd:string" minOccurs="1"
maxOccurs="1"></xsd:element>
            <xsd:element name="PublicSSHKey" type="xsd:string" minOccurs="1"
maxOccurs="1"></xsd:element>
            <xsd:element name="PrivateSSHKey" type="xsd:string" minOccurs="1"
maxOccurs="1"></xsd:element>
        </xsd:sequence>
        <xsd:sequence>
            <xsd:element name="EMCredentialReferenceGUID" type="xsd:string"
minOccurs="1" maxOccurs="1"></xsd:element>
        </xsd:sequence>
    </xsd:choice>
</xsd:complexType>

<xsd:complexType name="HostCredentialType">
    <xsd:annotation>
        <xsd:documentation>Host Credentials specifying the username and
            password or credential reference GUID
        </xsd:documentation>
    </xsd:annotation>
    <xsd:choice>
        <xsd:sequence>
            <xsd:element name="Username" type="xsd:string" minOccurs="1"
maxOccurs="1"></xsd:element>
            <xsd:element name="Password" type="xsd:string" minOccurs="1"
maxOccurs="1"></xsd:element>
        </xsd:sequence>
        <xsd:sequence>
            <xsd:element name="EMCredentialReferenceGUID" type="xsd:string"
minOccurs="1" maxOccurs="1"></xsd:element>
        </xsd:sequence>
    </xsd:choice>
</xsd:complexType>
</xsd:schema>
```

Part V

Direct Monitoring

This section describes how to discover and monitor a Xen based hypervisor and the associated virtual targets.

It contains the following chapters:

- [Direct Monitoring of Xen Based Systems](#)

16

Direct Monitoring of Xen Based Systems

This chapter describes the procedures to discover and monitor Xen based systems. It contains the following sections:

- [Direct Monitoring Overview](#)
- [Discovering the Hypervisor Target](#)
- [Viewing the Oracle Server Home Page](#)
- [Viewing the Oracle Virtual Platform Home Page](#)
- [Viewing the Oracle VM Instance Home Page](#)

16.1 Direct Monitoring Overview

You can directly monitor a Xen based Hypervisor, the bare metal machine, its operating system, and the virtual machines without relying on their monitoring software. Monitoring these targets involves the following:

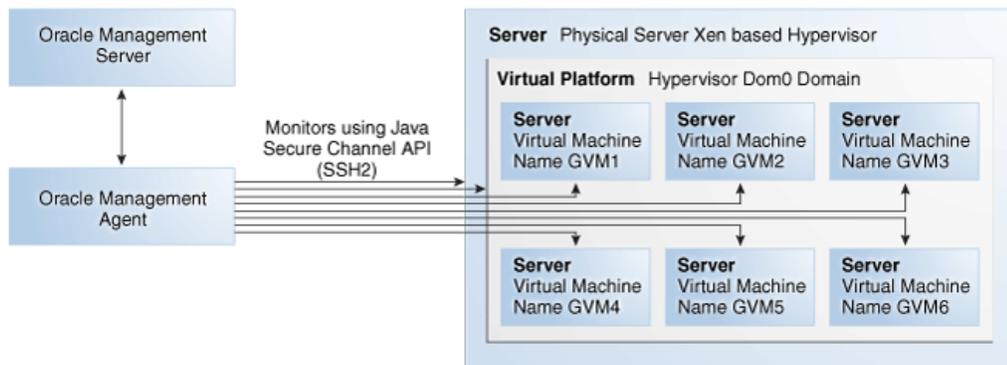
- Direct Monitoring of the Oracle Virtual Server (Guest OS or DomU running on the Hypervisor) target based on Xen 4.1.2 or later.
- Direct monitoring of Oracle Server (Physical Server)
- Direct monitoring of the Oracle Virtual Server (Xen based Hypervisor).
- Direct Monitoring of the Oracle Virtual Platform or the host operating system of the hypervisor machine.

 **Note:**

To enable direct monitoring of Xen based Hypervisors, the Oracle Virtual Infrastructure 12.1.0.2 plugin must be deployed on the Management Server. This plugin is automatically deployed on the Management Agent when the Hypervisor is registered.

The following figure shows the high level architecture.

Figure 16-1 Direct Monitoring Architecture



16.2 Discovering the Hypervisor Target

Prerequisites:

- To discover a Hypervisor target, the administrator must have the following privileges:
 - Add Any Target
 - Create Job
 - Operator privilege on the Management Agent that is monitoring the Hypervisor target.

To discover the Hypervisor by following these steps:

1. Log in to Enterprise Manager as a user with the above privileges.
2. From the **Setup** menu, select **Add Targets**, then select **Add Targets Manually**.
3. In the Add Targets Manually page, select **Add Targets Using Guided Process (Also Related Targets)** and select Oracle Virtual Platform from the Target Types drop down list.
4. Click **Add Using Guided Process**. The Discover Oracle Virtual Platforms page appears.

Figure 16-2 Discover Virtual Platform

Discover Oracle Virtual Platforms Submit Cancel

Register Oracle Virtual Platforms with Enterprise Manager. Target credentials and/or monitoring agent can be specified for each target. If set, these override the defaults for that target.

Default Monitoring Agent and Credentials

Specify the default Monitoring Agent and Credentials for the Oracle Virtual Platforms to be discovered.

Monitoring Agent: 

Failover Monitoring Agent: 

Privileged User: Yes No 

Credential Type:

Credential Properties

* Username:

* Password:

Run Privilege:

Hostname and IP Address

Specify the hostname or IP address for the Oracle VM servers that need to be discovered.

Host/IP Address	Agent & Credentials	Monitoring Agent	Username
No data to display			

Global Target Properties (Optional)

Setting global target properties is optional. These can also be set at a later time.

Comment:

Contact:

Cost Center:

Department:

Lifecycle Status:

Line of Business:

Location:

- In the Default Monitoring Agent and Credentials region, enter the following details:

 **Note:**

The credentials specified in this region will be applied to all Oracle Virtual Platform targets discovered through this process by default. You can choose to override these credentials for a specific Oracle Virtual Platform target.

- Monitoring Agent:** Click the **Search** icon and select the default monitoring agent to monitor the targets.
- Failover Monitoring Agent:** Click the **Search** icon and select the failover monitoring agent to monitor the targets.

 **Note:**

To ensure that Hypervisors and the associated targets can be monitored smoothly in a large scale environment, you must use the following recommendation for the Java Heap Size.

- If the Total Number of Targets (includes Oracle Virtual Platform, Oracle Server, and Oracle Virtual Server targets) is less than or equal to 300, the Java Heap Size for the Management Agent must be set to 128 MB.
 - If you add another 300 targets, you must increase the Java Heap Size by an additional 128 MB.
- Privileged User:** This field is used to provide the user with access to certain privileged commands. The access is available either by a root user or through the Privilege Delegation options provided here.

- **Yes:** If you select **Yes**, you must be a user who can execute the following `xl / xm` commands that require root access privileges:

```
/usr/sbin/xl list*,/usr/sbin/xl info*,/usr/sbin/xl network-list*,
/usr/sbin/xl uptime*,/usr/sbin/xl vcpu-list*,/usr/sbin/dmidecode,
/usr/sbin/xentop,/usr/bin/xenstore-read,/usr/bin/xenstore-list,
/usr/bin/xenstore-ls,/sbin/ethtool
```

These commands allow you to collect virtualization metrics when they are executed. If the `xl` command is not present on the system, the following commands will be used:

```
/usr/sbin/xm list*,/usr/sbin/xm info*,/usr/sbin/xm network-list*,
/usr/sbin/xm uptime*,/usr/sbin/xm vcpu-list*,/usr/sbin/dmidecode,
/usr/sbin/xentop,/usr/bin/xenstore-read,/usr/bin/xenstore-list,
/usr/bin/xenstore-ls,/sbin/ethtool
```

- **No:** If you select **No**, you cannot execute the `xl/xm` commands, and virtualization and configuration metrics for the Oracle Virtual Platform target are not collected.
- **Credential Type:** Specify the credentials for the target being discovered. You can select **Host Credentials** or **SSH Key Credentials**. Depending on your choice, you must enter the credential properties as described in [Setting the Credential Properties](#).
6. Click **Add** in the Host Name and IP Address region. In the Add Host/IP Address window, enter one or more host names, IP addresses or IP address ranges and click **Add**. Multiple host names, IP addresses or the ranges must be separated by a new line. The host names that you have added will appear in the Discover Oracle Virtual Platforms page.
 7. You can choose to use the default agent and credentials or click **Override** to override them. You can also override the Failover Monitoring Agent credentials. In the Override Monitoring Agent and Credentials window, enter the monitoring agent and credential properties and click **Override**. This will override the monitoring credentials. The new agent and credentials you specify will be applied.
 8. Optionally, you can also specify the Global Target Properties. The Enterprise Manager Target Properties allows you to store descriptive target information, such as Contact or Location, which can then be used in dynamic/administration group definition, reports, incident rules and notifications. The Global Target Credentials region allows you to specify the values for the target properties that are applied to all the targets discovered using this process.
 9. Click **Submit**. The registration information is validated and a job is submitted. On completion of the job, the following targets are discovered from a host that is running a Xen based hypervisor.
 - **Oracle Server:** The bare metal box running the hypervisor.
 - **Oracle Virtual Platform:** The host operating system that represents the hypervisor process.
 - **Oracle Virtual Server:** The virtual machines managed by the hypervisor domain.

Note:

To facilitate monitoring of these targets in a group, you can specify global target properties to create dynamic groups while registering the targets or by editing the already registered targets.

For instance, you can include all production virtual platforms into a dynamic group with production lifecycle status.

16.2.1 Deleting the Targets

To delete the targets that have been discovered, you must first delete the Oracle Virtual Platform target. When this target is deleted, all associated Oracle Virtual Server and Oracle Server targets are deleted.

To delete the target, follow these steps:

1. From the Targets menu, select All Targets to navigate to the All Targets page.
2. In the left panel of the All Targets page, select Oracle Virtual Platform under Servers, Storage, and Network target type. The list of Oracle Virtual Platform targets available is displayed.
3. Click on one of the targets to navigate to the Oracle Virtual Platform Home page. From the Oracle Virtual Platform menu, select Target Setup, then select Remove Target. A confirmation message is displayed. Click Yes to delete the Oracle Virtual Platform target and the associated targets.

16.2.2 Setting the Credential Properties

You can specify the credentials for the Virtual Platform target being discovered. You can select the credential type as Host Credentials or SSH Key Credentials. Each of these credentials can be clubbed with the Sudo or PowerBroker privilege delegation option.

Figure 16-3 Discover Oracle Virtual Platform: Setting the Credentials

Discover Oracle Virtual Platforms Submit Cancel

Register Oracle Virtual Platforms with Enterprise Manager. Target credentials and/or monitoring agent can be specified for each target. If set, these override the defaults for that target.

Default Monitoring Agent and Credentials

Specify the default Monitoring Agent and Credentials for the Oracle Virtual Platforms to be discovered

* Monitoring Agent

Fallover Monitoring Agent

Privileged User Yes No ⓘ

Credential type

Credential Properties

* Username

* Password

Run Privilege

Sudo Command

Run As

Enable Pseudo Terminal ⓘ

Host Credentials

If you have selected Host Credentials, you must specify the credential properties shown below:

- **User Name:** The user name required to access the target.
- **Password:** The password required to access the target.
- **Run Privilege:** This can be:
 - **None:** Run privileges are not required. This option is used when the user is **root** and the Privileged User option is set to **Yes**.
 - **Sudo:** If you select Sudo, you must specify the following:
 - * **Sudo Command:** Sudo allows a permitted user to execute a command as the super user or another user as specified in the sudoers file. Enter the command in the format `/usr/bin/sudo -S -u %RUN_AS% %COMMAND%` where `/usr/bin/sudo` is the path to the sudo executable, `RUN_AS` is the name of the user who is executing the command and `COMMAND` represents that Sudo command being executed.
 - * **Run As:** Specify `root` to run this command as a root user.
 - * **Enable Pseudo Terminal:** Select the checkbox if the sudo command requires the user to log in to a real terminal (tty). If this flag is set, the sudo user must log into the machine via a separate terminal.
 - **PowerBroker:** If you select PowerBroker, you must specify the following:
 - * **PowerBroker Command:** Enter the command in the format `/usr/bin/pbrun -l -u %RUN_AS% %COMMAND%` where `/usr/bin/pbrun` is the path to the PowerBroker executable, `RUN_AS` is the name of the user running the command, and `COMMAND` represents the PowerBroker command being executed.
 - * **Password Prompt:** The prompt that is to be displayed when the password is specified.
 - * **Run As:** Specify `root` to run this command as a root user.
 - * **Profile:** Specify the user profile to be used to run this command.

SSH Key Credentials

If you select **SSH Key Credentials**, you must specify the user name, private and public key, passphrase (for further encryption), and the run privilege.

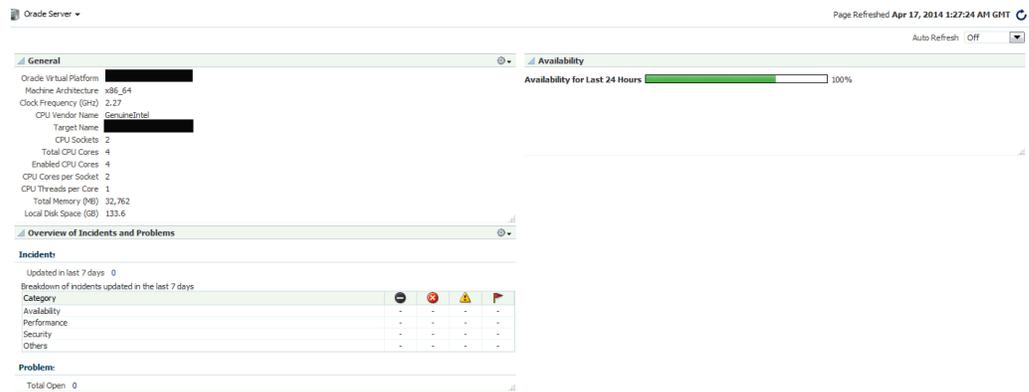
If you select Sudo or PowerBroker in the Run Privilege field, enter the additional details as listed in the **Host Credentials** section.

16.3 Viewing the Oracle Server Home Page

To view the Oracle Server Home page, follow these steps:

1. From the Targets menu, select All Targets to navigate to the All Targets page.
2. In the left panel of the All Targets page, select Oracle Server under Servers, Storage, and Network target type. The list of Oracle Server targets available is displayed.
3. Click on one of the targets to navigate to the Oracle Server Home page.

Figure 16-4 Oracle Server Home Page



This page contains the following regions:

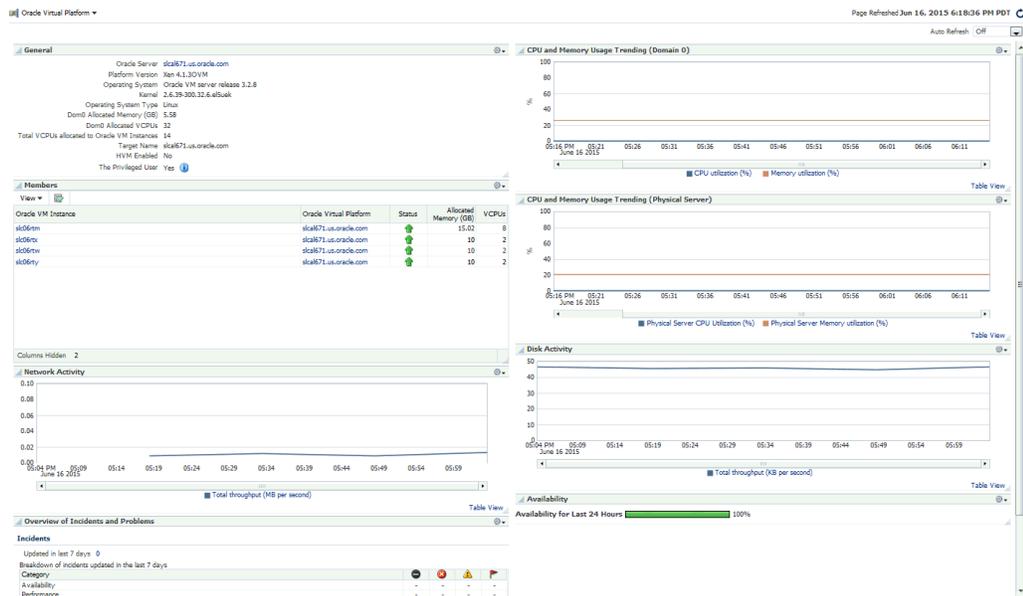
- **General:** This region provides general details such as the Oracle Virtual Platform target, name of the target, CPU sockets, CPU cores, total memory, and local disk space.
- **Availability:** The chart in this region shows the status of the target over the last 24 hours.
- **Overview of Incidents and Problems:** This region shows any incidents or problems associated with the Oracle Server target.

16.4 Viewing the Oracle Virtual Platform Home Page

To view the Oracle Virtual Platform Home page, follow these steps:

1. From the **Targets** menu, select **All Targets** to navigate to the All Targets page.
2. In the left panel of the All Targets page, select **Oracle Virtual Platform** under Servers, Storage, and Network target type. The list of Oracle Virtual Platform targets available is displayed.
3. Click on one of the targets to navigate to the Oracle Virtual Platform Home page.

Figure 16-5 Oracle Virtual Platform Home Page



This page contains the following regions:

- **General:** This region shows general details such as the Oracle Server target, platform version, name of the target, VCPUs allocated to Dom0 and total VCPUs allocated to the Oracle Virtual Server targets. It also indicates if this is a Privileged User. Virtualization metrics are collected only for privileged users.
- **Members:** This region listed the virtual servers that belong to this virtual platform, their status, and the memory allocated to each virtual server.
Host names corresponding to the Oracle Virtual Server target are also displayed if the Management Agent is present on the virtual server. By default, this column is not visible. You can select this column using the View drop down menu.
- **Network Activity:** This region shows the total throughput (MB per second) over the last 24 hours.
- **Overview of Incidents and Problems:** This region shows any incidents or problems associated with the Oracle Server target.
- **Charts:** The CPU utilization, Memory Utilization, Network, and Disk Activity charts show the activity over the last 24 hours. It shows the CPU and memory usage trending
- **Availability:** The chart in this region shows the status of the target over the last 24 hours.

16.5 Viewing the Oracle VM Instance Home Page

To view the Oracle VM Instance Home page, follow these steps:

1. From the **Targets** menu, select **All Targets** to navigate to the All Targets page.

2. In the left panel of the All Targets page, select Oracle VM Instance under Servers, Storage, and Network target type. The list of Oracle VM Instance targets available is displayed.
3. Click on one of the targets to navigate to the Oracle VM Instance Home page.

Figure 16-6 Oracle VM Instance Home Page



This page contains the following regions:

- **General:** This region provides general details such as the Oracle Server and Oracle Virtual Platform targets, name of the target, and allocated memory.
- **Availability:** The chart in this region shows the status of the target over the last 24 hours.
- **Overview of Incidents and Problems:** This region shows any incidents or problems associated with the Oracle Server target.
- **Charts:** The CPU utilization, Memory Utilization, Network, and Disk Activity charts show the activity over the last 24 hours.

Part VI

Setting Up and Using Platform as a Service

This section describes the steps required to enable Platform as a Service, which encompasses the Database as a Service (DBaaS) and Middleware as a Service (MWaaS) Cloud models.

It contains the following chapters:

- [Setting Up the PaaS Infrastructure](#)
- [Enabling the DBaaS Cloud](#)
- [Setting Up an MWaaS Cloud](#)

17

Setting Up the PaaS Infrastructure

This chapter covers the common operations that need to be performed to enable Platform as a Service (PaaS), which encompasses different service families such as Database as a Service (DBaaS) using Oracle Single Instance, and RAC or Middleware as a Service (MWaaS) using WebLogic Server, SOA Infrastructure, and Oracle Service Bus.

The PaaS model allows users to create platforms onto which consumers can deploy their own applications. A platform resource is typically comprised of a host, operating system, and application server, and may be virtualized. The platform may also include a database and even multiple hosts in a cluster. This chapter contains the following sections:

- [About Service Families](#)
- [Common Setup Tasks](#)

17.1 About Service Families

A service family can be classified as a group of services that provide a solution for a specific domain. For example, a Database Service provides RDBMS solutions and a WebLogic service provides the Java solutions for J2EE based application development and hosting.

Each service family can contain one or more service types. A service type provides a specialized service within a service family. For example, a database service can contain service types such as database service, schema service, or pluggable database service. A middleware service type can contain WebLogic service, OSB service, or SOA service. Each service type has certain fixed attributes, actions, configurations, metrics, and other properties.

A service instance is a cloud resource that is requested and managed by the self service user. For example, single instance database service instance, WebLogic service instance, and so on.

17.2 Common Setup Tasks

This section helps you get started by providing an overview of the common steps that must be performed before you set up a service family.

Table 17-1 Setting Up the Service Family

Step	Task	Role
1	Configure the Software Library. See Setting Up the Software Library section for details.	Cloud Administrator
2	Deploy the necessary plug-ins. See Deploying the Required Plug-ins	Cloud Administrator

Table 17-1 (Cont.) Setting Up the Service Family

Step	Task	Role
3	Define roles for administrators and self service users. See Defining Roles and Assigning Users .	Super Administrator
4	Install the Management Agent on unmanaged hosts so that they can be monitored by Enterprise Manager. See Adding Hosts .	Cloud Administrator
5	Create one or more resource providers. See Creating the Resource Providers .	Self Service Administrator
6	Configure the request settings. See Configuring Request Settings .	Self Service Administrator
7	Set up quotas for self service users. See Setting Up Quotas .	Self Service Administrator

17.2.1 Adding Hosts

Oracle Management Agent (Management Agent) is one of the core components of Enterprise Manager Cloud Control. It works in conjunction with the plug-ins to monitor the targets running on a managed host. You must install Oracle Management Agents on your unmanaged hosts to monitor them in Enterprise Manager. See http://docs.oracle.com/cd/E24628_01/install.121/e22624/install_agent.htm#EMBSC187 for details.

17.2.2 Creating the Resource Providers

A resource provider is a target that represents the type of resources required to provision a service instance of a specific service type. A PaaS Infrastructure zone is a resource provider which contains one or more hosts. A Software Pool is another resource provider that can contain resources such as Oracle Home targets, Oracle database targets, and so on. Resource providers such as the Database Pool or Middleware Pool are dependent on the PaaS Infrastructure Zone.

Resources can be grouped under a resource provider for easier administration and management. Resource providers allow administrators to enforce policies for service provisioning and capacity planning.

To create a resource provider, follow these steps:

1. Login as a user with the appropriate role. To create a PaaS Infrastructure Zone, you must login as a user with the `EM_CLOUD_ADMINISTRATOR` role. To create all other resource providers such as database pools, schema pools, and so on, you must login as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Resource Providers**, then click **Create**. The Create Resource Provider window appears.
4. Select the type of resource provider you want to create. This can be:
 - PaaS Infrastructure Zone. See [Creating a PaaS Infrastructure Zone](#).

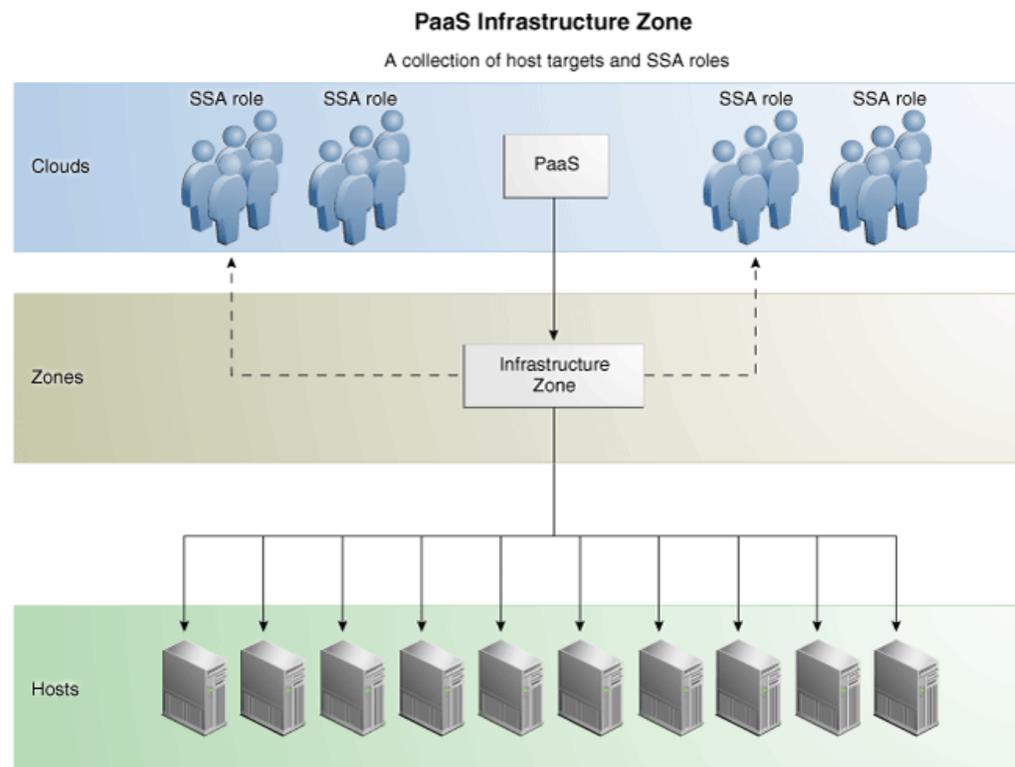
- PaaS Pool. See [Creating a PaaS Pool](#)
5. Click **Create** and follow the steps in the wizard to create the selected resource provider.

17.2.2.1 Creating a PaaS Infrastructure Zone

A PaaS Infrastructure Zone can contain a group of hosts. Each zone can contain homogeneous resources of only one type. Each resource in a zone represents a location at which a service instance is to be deployed.

The first step in building a PaaS cloud is to create at least one PaaS Infrastructure Zone, which is done by selecting one more Enterprise Manager host targets and identifying the SSA enabled roles that users will need in order to request resources in this zone.

Figure 17-1 PaaS Infrastructure Zone



Prerequisites

Before you create a PaaS Infrastructure Zone, you must ensure that the following prerequisites are met:

- The `EM_CLOUD_ADMINISTRATOR`, `EM_SSA_ADMINISTRATOR`, and `EM_SSA_USER` roles must have been created. See [Defining Roles and Assigning Users](#) for details.

-  **Note:**
 If you are using an OMS Shared System location in the Software Library, the credentials owner must grant privileges to the `CLOUD_ENGINE_USER`. Since the `CLOUD_ENGINE_USER` is a hidden user account, the owner of the named credential cannot grant **View** privileges from the Enterprise Manager Console. To address this issue, (especially on a Windows host where OMS Agent Filesystem is the recommended approach for setting up Software Library) you need to run the following EMCLI commands:

```
emcli login -username=<username> -password =<password>

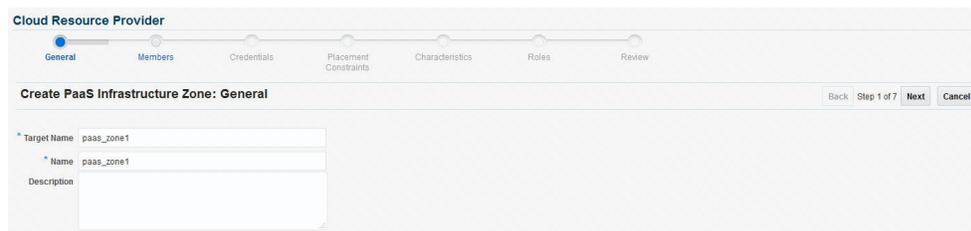
emcli grant_privs -name=CLOUD_ENGINE_USER -
privileges="GET_CREDENTIAL;"
CRED_NAME=<namedcred>:CRED_OWNER=<loginusername>"
```

- You must log in as a user with `EM_CLOUD_ADMINISTRATOR` privileges to create a PaaS Infrastructure Zone.

To create a PaaS Infrastructure Zone, follow these steps:

- From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
- From the **Cloud Home** menu, select **Resource Providers**, then select **Create**. In the Create Resource Provider window, select **PaaS Infrastructure Zone**, then click **Create**. The Create PaaS Infrastructure Zone: General page appears.

Figure 17-2 Create PaaS Infrastructure Zone: General



- Enter the target name, name, and description for the zone. Click **Next**.
- Click **Add** to add one or more host members to the zone. The hosts that you select cannot be present in more than one PaaS Infrastructure Zone. Click **Next**.
- In the Create PaaS Infrastructure Zone: Credentials page, specify the host credentials that are to be used for provisioning all targets in this zone. The credentials provided should be of global credential type (valid across the members in the zone) and owned by the current user. Click **Next**.

 **Note:**

To create new named credentials, from the **Setup** menu, select **Security**, then select **Named Credentials**. You can create user or password named credentials here. Other types of credentials such as SSH must be created from the **Security** menu and can be used here.

6. Specify appropriate values for the placement policy constraints based on the resources available to the host members. The placement policy constraints are used to set maximum ceilings for any host in the zone. Placement policy values are used during deployment to filter out hosts that are overburdened. You can define the following placement policy constraints for each host:
 - **Maximum CPU Utilization:** The average CPU utilization percentage for the past 7 days.
 - **Maximum Memory Allocation:** The average memory allocation for the past 7 days.Hosts exceeding these thresholds will not be considered for provisioning operations.
7. Click **Next**. In the Create PaaS Infrastructure Zone: Characteristics page, specify the target properties such as cost center, lifecycle status, location, and so on
8. Click **Next**. The Create PaaS Infrastructure Zone: Roles page appears. A PaaS Infrastructure Zone can be made available to a restricted set of self service users with the EM_SSA_USER role. Click **Add** to add and select the roles that can access this PaaS Infrastructure Zone.
9. Click **Next**. The Create PaaS Infrastructure Zone: Review page appears. Review the details of the zone being created and click **Submit** to create the zone. You will return to the Database and Cloud Home page.

 **Note:**

You can use EMCLI commands (see [Creating a PaaS Zone](#)) or REST APIs (see [Creating a PaaS Zone](#)) to create a PaaS Infrastructure Zone.

17.2.2.1.1 Editing a PaaS Infrastructure Zone

To edit a PaaS Infrastructure Zone, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
2. From the **Cloud Home** menu, select **Resource Providers**. The Resource Providers page appears.
3. Select a PaaS Infrastructure Zone from the list and click **Edit**.

 **Note:**

If you do not have access to or own the Named Credentials that have been defined for the PaaS Infrastructure Zone, you must specify new credentials.

4. Follow the steps in the wizard to edit the necessary parameters and click **Submit** to accept the changes.

17.2.2.1.2 Deleting a PaaS Infrastructure Zone

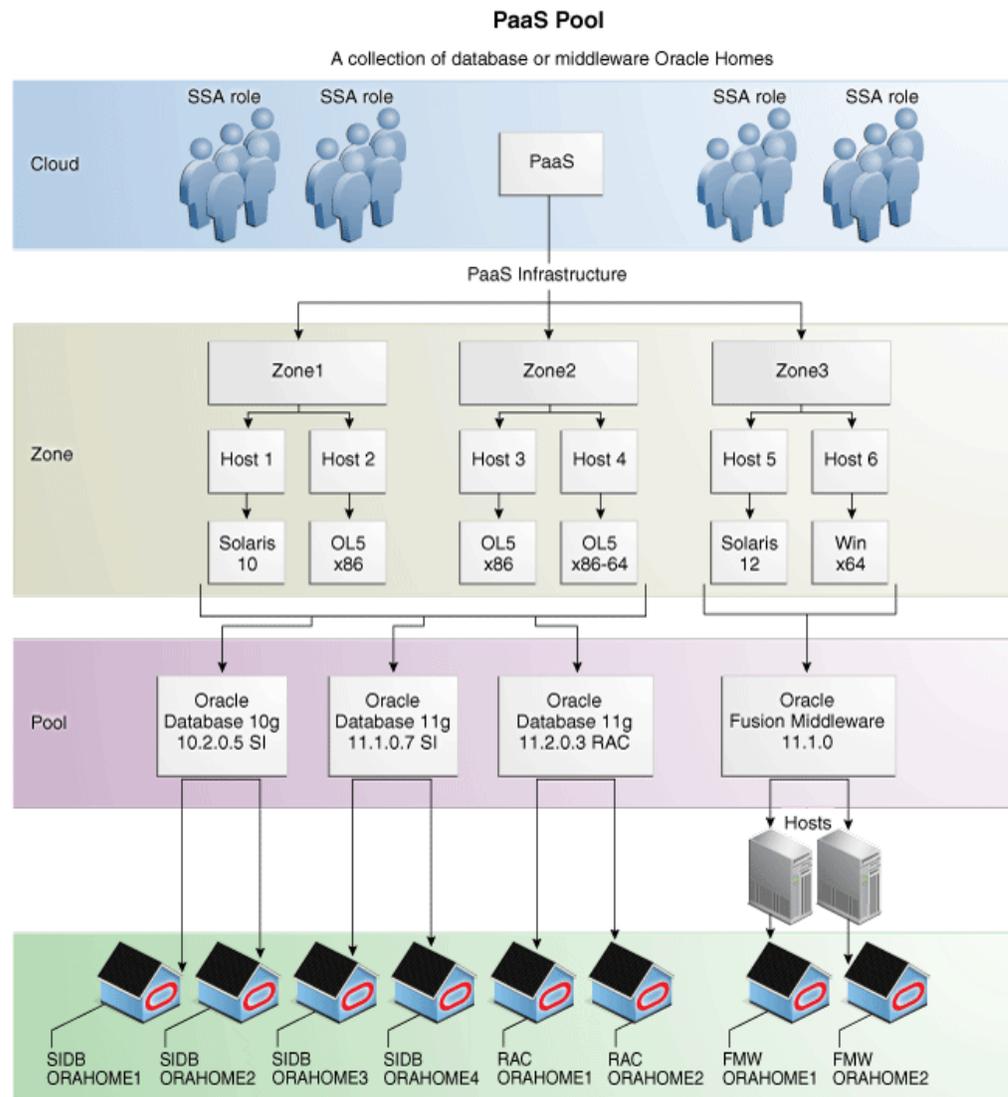
To delete a PaaS Infrastructure Zone, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
2. From the **Cloud Home** menu, select **Resource Providers**. The Resource Providers page appears.
3. Select a PaaS Infrastructure Zone from the list and click **Delete**.
4. A confirmation message is displayed. Click **Delete PaaS Infrastructure Zone** to delete the zone.

17.2.2.2 Creating a PaaS Pool

The second step in building a PaaS cloud is to create software pools (for example, database or middleware Oracle Homes that exist on hosts within the PaaS Infrastructure Zone, or database instances for schema as a service). The figure below shows an example of a PaaS pool.

Figure 17-3 PaaS Pool



A PaaS pool must be a homogeneous collection of Oracle Homes of the same platform, type, and version. For example, Solaris 10 Oracle Database single instance version 10.2.0.5 or Oracle Enterprise Linux 5 x86-64 WebLogic Server version 10.3.6. You can create a Database Pool or a Middleware Pool.

- To create a Database Pool, see [Creating a Database Pool](#).
- To create a Middleware Pool, see [Creating a Middleware Pool](#).

17.2.2.2.1 Creating a Database Pool

A Database Pool contains a set of resources that can be used to provision a database instance within a PaaS Infrastructure Zone. A database pool is a collection of homogenous targets such as servers or clusters with database software installed. For more details, see [Creating a PaaS Pool](#).

Depending on the type of database service you are setting up, you can do one of the following:

- [Creating a Database Pool for Database as a Service](#)
- [Creating a Database Pool for Schema as a Service](#)
- [Creating a Database Pool for PDB as a Service](#)

17.2.2.2 Creating a Middleware Pool

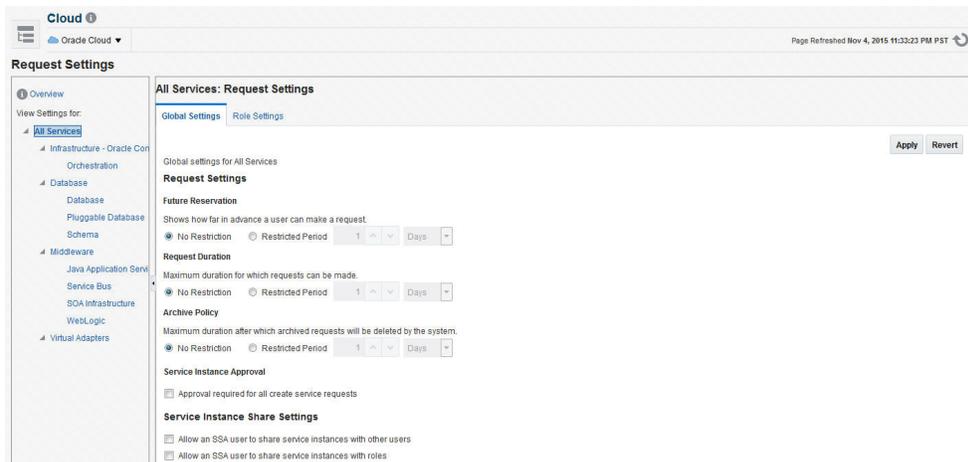
A Middleware Pool contains a set of resources that can be used to provision a service instance within a PaaS Infrastructure Zone. For more details on creating the middleware pool, see [Creating a Middleware Pool](#).

17.2.3 Configuring Request Settings

You can configure the request settings by specifying when a request can be made, its duration, and so on. To configure request settings, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Request Settings**.

Figure 17-4 Configuring Request Settings



3. You can specify the following settings:
 - **Future Reservation:** How far in advance can a request be made.
 - **Request Archive Retention:** Period for which archived requests are stored before they are automatically deleted by the system.
 - **Request Duration:** Maximum duration for which requests can be made.
 - **Service Instance Share Settings:** You can choose to share the service instance with other users or roles by selecting either of the following checkboxes.
 - Enable SSA User to share service instances with other Users

- Enable SSA User to share service instances with Roles

Note: By default, service instances are not shared with users or roles.

4. Click **Apply**.

Request settings can be defined for all services or a specific service family, service type or role. The most restrictive value of request settings is taken from all matched values. "No Restriction" on a level means the setting is not applied at this level and will not be considered in evaluating final value. For example, if a user requests a schema service and the Request Duration settings are as follows: All Services 30 Days, Database family 10 days, Schema service type (Global) 5 days, and Schema service type (SSAUser1 Role) 3 days. Then the most restrictive setting, 3 days from the Schema service type (SSAUser1 Role) setting, will be applied.

Share Service Instance Settings are taken from the highest enabled level. For example, if sharing is enabled for All Services, then sharing is allowed for all users regardless of any lower level settings. To turn off sharing for the Middleware family, you must first disable sharing at the All Services level, then disable sharing for the Middleware family and enable sharing for the other families. Any modified settings must be saved before making another selection. Any changes not yet applied will be discarded.

17.2.4 Setting Up Quotas

Quota is the aggregate amount of resources that can be granted to each self service user belonging to a certain role. This quota applies databases provisioned through the Database Cloud Self Service Portal or databases provisioned through REST APIs. To set up quotas, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Cloud** menu, select **Cloud Home**. The Cloud Home page is displayed. From the **Oracle Cloud** menu, click **Setup** and then select **Quotas**.
3. Click the **Databases** link on the left hand side. The quota definition page appears. Click **Create**.

 **Note:**

Quota validation ensures that a request is executed only if the user's current usage is within the limits specified for the roles to which the user belongs. Only the direct roles are considered for the quota determination, and not nested ones.

4. In the Create New Quota window, select the Role Name for which the quota is to be granted. Only roles that have the `EM_SSA_USER` privileges are displayed in the Select Roles dialog box. After you have selected the role, enter the following details:
 - Memory: Total allocated memory that can be assigned for all the databases owned by a specific user. This should be the total memory used by all:
 - Databases
 - Schemas requested
 - Pluggable Databases

- Storage: Total allocated storage that can be assigned for all the databases owned by a user. This should be total storage used by all:
 - Databases
 - Schemas requested
 - Pluggable Databases

 **Note:**

Storage used for backups is not included here.

- Number of Database Requests: The number of databases that can be requested by a user at any point in time. The standby databases created as part of database requests will not be included in this quota. But the storage and memory values for the standby databases will be added to the total allocated storage and memory.
- Number of Schema Service Requests: The number of database services that can be requested by the user.
- Number of Pluggable Database Service Requests: The number of PDBs that can be requested by the user.

For example, if a user has 3 roles with quota setup for each role as shown in the table below:

Role Name	Attribute	Value
Dev Role	Memory	30 GB
N/A	Storage	40 GB
N/A	DB Requests	10
N/A	Schema Requests	2
N/A	PDB Requests	3
Test Role	Memory	40 GB
N/A	Storage	60 GB
N/A	DB Requests	12
N/A	Schema Requests	3
N/A	PDB Requests	5
PM Role	Memory	Quota not set
N/A	Storage	Quota not set
N/A	DB Requests	Quota not set
N/A	Schema Requests	Quota not set
N/A	PDB Requests	Quota not set

The quota limits for each of the attributes would be determined based on all the roles to which a user directly belongs. The quota is calculated as the absolute maximum across the roles for each attribute value. For the user who belongs to the Dev, Test, and PM Role, the Quota is calculated as:

Value for Memory = MAX (Dev, Test, PM) = MAX (2, 5, NA) = 5 GB

Value for Storage = MAX (Dev, Test, PM) = MAX (15, 10, NA) = 15 GB

Value for DB Requests = MAX (Dev, Test, PM) = MAX (10, 12, NA) = 12 Databases

Value for Schema Requests = MAX (Dev, Test, PM) = MAX (2, 3, NA) = 5 Database Services

Value for PDB Requests = MAX (Dev, Test, PM) = MAX (3, 5, NA) = 8 PDB Services

A sample quota validation log generated by the user request follows:

Quota validation:

```
=====
                        Quota Details
=====
```

```
Total resources available
Memory: 15
Storage: 20
Number of Database Instances: 5
Number of Schema Services: 5
Number of Pluggable Databases: 10
```

```
=====
                        Current Usage
=====
```

```
Memory: 0.0
Storage: 0.0
Number of Database Instances: 0.0
Number of Database Services: 0.0
```

```
=====
                        Requested Resource
=====
```

```
Memory: 0.681640625
Number Of Databases: 1
Storage: 0.681640625
```

```
-----
                        Quota validation for 'Memory'
-----
```

```
Allocated Resource: 15.0
Current Usage: 0.0
Requested: 0.681640625
-----
Remaining Resource After Allocation: 14.318359375
-----
```

Result: Passed

```
-----
                        Quota validation for 'Storage'
-----
```

```
Allocated Resource: 20.0
Current Usage: 0.0
Requested: 0.681640625
-----
Remaining Resource After Allocation: 19.318359375
-----
```

Result: Passed

```
-----
                        Quota validation for 'Number of Database Instances'
-----
```

```
Allocated Resource: 5.0
```

```
Current Usage: 0.0  
Requested: 1.0  
-----  
Remaining Resource After Allocation: 4.0  
-----
```

18

Enabling the DBaaS Cloud

This chapter covers the initial configuration required to enable a DBaaS Cloud. It contains the following sections:

- [Getting Started](#)
- [Setting Up Credentials for Provisioning](#)
- [Provisioning Database Software for Database as a Service](#)
- [Provision the Database for Schema as a Service](#)
- [Provision a Container Database for PDB as a Service](#)
- [Configuring the Oracle Listener](#)

18.1 Getting Started

This section helps you get started by providing a list of steps that must be performed to get started in setting up a private database cloud. Before you set up the database cloud, you must have completed the common setup tasks described in [Common Setup Tasks](#).

Table 18-1 Getting Started with DBaaS

Step	Task	Role
1	Configure Privilege Delegation Settings on your managed hosts. See Configuring Privilege Delegation Settings	Super Administrator
2	Set up provisioning credentials. See Setting Up Credentials for Provisioning	Self Service Administrator
3	<ul style="list-style-type: none">• Setting up Database as a Service, you must provision the database software or create Oracle Homes. See Provisioning Database Software for Database as a Service.• Setting up Schema as a Service, you must provision the database. See Provision the Database for Schema as a Service.• Setting up Pluggable Database as a Service, you must create a container database (CDB) with one or more pluggable databases (PDBs). See Provision a Container Database for PDB as a Service.	Self Service Administrator
4	Configure the Listener. See Configuring the Oracle Listener .	Self Service Administrator
5	If you are using the Snap Clone profile, you must register the storage servers. See Registering and Managing Storage Servers .	Self Service Administrator

18.2 Setting Up Credentials for Provisioning

Before you perform any operations on the Managed Servers or databases, you must define the credentials that will be used by Enterprise Manager to connect to the targets.

You need to set up the following types of credentials:

- Normal credentials are the host operating system credentials used to provision the database software and create databases. For example, `oracle/<login password>`. These credentials are saved when the Database Pool is created and are used when the `EM_SSA_USER` requests a database or a schema.
- Privileged credentials are the host operating system credentials used to perform privileged actions like executing root scripts. These credentials are used deploying software (for running `root.sh` during deployment), for mounting and unmounting storage volumes (for databases created with snapshots) and so on. These credentials are saved along with the Database Pool if the pool is used for creating databases using snapshots.
- Database SYSDBA credentials are used and saved for schema as a service database pool. These credentials are required only for schema as a service.



Note:

It is recommended that the same OS user who owns the Oracle Home on the host, creates the database.

To create named credentials, follow these steps:

1. Log in to Enterprise Manager as an administrator with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Setup** menu, select **Security**, then select **Named Credentials**.
3. Click **Create** in the Named Credentials page.
4. Enter the Credential Name and Credential Description. Set the Authenticating Target Type field to Host and Scope field to Global. Enter the user name and password in the Credential Properties section. If you need to set privileged credentials, select Sudo or PowerBroker in the Run Privilege field and enter values in the Run As and Profile fields.
5. Click **Test** and **Save**.
6. Verify these credentials against a host target and click **OK**.

18.3 Provisioning Database Software for Database as a Service

Before you can enable database as a service, the database software must already be provisioned on all hosts. Database software can be provisioned by an administrator with the `EM_SSA_ADMINISTRATOR` role in the following ways:

- **Provisioning Profile**

- Capture a gold image of an existing database using a Provisioning Profile. See the Enterprise Manager Lifecycle Management Administrator's Guide for details.
- Use the Provisioning Profile to provision the Clusterware/ASM or Grid Infrastructure (for Real Application Cluster databases), and Database Oracle Home. This method ensures that the necessary database plug-in (monitoring part of the database plug-in) is deployed onto the Management Agent as part of the database provisioning Oracle Home installation.

To create a provisioning profile, from the **Enterprise** menu, select **Provisioning and Patching**, then select **Database Provisioning** and select the database provisioning deployment procedure to be used. You can select either **Provision Oracle Database** or **Provisioning Oracle RAC Database** deployment procedure.

Note: Do not create a new database as part of this deployment procedure.

- **Using the Database Installer**

- From the **Setup** menu, select **Extensibility**, then select **Plug-ins**. and deploy the complete SSA (Enterprise Manager for Oracle Cloud) plug-in on all the Management Agents in a PaaS Infrastructure Zone.
- Run the Clusterware/ASM or Grid Infrastructure installer to set up the cluster and ASM (for RAC databases).
- Run the Database Installer and ensure you select the **Install Database Software Only** option on all hosts.
- Discover the cluster. From the **Setup** menu, select **Add Target**, then **Add Targets Manually**, and then select **Add Non-Host Targets Using Guided Process** (Also Adds Related Targets).

Select:

- * Oracle Cluster and High Availability Service to discover the cluster.
 - * Oracle Database, Listener and Automatic Storage Management to discover ASM and listeners.
- From the **Enterprise** menu, you can also select **Job**, then select **Library** and submit the **Discover Promote Oracle Home Target** job to add the Oracle Home.

For more details on provisioning the database software, see the Enterprise Manager Lifecycle Management Administrator's Guide.

18.4 Provision the Database for Schema as a Service

For schema as a service, you must deploy a single instance or RAC database. To deploy a database, you must use the Provision Oracle Database deployment procedure. See the Enterprise Manager Lifecycle Management Administrator's Guide for details.

18.5 Provision a Container Database for PDB as a Service



Note:

If pluggable databases (PDBs) need to be provisioned, you must create container databases.

An Oracle Database can contain a portable collection of schemas, schema objects, and nonschema objects, that appear to an Oracle Net client as a separate database. This self-contained collection is called a pluggable database (PDB). A multi-tenant container database (CDB) is a database that includes one or more PDBs.

You can create a CDB either by using the Database Configuration Assistant (DBCA) or the `CREATE_DATABASE SQL` statement. See the *Oracle Database Administrator's Guide* for details. After the CDB is created, it consists of the root and the seed. The root contains minimal user data or no user data, and the seed contains no user data.

PDBs contain user data. After the CDB has been created, you can add PDBs to the CDB by using either of the following options:

- Create a new PDB. See the *Enterprise Manager Lifecycle Management Administrator's Guide* for details.
- Plug in an unplugged PDB into a CDB. See the *Enterprise Manager Lifecycle Management Administrator's Guide* for details.

18.6 Configuring the Oracle Listener

You need to configure an Oracle Home and the Oracle Listener before you can add them as Enterprise Manager targets.

To set up the Oracle Listener (Listener) for the database hosts, follow these steps:

1. Log in as a user with the `EM_SSA_ADMINISTRATOR` role and perform mass deployment of database homes on the newly added hosts as described in [Adding Hosts](#)
2. To configure a Listener running from the same Oracle Home on which the database instance is to be created, launch a Bash shell and enter the following commands:
 - a. `<AGENT_BASE>/agent_inst/bin/emctl stop agent`
 - b. `export TNS_ADMIN=<DB_HOME_LOCATION>/network/admin`
 - c. `export ORACLE_HOME=<DB_HOME_LOCATION>`
 - d. Run `$ORACLE_HOME/bin/netca` and create the listener. Make sure you have the same Listener name and Listener port on all the hosts.
3. To configure a Listener running from the Single Instance High Availability (SIHA) Oracle Home, launch a Bash shell and enter the following commands:
 - a. `export ORACLE_HOME=<SIHA_HOME_LOCATION>`
 - b. Run `$ORACLE_HOME/bin/netca` and create the listener. Make sure you have the same listener name and listener port on all the hosts

4. Log in as the user with the `DBAAS_ADMIN_ROLE` and discover the newly added Listener target on all the hosts. From the **Setup** menu, select **Add Target**, then select **Add Target Manually**.
5. Select the **Add Non-Host Targets Using Guided Process** option and select Target Type as **Oracle Database, Listener, and Automatic Storage Management** and click **Add Guided Discovery** and follow the steps in the wizard. Before you add the new Listener target, ensure the `ORACLE_HOME` for the Listener is pointing to the correct `ORACLE_HOME` location. This process adds the Oracle Home target which is used when a database pool is created.

18.7 Registering and Managing Storage Servers

Note:

If you are creating thin clones from a snap clone based profile, you must register and manage the storage servers such as NetApp, Sun ZFS, or EMC. See [Creating Snap Clones](#) for details.

This section describes the following:

- [Overview of Registering Storage Servers](#)
- [Before You Begin](#)
- [Prerequisites for Registering Storage Servers](#)
- [Registering Storage Servers](#)
- [Administering the Storage Server](#)
- [Managing Storage Servers](#)

18.7.1 Overview of Registering Storage Servers

Registering a storage server, such as NetApp storage server, Sun ZFS storage server, or EMC storage server in Enterprise Manager enables you to provision databases using the snapshot and cloning features provided by the storage.

The registration process validates the storage, and discovers the Enterprise Manager managed database targets on this storage. Once the databases are discovered, you can enable them for *Snap Clone*. Snap Clone is the process of creating database clones using the Storage Snapshot technology.

Note:

Databases on Windows operating systems are not supported.

18.7.2 Before You Begin

Before you begin, note the following:

- Windows databases are not discovered as part of storage discovery. This is because the Windows storage NFS collection does not happen at all. NFS collection is also not supported on certain OS releases, and thus databases on those OS releases cannot be Snap Cloned. For further details please refer to the *My Oracle Support* note [465472.1](#). Also, NAS volumes cannot be used on Windows for supporting Oracle databases.
- Snap Clone is supported on Sun ZFS Storage 7120, 7320, 7410, 7420 and ZS3 models, NetApp 8 hardware in 7-mode and c-mode, EMC VMAX 10K and VNX 5300, and Solaris ZFS Filesystem.
- Snap Clone supports Sun ZFS storage on HP-UX hosts only if the OS version is B.11.31 or higher. If the OS version is lower than that, the Sun Storage may not function properly thereby Snap Clone gives unexpected results.
- By default, the maximum number of NFS file systems that Enterprise Manager discovers on a target host is 100. However, this threshold is configurable. You can also choose a list of file systems to be monitored if you do not want all the extra file systems to be monitored.

The configuration file `$agent_inst/sysman/emd/emagent_storage.config` for each host agent contains various storage monitoring related parameters.

To configure the threshold for the NFS file systems, you need to edit the following parameters:

```
Collection Size:START
Disks=1000
FileSystems=1000
Volumes=1000
Collection Size:END
```

If you choose to provide a list of file systems to be monitored, it can be provided between the following lines:

```
FileSystems:START
FileSystems:END
```

Restart the Management Agent and refresh the host configuration for the changes to this configuration file to be effective.

- If the OMS Repository is running on RDBMS with 11.1.0.7.0 and AL32UTF8 character set, you need to apply patch 11893621.

18.7.3 Prerequisites for Registering Storage Servers

Before you register a storage server, follow the prerequisites outlined in the following sections:

- [Configuring Storage Servers](#)
- [Customizing Storage Proxy Agents](#)

18.7.3.1 Configuring Storage Servers

Before you register a storage server, you require the following privileges and licenses to successfully use Snap Clone:

- [Configuring NetApp Hardware](#)

- [Configuring Sun ZFS and ZS3 Hardware](#)
- [Configuring Solaris File System \(ZFS\) Storage Servers](#)
- [Configuring EMC Storage Servers](#)

 **Note:**

Enterprise Manager Cloud Control 13c supports NetApp, Sun ZFS, Solaris File System (ZFS) and EMC storage servers.

Configuring NetApp Hardware

This section consists of the following:

- [Obtaining NetApp Hardware Privileges](#)
- [Obtaining NetApp Hardware Licenses](#)
- [Creating NetApp Storage Credentials](#)
- [Configuring NetApp 8 Cluster Mode Hardware](#)
- [NetApp 8 Configuration Supported with Cluster Mode](#)
- [Preparing the NetApp 8 Storage and SVM](#)

Obtaining NetApp Hardware Privileges

Privileges is a generic term. NetApp refers to privileges as *Capabilities*.

For NetApp storage server, to use Snap Clone, assign the following privileges or capabilities to the NetApp storage credentials:

 **Note:**

You can assign these capabilities individually or by using wildcard notations. For example:

```
'api-volume-*', 'api-*', 'cli-*
```

- `api-aggr-list-info`
- `api-aggr-options-list-info`
- `api-file-delete-file`
- `api-file-get-file-info`
- `api-file-read-file`
- `api-license-list-info`
- `api-nfs-exportfs-append-rules`
- `api-nfs-exportfs-delete-rules`
- `api-nfs-exportfs-list-rules`

- api-nfs-exportfs-modify-rule
- api-snapshot-create
- api-snapshot-delete
- api-snapshot-list-info
- api-snapshot-reclaimable-info
- api-snapshot-restore-volume
- api-snapshot-set-reserve
- api-system-api-get-elements
- api-system-api-list
- api-snapshot-set-schedule
- api-system-cli
- api-system-get-info
- api-system-get-ontapi-version
- api-system-get-version
- api-useradmin-group-list
- api-useradmin-user-list
- api-volume-clone-create
- api-volume-clone-split-estimate
- api-volume-create
- api-volume-destroy
- api-volume-get-root-name
- api-volume-list-info
- api-volume-list-info-iter-end
- api-volume-list-info-iter-next
- api-volume-list-info-iter-start
- api-volume-offline
- api-volume-online
- api-volume-restrict
- api-volume-set-option
- api-volume-size
- cli-filestats
- login-http-admin

Obtaining NetApp Hardware Licenses

Snap Clone on a NetApp storage server requires a valid license for the following services:

- flex_clone

- nfs
- snapstore

Creating NetApp Storage Credentials

To create the NetApp storage credentials, follow these steps:

 **Note:**

Snap Clone is supported only on NetApp Data ONTAP® 7.2.1.1P1D18 or higher, and ONTAP@ 8.x (7-mode, c-mode, and v-server mode).

1. Create ROLE `em_smf_admin_role` with all the recommended capabilities, such as `api-aggr-list-info`, `api-file-delete-file`, and the like.
2. Create GROUP `em_smf_admin_group` with the ROLE `em_smf_admin_role`.
3. Create USER `em_smf_admin` with GROUP `em_smf_admin_group` and a secure password.

 **Note:**

The user `em_smf_admin` must be a dedicated user to be used by Oracle Enterprise Manager. Oracle does not recommend sharing this account for any other purposes.

Configuring NetApp 8 Cluster Mode Hardware

This topic discusses how to setup NetApp 8 cluster mode (c-mode) hardware for supporting Snap Clone in Enterprise Manager Cloud Control 13c.

NetApp 8 hardware in 7-mode is already supported for Snap Clone.

To configure NetApp 8 c-mode hardware, refer to the following sections:

- [NetApp 8 Configuration Supported with Cluster Mode](#)
- [Preparing the NetApp 8 Storage and SVM](#)

NetApp 8 Configuration Supported with Cluster Mode

The configuration supported with c-mode is as follows:

- Snap Clone features are supported only with SVM (Vserver).
- Registration of a physical cluster node is not supported.
- Multiple SVMs can be registered with Enterprise Manager Cloud Control 13c. All the registered SVMs are managed independently.

Preparing the NetApp 8 Storage and SVM

To prepare the NetApp 8 storage and SVM, ensure that the following requirements are done:

- The NetApp 8 c-mode hardware should have an SVM created. If not, you should create an SVM which will be registered with the Enterprise Manager.
- The SVM should have a network interface (LIF) with both Management and Data access. The domain name and IP address of this interface should be provided on the Storage Registration page in the Enterprise Manager.
- There should be at least one aggregate (volume) assigned to the SVM. The aggregates should not be shared between the SVMs.
- The SVM should have a user account that has the vsadmin-volume role assigned for ontapi access.

The user credentials should be supplied on the Storage Registration page in the Enterprise Manager.

- The root volume of SVM should have an export policy with a rule that allows Read Only access to all hosts. If you are using NFS v4, then the Superuser access needs to be granted from the Modify Export Rule dialog box.

Note:

- A directory named `em_volumes` is created with permissions 0444 inside the root volume of SVM. This directory will be used as an Enterprise Manager name space for the junction point.
- All the storage volumes created will use the junction point / `em_volumes` in the name space.

Note:

When you register an SVM in Enterprise Manager Cloud Control, the details of all the aggregates assigned to it are fetched. The total size of an aggregate is required to set the quota, perform space computation, and for reporting.

Presently, NetApp does not provide any Data ONTAP API to fetch the aggregate total size from an SVM. As a workaround, the available size of an aggregate is considered as the total size and is set as the Storage Ceiling during first Synchronize run. Storage Ceiling is the maximum amount of space that Enterprise Manager can use in an aggregate.

If the total space of an aggregate is increased on the storage, you can increase the Storage Ceiling till you consume the available space in that aggregate.

Configuring Sun ZFS and ZS3 Hardware

This section consists of the following:

- [Obtaining Sun ZFS Hardware Privileges](#)
- [Obtaining Sun ZFS Hardware Licenses](#)
- [Creating Sun ZFS Storage Credentials](#)

Obtaining Sun ZFS Hardware Privileges

Privileges is a generic term. For example, Sun ZFS refers to privileges as *Permissions*.

For Sun ZFS storage server, to use Snap Clone, assign the following privileges or permissions to the Sun ZFS storage credentials:

Note:

All the permissions listed must be set to `true`. The scope must be `'nas'` and there must not be any further filters.

- `changeProtocolProps`
- `changeSpaceProps`
- `clone` and `createShare`
- `destroy`
- `rollback`
- `takeSnap`

Obtaining Sun ZFS Hardware Licenses

Snap Clone on Sun ZFS Storage Appliance requires a license for the Clones feature. A restricted-use license for the same is included with the Enterprise Manager Snap Clone.

Creating Sun ZFS Storage Credentials

To create the Sun ZFS storage credentials, follow these steps:

1. Create ROLE `em_smf_admin_role`.
2. Create AUTHORIZATIONS for the ROLE `em_smf_admin_role`.
3. Set SCOPE as `nas`.
4. Set the recommended permissions, such as, `allow_changeProtocolProps`, `allow_changeSpaceProps`, and the like to `true`.
5. Create USER `em_smf_admin` and set its ROLE property as `em_smf_admin_role`.

Note:

The user `em_smf_admin` must be a dedicated user to be used by Oracle Enterprise Manager. Oracle does not recommend sharing this account for any other purposes.

Configuring Solaris File System (ZFS) Storage Servers

This section consists of the following:

- [Obtaining Solaris File System \(ZFS\) Privileges](#)
- [Obtaining Solaris File System \(ZFS\) Licenses](#)
- [Setting Up Solaris File System \(ZFS\) Storage Servers](#)

Obtaining Solaris File System (ZFS) Privileges

Solaris File System (ZFS) refers to privileges as *Permissions*. For Solaris File System (ZFS) storage server, to use Snap Clone, grant the following permissions on the pool for the Solaris File System (ZFS) user:

- clone
- create
- destroy
- mount
- rename
- rollback
- share
- snapshot
- quota
- reservation
- sharenfs
- canmount
- recordsize

Obtaining Solaris File System (ZFS) Licenses

Solaris File System (ZFS) does not require any special hardware license. Only Oracle Solaris OS version 11.1 is supported.

Setting Up Solaris File System (ZFS) Storage Servers

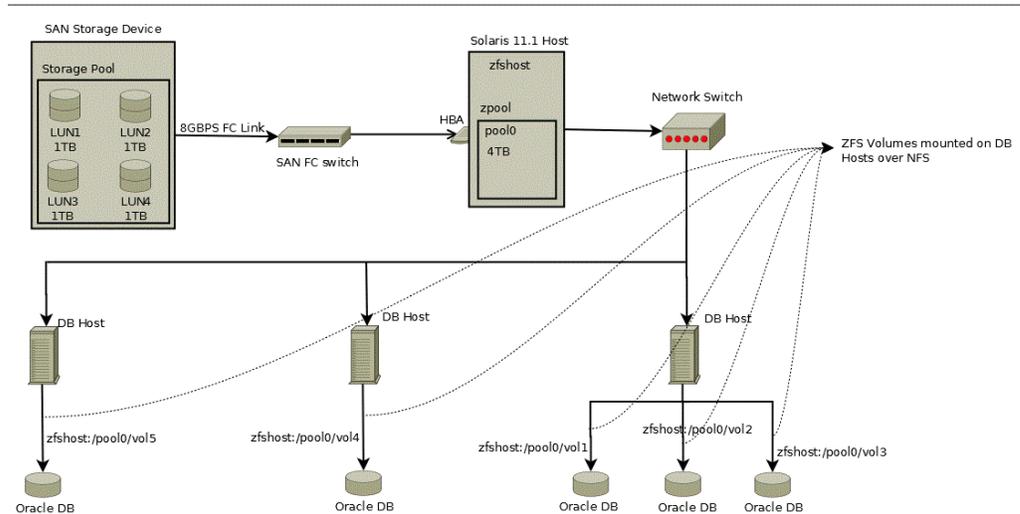
Solaris File System (ZFS) storage servers can work with any storage hardware. You do not need to buy any additional storage hardware. Instead, you can attach your in-house storage hardware and to acquire the Oracle Snap Clone functionality. For example, you can attach LUNs from an EMC VMAX, VNX systems, a Hitachi VSP, or an Oracle Pillar Axiom FC array.

The following storage topology figure explains how this works:



Note:

This figure assumes that you have a SAN storage device with 4 x 1TB logical unit devices exposed to the Solaris File System (ZFS) storage server.



This section contains the following:

- [Prerequisites for Setting Up Solaris File System \(ZFS\) Storage Servers](#)
- [Requirements for Storage Area Network Storage](#)
- [Recommendations for Solaris File System \(ZFS\) Pools](#)
- [Configuring Solaris File System \(ZFS\) Users and Pools](#)

Prerequisites for Setting Up Solaris File System (ZFS) Storage Servers

Before you configure a Solaris File System (ZFS) storage server, ensure that you meet requirements:

- Ensure that `zfs_arc_max` is not set in `/etc/system`. If it needs to be set ensure that it is set to a high value such as 80% of RAM.
- Ensure that the storage server is configured with multiple LUNs. Each LUN should be a maximum of 1TB. A minimum 2 LUNs of 1TB each is recommended for a Snap Clone. Each LUN should have a mirror LUN which is mounted on the host over a different controller to isolate failover. A LUN can be attached to the Solaris host over Fibre Channel for better performance.

Note:

If Fibre Channel is not available, any direct attached storage or iSCSI based LUNs are sufficient.

- All LUNs used in a pool should be equal in size. It is preferable to use less than 12 LUNs in a pool.
- Apart from LUNs, the storage needs cache and log devices to improve zpool performance. Both these devices should ideally be individual flash/SSD devices. In case it's difficult to procure individual devices, one can use slices cut from a single device. Log device needs to be about 32GB in size and also have redundancy and

battery backup to prevent data loss. Cache device can be about 128GB in size and need not have redundancy.

Requirements for Storage Area Network Storage

The requirements for Storage Area Network (SAN) storage are as follows:

- It is recommended to create large LUNs and lesser number of LUNs. The maximum recommended size for a LUN is 3TB.
- LUNs should come from different SAN storage pools or an entirely different SAN storage device.
These LUNs are needed for mirroring, to maintain the pool level redundancy. If your SAN storage maintains a hardware level redundancy, then you can skip this requirement.
- The LUNs should be exposed over Fiber Channel.

Recommendations for Solaris File System (ZFS) Pools

The recommendations for Solaris File system (ZFS) pools are as follows:

- Create the Storage pool with multiple LUNs of the same size. You can add more disks to the storage pool to increase the size based on your usage.
- The storage pool created on the Solaris File System (ZFS) storage server should use the LUNs coming from a different SAN storage pool or an entirely different SAN storage device. You can skip this if your SAN storage maintains hardware level redundancy.
- To repair data inconsistencies, use ZFS redundancy such as mirror, RAIDZ, RAIDZ-2 or RAIDZ-3 to repair data inconsistencies, regardless of whether RAIDZ is implemented at the underlying storage device.
- For better throughput and performance, use cache and log devices. Both these devices should ideally be on individual flash/SSD devices. In case of difficulty in procuring individual devices, you can use slices cut from a single device.

It is recommended to have the Log device at about 50% of RAM and also have redundancy and battery backup to prevent data loss. Cache device size could be based on the size of the workload and the pool.

Cache device do not support redundancy. This is optional.

- While creating the pool, it has to be sized to accommodate the test master database along with the cloned databases. A clone will co-exist with the parent database in the same storage pool. Therefore, you should plan for test master and clone capacity well ahead.

For example, The size of the test master is 1TB and you expect to create 10 clones with each of them expected to differ from the test master by 100G. Then, the storage pool should be minimum 2.5TB in size.

- Maintain the storage pool with at least 20% free space. If the free space falls below this level, then the performance of the pool degrades.

Configuring Solaris File System (ZFS) Users and Pools

You need to create a user which will be able to administer the storage from Enterprise Manager. To do this, run the following commands as root user:

```
# /sbin/useradd -d /home/emzfsadm -s /bin/bash emzfsadm
# passwd emzfsadm
```

 **Note:**

The username should be less than or equal to 8 characters.

You need to configure the ZFS pool that is used to host volumes, and grant privileges on this pool to the user created. The `emzfsadm` user should have the privileges on all the zpools and its mount points in the system.

To configure the ZFS pool, refer to the following table and run the following commands:

 **Note:**

The table displays a reference implementation, and you can choose to change this as required.

Pool Name	lunpool
Disks (SAN exposed LUNs over FC/iSCSI)	lun1=c9t5006016E3DE0340Ed0, lun2=c9t5006016E3DE0340Ed1
Disks Mirror (SAN exposed LUNs over FC/iSCSI)	mir1=c10t5006016E3DE0340Ed2, mir2=c10t5006016E3DE0340Ed3
Flash/ SSD disk (log)	ssd1=c4t0d0s0
Flash/SSD disk (cache)	ssd2=c4t0d1s0

```
# zpool create lunpool mirror lun1=c9t5006016E3DE0340Ed0 mir1=c10t5006016E3DE0340Ed2
mirror lun2=c9t5006016E3DE0340Ed1 mir2=c10t5006016E3DE0340Ed3 log ssd1=c4t0d0s0
cache ssd2=c4t0d1s0
```

Example format output is as follows:

```
bash-4.1# /usr/sbin/format
Searching for disks...done
```

AVAILABLE DISK SELECTIONS:

0. c9t5006016E3DE0340Ed0 <DGC-VRAID-0532-1.00TB>
/pci@78,0/pci8086,3c08@3/pci10df,f100@0/fp@0,0/disk@w5006016e3de0340e,0
1. c9t5006016E3DE0340Ed1 <DGC-VRAID-0532-1.00TB>
/pci@78,0/pci8086,3c08@3/pci10df,f100@0/fp@0,0/disk@w5006016e3de0340e,1
2. c10t5006016E3DE0340Ed2 <DGC-VRAID-0532-1.00TB>
/pci@78,0/pci8086,3c08@3/pci10df,f100@0/fp@0,0/disk@w5006016e3de0340e,2
3. c10t5006016E3DE0340Ed3 <DGC-VRAID-0532-1.00TB>
/pci@78,0/pci8086,3c08@3/pci10df,f100@0/fp@0,0/disk@w5006016e3de0340e,3

```
[ We need to find the size of pool that was created ]
# df -k /lunpool
Filesystem          1024-blocks      Used   Available Capacity  Mounted on
lunpool             1434746880        31  1434746784     1%   /lunpool

[ We use the Available size shown here to set quota as shown below ]

# zfs set quota=1434746784 lunpool

# zfs allow emzfsadm
clone,create,destroy,mount,rename,rollback,share,snapshot,quota,reservation,sharenfs,
canmount,recordsize,logbias lunpool

# chmod A+user:emzfsadm:add_subdirectory:fd:allow /lunpool

# chmod A+user:emzfsadm:delete_child:fd:allow /lunpool
```

**Note:**

this content did not make it through the conversion

Configuring EMC Storage Servers

Before you use an EMC Symmetrix VMAX Family or an EMC VNX storage server, you need to first setup the EMC storage hardware for supporting Snap Clone in Oracle Enterprise Manager 13c. Ensure that all the requirements are met in the following sections:

- [Supported Configuration for EMC Storage Servers](#)
- [Requirements for EMC Symmetrix VMAX Family and Database Servers](#)
- [Preparing the Storage Area Network](#)
- [Understanding VMAX Terminology](#)
- [Preparing the EMC VMAX Storage](#)
- [Preparing the EMC VNX Storage](#)
- [Preparing Database Servers](#)
- [Setting Privileged Host Monitoring Credentials](#)

Supported Configuration for EMC Storage Servers

Before you configure the EMC Symmetrix VMAX family or the EMC VNX storage server, check the following list. The list displays components that are supported and are not supported for EMC VMAX and EMC VNX storage.

- EMC VMAX 10K and VNX 5300 are certified to use. Higher models in the same series are expected to work.
- Only Linux and Solaris operating systems are supported. Other operating systems are not yet supported.
- Multi-pathing is mandatory.
- Only EMC PowerPath, and Solaris MPxIO are supported.

- Switched fabric is supported. Arbitrated loop is not supported.
- Emulex (LPe12002-E) host bus adapters are certified to use. Other adapters are expected to work.
- SCSI over Fibre Channel is supported. iSCSI, NAS are not yet supported.
- Oracle Grid Infrastructure 11.2 is supported.
- Oracle Grid Infrastructure 12.1 with Local ASM Storage option is supported. Flex ASM is not supported.
- ASM Filter Driver is not supported.
- ASM support is only for raw devices. File System is not supported.
- Support for Thin Volumes (TDEV) on VMAX.
- Support for only LUNs on VNX. NAS is not yet supported.

Requirements for EMC Symmetrix VMAX Family and Database Servers

The requirement for the operating system version of EMC Symmetrix VMAX Family is:

- EMC VMAX Enginuity Version: 5876.251.161 and above
- SMI-S Provider Version: V4.6.1.6 and above
- Solutions Enabler Version: V7.6-1755 and above

Note:

The EMC VMAX Enginuity version is the Operating System version of the storage.

The SMI-Provider and Solutions Enabler are installed on a host in a SAN.

The requirements for database server are as follows:

Oracle Database Requirements

- Oracle Database 10.2.0.5 and higher

Operating System Requirements

- Oracle Linux 5 update 8 (compatible with RHEL 5 update 8) and above
- Oracle Linux 6 (compatible with RHEL 6) and above
- Oracle Solaris 10 and 11

Multipathing Requirements

- EMC PowerPath Version 5.6 or above as available for Linux Operating System release and kernel version
- EMC PowerPath Version 5.5 or above as available for Oracle Solaris 11.1 release
- EMC PowerPath Version 6 is not supported.
- Solaris MPxIO as available in latest update

Oracle Grid Infrastructure Requirements

- Oracle Grid Infrastructure 11.2
- Oracle Grid Infrastructure 12.1. Flex ASM is not supported.

Preparing the Storage Area Network

To prepare the storage area network, follow the configuration steps outlined in each section.

SAN Fabric Configuration

Configure your SAN fabric with multipathing by ensuring the following:

- You must have redundancy at storage, switch and server level.
- Perform the zoning such that multiple paths are configured from the storage to the server.
- Configure the paths such that a failure at a target port, or a switch or a host bus adapter will not cause unavailability of storage LUNs.
- Configure gatekeepers on the host where EMC SMI-S provider is installed. To configure gatekeepers, refer to the documentation available on the EMC website:

SMI-S Provider

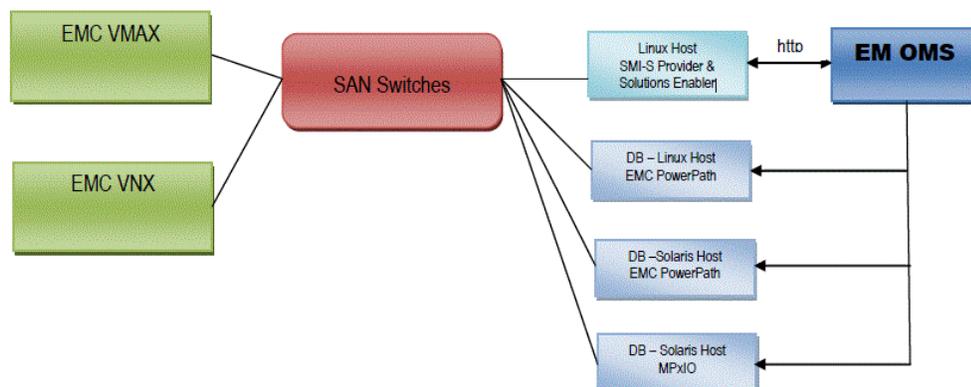
You should install the SMI-S provider and Solutions Enabler on one of the servers in the fabric where the storage is configured. To install and configure the SMI-S provider, refer to the documentation available on the EMC website:

The SMI-S provider URL and login credentials are needed to interact with the storage. An example of an SMI-S Service Provider URL is <https://rstx4100smis:5989>.

These details are needed when you register a storage server. You are required to do the following:

- Ensure that the VMAX or VNX storage is discovered by the SMI-S provider.
- Add the VNX storages to the SMI-S provider.
- Create a user account with administrator privileges in the SMI-S provider to access the VMAX or VNX storage.
- Set a sync interval of 1 hour.

Setup



Understanding VMAX Terminology

The following table outlines VMAX terms that are used in this section. Refer to these terms to gain a better conceptual understanding, before you prepare the EMC VMAX storage.

Table 18-2 VMAX terminologies

Term	Definition
Logical Unit	An I/O device is referred to as a Logical Unit.
Logical Unit Number	A unique address associated with a Logical Unit.
Initiator	Any Logical Unit that starts a service request to another Logical Unit is referred to as an Initiator
Initiator Group	An initiator group is a logical grouping of up to 32 Fibre Channel initiators (HBA ports), eight iSCSI names, or a combination of both. An initiator group may also contain the name of another initiator group to allow the groups to be cascaded to a depth of one.
Port Group	A port group is a logical grouping of Fibre Channel and/or iSCSI front-end director ports. The only limit on the number of ports in a port group is the number of ports in the Symmetrix system. It is also likely that a port group can contain a subset of the available ports in order to isolate workloads to specific ports. Note: As a pre-requisite, OEM expects a port group created with the name ORACLE_EM_PORT_GROUP and it should contain the required target ports.
Storage Group	A storage group is a logical grouping of up to 4,096 Symmetrix devices.
Target	Any Logical Unit to which a service request is targeted is referred to as a Target
Masking View	A masking view defines an association between one initiator group, one port group, and one storage group. When a masking view is created, the devices in the storage group are mapped to the ports in the port group and masked to the initiators in the initiator group.
SCSI Command	A service request is referred to as a SCSI command
Host Bus Adapter (HBA)	The term host bus adapter (HBA) is most often used to refer to a Fibre Channel interface card. Each HBA has a unique World Wide Name (WWN), which is similar to an Ethernet MAC address in that it uses an OUI assigned by the IEEE. However, WWNs are longer (8 bytes). There are two types of WWNs on a HBA: a node WWN (WWNN), which is shared by all ports on a host bus adapter, and a port WWN (WWPN), which is unique to each port. There are HBA models of different speeds: 1Gbit/s, 2Gbit/s, 4Gbit/s, 8Gbit/s, 10Gbit/s, 16Gbit/s and 20Gbit/s.

For more information on VMAX storage and terminologies, refer to the document *EMC Symmetrix VMAX Family with Engenuity* available in the EMC website.

Preparing the EMC VMAX Storage

Configure your EMC VMAX appliance such that it is zoned with all the required nodes where you need to provision databases. To prepare the EMC VMAX storage, do the following on the storage server:

- Ensure that all the Host Initiator ports are available from the storage side.
- It is recommended to create one initiator group per host with corresponding initiators to increase security. The 'Consistent LUNs' property of the immediate parent Initiator Group of the initiators should be set to 'No'

- Create a Port Group called `ORACLE_EM_PORT_GROUP` to be used by Oracle Enterprise Manager for creating Masking Views. This port group should contain all the target ports that will be viewed collectively by all the hosts registered in the Enterprise Manager Cloud Control system.

For example, host1 views storage ports P1 and P2, and host2 views storage ports P3 and P4. Then, the `ORACLE_EM_PORT_GROUP` should include all ports P1, P2, P3 and P4. Include only the necessary target ports as needed by the development infrastructure.
- Create a separate Virtual Provisioning Pool also known as Thin Pool, and dedicate it for Oracle Enterprise Manager.
- Ensure that the TimeFinder license is enabled to perform VP Snap

Preparing the EMC VNX Storage

Configure your EMC VNX appliance such that it is zoned with all the required nodes where you need to provision databases. To prepare the EMC VNX storage, do the following on the storage server:



Note:

EMC VNX Storage supports only LUN creation, cloning, and deletion. It does not support NAS.

- Ensure that all host initiator ports are available from the storage side.
- Ensure that the initiators belonging to one host are grouped and named after the Host on the EMC VNX storage.
- Create one storage group with one host for each of the hosts registered in Enterprise Manager.

For example, if initiators i1 and i2 belong to host1, register the initiators under the name Host1. Create a new storage group SG1 and connect Host1 to it. Similarly, create one storage group for each of the hosts that are to be added to Enterprise Manager.

Preparing Database Servers

To prepare your server for Enterprise Manager Snap Clone, ensure the following:

- Servers should be physical and equipped with Host Bus Adapters. NPIV and VMs not supported.
- Configure your servers with recommended and supported multipath software. If you use EMC PowerPath, then enable the PowerPath license. To enable the PowerPath license, use the following command:

```
emcpreg -install
```

- If you need the servers to support Oracle Real Application Clusters, then install Oracle Clusterware.

 **Note:**

ASM and Clusterware have to be installed and those components have to be discovered in Enterprise Manager as a target. Once ASM and Clusterware are installed, additional ASM disk groups can be created from Enterprise Manager.

- Enable Privileged Host Monitoring credentials for all the servers. If the server is part of a cluster, then you should enable privileged host monitoring credential for that cluster.

For more details on enabling privileged host monitoring credentials, refer to *Oracle Enterprise Manager Framework, Host, and Services Metric Reference Manual*.

- If you are using Linux, you should configure Oracle ASMLib, and set the `asm_diskstring` parameter to a valid ASM path. For example:

```
/dev/oracleasm/disks/
```

Update the boot sequence such that the ASMLib service is run first, and then the multipath service.

To install Oracle ASMLib, refer to the following website:

<http://www.oracle.com/technetwork/server-storage/linux/install-082632.html>

To configure Oracle ASMLib on multipath disks, refer to the following website:

<http://www.oracle.com/technetwork/server-storage/linux/multipath-097959.html>

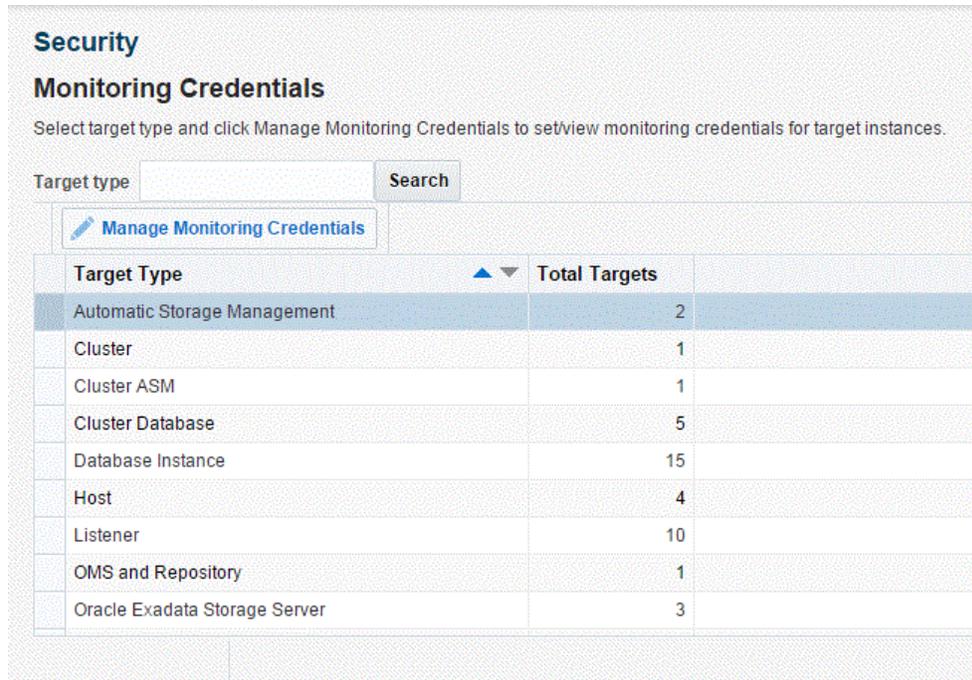
Setting Privileged Host Monitoring Credentials

You should set the privilege delegation settings before setting Host monitoring credentials. Do the following:

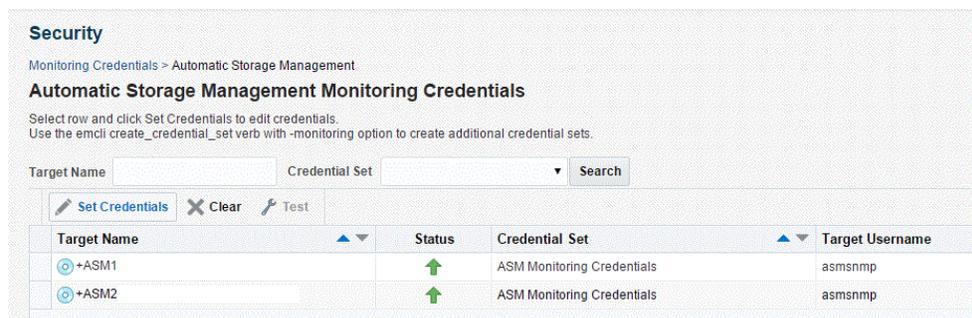
 **Note:**

This is required only on hosts that are used for snap cloning databases on EMC storage.

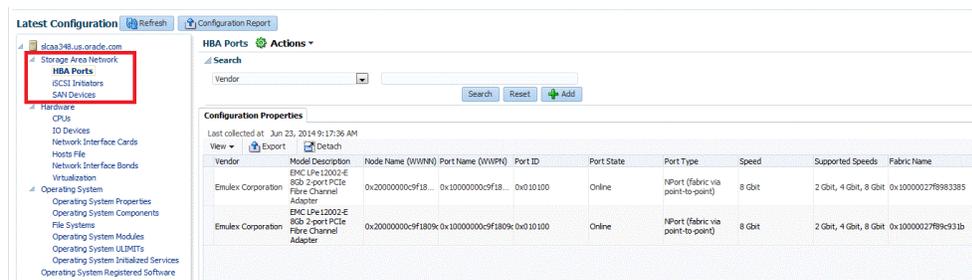
1. From the **Setup** menu, click on **Security** and then select **Monitoring Credentials**.
2. On the Monitoring Credentials page, select **Cluster** or **Host** according to your requirement and then click **Manage Monitoring Credentials**.



- On the Cluster Monitoring Credentials page, select **Privileged Host Monitoring Credentials** set for the cluster or host and click **Set Credentials**.



- In the dialogue box that appears, specify the credentials, and click **Save**.
- After the host monitoring credentials are set for the cluster, refresh the cluster metrics. Verify if the Storage Area Network metrics get collected for the hosts.



18.7.3.2 Customizing Storage Proxy Agents

A Proxy Agent is required when you register a NetApp, Sun ZFSSA or Solaris File System (ZFS) File System.

Before you register a NetApp storage server, meet the following prerequisites:

- [Acquiring Third Party Licenses](#)
- [Uploading Storage Vendor SDK](#)
- [Overriding the Default SDK](#)
- [Overriding Third Party Server Components](#)

 **Note:**

Storage Proxy Agent is supported only on *Linux Intel x64* platform.

Acquiring Third Party Licenses

The Storage Management Framework is shipped by default for *Linux x86-64* bit platform, and is dependent on the following third party modules:

- Source CPAN - CPAN licensing apply
 - IO::Tty (version 1.10)
 - XML::Simple (version 2.20)
 - Net::SSLeay (version 1.52)
- Open Source - Owner licensing apply
 - OpenSSL(version 1.0.1e)

Uploading Storage Vendor SDK

Before you register a NetApp storage server, do the following:

1. Download the *NetApp Manageability SDK* version 5.0R1 for all the platforms from the following NetApp support site: <http://support.netapp.com/NOW/cgi-bin/software>
2. Unzip the 5.1 SDK and package the Perl NetApp Data OnTap Client SDK as a tar file. Generally, you will find the SDK in the `lib/perl/NetApp` folder. The tar file when extracted should look as follows:

```
NetApp.tar
- netapp
  - Na    Element.pm
  - NaServer.pm
  - NaErrno.pm
```

For example, the Software Library entity `Storage Management Framework Third Party/Storage/NetApp/default` should have a single file entry that contains `NetApp.tar` with the above tar structure.

 **Note:**

Ensure that there is no extra space in any file path name or software library name.

3. Once the tar file is ready, create the following folder hierarchy in software library:
Storage Management Framework Third Party/Storage/NetApp
4. Upload the tar file as a Generic Component named `default`.

 **Note:**

To upload the tar file, you must use the OMS shared filesystem for the software library.

The tar file should be uploaded to this `default` software library entity as a Main File.

Overriding the Default SDK

The `default` SDK is used for all the NetApp storage servers. However, the storage server may work with only a certain SDK. In such a case, you can override the SDK per storage server, by uploading an SDK and using it only for this particular storage server.

To override the existing SDK for a storage server, upload the tar file to the Software Library entity. The tar file should have the structure as mentioned in Step 3 of the previous section.

The Software Library entity name should be the same as the storage server name.

For example, if the storage server name is `mynetapp.example.com`, then the Software Library entity must be as follows:

```
Storage Management Framework Third Party/Storage/NetApp/mynetapp.example.com
```

 **Note:**

A storage specific SDK is given a higher preference than the `default` SDK,

Overriding Third Party Server Components

By default, all the required third party components are shipped for *Linux Intel 64 bit* platform. If you need to override it by any chance, package the tar file as follows:

 **Note:**

The tar file should contain a `thirdparty` folder whose structure should be as mentioned below:

```
thirdparty
|-- lib
|  |-- engines
|  |  |-- lib4758cca.so
|  |  |-- libaep.so
|  |  |-- libatalla.so
|  |  |-- libcapi.so
|  |  |-- libchil.so
|  |  |-- libcsswift.so
|  |  |-- libgmp.so
|  |  |-- libgost.so
|  |  |-- libnuron.so
|  |  |-- libpadlock.so
|  |  |-- libsureware.so
|  |  `-- libubsec.so
|  |-- libcrypto.a
|  |-- libcrypto.so
|  |-- libcrypto.so.1.0.0
|  |-- libssl.a
|  |-- libssl.so
|  `-- libssl.so.1.0.0
`-- pm
    |-- CPAN
    |  |-- IO
    |  |  |-- Pty.pm
    |  |  |-- Tty
    |  |  `-- Constant.pm
    |  `-- Tty.pm
    |-- Net
    |  |-- SSLeay
    |  |  `-- Handle.pm
    |  `-- SSLeay.pm
    |-- XML
    |  `-- Simple.pm
    `-- auto
        |-- IO
        |  `-- Tty
        |  |-- Tty.bs
        |  `-- Tty.so
        `-- Net
            `-- SSLeay
                |-- SSLeay.bs
                `-- SSLeay.so
```

Ensure that the tar file is uploaded to the Software Library entity which is named after the platform name, `x86_64`. The Software Library entity must be under the following:

```
Storage Management Framework Third Party/Server
```

The `x86_64` entity, when uploaded is copied to all the storage proxy hosts irrespective of which storage server it would be processing. To use this entity on a specific storage proxy agent, name the entity after the host name.

For example, `Storage Management Framework/Third Party/Server/x86_64` will be copied to any storage proxy host which is on an `x86_64` platform. Similarly, `Storage Management Framework Third Party/Server/myhost.example.com` is copied only to `myhost.example.com`, if it is used as a storage proxy host.

The host name is given a higher preference than the platform preference.

18.7.4 Registering Storage Servers

To register a particular storage server, follow the procedure outlined in the respective section:

- [Registering a NetApp or a Sun ZFS Storage Server](#)
- [Registering a Solaris File System \(ZFS\) Storage Server](#)
- [Registering an EMC Storage Server](#)

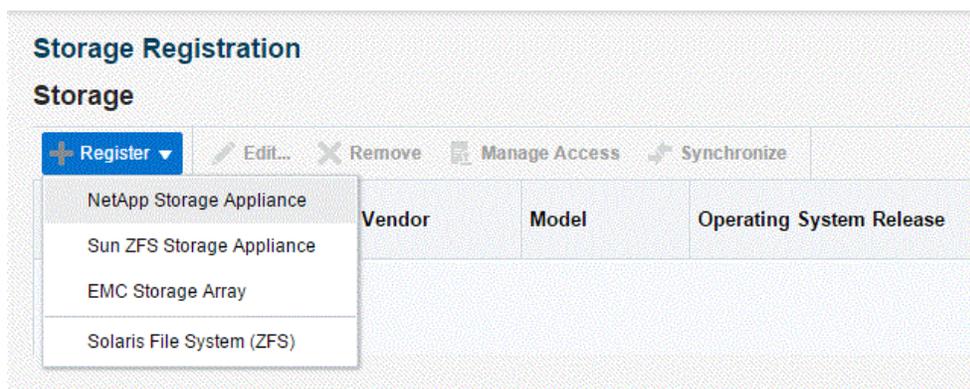
18.7.4.1 Registering a NetApp or a Sun ZFS Storage Server

To register the storage server, follow these steps:

1. From the **Setup** menu, click on **Provisioning and Patching**, and then select **Storage Registration**.
2. On the Storage Registration page, in the Storage section, click on **Register**, and then select either **NetApp Storage Appliance** or **Sun ZFS Storage Appliance**, based on which storage server you want to register.

 **Note:**

If you see a *No named credentials available* message, it means that no credentials are registered or the credentials are owned by another user.



 **Note:**

You need the `EM_STORAGE_ADMINISTRATOR` role to complete the storage registration.

3. On the NetApp or Sun ZFS Storage Registration page, in the Storage section, do the following:

Storage

* Name

Vendor NetApp

* Protocol https http

* Storage Credentials +

Tip Only credentials that you own are listed.

+ Add X Remove

Name
No data to display

Tip Provide the interface that should be used to carry out storage operations in the Name field.

Tip Specify all the interfaces and aliases of the storage that will be used to mount the volumes on host in the aliases section. This should include fully qualified domain name, IP address, DNS alias or any other name that points to storage data interface.

- Enter the storage server name in the Name field. Ensure that the name is the valid host name and contains no spaces and invalid characters.
- Select the protocol.

Note:

For NetApp storage, the connection is over http or https. For Sun ZFS storage, the connection is over ssh.

- Select the Storage Credentials, or click on the green plus sign to add.

Note:

These credentials will be used by the Management Agent to execute storage (NetApp or Sun ZFS) APIs.

Only credentials owned by the user are displayed here.

In the display box that appears, enter the storage server name and password. Confirm the password and click **OK**.

- Enter storage name aliases (optional).
The storage name alias should be in lowercase.

 **Note:**

A storage name alias is any name that may have been used when mounting a volume from the storage.

For example: IP address, FQDN, DNS alias, and the like.

A storage alias is necessary to identify the database targets on the storage. The database targets are identified by mapping the mount points to the files used by the database. For example, if the storage `mystorage.com` has an alias `mystorage.net`, and a database uses a data file mounted as `mystorage.net:/u01`, then `mystorage.net` must be added as an alias for the discovery to work.

When you register the storage, use the admin interface as the storage name. List the data interfaces in the storage alias section. The registered storage name will be used to perform registration operations and while mounting the volumes on target host, it will give preference to interfaces listed as storage aliases.

4. In the Agent to Manage Storage section, do the following:
 - Click **Add** to add a Management Agent host. A Storage Agent display box appears. Select a Management Agent from the Target Name column of the table. Then, click **Select**.

 **Note:**

The Management Agent list displays only *Linux X64* Management Agents.

Agent to Manage Storage

Select one or more Linux x86_64 or Solaris SPARC agents that can be used to perform operations on this storage device.

+ Add ✕ Remove

Host	Credential Type	Credentials
No data to display		

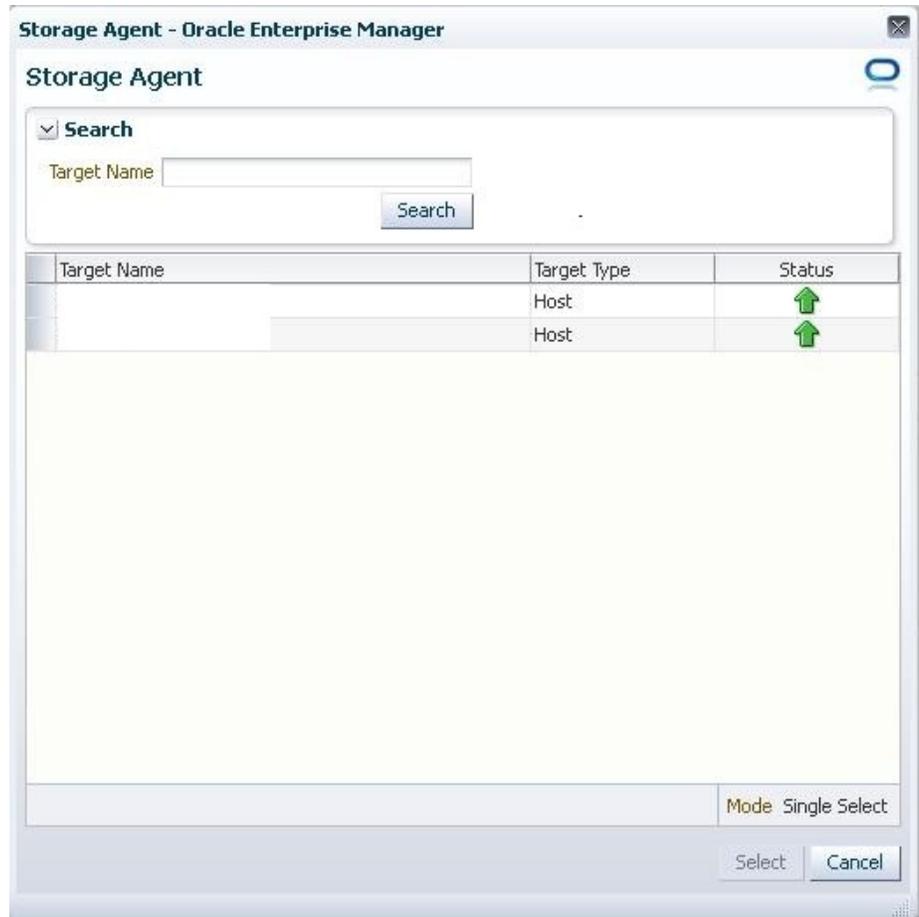
Tip Only credentials that you own are listed.

Synchronize Schedule

Specify frequency to synchronize storage details with the hardware.

Repeat Every N hours ▼

Frequency Every 3 ▲ ▼ hour(s)



The Management Agent selected is used for performing operations on the storage server.

- Once a Management Agent is selected, the Management Agent credentials are found and a named credential for the host is displayed.

 **Note:**

The Management Agent credentials are used to connect to the Management Agent from Oracle Management Service.

Multiple Management Agents can be configured to monitor the storage device. Click **Add** to choose a second Management Agent if required.

 **Note:**

Configuring multiple Management Agents to monitor the storage device provides you with a backup in the event that an host is down or the Management Agent is under blackout.

- Click **Submit** to register the storage server.

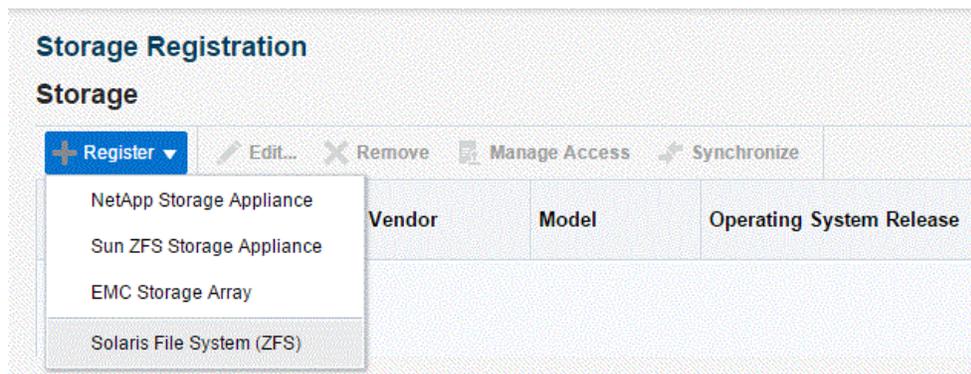
18.7.4.2 Registering a Solaris File System (ZFS) Storage Server

To register the storage server, follow these steps:

1. From the **Setup** menu, click on **Provisioning and Patching**, and then select **Storage Registration**.
2. On the Storage Registration page, in the Storage section, click on **Register**, and then select **Solaris File System (ZFS)**

Note:

If you see a *No named credentials available* message, it means that no credentials are registered or the credentials are owned by another user.



Note:

You need the `EM_STORAGE_ADMINISTRATOR` role to complete the storage registration.

3. On the **Register File System (ZFS)** page, in the Storage section, do the following:
 - Enter the Solaris system name in the Name field. Ensure that the name is the valid host name or IP address and contains no spaces and invalid characters.
 - Select the protocol.
 - Select the Storage Credentials, or click on the green plus sign to add.

Note:

These credentials will be used by the Management Agent to execute Solaris file system APIs.

Only credentials owned by the user are displayed here.

In the display box that appears, enter the storage server name and password. Confirm the password and click **OK**.

- Enter storage name aliases (optional).

The storage name alias should be in lowercase.

Note:

A storage name alias is any name that may have been used when mounting a volume from the storage.

For example: IP address, FQDN, DNS alias, and the like.

Storage alias is necessary to identify the database targets on the storage. The database targets are identified by mapping the mount points to the files used by the database. For example, if the storage `mystorage.com` has an alias `mystorage.net`, and a database uses a data file mounted as `mystorage.net:/u01`, then `mystorage.net` must be added as an alias for the discovery to work.

When you register the storage, use the admin interface as the storage name. List the data interfaces in the storage alias section. The registered storage name will be used to perform registration operations and while mounting the volumes on target host, it will give preference to interfaces listed as storage aliases.

Storage Registration

Register File System (ZFS)

Storage

* Name

Vendor Solaris ZFS

* Protocol Local

* Storage Credentials +

Tip Only credentials that you own are listed.

+ Add X Remove

Name
No data to display

Tip Provide the interface that should be used to carry out storage operations in the Name field.

Tip Specify all the interfaces and aliases of the storage that will be used to mount the volumes on host in the aliases section. This should include fully qualified domain name, IP address, DNS alias or any other name that points to storage data interface.

4. In the Synchronize Schedule section, specify the frequency to synchronize the storage details with the hardware.

Ensure that the zpools setup is completed before clicking **Submit**. To setup the zpools, refer to [Configuring Solaris File System \(ZFS\) Users and Pools](#).

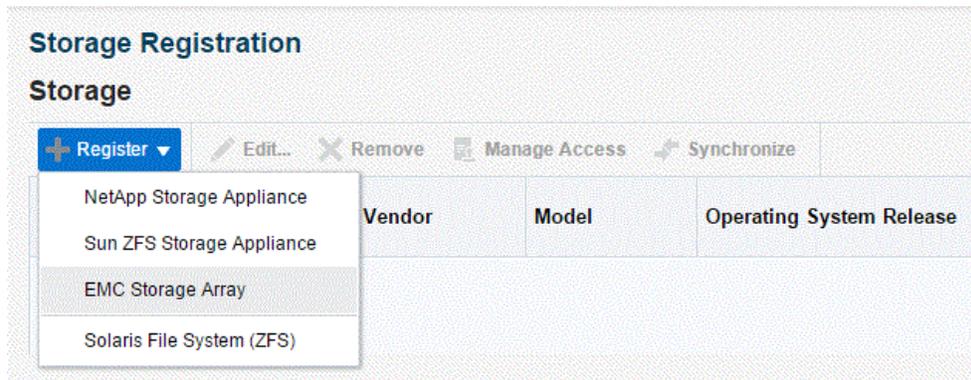
18.7.4.3 Registering an EMC Storage Server

To register the storage server, follow these steps:

 **Note:**

Before you register an EMC storage server, the storage server should be prepared. To prepare the storage server refer to [Configuring EMC Storage Servers](#).

1. From the **Setup** menu, click on **Provisioning and Patching**, and then select **Storage Registration**.
2. On the Storage Registration page, in the Storage section, click on **Register**, and then select **EMC Storage Array**.



 **Note:**

If you see a *No named credentials available* message, it means that no credentials are registered or the credentials are owned by another user.

 **Note:**

You need the `EM_STORAGE_ADMINISTRATOR` role to complete the storage registration.

3. On the Register **EMC Storage Appliance** page, in the Storage section, do the following:
 - Specify the storage server name in the Name field. Ensure that the name is the valid storage name and contains no spaces and invalid characters.
 - For EMC storage, the connection is over SMI-S protocol. Specify the SMI-S Provider URL.
 - Specify the SMI-S User Credentials, or click on the green plus sign to add.

 **Note:**

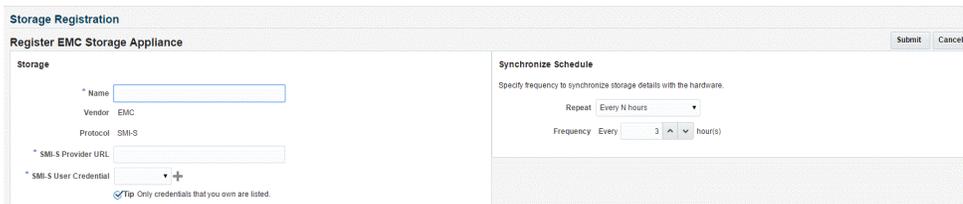
These credentials are used by the Enterprise Manager to interact with the EMC storage appliance.

The credentials should be of the Administrator in the SMI-S provider and not that of the storage.

Only credentials owned by the user are displayed here.

In the display box that appears, enter the SMI-S User name and password. Confirm the password and click **OK**.

4. In the Synchronize Schedule section, specify the frequency to synchronize the storage details with the hardware.



Click **Submit**.

18.7.5 Administering the Storage Server

To administer the storage server, refer to the following sections:

- [Synchronizing Storage Servers](#)
- [Deregistering Storage Servers](#)

18.7.5.1 Synchronizing Storage Servers

When you register a storage server for the first time, a synchronize job is run automatically. However, to discover new changes or creations, you should schedule a synchronize job to run at a scheduled time, preferably during a quiet period when Snap Clone actions are not in progress. To do this, follow these steps:

1. On the Storage Registration page, in the Storage section, click **Synchronize**.

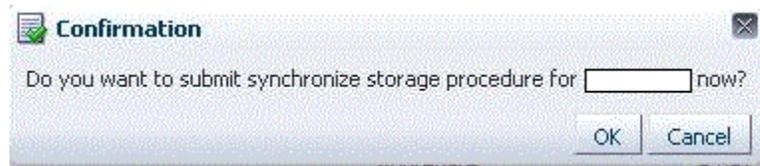
 **Note:**

When you click on Synchronize, a deployment procedure is submitted which discovers all databases monitored by Enterprise Manager Cloud Control which can be used for Snap Clone.

Windows databases are not discovered as part of storage discovery. This is because the Windows storage NFS collection does not happen at all. For further details please refer to the MOS note [465472.1](#)

You need `EM_STORAGE_OPERATOR` role along with `GET_CREDENTIAL` privilege on the Storage Server and Storage Management Agent credentials to be able to synchronize the storage.

2. A confirmation box appears. Click **OK**.



This action now submits a one-time synchronization job.

 **Note:**

The synchronization job fetches latest storage information, and recomputes the mapping between storage volumes and databases.

3. On the Storage Registration page, in the Storage section, to view the procedure details of the Management Agent host, click on the value (for example, Scheduled) in the Status column.

Confirmation						
Synchronize storage procedure for dlc submitted successfully. SHF_HDU_1418105371815_dlc						
Storage						
Name	Vendor	Model	Operating System Release	Owner	Status	Synchronize Synchronized On
000198705990	EMC	VNXE20K	Esogenix 207C-201.12K	BAKUTHA1	Scheduled	Dec 9, 2014 8:58:58 AM UTC
dlc	NetApp	FAS3040	NetApp Release 7.3.4P4: Fri Nov 19 14:00:14 PST 2010	BAKUTHA1	Scheduled	Dec 9, 2014 8:10:09 AM UTC

4. On the Provisioning page, in the Procedure Steps section, click **View**, and then select **Expand All**. Keep clicking the Refresh button on the page to view the procedure activity as it progresses.

Provisioning

Procedure Activity: SMF_MDU_1418105371615_slc

▶  **Elapsed Time: 9 seconds**

Procedure Steps

View Show All Steps

Columns	Status
Expand	
Expand All Below	
Collapse All Below	
Expand All	
Collapse All	
Scroll to First Ctrl+Home	
Scroll to Last Ctrl+End	
Reorder Columns...	

The synchronization status of the Management Agent on the Storage Registration page, changes to Succeeded once the synchronization process is complete.

- To update a synchronize schedule of a registered storage server, select a storage server on the Storage Registration page and then click on **Edit**. On the Edit Storage page, in the Synchronize Storage section, edit the repetition time and frequency of the synchronize job.

Synchronize Schedule

Specify frequency to synchronize storage details with the hardware.

Repeat 

Frequency Every  hour(s)

 **Note:**

The frequency of a synchronization job is set at 3 hours by default.

Click **Submit**.

 **Note:**

The *Associating Storage Volumes With Targets* step relies on both database target metrics and host metrics. The database target (`oracle_database/rac_database`) should have up-to-date metrics for the *Controlfiles*, *Datafiles* and *Redologs*. The File Systems metric should be up to date for the hosts on which the database is running.

18.7.5.2 Deregistering Storage Servers

To deregister a registered storage server, follow these steps:

 **Note:**

To deregister a storage server, you need `FULL_STORAGE` privilege on the storage along with `FULL_JOB` privilege on the Synchronization GUID of the storage server.

1. From the **Setup** menu, click on **Provisioning and Patching**, and then select **Storage Registration**.
2. On the Storage Registration page, in the Storage section, select a storage server from the list of registered storage servers.
3. Select **Remove**.

On the Remove Storage page, select the storage server that you want to deregister, and then click **Submit**.

The storage server is now deregistered.

 **Note:**

Once a storage is deregistered, the Snap Clone profiles and Service Templates on the storage will no longer be functional, and the relationship between these Profiles, Service Templates and Snap Cloned targets will be lost.

 **Note:**

It is recommended to delete the volumes created using Enterprise Manager before deregistering a storage. As a self service user, you should submit deletion requests for the cloned databases.

To submit these deletion requests, click **Remove** from the Hierarchy tab on the Storage Registrations page for deleting the volumes that were created by Enterprise Manager for hosting test master databases.

18.7.6 Managing Storage Servers

To manage the storage server, refer to the following sections:

- [Managing Storage Allocation](#)
- [Managing Storage Access Privileges](#)
- [Viewing Storage Registration Overview and Hierarchy](#)
- [Editing Storage Servers](#)

18.7.6.1 Managing Storage Allocation

You can manage storage allocation by performing the following tasks:

- [Editing the Storage Ceiling](#)
- [Creating Storage Volumes](#)
- [Resizing Volumes of a Database](#)
- [Creating Thin Volumes](#) (for EMC Storage Servers)
- [Example 18-1](#)

Editing the Storage Ceiling

Storage Ceiling is the maximum amount of storage from a project, aggregate, or thin pool that Enterprise Manager is allowed to use. This ensures that Enterprise Manager creates clones in that project only till this limit is reached. When a storage project is discovered for the first time, the entire capacity of the project is set as the ceiling. In case of Sun ZFS, the quota set on the project is used.

 **Note:**

You must explicitly set quota property for the Sun ZFS storage project on the storage end. Also, the project should have a non zero quota set on the storage end. Else, Enterprise Manager will not be able to clone on it.

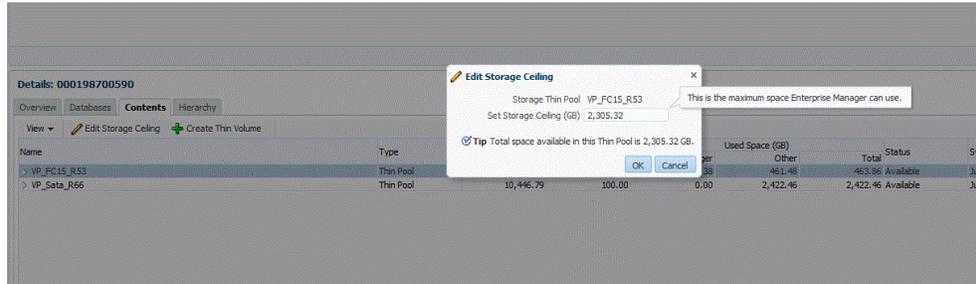
To edit the storage ceiling, do the following:

1. On the Storage Registration page, from the Storage section, select the storage server for which you want to edit the storage ceiling.
2. Select the **Contents** tab, select the aggregate, and then click **Edit Storage Ceiling**.

 **Note:**

Edit Storage Ceiling option enables you modify the maximum amount of storage that Enterprise Manager can use. You can create clones or resize volumes only till this limit is reached.

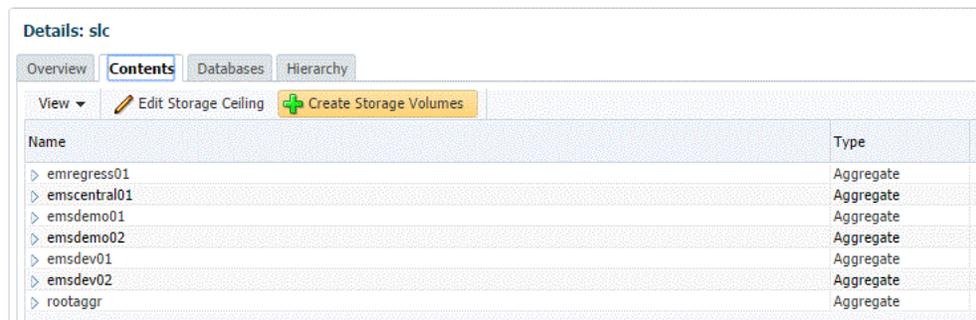
3. In the Edit Storage Ceiling dialog box, enter the storage ceiling, and then, click **OK**.



Creating Storage Volumes

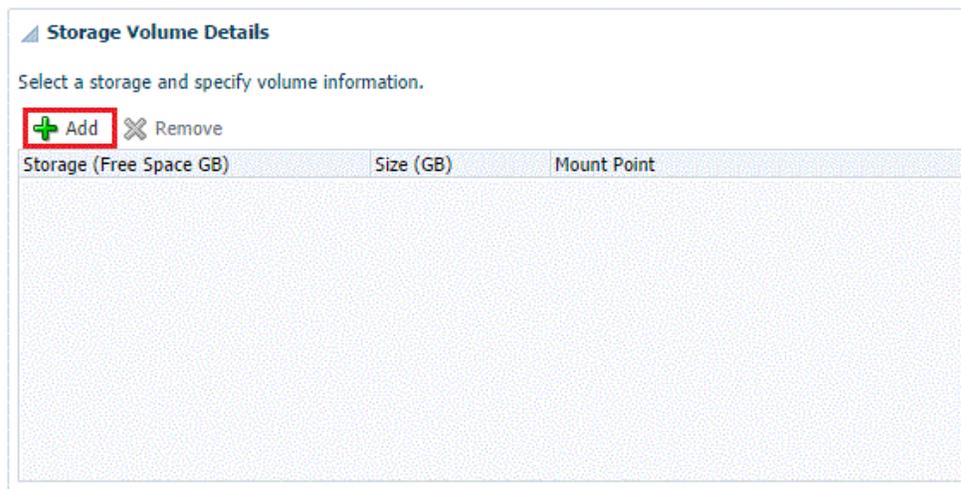
To create storage volume, do the following:

1. On the Storage Registration page, from the Storage section, select the storage server for which you want to create storage volume.
2. Select the **Contents** tab, select the aggregate, and then select **Create Storage Volumes**.



3. On the Create Storage Volumes page, in the Storage Volume Details section, click **Add**.

Storage Volume Details



4. Select a storage and specify the size in GB (size cannot exceed the storage size). The specified size should be able to accommodate the test master database size, without consuming the entire storage size.

Next, specify a mount point starting with /.

For example,

If the storage is "lunpool", select the "lunpool".

The specified size under the size column should not exceed the storage space. If the size of the "lunpool" is 100GB and the test master database is 10 GB, then specify size as 10GB.

The mount point should be a meaningful mount point starting with "/".

For example: /oracle/oradata

Storage Volume Details

Storage Volume Details

Select a storage and specify volume information.

+ Add - Remove

Storage (Free Space GB)	Size (GB)	Mount Point
emregress01 (1983.08 GB)	10	/oracle/oradata

5. In the Host Details section, specify the following:
 - **Host Credentials:** Specify the target host credentials of the Oracle software.
 - **Storage Purpose:** For using Snap Clone, the most important options are as follows:
 - Oracle Datafiles for RAC
 - Oracle Datafiles for Single Instance

Note:

You can also store the *OCR and Voting disks and Oracle binaries* in the storage volume,

- **Platform:** Select the supported target platform. The volume will be mounted on the supported target platform.
 - **Mount Options:** Mount options field is automatically filled based on the values specified for the storage purpose and the platform. Do not edit the mount options.
 - Select **NFS v3** or **NFS v4**.
6. Select one or more hosts to perform the mount operations by clicking **Add**.

If you select **Oracle Datafiles for RAC**, you would normally specify more than one host. The volume is then mounted on the specified hosts automatically after the completion of the procedure activity.

The screenshot shows the 'Host Details' configuration window. At the top right are 'Submit' and 'Cancel' buttons. The main area is titled 'Host Details' and contains the following fields:

- Select the host credentials for which the permissions to access the volume would be granted.
 - * Host Credentials: CS_ALL (with a plus icon)
 - * Storage Purpose: Oracle Binaries for RAC
 - * Platform: Linux x86-64
 - * Mount Options: rw,bg,hard,nointr,rsize=32768,wsz=32768,tcp,actimeo=0,vers=3,timeo=600
 - * Select NFS Version: NFS v3 NFS v4
- Select one or more hosts where the volumes need to be mounted.
 - + Add
 - ⊗ Remove

Below these fields is a table with two columns: 'Host' and 'Root Credentials'. The table is currently empty.

7. Click **Submit**.

When you click Submit, a procedure activity is executed. On completion of the procedure activity, the volumes get mounted on the target system. You can now proceed to create a test master database on the mounted volumes on the target system.

Resizing Volumes of a Database

When a database runs out of space in any of its volumes, you can resize the volume according to your requirement. To resize volume(s) of a clone, follow these steps:

 **Note:**

This is not available for EMC storage servers.

 **Note:**

Resizing of volumes of a Test Master database cannot be done using Enterprise Manager, unless the volumes for the Test Master were created using the Create Volumes UI.

 **Note:**

You need the `FULL_STORAGE` privilege to resize volumes of a database or a clone. Also, ensure that the underlying storage supports quota management of volumes.

1. On the Storage Registration page, from the Storage section select the required storage server.
2. In the Details section, select the **Hierarchy** tab, and then select the target.

The Storage Volume Details table displays the details of the volumes of the target. This enables you to identify which of the volume of the target is running out of space.

3. In the Volume Details table, select **Resize**.

Name	Type	Writable Space (GB)	Storage Volume Details
oracle.com	Database Instance	19.00	
Profile details not available	Profile	5.00	
Database oracle.com Profile 06-12-2014 08:30 AM	Profile		
oracle.com	Database Instance	15.00	
Profile details not available	Profile		
Profile details not available	Profile		
Database oracle.com Profile 06-12-2014 12:09 PM	Profile		
Target details not available	Profile	30.00	
Target details not available	Profile	15.00	
Target details not available	Profile	40.00	

4. On the Resize Storage Volumes page, specify the New Writable Space for the volume or volumes that you want to resize. If you do not want to resize a volume, you can leave the New Writable Space field blank.

Storage Registration

Manage Storage for Target: prod2.us.oracle.com

Resize Storage Volumes

Enter the New Writable Space of the volumes you wish to resize. Leave the field unchanged if you do not wish to resize that volume.

Storage	Aggregate Name	Volume Name	Writable Space (GB)	Used Space (GB)	New Writable Space (GB)
slc1008nap	emregress01	smf_vol_1328	5.00	2.16	5
slc1008nap	emregress01	smf_vol_1329	5.00	1.51	5

Columns Hidden 1

5. You can schedule the resize to take place immediately or at a later time.

Schedule

Start Immediately Later (UTC+00:00) GMT

6. Click **Submit**.

Note:

You can monitor the re-size procedure from the **Procedure Activity** tab.

Creating Thin Volumes

This section is only for EMC Symmetrix VMAX Family and EMC VNX Storage.

An EMC Symmetrix VMAX Family or an EMC VNX storage enables you to create thin volumes and ASM disks from the created thin volumes. To create thin volumes on an EMC Symmetrix VMAX Family or EMC VNX storage, follow these steps:

 **Note:**

Enterprise Manager enables you to create a thin volume from a thin pool after clusterware and ASM components are installed.

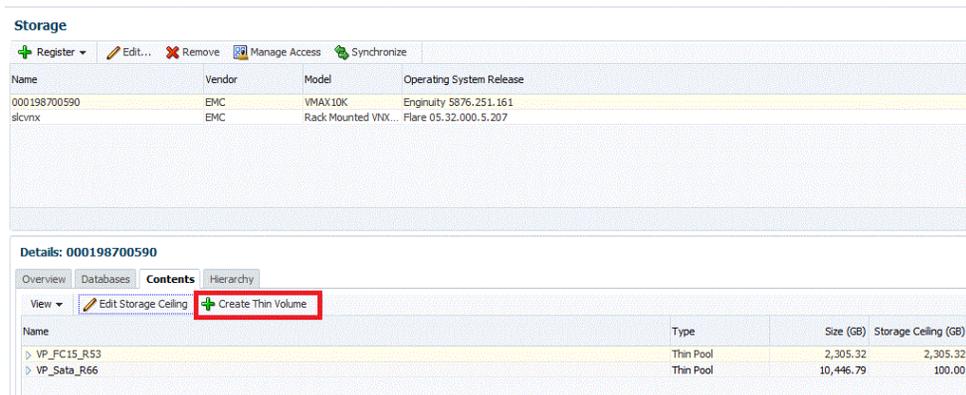
After you install the clusterware and ASM components, the `asm_diskstring` parameter may be set to Null. This could cause failure during creation of the thin pool.

To prevent this from happening, set the `asm_diskstring` parameter to a valid disk path and restart the ASM instance.

For example, set the `asm_diskstring` parameter as:

```
/dev/oracleasm/disks/*
```

1. On the Storage Registration page, in the Storage section, select the EMC Symmetrix VMAX Family or EMX VNX storage on which you want to create thin volumes.
2. In the Details section, select the **Contents** tab, and then click **Create Thin Volume**.



3. In the Storage Details section, the ASM Disk Group is set to **Create with External Redundancy**, by default. ASM Disk Group creation is optional. If you want to create an ASM Disk Group with redundancy you can skip this step for now by selecting **Do not create. I will create later**. You can then later create it using the Oracle Enterprise Manager ASM target home page or the ASM Configuration Assistant.
4. Click **Add** to create multiple LUNs of same size and create an ASM disk group with those volumes. You can create one or more disk groups at a time.
5. Select the thin pool/storage pool, and then specify the number of thin volumes, and the size for the thin volume.

 **Note:**

It is recommended to create larger LUNs and lesser number of LUNs. For example, if you want a disk group of size 200 GB, create 1 LUN of size 200 GB and make a disk group out of it. Do not create 10 x 20 GB LUNs for it.

 **Note:**

A thin volume of size more than 240GB is not permitted by default on a VMAX storage. To create thin volumes of size more than 240GB, request the storage administrator to enable auto meta on the VMAX. The storage administrator can remove this restriction or in the alternative, create multiple thin volumes of size less than 240GB.

To create LUNs of size more than 240GB, contact the storage administrator to enable auto meta.

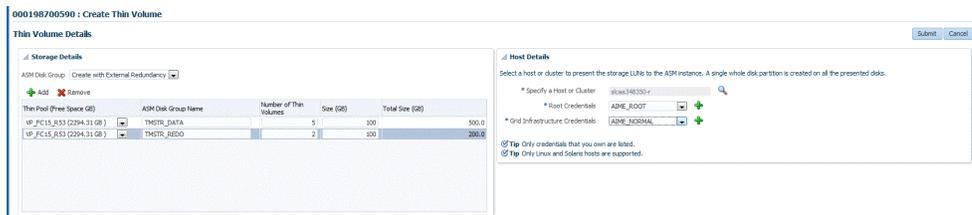
Do not create LUNs of size more than 2TB.

- In the Host Details section, specify a host or a cluster, or select one by clicking the Search icon. The disks will be created on the ASM instance present on this host or cluster. A single disk partition is created on all the presented disks.

 **Note:**

Only Linux and Solaris hosts are supported.

- Specify the root and grid infrastructure credentials. Only the credentials that you own are listed.



Thin Pool (Free Space GB)	ASM Disk Group Name	Number of Thin Volumes	Size (GB)	Total Size (GB)
HP_FC15_A53 (2294.31 GB)	THSTR_DATA	5	100	500.0
HP_FC15_A53 (2294.31 GB)	THSTR_REDO	2	100	200.0

Click **Submit**.

 **Note:**

Once a Create Target request succeeds and a diskgroup has been created, you must manually set the attributes of the diskgroup in `compatible.asm` and `compatible.rdbms` depending on the version of the database that will be installed on the diskgroup.

Example 18-1 Understanding Space Utilization on EMC Storage Servers

Writable space implementation on EMC Storage Server is different from NetApp, Sun ZFS SA, and Sun ZFS storage servers. In NetApp, Sun ZFS SA, and Sun ZFS storage servers, writable space defined in a service template will be allocated from the storage pool to the clone database even if data is not written to the volume. In EMC storage servers (VMAX and VNX) space is only reserved on the storage pool. The space is consumed only when data is written to the volume or LUN.

For example, if you define 10GB writable space in a service template, in NetApp, Sun ZFS SA, and Sun ZFS, space of 10GB will be allocated to the clone database from storage pool even if data is not written to the volume. In an EMC storage, space is consumed only when data is written to the volume or LUN.

In Enterprise Manager, to create thin volumes (ASM Disk groups/LUNS) up to the maximum size defined for the storage pool, select the **Contents** tab on the Storage Registration page, and then select **Create Thin Volume**. The test master database can then be created on ASM Disk groups or LUNs.

The following graphic shows the Test Master database and the created clone database:

Details: 000198700639

Overview Databases Contents **Hierarchy**

View ▾

Name	Type	Writable Space (GB)
oracle.com	Cluster Database	20.00
▶ oracle.com	Cluster Database	20.00
▲ oracle.com	Cluster Database	400.00
oracle.com	Cluster Database	400.00

The following graphic shows the storage volume of the Test Master database:

oracle.com

Storage Volume Details | Procedure Activity

View ▾ Remove ✕ Resize 📏 Synchronize 🔄

Thin Volume Name	Contents	Source Snapshot Size (GB)	Writable Space (GB)	Space Usage
00EDB _p1_vol2161	Control Files, Data Files, Redo Log Files	0.00	200.00	<div style="width: 0%;"></div>
00EDC _p1_vol2162	Control Files, Data Files, Redo Log Files	0.00	200.00	<div style="width: 0%;"></div>
Total		0.00	400.00	

The following graphic shows storage volume of the clone database:

oracle.com

Thin Volume Name	Contents	Source Snapshot Size (GB)	Writable Space (GB)	Space Usage
00EDD _p1_vol2181	Control Files, Data Files, Redo Log Files	60.74	200.00	<div style="width: 30%;"></div>
00EDE _p1_vol2182	Control Files, Data Files, Redo Log Files	60.74	200.00	<div style="width: 30%;"></div>
Total		121.48	400.00	

Columns Hidden 3

 **Note:**

ASM disk groups, as discussed, can be created using the Create Thin Volumes option. However, they can also be created using other methods. The following example illustrates the space usage on EMC VMAX and VNX storage servers:

Let us assume the Storage Pool is of size 1 TB and Storage ceiling is set to 1 TB.

Scenario 1:

If an Enterprise Manager Storage Administrator creates 2 ASM disk groups, as an example, DATA and REDO of sizes 125GB and 75GB respectively through the Create Thin Volume method and the Test Master database is created on those disk groups, used space on DATA and REDO disk groups are 100GB and 50GB respectively (remaining free space on DATA and REDO disk groups are 25GB), then each clone database created by a self service user will be allocated 25GB of writable space on the DATA and REDO disk groups.

New data written to the cloned database is the actual used space and can grow up to 25GB on each disk group. The DATA and REDO disk groups in this scenario.

The Enterprise Manager Storage Administrator will be able to create 600GB LUNs through the Create Thin volume method, assuming a clone database is created from a 200GB Test Master database. The size of the clone database will also be deducted from available space. The Self Service User will be able to create multiple clones. The number of clone databases that can be created cannot be estimated as it depends on the amount of new data written to the initial clone database in that storage pool.

Scenario 2:

If an Enterprise Manager Storage Administrator creates 2 ASM disk groups, as an example, DATA and REDO of sizes 850GB and 150GB respectively through the Create Thin Volume method, and the Test Master database is created on those ASM disk groups, used space on the DATA and REDO disk groups are 750GB and 50GB respectively (remaining free space on DATA and REDO is 100GB), then each clone database created by a self service user will be allocated 100GB of writable space on DATA and REDO disk groups.

New data written to the cloned database is the actual used space and can grow up to 100GB on each disk group. The DATA and REDO disk groups in this scenario.

Similar to Scenario 1, the Self Service User will be able to create multiple clones, but number of clone databases cannot be estimated. The Enterprise Manager Storage Administrator will not be able to create additional disk groups in scenario 2. This is the major difference when compared to Scenario 1.

In both scenarios, only the actual used space of the clones will be subtracted from the Storage Ceiling. The general formula for writable disk space is the difference between the LUN size and the actual space occupied by data.

18.7.6.2 Managing Storage Access Privileges

To manage storage access privileges for a registered storage server, follow these steps:

1. On the Storage Registration page, in the Storage section, select a storage server from the list of registered storage servers.

Note:

The Storage Registration page displays only the databases which you have `VIEW_STORAGE` privilege on.

2. Click **Manage Access**.

Storage

[+ Register](#)
[Edit...](#)
[Remove](#)
[Manage Access](#)
[Synchronize](#)

Name	Vendor	Model	Operating System Release
000198700590	EMC	VMAX10K	Enginuity 5876.251.161
slc	NetApp	FAS3040	NetApp Release 7.3.4P4: Fri Nov 19 14:00:14 PST 2010

3. On the Manage Access page, do the following:
 - Click **Change**, if you need to change the Owner of the registered storage server.

Note:

The Owner of a registered storage server can perform all actions on the storage server, and grant privileges and roles to other Administrators.

Manage Access: slc

Storage

Name: slc
Owner: RAMI [Change](#)

[+ Add Grant](#)
[Revoke Grant](#)
[Change Privilege](#)

Grantee	Type	Privilege	Privilege Description
---------	------	-----------	-----------------------

- Click **Add Grant** to grant privileges to an Administrator, Role or both.
 - On the Add Grant page, enter an Administrator name or select the type, and then click **Go**.
 - Select an Administrator from the list of Administrators or Roles, and then click **Select**.
4. On the Manage Access page, you can change privileges of an Administrator or Role by selecting the Administrator or Role from the Grantee column, and then clicking **Change Privilege**.
 5. In the Change Privilege display box, you can select one of the three following privileges:
 - View Storage (ability to view the storage)
 - Manage Storage (ability to edit the storage)
 - Full Storage (ability to edit or remove the storage)Click **OK**.
 6. You can also revoke a grant to an Administrator by selecting the Administrator from the Grantee column, and then clicking **Revoke Grant**.
 7. When you are done with granting, revoking, or changing privileges to Administrators or Roles, click **Submit**.



Note:

To be able to use the storage server, you also need to specifically grant privileges to the storage server and storage Management Agent credentials to the user.

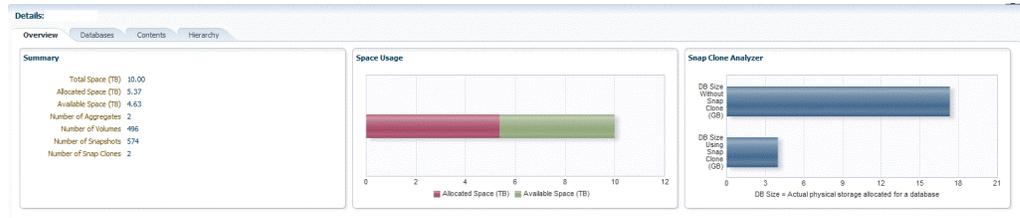
18.7.6.3 Viewing Storage Registration Overview and Hierarchy

To view the storage registration overview, on the Storage Registration page, in the Details section, select the **Overview** tab. The Overview section provides a summary of storage usage information. It also displays a Snap Clone Storage Savings graph that shows the total space savings by creating the databases as a Snap Clone versus without Snap Clone.



Note:

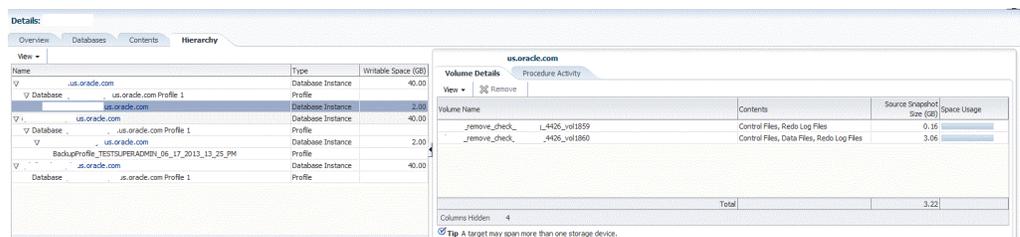
If you have NetApp volumes with no space guarantee, you may see negative allocated space in the Overview tab. Set guarantee to 'volume' to prevent this.



To view the storage registration hierarchy, on the Storage Registration page, in the Details sections, select the **Hierarchy** tab. This displays the storage relationships between the following:

- Test Master Database
- Database Profile
- Snap Clone Database
- Snap Clone Database Snapshots

You can select a row to display the corresponding Volume or Snapshot Details.



If a database profile or Snap Clone database creation was not successful, and it is not possible to delete the entity from its respective user interface, click on the **Remove** button to access the Manage Storage page. From this page, you can submit a procedure to dismount volumes and delete the snapshots or volumes created from an incomplete database profile or snap clone database.

Note:

The Manage Storage page only handles cleanup of storage entities and does not remove any database profile or target information from the repository.

The **Remove** button is enabled only if you have the `FULL_STORAGE` privilege.

You can also select the **Procedure Activity** tab on the right panel, to see any storage related procedures run against that storage entity.

To view the NFS Exports, select the **Volume Details** tab. Select **View**, **Columns**, and then select **NFS Exports**.

The Volume Details tab, under the Hierarchy tab also has a **Synchronize** button. This enables you to submit a synchronize target deployment procedure. The deployment procedure collects metrics for a given target and its host, determines which volumes

are used by the target, collects the latest information, and updates the storage registration data model. It can be used when a target has been recently changed, data files added in different locations, and the like.

18.7.6.4 Editing Storage Servers

To edit a storage server, on the Storage Registration page, select the storage server and then, click **Edit**. On the Storage Edit page, you can do the following:

- Add or remove aliases.
- Add, remove, or select an Agent that can be used to perform operations on the storage server.
- Specify a frequency to synchronize storage details with the hardware.

 **Note:**

If the credentials for editing a storage server are not owned by you, an Override Credentials checkbox will be present in the Storage and Agent to Manage Storage sections. You can choose to use the same credentials or you can override the credentials by selecting the checkbox.

19

Setting Up an MWaaS Cloud

This chapter covers the initial configuration required to set up and enable a Middleware as a Service Cloud which includes WebLogic as a Service, SOA as a Service, and OSB as a Service.

It contains the following sections:

- [About Middleware as a Service](#)
- [Getting Started with Middleware as a Service](#)

19.1 About Middleware as a Service

The Oracle Middleware as a Service (MWaaS) service family includes the following:

- WebLogic as a Service (WLaaS)
- SOA as a Service (SOaaS)
- Service Bus as a Service (SBaaS)
- Java Application Service (JVMAaS)

Oracle Enterprise Manager Cloud Control 12c offers a single management tool for creating, monitoring and managing a private MWaaS environment. MWaaS delivers a complete runtime environment comprised of all services necessary to deploy and run an enterprise-class application, including services such as application hosting, persistence store, application integration and APIs that enable programmatic access to additional computing services that might be required by an application. MWaaS facilitates deployment of applications without requiring the developer to deal with the complexity of underlying hardware and software components, thereby achieving cheaper and faster time-to-delivery.

Middleware as a Service provides:

- A shared, consolidated platform on which middleware services can be provisioned.
- A self service model for deploying and managing applications.
- Seamless integration with other services such as a Database as a Service (DBaaS) and Java Diagnostics as a Service (JDaaS).
- Ability to scale up and scale down resources manually and based on policies.
- Metering and Chargeback based on platform usage and the underlying infrastructure.

19.2 Getting Started with Middleware as a Service

This section helps you get started by providing a list of steps that must be performed to get started in setting a private middleware cloud. Before you set up MWaaS, you must have completed the common tasks listed in [Common Setup Tasks](#).

Table 19-1 Getting Started with Middleware as a Service

Step	Task	Role
1	You may need to configure Privilege Delegation Settings on your managed hosts. See Configuring Privilege Delegation Settings . Note: This is an optional step.	Super Administrator
2	Creating a Middleware Home. See Provisioning a Middleware Home . Note: This step is optional for SOAaaS and SBaaS. It is required only if a shared middleware home (NFS location) is used. If middleware home is local, it is provisioned by the deployment procedure used to create SOA or Service Bus service.	Self Service Administrator
3	Load Middleware Provisioning Profiles into the Software Library. See Creating Provisioning Profiles .	Self Service Administrator
4	If you are setting up WebLogic as a Service (WLaaS), you must create a WebLogic Domain Provisioning Profile. See Creating a WebLogic Domain Provisioning Profile .	Self Service Administrator

19.2.1 Creating Provisioning Profiles

Provisioning profiles can be used to standardize deployments and help reduce errors when deployment procedures are configured. These provisioning profiles are used by operators for mass deployment. You can create a Middleware Provisioning Profile from a domain by using the Software Library. See [Creating a WebLogic Domain Provisioning Profile](#) for details.

19.2.1.1 Creating a WebLogic Domain Provisioning Profile

A WebLogic Domain Provisioning Profile consists of the Middleware Home, binaries, and the domain configuration. You can create a profile, save it in the Software Library, and then use the saved profile as the source for creating new WebLogic domains. This will ensure that future WebLogic installations follow a standard, consistent configuration.

Before you create a WebLogic Domain Provisioning profile, ensure that the following prerequisites are met:

- The Management Agent must be running on the Administration Server.
- You must have the host credentials for the Administration Server running on the source machine.
- The WebLogic Domain for which the profile is being created must be a monitored target in Enterprise Manager.
- The disk space required to create a profile is calculated as follows:

Disk Space = Middleware Home Size + WebLogic Domain Size + Space for Temporary Scripts

- If Log Viewing support is required on the service instance, the self service administrator must do the following:

- Configure the host credentials required for querying the log files. From the **Target** menu, select **Logs**, then select **Configure Log Location Settings** to access the corresponding WebLogic domain target page and configure the credentials.
- Grant privileges to the self service user to access the host credentials specified in the Configure Log Location Settings page.
- Provide the view target privilege to the self service user to all the host targets associated with this WebLogic domain.
- If Fusion Middleware console access support is required, you must configure the WebLogic domain through Fusion Middleware Control. This ensures that the Fusion Middleware Control link is displayed in the Service Instance Home page in the Middleware Self Service Portal. See [Middleware Service Home Page](#).
- The WebLogic Domain that is used to create a profile must meet the following requirements:
 - The machine associated with the WebLogic Server must not be of Unix type.
 - The Administration Server must not be associated with a machine.
 - The Administration Server must be present on the same host as one of the Managed servers.
- The maximum Java heap size of all the servers must have an appropriate -Xmx setting in multiples of 256. For example, Xms1024m -Xmx1536m -XX:PermSize=512m -XX:MaxPermSize=1536m and so on. You must define the -Xmx server setting to ensure that the MWaaS memory metric and quota checking feature works properly. The value of the memory metric for a MWaaS service is the sum of the maximum heap available for all servers in the service.

For detailed instructions on how to create a WebLogic Domain Provisioning profile, see the *Enterprise Manager Lifecycle Management Administrator's Guide*.

19.2.2 Provisioning a Middleware Home

A Middleware Home consists of the WebLogic Server Home and optionally, one or more Oracle Homes. The Middleware Home must be created on the hosts that are part of the PaaS Infrastructure Zone. See [Creating a PaaS Infrastructure Zone](#) for details. If the Middleware Home has not been created on a host, that host cannot participate in the Middleware Pool.

You can:

- Use pre-provisioned Oracle Homes
- Create Oracle Homes on demand
- Use a combination of both

If you are provisioning the Middleware Home on multiple hosts, you must specify a shared mount directory that is accessible by all destination hosts.

Note:

You can also manually install the Middleware Home and use the **Discover Promote Oracle Home Target** job to discover it in Enterprise Manager.

To create a Middleware Home, you must run the **Provision from Oracle Middleware Home Gold Image** deployment procedure.

Prerequisites

Before running this deployment procedure, you must meet the following prerequisites:

- The user must have Write permissions on:
 - The Working Directory on all destination hosts.
 - The Middleware Home on all destination hosts.
- An Oracle Middleware Home Gold Image must be present in the Software Library. For details on creating this gold image. You can create an Oracle Middleware Home Gold Image and save it in the Software Library. You can then use this gold image as the source for future Middleware Home installations. For the detailed procedure on creating an Oracle Middleware Home Gold Image, see the *Enterprise Lifecycle Management Administrator's Guide*.

19.2.2.1 Provision from Oracle Middleware Home Gold Image Deployment Procedure

Note:

- If you have manually created and discovered a Middleware Home, this step can be ignored.
- You cannot have more than one Middleware Home of the same WebLogic Server version on a single host.

You can clone a Middleware Home from a gold image present in the Software Library. This gold image must have been created earlier by pointing to an existing Middleware Home. For a detailed description on cloning a Middleware Home from a gold image, refer to the *Enterprise Manager Lifecycle Management Administrator's Guide*.

Part VII

Provisioning New Database Artifacts

This section describes the procedures to provision new databases, schemas, and pluggable databases using Database as a Service.

It contains the following chapters

- [Getting Started with Database as a Service](#)
- [Creating Databases Using Database Template](#)
- [Creating Schemas](#)
- [Provisioning Pluggable Databases](#)

20

Getting Started with Database as a Service

This chapter describes the procedure to different DBaaS use cases supported in this release.

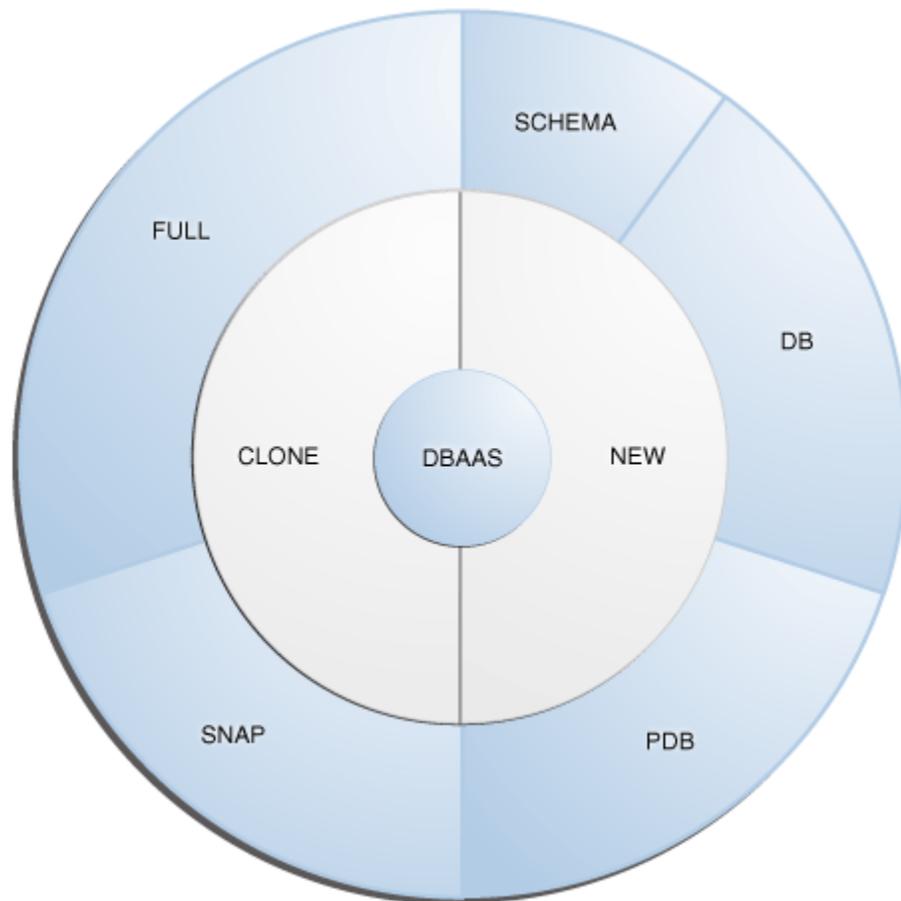
It contains the following sections:

- [Supported DBaaS Use Cases](#)
- [Getting Started with DBaaS](#)

20.1 Supported DBaaS Use Cases

The following figure provides an overview of the different flavors of Enterprise Manager DBaaS.

Figure 20-1 DBaaS Use Cases



This table lists the DBaaS use cases that are supported in this release and lists the different methods (GUI, EMCLI, and Rest API) that can be used to run these use cases.

Table 20-1 DBaaS Use Cases

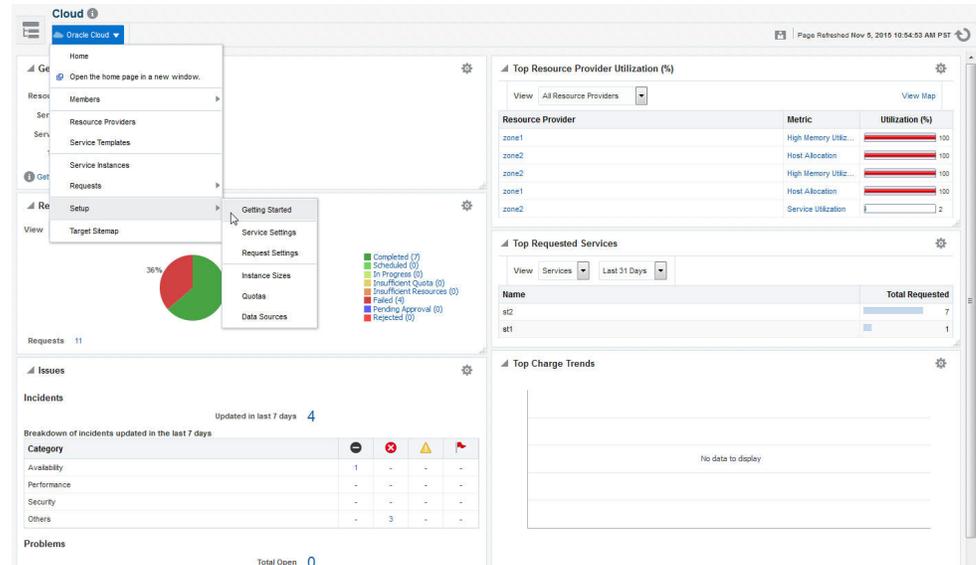
Service Type	Service Offering	Using Graphical User Interface	Using EMCLI	Using Rest API
New	Creating Databases Using Database Template.	Creating Databases Using Database Template	Creating Databases Using Database Template With REST APIs and EM CLI Verbs	Creating Databases Using Database Template With REST APIs and EM CLI Verbs
-	Schema <ul style="list-style-type: none"> Creating an Empty Schema Creating a Schema Based on Profile 	Creating Schemas	Creating Empty Schemas and Schemas Based on Profile With REST APIs and EM CLI Verbs	Creating Empty Schemas and Schemas Based on Profile With REST APIs and EM CLI Verbs
-	Pluggable Database <ul style="list-style-type: none"> Creating an Empty Pluggable Database Creating a Pluggable Database Based on Profile 	Provisioning Pluggable Databases	Creating Empty PDBs and PDBs Based on Profile With REST APIs and EM CLI Verbs	Creating Empty PDBs and PDBs Based on Profile With REST APIs and EM CLI Verbs
Clone	Full Clone <ul style="list-style-type: none"> Cloning Databases Using RMAN Backup Cloning Databases Using RMAN Duplicate 	Creating Full Clones	Creating Full Database Clones Using RMAN With REST APIs and EM CLI Verbs	Creating Full Database Clones Using RMAN With REST APIs and EM CLI Verbs
Snap Clone	<ul style="list-style-type: none"> Software Solution ZFS File System Clone DB Hardware Solution Sun ZFS Storage Appliance NetApp EMC 	Creating Snap Clones	Creating Databases Using Snap Clone With REST APIs and EM CLI Verbs	Creating Databases Using Snap Clone With REST APIs and EM CLI Verbs

20.2 Getting Started with DBaaS

To get started with database as a service, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The following page appears:

Figure 20-2 Cloud Home Page



2. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. You must first perform the common setup tasks as described in [Common Setup Tasks](#). This page is the main entry point for setting up database as a service.
3. Click the **Setup** link next to the Database Service Family in the left panel. Select one of the service types (Database, Pluggable Database, or Schema) from the drop down list and perform the necessary tasks required for the selected service type.
4. Depending on your selection, the list of tasks can be different. Any step that has been configured is marked with a green check mark and the non-configured are listed as not configured.

Note:

The service types you can access are based on your user role. For example, if you have logged in as a user (for instance `DBAAS_ADMIN`) who can access only Database service type, you will see only the tasks relevant to that service type. But if you have logged in as a user with the `EM_SSA_ADMINISTRATOR` role, you can view all the service types. See [Defining Roles and Assigning Users](#) for more details.

5. Depending on the service type you wish to configure, you can perform the relevant tasks required to set up that service type.
 - See [Provisioning New Database Artifacts](#)
 - See [Cloning Databases](#)

21

Creating Databases Using Database Template

This chapter describes the process involved in creating single instance and cluster databases using database template based profiles. It contains the following sections:

- [Creating Databases Using Database Template](#)
- [Provisioning Standby Databases](#)

21.1 Creating Databases Using Database Template

The DBCA template supports both structure plus data and structure only types. This database provisioning profile is created from the production or source database registered with Enterprise Manager. It supports both structure plus data and structure only types. This option is recommended if the database size being created is less than 50 GB.

The table below shows the list of tasks that are involved in creating a database using the database template based profile.

Table 21-1 Creating Databases Using Database Template

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started
2	Create resource providers. <ul style="list-style-type: none">• Create one or more PaaS Infrastructure Zones.• Create one or more database pools.	See Creating Resource Providers
4	Configure the request settings.	See Configuring Request Settings
5	Define quotas for each self service user.	See Defining Quotas
6	Create a DBCA template based database provisioning profile.	See Creating a Database Provisioning Profile Using Database Template
7	Create a service template based on the profile you have created.	See Creating a Service Template Using Database Template Profile
8	Configure the Chargeback Service.	See Configuring Chargeback
9	While creating a database, select the service template (associated with the database template based profile) you have created.	See Requesting a Database

21.1.1 Creating Resource Providers

You must create one or more resource providers which include:

- PaaS Infrastructure Zones: See [Creating a PaaS Infrastructure Zone](#)

- Database Pool: See [Creating a PaaS Pool](#)

21.1.1.1 Creating a Database Pool for Database as a Service

To create a database pool for database as a service, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. Click the **Setup** link next to the Database service family, click the **Database Pool** link and click **Create**.
3. In the Credentials region, specify the following credentials:
 - **Host:** Required for creating and starting the database.
 - **Root:** This is an optional field. It is required if you plan to use this database pool for database requests based on snap clone profile.
 - **Grid Infrastructure:** This is an optional field. It is required for registering database services with credentials.
 - **Automatic Storage Management:** This is an optional field. It is required if you plan to use this database pool for live cloning on any database running on ASM.

 **Note:**

You can use Preferred Credentials or the Named Credentials. If you are using Preferred Credentials,

- Host Credentials: Select the Target Type as Oracle Home and Credential Set as Normal Host Credentials.
- Root Credentials: Select the Target Type as Host and Credential Set as Privileged Host Credentials.
- Grid Infrastructure: Select the Target Type as Oracle High Availability Service and Credential Set as Host Credentials.
- Automatic Storage Management: Select the Target Type as ASM Instance.

4. Enter a name and description for the database pool.
5. Specify the following details:
 - **PaaS Infrastructure Zone:** Select the PaaS Infrastructure Zone into which the database instance is to be provisioned.
 - **Database Configuration:** Specify the configuration of the database being provisioned. This can either be Single Instance or Cluster Database (RAC) but cannot be a combination of both.
 - **Platform and Version:** Specify the platform and version of the database being deployed.
6. Click **Add** and select one or more Oracle Homes to be added to the database pool.

7. In the Maximum Number of Database Instances (per host), enter the maximum number of database instances that can be running on each host in the pool.

 **Note:**

For RAC databases, the value specified in this field is used to ensure that the nodes on which the database is created meet this criteria.

8. Click **Submit** to create a database pool. The newly created pool will appear in the Database Cloud Self Service Portal Setup: Database Pools page. The database pool can now be added to the Service Template.

21.1.2 Creating a Database Provisioning Profile Using Database Template

To create a database provisioning profile, follow these steps:

1. You can access the Database Provisioning page using either of the following ways:
 - From the **Enterprise** menu, select **Cloud**, and then select **Cloud Home**. On the Cloud home page, click **Oracle Cloud**, select **Setup**, and then select **Data Sources**. On the Database: Data Sources page, in the Data Profiles tab, click **Create**.
 - From the Enterprise menu, select **Provisioning and Patching**, and then select **Database Provisioning**. On the Database Provisioning page, in the Profiles section, click **Create**.
 - From the database target home page, click **Oracle Database**, select **Provisioning**, and then select **Create Provisioning Profile**.
2. On the **Reference Target** page, click the search icon to select a target.
3. In the Search and Select: Targets display box, select the database you want to create a profile for, and then, click **Select**.
4. On the **Reference Target** page, select the following steps:
 - Click **Data Content**.
 - Select **Structure Only** to include only the structural files in the template

 **Note:**

You can use the Structure and Data option if the database size is lesser than or equal to 5 GB.

- **Create**
- **Database Template**

Reference Target

* Name

Type Database Instance

Include Database Oracle Home (OraDb11g_home1_2_sca00fiv.us.oracle.com_423)

Data Content

Structure and Data Structure Only

Create Database Template

RMAN Backup Export Schema Definition

RMAN Database Image

Database Template

Use Existing RMAN Backup

Export Schema Objects

5. In the Credentials section, select **Named Credentials**, and then select a credential name from the Credential Name column (or) select **Preferred Credentials**. Click **Next**.
6. On the **Create Database Provisioning Profile**: page, in the **Profile Information** section, add the following:
 - Specify or select a profile location in the software library where the database profile will be created.
 - Specify a unique profile name.
For example:
Database Template for HR database
 - Add a description for the profile.
 - Verify the profile version and the vendor.
 - Add any additional notes such as host name, database, data content, data content mode, and the like.

Create Database Provisioning Profile: Profile

Profile Information

* Profile Location Database Provisioning Profiles/11.2.0.4.0/solaris_sparc64

* Profile Name Database db1.us.oracle.com Profile 05-11-2015 05:48 PM

Description Database Reference Profile 05-11-2015 05:48 PM from db1.us.oracle.com
Version : 11.2.0.4.0

Profile Version 11.2.0.4.0 Vendor Oracle

Notes Host Name: sca00fiv.us.oracle.com
Database: db1.us.oracle.com
Data Content: Structure and Data
Data Content Mode: Database Template

7. In the Schedule section, you can choose to start the profile creation immediately, or you can schedule it for a later time. You can also choose to repeat the creation of the provisioning profile, and set a repeat time.
8. Specify or select a working directory. Click **Next**.
9. On the **Review** page, ensure that the selections you have made in the previous pages are correctly displayed and click **Submit**. Otherwise, click **Back** repeatedly till you reach the page where you want to make changes. Click **Cancel** to abort the provisioning profile creation.

Once you have submitted the provisioning profile creation job, manually refresh the page if View Data has been set to Real Time: Manual Refresh. Else, set View Data to reload after a specific period of time, and then select an execution step from the Procedure Steps tree on the left pane to view the details.

To view the submitted jobs, select the **Procedure Activity** link in the **Data Profiles** tab.

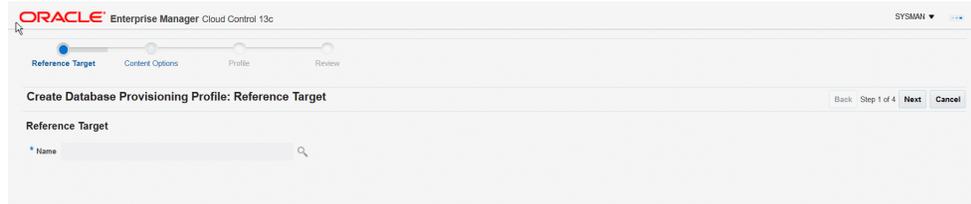
21.1.3 Creating a Container Database Provisioning Profile Using Database Template

To create a database provisioning profile, follow these steps:

1. You can access the Database Provisioning page using either of the following ways:
 - From the **Enterprise** menu, select **Cloud**, and then select **Cloud Home**. On the Cloud home page, click **Oracle Cloud**, select **Setup**, and then select **Data Sources**. On the Database: Data Sources page, in the Data Profiles tab, click **Create**.
 - From the Enterprise menu, select **Provisioning and Patching**, and then select **Database Provisioning**. On the Database Provisioning page, in the Profiles section, click **Create**.

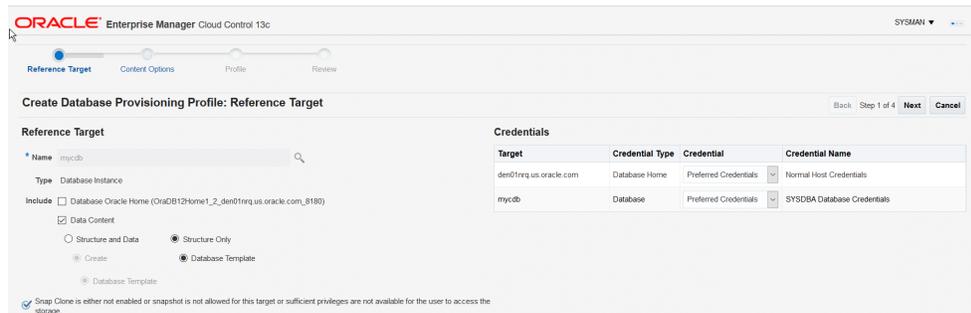
- From the database target home page, click **Oracle Database**, select **Provisioning**, and then select **Create Provisioning Profile**.
2. On the **Reference Target** page, click the search icon to select a target Container Database.

Figure 21-1 Create Container Database: Reference Target



3. On the **Reference Target** page, perform the following steps:
 - a. Click **Data Content**.
 - b. Select **Structure Only** to include only the structural files in the template (Structure only Database templates are only supported to provision CDBs)
 - c. Select **Database Template**.
4. In the **Credentials** section, select **Named Credentials**. and then select a credential name from the Credential Name column (or) select **Preferred Credentials**. Click **Next**.

Figure 21-2 Create Container Database: Reference Target



5. On the **Create Database Provisioning Profile**: page, in the **Profile Information** section, add the following:
 - Specify or select a profile location in the software library where the database profile will be created.
 - Specify a unique profile name.
 - Add a description for the profile.
 - Verify the profile version and the vendor.

For example:
Database Template for HR database

Create Database Provisioning Profile: Profile

Profile Information

* Profile Location Database Provisioning Profiles/11.2.0.4.0/solaris_sparc64

* Profile Name Database db1.us.oracle.com Profile 05-11-2015 05:48 PM

Description Database Reference Profile 05-11-2015 05:48 PM from db1.us.oracle.com
Version : 11.2.0.4.0

Profile Version 11.2.0.4.0 Vendor Oracle

Notes Host Name: sca00fiv.us.oracle.com
Database: db1.us.oracle.com
Data Content: Structure and Data
Data Content Mode: Database Template

6. Select the Schedule.
7. Specify or select a working directory. Click **Next**.
8. On the **Review** page, ensure that the selections you have made in the previous pages are correctly displayed and click **Submit**. Otherwise, click **Back** repeatedly till you reach the page where you want to make changes. Click **Cancel** to abort the provisioning profile creation.

Once you have submitted the provisioning profile creation job, manually refresh the page if View Data has been set to Real Time: Manual Refresh. Else, set View Data to reload after a specific period of time, and then select an execution step from the Procedure Steps tree on the left pane to view the details.

To view the submitted jobs, select the **Procedure Activity** link in the **Data Profiles** tab.

21.1.4 Configuring Request Settings

You can configure the request settings by specifying when a request can be made, its duration, and so on. See [Configuring Request Settings](#)

21.1.5 Defining Quotas

After configuring the request settings, you must define quotas for each self service user. See [Setting Up Quotas](#)

21.1.6 Creating a Service Template Using Database Template Profile

A service template is a standardized service definition that is offered to self service users to create databases or schemas. Self service users can create one or more databases based on the service template definition.

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.

2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select Database from the drop down menu.
4. Click the **Service Templates** link. The **Service Templates** page appears. Click **Create**. The **Create Service Template: General** page appears.

Figure 21-3 Create Service Template: General (DBCA Template)

5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. Click the **Search** icon next to the **Source Identification** field and select a DBCA template based profile from the list.
7. In the Database Definition region, specify the following:
 - **Type:** This can be Single Instance or Real Application Cluster (RAC). If you select RAC, specify the Number of Nodes.
 - **Database SID:** You can select **Specify Prefix** or **Specified by User at Request Time**.

- **Specify Prefix:** If you choose this option, enter a prefix that is to be used to generate a unique System Identifier (SID) at the time of database creation. The prefix helps to identify databases created using this service template. The prefix can be a maximum of 6 characters.

The new database name generated will be based on the SID Prefix specified here. For example, if the prefix is specified as MYDB, the SID for the new database is generated as MYDB0000, MYDB0001, MYDB0002, and so on.

For existing databases (running databases and in progress requests), a unique SID name is generated for single instance databases, or a unique name is generated for real application cluster databases. For example, if the existing SIDs running on a host are MYDB0000, MYDB0001,

- MYDB0002 And In progress are MYDB0003, MYDB0004, the new SID or database name generated for the new request is MYDB0005.
- **Specified by User at Request Time:** If you choose this option, you can leave this field blank and specify the SID when you are making a database request
 - **Domain Name:** This is an optional field. Enter a Domain Name to be used for the new database being created. You must ensure that the domain name does not contain a preceding "." (dot).
 - **Enable Standby Database:** Select this checkbox if you want to provision standby databases using this service template. If this checkbox is selected, you have to add standby databases. See [Creating a Service Template](#) for details.
8. In the Zones region, click **Add** to select a PaaS Infrastructure Zone into which the database instance is to be provisioned. Click **Assign Pool**. Select a pool from the list and assign this pool to the PaaS Infrastructure Zone. The database will be provisioned into this pool.
 9. After you have selected the zone and the pool, the host target is populated in the **Reference Host** field.
 10. Click **Next**. The **Create Service Template: Database** page appears.

Figure 21-4 Create Service Template: Database (DBCA Template)

The screenshot displays the 'Database Cloud Self Service Portal Setup: Database' configuration page. It is divided into several sections:

- Reference Host:** Shows 'Zone: zone1', 'Pool: pool1', and 'Host: s1c00drw.us.oracle.com'.
- Storage type:** 'File System' is selected. The 'Location' is '(ORACLE_BASE)/oradata'.
- Fast Recovery:** 'Automatic Storage Management' is selected. There is a checkbox for 'Enable Fast Recovery Area' and 'Enable Archiving'.
- Administrator Credentials:** 'Use the same password' is selected. There are fields for 'Password' and 'Confirm Password', both masked with asterisks.
- Master Account Privileges:** Shows a role name 'ROLE_Oct_28_2015_11_46_AM' and a list of privileges including 'CREATE SESSION', 'ALTER SESSION', 'CREATE INDEX', etc.

11. In the Reference Host region, the name of the PaaS Infrastructure zone, the database pool, and the reference host you have selected in the Database Cloud Self Service Portal Setup: General page are displayed. The database values such as a Automatic Storage Management (ASM) disk group, location of the file system, and listener port you select must be available on the reference host.
12. Specify the following:
 - **Storage Type:** This can be:
 - **Automatic Storage Management:** The Oracle Automatic Storage Management (ASM) is a volume manager and a file system for database

files that supports single-instance and RAC configurations. ASM groups the disks in your storage system into one or more disk groups. If you select ASM, select the Disk Group here.

- **File System:** The Oracle Database File System creates a standard file system interface on top of files and directories that are stored in database tables. If you select this option, you must specify or select the Location of the File System.
- **Fast Recovery (Optional):** To simplify the management of backup and recovery files, you can create a fast recovery area for your database. Select the **Enable Fast Recovery Area** checkbox to specify the location in which recovery related files must be stored. The fast recovery area can be a ASM disk group or a file system that provides a centralized disk location for backup and recovery file. Specify the location of the Fast Recovery Area and the Fast Recovery Size. The amount of disk space to allocate for the fast recovery area depends on the size and activity levels of your database.

To allow self service users to schedule backups and perform restore operations, configure a Fast Recovery Area and select the **Enable Archiving** check box.

- **Listener Port:** In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number.
 - **Administrator Credentials:** Specify passwords for the system schemas of the new database. These schemas will not be available to the self service users. You can choose to use the same password for all the schemas or different passwords for each schema. If these values are not specified, default values will be used and the self service administrator can change them.
 - **Non-Administrator Credentials:** Apart from the system schemas, if you want to restrict access to other schemas, you can select them in the Non-Administrator Credentials region and specify the password. These schemas will be locked and the EM_SSA_USERS cannot access them. Click **Next**.
13. Click **Next**. The Create Service Template: Initialization Parameters page appears. In this page, you can configure the values of various initialization parameters that affect the operation of the database instance. Select a parameter and click the **Set** icon to modify the value of the parameter.
 14. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
 15. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
 16. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.

17. The Create Service Template: Review page appears. Click **Create**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page.

21.1.7 Creating a Service Template Using Database Template Profile for Container Database

A service template is a standardized service definition that is offered to self service users to create databases or schemas. Self service users can create one or more databases based on the service template definition.

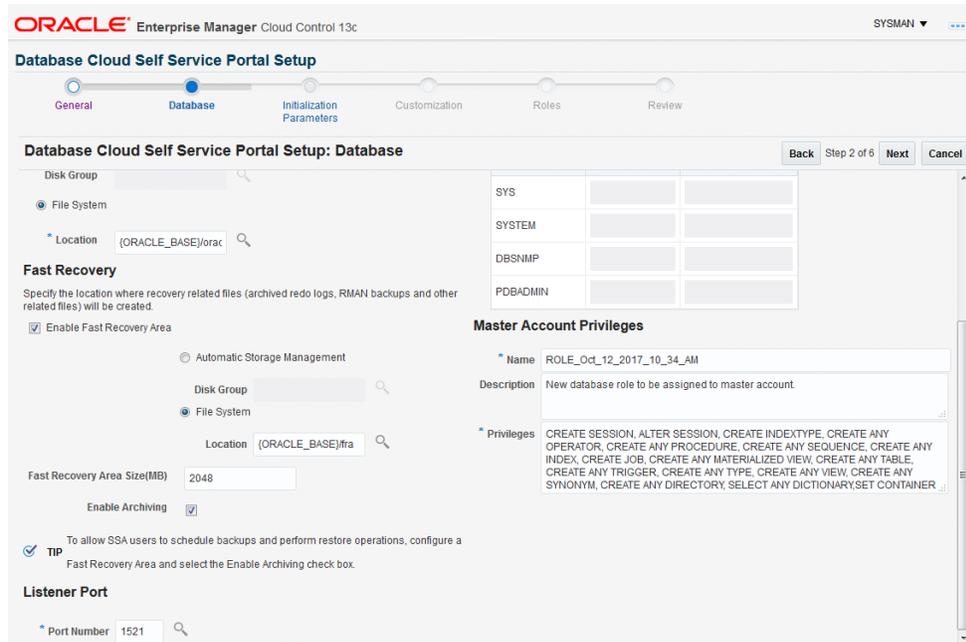
1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Setup** menu, select **Cloud**, then select **Database**. Click **Select Database** from the drop down menu.
3. Click the **Service Templates** link. The **Service Templates** page appears. Click **Create**. The **Create Service Template: General** page appears.

Figure 21-5 Create Service Template: General (DBCA Template)

4. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
5. Select the **Create As Container Database** checkbox. The profiles created from the Container Database will be listed in the Profile list only if you select this checkbox .
6. In the Source Identification section, select the **Using profile** radio button. Click **Search** next to the **Profile** field and select a Container Database template based profile from the list.
7. In the Database Definition region, specify the following:
 - **Type**: This can be Single Instance or Real Application Cluster (RAC). If you select RAC, specify the Number of Nodes.
 - **Database SID**: You can select **Specify Prefix** or **Specified by User at Request Time**.

- **Domain Name:** This is an optional field. Enter a Domain Name to be used for the new database being created.
8. In the Zones region, click **Add** to select a PaaS Infrastructure Zone into which the database instance is to be provisioned. Click **Assign Pool**. Select a pool from the list and assign this pool to the PaaS Infrastructure Zone. The database will be provisioned into this pool.
 9. After you have selected the zone and the pool, the host target is populated in the **Reference Host** field.
 10. Click **Next**. The **Create Service Template: Database** page appears.

Figure 21-6 Create Service Template: Database (DBCA Template)



11. Specify the following:
 - **Storage Type:** This can be:
 - **Automatic Storage Management:** The Oracle Automatic Storage Management (ASM) is a volume manager and a file system for database files that supports single-instance and RAC configurations. ASM groups the disks in your storage system into one or more disk groups. If you select ASM, select the Disk Group here.
 - **File System:** The Oracle Database File System creates a standard file system interface on top of files and directories that are stored in database tables. If you select this option, you must specify or select the Location of the File System.
 - **Fast Recovery (Optional):** To simplify the management of backup and recovery files, you can create a fast recovery area for your database. Select the **Enable Fast Recovery Area** checkbox to specify the location in which recovery related files must be stored. The fast recovery area can be a ASM disk group or a file system that provides a centralized disk location for backup and recovery file. Specify the location of the Fast Recovery Area and the Fast

Recovery Size. The amount of disk space to allocate for the fast recovery area depends on the size and activity levels of your database.

To allow self service users to schedule backups and perform restore operations, configure a Fast Recovery Area and select the **Enable Archiving** check box.

- **Listener Port:** In the Listener Port field, specify listener port number that is to be associated with the new Container Database.
 - **Administrator Credentials:** Select either Use Same Password or Use different password option.
12. Click **Next**. The Create Service Template: Initialization Parameters page appears. In this page, you can configure the values of various initialization parameters that affect the operation of the database instance. Select a parameter and click the **Set** icon to modify the value of the parameter.
 13. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
 14. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
 15. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the EM_SSA_USER roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
 16. The Create Service Template: Review page appears. Click **Create**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page.

21.1.8 Configuring Chargeback

Optionally, you can configure the chargeback service. See [Chargeback Administration](#).

21.1.9 Requesting a Database

The self service user can now select the service template based on the database template profile and create a database. See [Requesting a Database](#).

21.2 Provisioning Standby Databases

A data guard configuration consists of one primary database and one or more standby databases. The databases in a Data Guard configuration are connected by Oracle Net and may be dispersed geographically. There are no restrictions on where the databases are located, provided they can communicate with each other.

Oracle Data Guard ensures high availability, data protection, and disaster recovery for enterprise data. It provides a comprehensive set of services that create, maintain, manage, and monitor one or more standby databases to enable production Oracle

databases to survive disasters and data corruptions. Oracle Data Guard maintains these standby databases as copies of the production database. If the production database becomes unavailable due to a planned or an unplanned outage, the Oracle Data Guard can switch any standby database to the production role, minimizing the downtime associated with the outage.

The production database, also referred to as the primary database can be either a single-instance Oracle database or an Oracle Real Application Clusters (RAC) database. A standby database is a transactionally consistent copy of the primary database. Using a backup copy of the primary database, you can create one or more standby databases and incorporate them in a Data Guard configuration. Using Enterprise Manager Database as a Service, users with the `EM_SSA_ADMINISTRATOR` role can setup the DBaaS Cloud with single instance of RAC standby databases.

Table 21-2 Provisioning Standby Databases

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started
2	Create resource providers. <ul style="list-style-type: none"> • Create one or more PaaS Infrastructure Zones. • Create one or more database pools for provisioning standby databases 	See Creating Resource Providers
6	Create either of the following types of profiles: <ul style="list-style-type: none"> • DBCA template based database provisioning profile. • RMAN Backup based database provisioning profile. 	See: <ul style="list-style-type: none"> • Creating a Container Database Provisioning Profile Using Database Template • Creating a Database Provisioning Profile Using RMAN Backup
4	Configure the request settings.	See Configuring Request Settings
5	Define quotas for each self service user.	See Defining Quotas
7	Create a service template based on the profile you have created.	See Creating a Service Template
8	Configure the Chargeback Service.	See Configuring Chargeback
9	While deploying a database, select the service template (associated with the DBCA template based profile) you have created. Additionally, you can also specify the standby database information while requesting the database.	See Requesting a Database

21.2.1 Defining Database Pools for Provisioning Standby Databases

A Data Guard configuration consists of one production database and one or more standby databases. To define a database pool for provisioning standby databases, you must follow these steps:

1. Create a database pool. See [Creating a Database Pool for Database as a Service](#).
2. Associate the database pool with one or more pools that host standby databases. See [Associating a Standby Database Pool with a Primary Database Pool](#).

21.2.1.1 Associating a Standby Database Pool with a Primary Database Pool

To include standby support, you must add one or more pre-created database pools on which the standby databases will be created by following these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Resource Providers**, and select the database pool that has been designated as the primary database pool and click **Edit**. The Edit Pool: Setup page appears.

Figure 21-7 Edit Database Pool

Edit Pool: Setup Back Step 1 of 1 Submit Cancel

Pool Details

Name: pool1
Description:

Credentials

Specify the host credentials that will be used for performing database creation operations. Root credentials are optional. They are needed if you plan to use this pool for snap cloned database requests. Grid Infrastructure credentials are also optional. They are needed if you plan to use this pool for live cloning of a database using ASM.

* Host: EMGA (DBAAS_ADMIN) +
Root: EMGA_ROOT (DBAAS_ADMIN) +
Grid Infrastructure: EMGA (DBAAS_ADMIN) +
Automatic Storage Management: Select a Credential +

Oracle Homes

Add one or more Oracle Homes to the pool. All Oracle Homes must reside in the same PaaS infrastructure zone. Homogeneity is controlled by the target filters that cannot be modified once the pool is created.

PaaS Infrastructure Zone: zone1 Platform: Linux x86-64
Database Configuration: Cluster Database Version: 12.1.0.1.9

Name	Location	Description	On Host
OraDB12c_home1_2015_10_27_5_sic00drw.us.oracle.com_2063	/oradbocfahewracdbhome1	OraDB12c_home1_2015_10_27_5_sic00drw.us.oracle.com_2063	sic00drw.us.oracle.com

Standby Pools

Associate one or more Pools for provisioning the Physical Standby Database(s). The 'Add' list contains a filtered set of Pools based on the Dataguard compatibility matrix.

Name	Member Target Type	Targets	Description
pool2	Oracle Home	2	

3. The pool details and the Oracle homes in the pool are displayed. You can now add one or more standby database pools and associate it with the primary database pool. Click **Add** in the Standby Pools region. The Add Standby Pools window appears.
4. Select one or more standby pools and click **Select**. The selected pools appear in the Standby Pools region. These pools are now associated with the primary database pool and can be used to provision standby databases.

Note:

The OS user name and password for the primary and standby database pool must be the same but the Named Credentials can be different.

5. Specify the Placement Constraints that will allow the self service administrator to set the maximum limits for resource utilization. For example, if you are using the database pool to provision standby databases, you can specify a higher value in the Maximum Number of Database Instances Per Host field, since the standby database may not be used for active operations all the time.
6. Click **Submit**. The primary pool is now associated with the standby database pool and can be used to provision standby databases.

21.2.2 Creating a Service Template

Service templates are standardized service definitions that allow self service users to create standby databases. Self service users can create one or more standby databases based on the service template definition. To create a database service template, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select Database from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.
5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. Click the **Search** icon next to the **Profile** field and select a database provisioning profile.
7. You can select the following types of profiles:
 - RMAN Backup Based Database Provisioning Profile.
 - DBCA Template Based Database Provisioning Profile.
8. In the Database Definition region, specify the following:
 - **Type**: This can be Single Instance or Real Application Cluster (RAC). If you select RAC, specify the Number of Nodes.
 - **Database SID**: This is an optional field. You can select **Specify Prefix** or **Specified by User at Request Time**.
 - **Specify Prefix**: If you choose this option, enter a prefix that is to be used to generate a unique System Identifier (SID) at the time of database creation. The prefix helps to identify databases created using this service template. The prefix can be a maximum of 6 characters.

The new database name generated will be based on the SID Prefix specified here. For example, if the prefix is specified as MYDB, the SID for the new database is generated as MYDB0000, MYDB0001, MYDB0002, and so on.

For existing databases (running databases and in progress requests), a unique SID name is generated for single instance databases, or a unique name is generated for real application cluster databases. For example, if the existing SIDs running on a host are MYDB0000, MYDB0001, MYDB0002 And In progress are MYDB0003, MYDB0004, the new SID or database name generated for the new request is MYDB0005.

- **Specified by User at Request Time**: If you choose this option, you can leave this field blank and specify the SID when you are making a database request.

- **Domain Name:** This is an optional field. Enter a Domain Name to be used for the new database being created. You must ensure that the domain name does not contain a preceding "." (dot).
 - **Enable Standby Database:** Select this checkbox if you want to provision standby databases using this service template. The database lock icon and the Add Standby Database region appears. Click the database lock icon to lock the database. This forces the self service user to request standby databases. If unlocked, the self service user can deselect the standby database while submitting the database request.
9. Click **Add Standby Database**. In the Add Standby Database window that appears, specify the following details:
- **Standby Name:** The name used to identify the standby database.
 - **Type:** This can be Single Instance or Real Application Cluster (RAC). If you select RAC, you must specify the Number of Nodes.
 - **Standby Domain Name:** Enter a domain name for the new standby database that is to be created.
 - **Standby Protection Mode:** Specify the protection mode which can be:
 - **Maximize Protection:** Provides the highest level of data protection with no data loss. If this mode is selected, you must set the SYNC Redo Transport Mode on at least one standby database.
 - **Maximize Availability:** Provides very high data protection. If this mode is selected, you must set the SYNC Redo Transport Mode on at least one standby database.
 - **Maximize Performance:** Provides high data protection with the ASYNC Redo Transport Mode. If you select this mode, there is no performance impact on the primary database.
 - **Enable Real Time Query:** Select this option to enable real time data query on the database. This feature requires an active data guard license.
 - **Apply Delay:** Specifies the delay period before which the archived redo log data is applied on the standby database. When the property is set to 0 minutes, the redo log data is applied immediately on the standby database.

 **Note:**

You can use a single service template to provision multiple standby databases.

10. In the Pools and Zones (Primary Pools) region, click **Add** to add one or more PaaS Infrastructure zones into which the database instance is to be provisioned. Click **Assign Pool** and select a database pool which will be the primary database pool for the standby database.
11. In the Standby Pools region, you will see the list of standby databases that you have defined. From the drop down list, select the standby pool with which the standby database is to be associated. You can associate multiple standby pools with one primary pool.

 **Note:**

If the Primary Pool is of single instance type, both single instance and RAC database pools are listed. But if the Primary Pool is RAC, only RAC database pools are listed in the Standby Pools region.

12. Click **Search** in the Reference Host field to select a host target.
13. Specify the Shared Location and click **Next** to continue to the Database Cloud Self Service Portal Setup: Database page.
14. The name of the Zone, Pool, and Reference Host you have selected is displayed. You can select the ASM Disk Group, File System Location, and Listener Port that is available on the Reference Host.

 **Note:**

The storage locations and listener ports must be identical on all the primary and standby pools.

- Storage Type: Storage type can be:
 - Automatic Storage Management: The Oracle Automatic Storage Management (ASM) is a volume manager and a file system for database files that supports single-instance and RAC configurations. ASM groups the disks in your storage system into one or more disk groups. If you select ASM, specify the Disk Group here.
 - File System: The Oracle Database File System creates a standard file system interface on top of files and directories that are stored in database tables. If you select this option, you must specify the Location of the File System.
 - Fast Recovery: To simplify the management of backup and recovery files, you can create a fast recovery area for your database. The fast recovery area can be a ASM disk group or a file system that provides a centralized disk location for backup and recovery file. Specify the location of the Fast Recovery Area and the Fast Recovery Size. The amount of disk space to allocate for the fast recovery area depends on the size and activity levels of your database.

To allow self service users to schedule backups and perform restore operations, configure a Fast Recovery Area and select the **Enable Archiving** check box.
15. In the Port Number field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number.
 16. In the Location fields, specify the RMAN Duplicate Backup location. This directory must be present on all members of the Primary and Standby pools. The free space available in this location must be equal to or more than the size of the database from which the profile has been created.
 17. Specify the Administrator Credentials. Specify passwords for the system schemas of the new database. These schemas will not be available to the `EM_SSA_USERS`. You

can choose to use the same password for all the schemas or different passwords for each schema. If these values are not specified, default values will be used and the `EM_ADMINISTRATOR` can change them.

18. Apart from the system schemas, if you want to restrict access to other schemas, you can select them in the Non-Administrator Credentials region and specify the password. These schemas will be locked and the `EM_SSA_USERS` cannot access them.
19. Click **Next**. The Database Cloud Self Service Portal Setup: Initialization Parameters page appears. In this page, you can configure the values of various initialization parameters that affect the operation of the database instance. Select the parameter and click the **Set** icon to modify the value of the parameter.

 **Note:**

Database sizes that can be selected by the self service user while creating a service instance are defined globally using EMCLI commands. A subset of these global database sizes can be defined on the Initialization Parameters page and the self service user can choose one of these sizes while creating a database.

20. Click **Next**. The Database Cloud Self Service Portal Setup: Scripts page appears. Specify the custom scripts that need to be executed before and after the database is created.
21. Click **Next**. The Database Cloud Self Service Portal Setup: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template.
22. Click **Next**. The Database Cloud Self Service Portal Setup: Review page appears. Review the information you have entered so far and click **Create**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page. You can click on the Service Template Name link to view additional details.

22

Creating Schemas

You can create one or more schemas on a running database. Schemas can either be empty or based on a profile. This chapter covers the following sections:

- [Getting Started](#)
- [Creating Resource Providers](#)
- [Creating a Database Provisioning Profile Using Export Schema Objects](#)
- [Configuring Request Settings](#)
- [Defining Quotas](#)
- [Configuring Chargeback](#)
- [Requesting a Schema](#)

22.1 Getting Started

The data content of this database provisioning profile is compiled from an export dump created using the Data Pump tool. You can choose to export Schema objects (structure only) or the Schema with data (structure + data).

The table below shows the list of tasks that are involved in creating an empty schema or a schema based on profile.

Table 22-1 Creating Databases Using Database Template

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started
2	Create resource providers. <ul style="list-style-type: none">• Create one or more PaaS Infrastructure Zones.• Create one or more database pools.	See Creating Resource Providers
6	Create a database provisioning profile. This step is optional and is required if you are importing schemas from a profile.	See Creating a Database Provisioning Profile Using Export Schema Objects
4	Configure the request settings.	See Configuring Request Settings
5	Define quotas for each self service user.	See Defining Quotas

Table 22-1 (Cont.) Creating Databases Using Database Template

Step	Task	Role
7	Create as service template based on: <ul style="list-style-type: none"> User Defined Schema: In this case, the service template is created with an empty schema. Schema from a Profile: In this case, you can import schemas from a database provisioning profile. You can select this option for applications with data such as eBusiness applications. 	See Creating a Service Template for Schema Based on Profile
8	Configure the Chargeback Service.	See Configuring Chargeback
9	While creating a database, select the service template (associated with the database template based profile) you have created.	See Requesting a Schema

22.2 Creating Resource Providers

You must create one or more resource providers which include:

- PaaS Infrastructure Zones: See [Creating a PaaS Infrastructure Zone](#)
- Schema Pool: See [Creating a Database Pool for Schema as a Service](#)

22.2.1 Creating a Database Pool for Schema as a Service

You can create a database service with one or more schemas with or without seed data and database objects. To do so, follow these steps:

- Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
- From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. Click the **Setup** link next to the Database service family, select **Schema** from the drop down list, click **Schema Pool** and click **Create**.
- Enter a name and description for the schema pool.
- In the Credentials region, specify the credentials that will be used for performing database operations. Specify the following credentials:
 - Host:** Required for starting the database.
 - Grid Infrastructure:** Required to register a database service with grid infrastructure credentials. These credentials are used when schema backups taken by the self service user from ASM need to be deleted.
 - Database:** Required for creating schemas on the database. The database credentials must have SYSDBA privileges.
- Specify the following details:
 - PaaS Infrastructure Zone:** Select the PaaS Infrastructure Zone in which the databases are present. The schemas will be created on the databases selected for the pool.

- **Target Type:** Specify the configuration of the target database on which the schema is being deployed. This can be Single Instance or Cluster Database (RAC).
 - **Platform and Version:** Specify the platform and version of the database being deployed.
6. Click **Add** and select one or more databases to be added to the pool. All databases you select must be present in the same PaaS Infrastructure Zone.

 **Note:**

You can search for database groups that meet your requirements by specifying a search string in the Groups field.

7. Click **Next**. The Create New Pool: Policies page appears.
- Specify the placement policy constraints to set maximum ceilings for resource utilization on each database. Placement policy constraints for each database can be defined by services or workloads as follows:
- **Services:** If you select this check box, you must specify the Maximum Number of Database Services that can be running on each database.
 - **Workloads Associated with Service Requests:** The amount of resources (such as CPU and memory) to manage the workload can be specified here. Specify the total workload for each database.
 - **Maximum CPU Allocation:** Specify the maximum CPU that can be allocated to each database.
 - **Maximum Memory Allocation:** Specify the maximum memory that can be allocated for each database.
8. If you have chosen to set the placement constraints by **Workloads Associated with Service Requests**, you can choose to enable the resource manager by selecting the **Enable Resource Manager for CPU** check box. You can use the resource manager to manage the CPU resource and ensure that `EM_SSA_USER` will not exceed the maximum allocated value.
9. Click **Submit** to create a database pool. The newly created database pool will appear in the Database Cloud Self Service Portal Setup: Database Pools page.

22.3 Creating a Database Provisioning Profile Using Export Schema Objects

To create a database provisioning profile, follow these steps:

1. You can access the Database Provisioning page using either of the following ways:
 - From the **Enterprise** menu, select **Cloud**, and then select **Cloud Home**. On the Cloud home page, click **Oracle Cloud**, select **Setup**, and then select **Data Sources**. On the Database: Data Sources page, in the Data Profiles tab, click **Create**.

- From the Enterprise menu, select **Provisioning and Patching**, and then select **Database Provisioning**. On the Database Provisioning page, in the Profiles section, click **Create**.
 - From the database target home page, click **Oracle Database**, select **Provisioning**, and then select **Create Provisioning Profile**.
2. On the Reference Target page, click the search icon to select a target.
 3. In the Search and Select:Targets display box, select the database you want to create a profile for, and then, click **Select**.
 4. On the Reference Target page, select the following:
 - **Data Content**
 - **Structure and Data** to include physical and structural files from the database or **Structure Only** to include only the structural files in the template.
 - **Export Schema Objects**

Create Database Provisioning Profile: Reference Target

Reference Target

* Name

Type Database Instance

Include Database Oracle Home (OraDb11g_home1_2_adc2201753.us.oracle.com_4745)

Grid Infrastructure Oracle Home (Ora11g_gridinfrahome1_1_adc2201753.us.oracle.com_1453)

Data Content

Structure and Data Structure Only

Create Database Template

RMAN Backup Export Schema Definition

RMAN Database Image

Database Template

Use Existing RMAN Backup

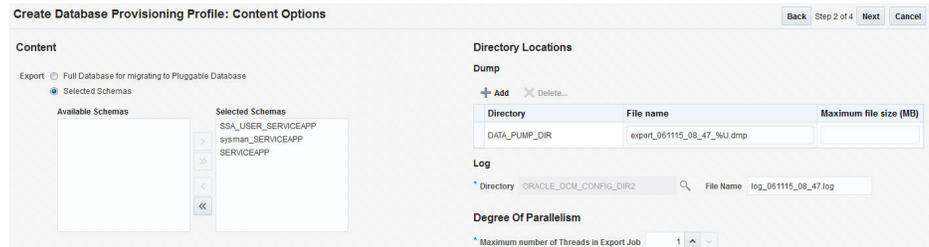
Export Schema Objects

5. In the Credentials section, select the database. In the Credentials column, you can select **Named Credentials** and then select a credential name from the Credential Name column (or) select **Preferred Credentials**. Click **Next**.
6. On the Content Options page, do the following:
 - Select the schema you want to include in the profile by clicking on a schema in the Available Schema list and moving it to the Selected Schema list.

 **Note:**

When one or more schemas are selected, the database checks if the dependent schemas are also selected for export. If the dependent schemas are not exported, you will receive a warning. You can choose to go ahead with the selected schemas, or to include the schemas which were not initially selected.

The same warning is also displayed when you select a profile that does not have the dependent schemas exported.



 **Note:**

The Available Schemas section displays only the user created schemas that has data content in it. All the empty schemas are filtered out by default.

 **Note:**

System schemas such as SYS, SYSTEM, and DBSNMP will not be exported.

The user schemas which do not have their own tablespace are not shown in left side of the shuttle.

- In the Degree of Parallelism section, enter the number of threads required to perform the export operation.

 **Note:**

Increasing the number of threads helps reduce the time required to create the profile at the cost of using system resources.

- In the Directory Locations section, click on **Add**. In the Select Directory window, select a directory object listed to perform the export operation, and then click **Select**.

 **Note:**

The number of export threads determines the number of parallel export processes that will run in parallel during export.

Hence, the dump file names should contain %U, to ensure the file names are auto generated with the running count to facilitate parallel operation along with the maximum size for the dump file. For example, 5GB. This means that the file rotation will start after 5GB limit is reached.

 **Note:**

Ensure that the directory location is accessible. The directory object that you select must refer to a location that is accessible across all the nodes. You can also create a directory object on ASM. However, it is not supported on ASM.

In the Log subsection, click on the search icon. In the Select Directory window, select the directory object you require to perform the export operation, and then click **Select**.

In the Log subsection, enter the file name, and then click on **Next**.

 **Note:**

You can make use of degree of parallelism with dump file names. The default value of dump files contain %U which creates a running count when degree of parallelism is greater than 1.

Also, this enables you to add multiple dump directories to distribute the storage if required.

7. On the Create Database Provisioning Profile: Page, in the Profile Information section, do the following:
 - Specify or select a profile location in the software library where the database profile will be created.
 - Specify a unique profile name.
For example:
Export Schema Objects Provisioning Profile for HR database
 - Add a description for the profile.
 - Verify the profile version and the vendor.
 - Add any additional notes such as host name, database, data content, data content mode, and the like.

8. In the Schedule section, you can choose to start the profile creation immediately, or you can schedule it for a later time. You can also choose to repeat the creation of the provisioning profile, and set a repeat time.
9. Specify or select a working directory. Click **Next**.
10. On the Review page, ensure that the selections you have made in the previous pages are correctly displayed and click **Submit**. Otherwise, click **Back** repeatedly till you reach the page where you want to make changes. Click **Cancel** to abort the provisioning profile creation.

Once you have submitted the provisioning profile creation job, manually refresh the page if View Data has been set to Real Time: Manual Refresh. Else, set View Data to reload after a specific period of time, and then select an execution step from the Procedure Steps tree on the left pane to view the details.

To view the submitted jobs, select the **Procedure Activity** link in the **Data Profiles** tab.

22.4 Configuring Request Settings

You can configure the request settings by specifying when a request can be made, its duration, and so on. See [Configuring Request Settings](#)

22.5 Defining Quotas

After configuring the request settings, you must define quotas for each self service user. See [Setting Up Quotas](#)

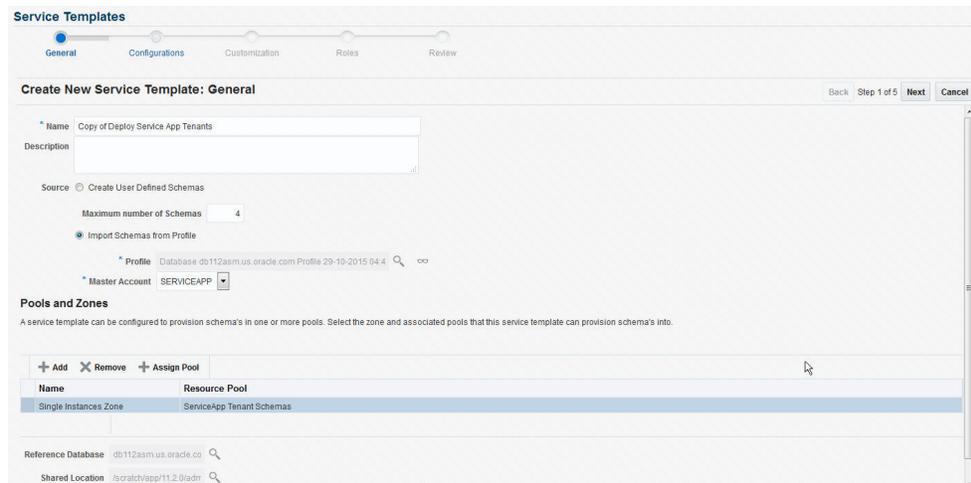
22.6 Creating a Service Template for Schema Based on Profile

One or more schemas can be created based on the service template definition. To create a service template for schema as a service, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.

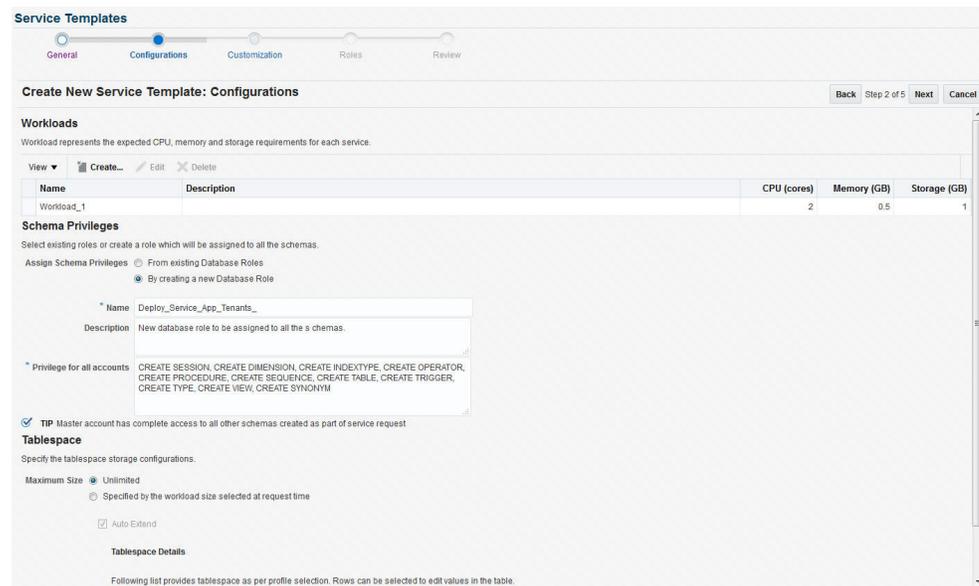
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select **Schema** from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 22-1 Create Service Template: General



5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. In the Source region, select the **Import Schemas from Profile** option and select a database provisioning profile from which the schema is to be imported. Click the Search icon next to the Profile field and select an export schema objects based profile from the list. If a profile does not exist, you must create one. See [Creating a Database Provisioning Profile Using Export Schema Objects](#).
7. After selecting the profile, you must select the Master Account that has privileges on all the schemas. If the Master Account is not selected, the self service user will have to select it when requesting a schema.
8. In the Zones region, click **Add** to select a PaaS Infrastructure Zone into which the service instance is to be provisioned. Click **Assign Pool** to add a Database Pool for the zone.
9. After you have selected the zone and the pool, the host target is populated in the Reference Host field. If you have added multiple zones and pools, you must click the **Search** icon and select a host target from the list.
10. If you creating a service template based on an export schema objects profile, in the Shared Location region, specify the Path or the Shared Location in which the schema dumps are present. The Shared Location must be accessible by all the databases.
11. Click **Next**. The Create New Service Template: Configurations page appears.

Figure 22-2 Create Service Template: Configurations



Specify the following details:

- **Workload Size:** Workload represents the total CPU, memory, and storage requirements for each service. You can define workload sizes such as small, medium, and large for the schema service. Click **Create** and in the Create Workload window, enter the name, CPU, Memory, and Storage limit for each service. Select a workload size and click **Default** to designate it as the default workload size.
- **Assign Schema Privileges:** You can select existing roles or create a role that will be assigned to all the schemas. All database privileges such as `CREATE_SESSION`, `CREATE_DIMENSION`, and so on can be granted to the role. Enter the name of the user, description, and the privileges that will be granted to the user.

Note:

- If the role with the name specified already exists in the database, the database privileges cannot be modified.
- The Master Account will have the `CREATE_SESSION`, `CREATE_DIMENSION`, `CREATE_INDEXTYPE`, `CREATE_OPERATOR`, `CREATE_PROCEDURE`, `CREATE_SEQUENCE`, `CREATE_TABLE`, `CREATE_TRIGGER`, `CREATE_TYPE`, `CREATE_VIEW`, and `CREATE_SYNONYM` privileges over all the schemas created as part of this service request.

- **Tablespace:** Specify the tablespace storage configuration. Enter the following details:
 - **Maximum Size:** The maximum size of the tablespace can be **Unlimited** or **Specified by the workload size selected at request time**.

- **Auto Extend:** Select this check box to automatically extend the new data file.

 **Note:**

If you are creating an empty schema, the tablespaces are not listed in the Tablespace Details section. In this case, you must specify the Initial Size and the Increment value for the tablespace and only one tablespace is created.

- Tablespace Details: Based on the profile you have selected, one or more tablespaces are listed here. You can edit the following values in the table:
 - **Initial Size:** If you selected **Specified by the workload size selected at request time** in the Maximum Size field, enter the initial size of the tablespace.
 - **Increment:** If you have selected the **Auto Extend** checkbox, specify the size by which the data file is to be automatically incremented.
 - **Maximum Size:** If the tablespace storage is Specified by workload size specified at request time, enter the maximum size here that can be distributed across tablespaces.
- 12. Click **Next**. The Create Service Template: Scripts page appears. Specify the custom scripts that need to be executed before and after the service instance has been created. See Pre and Post Scripts section for details.
- 13. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a schema.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a schema.
- 14. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template.
- 15. Click **Next** to go to the Review page. Review the details entered so far and click **Submit**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page. You can click on the Service Template Name link to view additional details.

22.7 Creating a Service Template with Empty Schema

One or more schemas can be created based on the service template definition. To create a service template that can be used to create empty schemas, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.

3. Click the **Setup** link next to the Databases option in the left panel. Select **Schema** from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 22-3 Create Service Template: General (Empty Schema)

The screenshot shows the 'Create New Service Template: General' page. At the top, there are tabs for 'General', 'Configurations', 'Customization', 'Roles', and 'Review'. Below the tabs, the title is 'Create New Service Template: General' with navigation buttons 'Back', 'Step 1 of 5', 'Next', and 'Cancel'. The form includes:

- Name:** A text field containing 'empt_schema_template'.
- Description:** An empty text area.
- Source:** Radio buttons for 'Create User Defined Schemas' (selected) and 'Import Schemas from Profile'.
- Maximum number of Schemas:** A numeric input field set to '4'.
- Profile:** A search field with a magnifying glass icon.
- Master Account:** A dropdown menu.

Below the form is the 'Pools and Zones' section, which includes a table:

Name	Resource Pool
Single Instances Zone	ServiceApp Tenant Schemas

At the bottom, there is a 'Reference Database' field with the value 'db112asm.us.oracle.co' and a search icon.

5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. In the Source region, select the **Create User Defined Schemas** option to create empty schemas which can be configured by the user. If you select this option, you must specify the Maximum Number of Schemas that can be created.
7. In the Zones region, click **Add** to select a PaaS Infrastructure Zone into which the service instance is to be provisioned. Click **Assign Pool** to add a Database Pool for the zone.
8. After you have selected the zone and the pool, the host target is populated in the Reference Host field. If you have added multiple zones and pools, you must click the **Search** icon and select a host target from the list.
9. Click **Next**. The Create New Service Template: Configurations page appears.

Figure 22-4 Create Service Template: Configurations (Empty Schema)

The screenshot shows the 'Configurations' step of the 'Create New Service Template' wizard. It includes sections for Workloads, Schema Privileges, and Tablespace configurations.

Workloads
Workload represents the expected CPU, memory and storage requirements for each service.

Name	Description	CPU (cores)	Memory (GB)	Storage (GB)
medium		100	50	60

Schema Privileges
Select existing roles or create a role which will be assigned to all the schemas.

Assign Schema Privileges From existing Database Roles By creating a new Database Role

Name: empty_schema_template_Nov_0
Description: New database role to be assigned to all the schemas.

Privilege for all accounts: CREATE SESSION, CREATE DIMENSION, CREATE INDEXTYPE, CREATE OPERATOR, CREATE PROCEDURE, CREATE SEQUENCE, CREATE TABLE, CREATE TRIGGER, CREATE TYPE, CREATE VIEW, CREATE SYNONYM

TIP Master account has complete access to all other schemas created as part of service request

Tablespace
Specify the tablespace storage configurations.

Maximum Size: Unlimited Specified by the workload size selected at request time

Auto Extend

Initial Size: Workload size selected during request

Increment: _____ GB

Specify the following details:

- **Workload Size:** Workload represents the total CPU, memory, and storage requirements for each service. You can define workload sizes such as small, medium, and large for the schema service. Click **Create** and in the Create Workload window, enter the name, CPU, Memory, and Storage limit for each service. Select a workload size and click **Default** to designate it as the default workload size.
- **Assign Schema Privileges:** You can select existing roles or create a role that will be assigned to all the schemas. All database privileges such as `CREATE_SESSION`, `CREATE_DIMENSION`, and so on can be granted to the role. Enter the name of the user, description, and the privileges that will be granted to the user.

Note:

- If the role with the name specified already exists in the database, the database privileges cannot be modified.
- The Master Account will have the `CREATE_SESSION`, `CREATE_DIMENSION`, `CREATE_INDEXTYPE`, `CREATE_OPERATOR`, `CREATE_PROCEDURE`, `CREATE_SEQUENCE`, `CREATE_TABLE`, `CREATE_TRIGGER`, `CREATE_TYPE`, `CREATE_VIEW`, and `CREATE_SYNONYM` privileges over all the schemas created as part of this service request.

- **Tablespace:** Specify the tablespace storage configuration. Enter the following details:
 - **Maximum Size:** The maximum size of the tablespace can be **Unlimited** or **Specified by the workload size selected at request time**.

- **Auto Extend:** Select this check box to automatically extend the new data file. If this check box is selected, enter the following details:
 - Initial Size:** Enter the initial size of the tablespace.
 - Increment:** Specify the size by which the data file is to be automatically incremented.
- 10. Click **Next**. The Create Service Template: Scripts page appears. Specify the custom scripts that need to be executed before and after the service instance has been created.
- 11. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a schema.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a schema.
- 12. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template.
- 13. Click **Next** to go to the Review page. Review the details entered so far and click **Submit**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page. You can click on the Service Template Name link to view additional details.

22.8 Configuring Chargeback

Optionally, you can configure the chargeback service. See [Chargeback Administration](#).

22.9 Requesting a Schema

The self service user can now select the service template based on the database template profile and create a database. See [Requesting a Schema](#).

Provisioning Pluggable Databases

This chapter describes the process involved in provisioning pluggable databases. It contains the following sections:

- [Getting Started](#)
- [Creating Resource Providers](#)
- [Creating a Database Provisioning Profile Using Export Schema Objects](#)
- [Configuring Request Settings](#)
- [Defining Quotas](#)
- [Creating a Service Template for PDB Based on Profile](#)
- [Creating a Service Template for an Empty PDB](#)
- [Configuring Chargeback](#)
- [Requesting a Pluggable Database](#)
- [Creating Test Master Pluggable Databases and Snapshot Clones](#)
- [Enabling a Test Master Pluggable Database](#)
- [Disabling a Test Master Pluggable Database](#)

23.1 Getting Started

An Oracle Database can contain a portable collection of schemas, schema objects, and nonschema objects, that appear to an Oracle Net client as a separate database. This self-contained collection is called a pluggable database (PDB). A multi-tenant container database (CDB) is a database that includes one or more PDBs. Oracle Database 12c Release 1 (12.1) and later versions allow you to create many PDBs within a single CDB.

Table 23-1 Provisioning Pluggable Databases

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started
2	Create one or more resource providers.	See Creating Resource Providers
4	Configure the request settings.	See Configuring Request Settings
5	Define quotas for each self service user.	See Defining Quotas
6	Create a database provisioning profile. This step is optional and is not required if you are creating an empty pluggable database.	See Creating a Database Provisioning Profile Using Export Schema Objects

Table 23-1 (Cont.) Provisioning Pluggable Databases

Step	Task	Role
7	Create a service template. A service template can contain: <ul style="list-style-type: none"> • Empty Pluggable Database: In this case, the service template is created with an empty schema. • Pluggable Database from a Profile: In this case, you can import schemas from a database provisioning profile. You can select this option for applications with data such as eBusiness applications. 	See Creating a Service Template for PDB Based on Profile
8	Configure the Chargeback Service.	See Configuring Chargeback
9	While deploying a database, select the service template that you have created.	See Requesting a Pluggable Database

23.2 Creating Resource Providers

You must create one or more resource providers which include:

- PaaS Infrastructure Zones: See [Creating a PaaS Infrastructure Zone](#)
- Database Pool:
 - See [Creating a Database Pool for PDB as a Service](#)

23.2.1 Creating a Database Pool for PDB as a Service

A Pluggable Database (PDB) is portable set of schemas, schema objects, and related structures that appears logically to an application as a separate database. This self-contained collection is called a pluggable database (PDB). Every PDB is owned by a SYS user.

A container is a collection of schemas, objects, and related structures in a container database (CDB) that appears logically to an application as a separate database. A container database (CDB) is an Oracle database that includes zero, one, or many user-created PDBs.

A database pool for PDB as a Service must contain a set of container databases. The container databases must meet the following guidelines:

- All CDBs in a database pool must be of the same version and platform.
- All CDBs in a database pool must either be single instance databases or RAC databases. Mix and match of database types is not supported.

To create a database pool for PDB as a service, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. Click the **Setup** link next to the Database service family, select **Pluggable Database** from the drop down link, click on the **Pluggable Database Pool** link and then click **Create**.

Figure 23-1 Create Database Pool: Setup Page (PDB)

Database Pools

Create New Pool: Setup Back Step 1 of 2 Next Cancel

Pool Details

* Name
 Description

Credentials

Specify the database credentials that will be used for performing database operations like Pluggable Database creation. The database credentials require SYSDBA privileges.

* Host Select a Credential +
 Root Select a Credential +
 Grid Infrastructure Select a Credential +
 * Database Select a Credential +
 Container Database Wallet Password

Container Databases

Add one or more Container Databases to the pool from a single PaaS Infrastructure zone. Homogeneity is controlled by the target filters that cannot be modified once the pool is created.

* PaaS Infrastructure Zone * Platform
 * Target Type * Version

+ Add - Remove

Name	Location	Description	On Host	CPU	Memory (GB)
Select targets for the pool creation.					

TIP A target can only belong to one pool.
 * CPU is not caged.
 Where is my Container Database?

3. Enter a name and description for the database pool.
4. In the Credentials region, specify the credentials that will be used for performing database operations. Specify the following credentials:
 - **Host:** Required for performing remote host operations.
 - **Grid Infrastructure:** Required to register a database service with grid infrastructure credentials.
 - **Database:** Required for creating the pluggable database.
 - **Container Database Wallet Password:** If the PDB is to be encrypted, you must specify the password required to open the wallet from the keystore.
5. Specify the following details:
 - **PaaS Infrastructure Zone:** Select a PaaS Infrastructure Zone in which the container databases are present. The PDBs will be created on the databases selected for the pool. For details on creating container databases, see [Provision a Container Database for PDB as a Service](#).
 - **Target Type:** Specify the configuration of the target database on which the PDB is being deployed. This can be Single Instance or Cluster Database (RAC).
 - **Platform and Version:** Specify the platform and version of the database being deployed.
6. Click **Add** and select one or more container databases to be added to the pool. All databases you select must be present in the same PaaS Infrastructure Zone.

Note:

You can search for database groups that meet your requirements by specifying a search string in the Groups field.

7. Click **Next**. The Create New Pool: Policies page appears.

Figure 23-2 Create Database Pool: Policies (PDB)

Database Pools

Create New Pool: Policies Back Step 2 of 2 Submit Cancel

Placement Constraints

Placement policy constraints allow the self service administrator to set maximum ceilings for resource utilization. This provides protection for the members of the database pool in terms of resource consumption. For example, a production database pool might enforce more conservative limits, whereas a development database pool might enforce more liberal limits.

Constrain Placement on Each Container Database by Pluggable Databases

Maximum Number of Pluggable Databases ^ v

Workloads associated with the service requests

Maximum CPU allocation never exceeds (%) ^ v

Maximum memory allocation never exceeds (%) ^ v

Resource Manager Settings

Enable Resource Manager for CPU ⓘ

TIP The service instance will be provisioned on the best member that satisfies the placement constraints.

Specify the placement policy constraints to set maximum ceilings for resource utilization on each database. Placement policy constraints for each database can be defined by services or workloads as follows:

- **Pluggable Database:** Select the Pluggable Database checkbox and specify the Maximum Number of Pluggable Databases that can be created inside each CDB.
- **Workloads Associated with Service Requests:** The amount of resources (such as CPU and memory) to manage the workload can be specified here. Specify the workload that is to be enforced for the pluggable database.
 - **Maximum CPU Allocation:** Specify the maximum CPU that can be allocated to each database.
 - **Maximum Memory Allocation:** Specify the maximum memory that can be allocated for each database.

For example: If a container database is caged to 2 CPUs with SGA of 4GB, and you specify the Maximum CPU Allocation and Maximum Memory Allocation as 80%:

- the maximum CPU limit for each pluggable database is 1.6
- the maximum SGA / memory limit for each pluggable database is 3.2

8. If you have chosen to set the placement constraints by **Workloads Associated with Service Requests**, you can choose to enable the resource manager by selecting the **Enable Resource Manager for CPU** check box. You can use the resource manager to manage the CPU resource and create Consumer Groups. A Consumer Group is used to ensure that the service gets the requested CPU cycles on a fully loaded system.
9. Click **Submit** to create a database pool for PDB as a service. The newly created database pool will appear in the Database Cloud Self Service Portal Setup: Database Pools page.

23.3 Creating a Database Provisioning Profile Using Export Schema Objects

To create a database provisioning profile, follow these steps:

1. You can access the Database Provisioning page using either of the following ways:
 - From the **Enterprise** menu, select **Cloud**, and then select **Cloud Home**. On the Cloud home page, click **Oracle Cloud**, select **Setup**, and then select **Data Sources**. On the Database: Data Sources page, in the Data Profiles tab, click **Create**.
 - From the Enterprise menu, select **Provisioning and Patching**, and then select **Database Provisioning**. On the Database Provisioning page, in the Profiles section, click **Create**.
 - From the database target home page, click **Oracle Database**, select **Provisioning**, and then select **Create Provisioning Profile**.
2. On the Reference Target page, click the search icon to select a target.
3. In the Search and Select:Targets display box, select the database you want to create a profile for, and then, click **Select**.
4. On the Reference Target page, select the following:
 - **Data Content**
 - **Structure and Data** to include physical and structural files from the database or **Structure Only** to include only the structural files in the template.
 - **Export Schema Objects**

Create Database Provisioning Profile: Reference Target

Reference Target

* Name 

Type Database Instance

Include Database Oracle Home (OraDb11g_home1_2_adc2201753.us.oracle.com_4745)

Grid Infrastructure Oracle Home (Ora11g_gridinfrahome1_1_adc2201753.us.oracle.com_1453)

Data Content

Structure and Data Structure Only

Create Database Template

RMAN Backup Export Schema Definition

RMAN Database Image

Database Template

Use Existing RMAN Backup

Export Schema Objects

5. In the Credentials section, select the database. In the Credentials column, you can select **Named Credentials** and then select a credential name from the Credential Name column (or) select **Preferred Credentials**. Click **Next**.
6. On the Content Options page, do the following:
 - Select the schema you want to include in the profile by clicking on a schema in the Available Schema list and moving it to the Selected Schema list.

 **Note:**

When one or more schemas are selected, the database checks if the dependent schemas are also selected for export. If the dependent schemas are not exported, you will receive a warning. You can choose to go ahead with the selected schemas, or to include the schemas which were not initially selected.

The same warning is also displayed when you select a profile that does not have the dependent schemas exported.

Create Database Provisioning Profile: Content Options Back Step 2 of 4 Next Cancel

Content

Export Full Database for migrating to Pluggable Database
 Selected Schemas

Available Schemas	Selected Schemas
	SSA_USER_SERVICEAPP sysman_SERVICEAPP SERVICEAPP

Directory Locations

Dump

Directory	File name	Maximum file size (MB)
DATA_PUMP_DIR	export_061115_08_47_%U.dmp	

Log

Directory: ORACLE_OCM_CONFIG_DIR2 File Name: log_061115_08_47.log

Degree Of Parallelism

Maximum number of Threads in Export Job: 1

 **Note:**

The Available Schemas section displays only the user created schemas that has data content in it. All the empty schemas are filtered out by default.

 **Note:**

System schemas such as SYS, SYSTEM, and DBSNMP will not be exported.

The user schemas which do not have their own tablespace are not shown in left side of the shuttle.

- In the Degree of Parallelism section, enter the number of threads required to perform the export operation.

 **Note:**

Increasing the number of threads helps reduce the time required to create the profile at the cost of using system resources.

- In the Directory Locations section, click on **Add**. In the Select Directory window, select a directory object listed to perform the export operation, and then click **Select**.

 **Note:**

The number of export threads determines the number of parallel export processes that will run in parallel during export.

Hence, the dump file names should contain %U, to ensure the file names are auto generated with the running count to facilitate parallel operation along with the maximum size for the dump file. For example, 5GB. This means that the file rotation will start after 5GB limit is reached.

 **Note:**

Ensure that the directory location is accessible. The directory object that you select must refer to a location that is accessible across all the nodes. You can also create a directory object on ASM. However, it is not supported on ASM.

In the Log subsection, click on the search icon. In the Select Directory window, select the directory object you require to perform the export operation, and then click **Select**.

In the Log subsection, enter the file name, and then click on **Next**.

 **Note:**

You can make use of degree of parallelism with dump file names. The default value of dump files contain %U which creates a running count when degree of parallelism is greater than 1.

Also, this enables you to add multiple dump directories to distribute the storage if required.

7. On the Create Database Provisioning Profile: Page, in the Profile Information section, do the following:
 - Specify or select a profile location in the software library where the database profile will be created.
 - Specify a unique profile name.

For example:

Export Schema Objects Provisioning Profile for HR database

- Add a description for the profile.
- Verify the profile version and the vendor.
- Add any additional notes such as host name, database, data content, data content mode, and the like.

8. In the Schedule section, you can choose to start the profile creation immediately, or you can schedule it for a later time. You can also choose to repeat the creation of the provisioning profile, and set a repeat time.
9. Specify or select a working directory. Click **Next**.
10. On the Review page, ensure that the selections you have made in the previous pages are correctly displayed and click **Submit**. Otherwise, click **Back** repeatedly till you reach the page where you want to make changes. Click **Cancel** to abort the provisioning profile creation.

Once you have submitted the provisioning profile creation job, manually refresh the page if View Data has been set to Real Time: Manual Refresh. Else, set View Data to reload after a specific period of time, and then select an execution step from the Procedure Steps tree on the left pane to view the details.

To view the submitted jobs, select the **Procedure Activity** link in the **Data Profiles** tab.

23.4 Configuring Request Settings

You can configure the request settings by specifying when a request can be made, its duration, and so on. See [Configuring Request Settings](#)

23.5 Defining Quotas

After configuring the request settings, you must define quotas for each self service user. See [Setting Up Quotas](#)

23.6 Creating a Service Template for PDB Based on Profile

One or more pluggable databases can be created based on the service template definition. To create a service template for PDB as a service, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select **Pluggable Database** from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 23-3 Create Service Template: General (PDB)

The screenshot displays the 'Create New Service Template: General' configuration page. At the top, there are navigation tabs: General, Configurations, Initialization Parameters, Customization, Roles, and Review. Below the tabs, the page title is 'Create New Service Template: General' with navigation buttons for Back, Step 1 of 6, Next, and Cancel. The main form contains several sections:

- Name:** A text field containing 'pdb_profile_temp'.
- Description:** A text area for providing a description.
- Pluggable Database:** Radio buttons for 'Create Empty Pluggable Database' and 'Create Pluggable Databases from Profile' (which is selected).
- Profile:** A search field containing 'ServiceApp Dump for PDBs' with a search icon.
- Pools and Zones:** A section with a note: 'A service template can be configured to provision pluggable databases in one or more pools. Select the zone and associated pools that this service template can provision pluggable databases into.' Below this is a table with columns 'Name' and 'Resource Pool'. The table contains one row: 'Single Instances Zone' with 'Container Databases' as the resource pool. There are '+ Add', 'X Remove', and '+ Assign Pool' buttons above the table.
- Reference Container Database:** A search field containing 'db121fs.us.oracle.com'.
- Shared Location:** A search field containing '/scratch/app/11.2.0/admin'.
- TIP:** A note: 'Select the operating system directory containing the export dump file(s)'.
- Placement:** Radio buttons for 'Selected by placement algorithm' (selected) and 'Selected by the user during request'.
- Identification:** A note: 'Specify a prefix that should be used to generate a unique Pluggable Database name at the time of database creation. The prefix helps to identify Pluggable Databases, which are created using this service template. Prefix cannot exceed more than 15 characters, rest of the characters will be auto generated.' Below this is a text field for 'Pluggable Database Name Prefix' containing 'plugdb'.

5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. In the Pluggable Database region, select the **Create Pluggable Databases from Profile** option and select a database provisioning profile that is to be used to create the pluggable database. Click the **Search** icon next to the Profile field and select an export schema objects profile from the list. If a profile does not exist, you must create one. See [Creating a Database Provisioning Profile Using Export Schema Objects](#) for details.

•

 **Note:**

You can also create a PDB from an unplugged PDB. To do so, follow these steps:

- Unplug the PDB from the container database and specify the location in the Software Library which the PDB template (contains data files and the metadata XML file) is to be stored.
- In the Service Template Creation wizard, specify the PDB template location in the Shared Location field. The PDB is created with the specified data files.

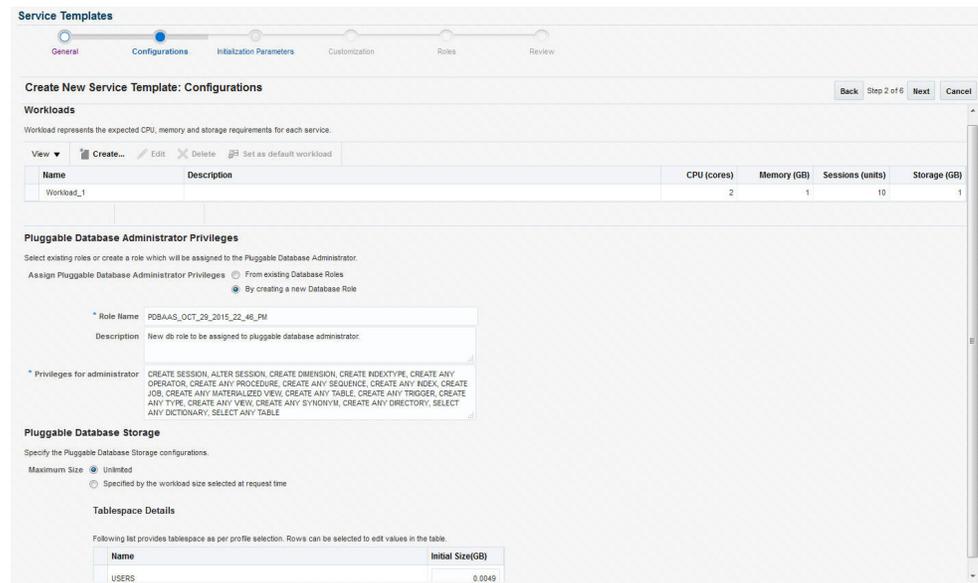
7. In the Pools and Zones region, click **Add** to select a PaaS Infrastructure Zone into which the pluggable database instance is to be provisioned. Click **Assign Pool** to add a Database Pool (for Pluggable Databases) for the zone.

 **Note:**

A database pool (for PDBs) must be present in the PaaS Infrastructure Zone that you select here.

8. After the database pool has been assigned, the container database into which the pluggable database is to be added is displayed in the Reference Container Database field. All the validations for the service template will be performed against this database.
9. If you have selected **Create Pluggable Databases from Profile** in the Pluggable Database region, in the Shared Location field, specify the Path or the shared location on all hosts in which the schema dumps are present. The Dump File Location must be accessible by all the databases.
10. In the Placement region, the pluggable database can be provisioned on the container database using one of the following options:
 - Selected by placement algorithm: If this option is selected, the container database will be selected based on the placement algorithm.
 - Selected by user during request: If this option is selected, while requesting a new PDB, the self service user can select the container database on which the PDB is to be provisioned.
11. In the Identification region, in the Pluggable Database Prefix Name field, specify the prefix that is to be used to generate a unique Pluggable Database name at the time of database creation. The prefix helps to identify the PDBs that are created using this service template.
12. Click **Next**. The Create New Service Template: Configurations page appears.

Figure 23-4 Create Service Template: Configurations (PDB)



Specify the following details:

- **Workload Size:** Workload represents the total CPU, memory, number of sessions, and storage requirements for each service. You can define workload sizes such as small, medium, and large. The workload sizes defined here will be the default workload sizes available to the users with the `EM_SSA_USER` role.
Click **Create** and in the Create Workload window, enter the name, CPU, Memory, and Storage limit for each service.
- **Pluggable Database Administrator Privileges:** You can assign privileges to the Pluggable Database Administrator by:
 - **From Existing Database Roles:** If you select this option, click **Add Roles** to add one or more existing roles from which the privileges will be assigned to the Pluggable Database Administrator.
 - **Creating a new Database Role:** If you select this option, you must specify the Role Name, Description, and the Privileges such as `CREATE_SESSION`, `ALTER_SESSION`, `CREATE ANY OPERATOR`, `CREATE ANY PROCEDURE` and so on that will be assigned to the administrator.
- **Pluggable Database Storage:** The maximum size of the PDB storage can either be **Unlimited** or **Specified by the workload size selected at request time**.
- **Tablespace:** The tablespaces in the profile are displayed. You can edit the value of the Initial Size of the tablespace.

 **Note:**

You can create encrypted tablespaces by specifying a Tablespace Data Encryption (TDE) key. This encrypts and decrypts the data in the tablespace. If you are using a profile with encrypted tablespaces, you will be prompted for the wallet password here.

13. Click **Next**. The Create Service Template: Initialization Parameters page appears. In this page, you can configure the values of various initialization parameters that affect the operation of the database instance. Select the parameter and click the Set icon to modify the value of the parameter.
14. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
15. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
16. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the `EM_SSA_USER` roles to which this service template will be available. All users belonging to the selected role can use this service template.
17. Click **Next**. The Create Service Template: Review page appears where you can review the details entered so far.
18. Click **Submit**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page. You can click on the Service Template Name link to view additional details.

23.7 Creating a Service Template for an Empty PDB

One or more pluggable databases can be created based on the service template definition. To create a service template for PDB as a service, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select **Pluggable Database** from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 23-5 Create Service Template: General (Empty)

The screenshot shows the 'Create New Service Template: General' page. At the top, there's a progress bar with steps: General, Configurations, Initialization Parameters, Customization, Roles, and Review. The 'General' step is active. Below the progress bar, there are navigation buttons: 'Back', 'Step 1 of 6', 'Next', and 'Cancel'. The main form area contains several sections:

- Name:** A text field containing 'pdb_empty_temp'.
- Description:** An empty text area.
- Pluggable Database:** Two radio buttons: 'Create Empty Pluggable Database' (selected) and 'Create Pluggable Databases from Profile'.
- Profile:** A dropdown menu showing 'ServiceApp Dump for PDBs'.
- Pools and Zones:** A section with a note: 'A service template can be configured to provision pluggable databases in one or more pools. Select the zone and associated pools that this service template can provision pluggable databases into.' Below this is a table with columns 'Name' and 'Resource Pool'. The table has one row: 'Single Instances Zone' with 'Container Databases' in the Resource Pool column. There are '+ Add', 'X Remove', and '+ Assign Pool' buttons above the table.
- Reference Container Database:** A text field containing 'db1216.us.oracle.com'.
- Placement:** Two radio buttons: 'Selected by placement algorithm' (selected) and 'Selected by the user during request'.
- Identification:** A section with a note: 'Specify a prefix that should be used to generate a unique Pluggable Database name at the time of database creation. The prefix helps to identify Pluggable Databases, which are created using this service template. Prefix cannot exceed more than 15 characters, rest of the characters will be auto generated.' Below this is a text field for 'Pluggable Database Name Prefix' containing 'plupdb'.

5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. In the Pluggable Databases region, select the **Create Empty Pluggable Database** option to create an empty PDB that can be configured by the user.
7. In the Pools and Zones region, click **Add** to select a PaaS Infrastructure Zone into which the pluggable database instance is to be provisioned. Click **Assign Pool** to add a Database Pool (for Pluggable Databases) for the zone.

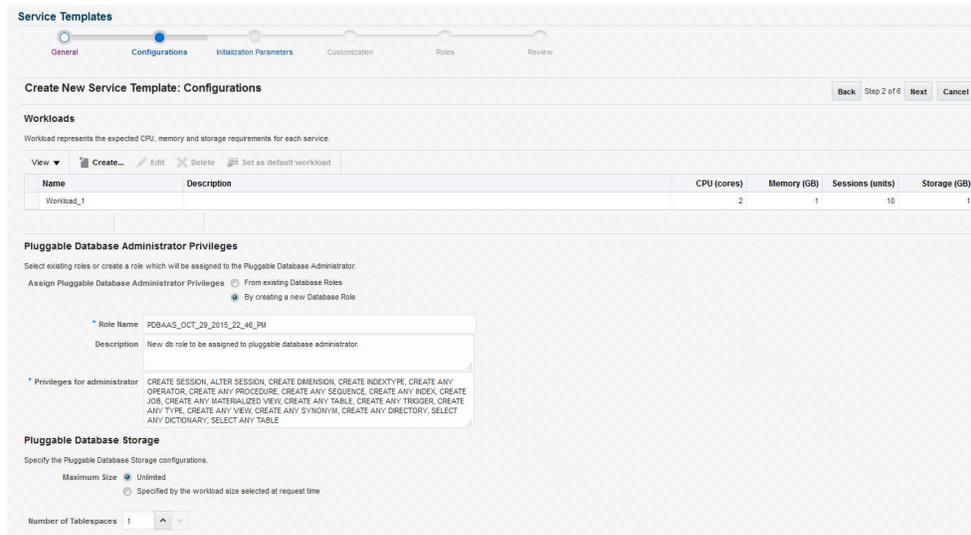


Note:

A database pool (for PDBs) must be present in the PaaS Infrastructure Zone that you select here.

8. After the database pool has been assigned, the container database into which the pluggable database is to be added is displayed in the Reference Container Database field. All the validations for the service template will be performed against this database.
9. In the Placement region, the pluggable database can be provisioned on the container database using one of the following options:
 - Selected by placement algorithm
 - Selected by user during request
10. In the Identification region, in the Pluggable Database Prefix Name field, specify the prefix that is to be used to generate a unique Pluggable Database name at the time of database creation. The prefix helps to identify the PDBs that are created using this service template.
11. Click **Next**. The Create New Service Template: Configurations page appears.

Figure 23-6 Create Service Template: Configurations (PDB)



Specify the following details:

- **Workload Size:** Workload represents the total CPU, memory, number of sessions, and storage requirements for each service. You can define workload sizes such as small, medium, and large. The workload sizes defined here will be the default workload sizes available to the users with the `EM_SSA_USER` role.

Click **Create** and in the Create Workload window, enter the name, CPU, Memory, and Storage limit for each service.

- **Pluggable Database Administrator Privileges:** You can assign privileges to the Pluggable Database Administrator by:
 - **From Existing Database Roles:** If you select this option, click **Add Roles** to add one or more existing roles from which the privileges will be assigned to the Pluggable Database Administrator.
 - **Creating a new Database Role:** If you select this option, you must specify the Role Name, Description, and the Privileges such as `CREATE_SESSION`, `ALTER_SESSION`, `CREATE ANY OPERATOR`, `CREATE ANY PROCEDURE` and so on that will be assigned to the administrator.
- **Pluggable Database Storage:** The maximum size of the PDB storage can either be **Unlimited** or **Specified by the workload size selected at request time**.
- **Tablespace:** Specify the number of tablespaces that should be present in the new empty PDB.

12. Click **Next**. The Create Service Template: Initialization Parameters page appears. In this page, you can configure the values of various initialization parameters that affect the operation of the database instance. Select the parameter and click the Set icon to modify the value of the parameter.

13. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.

14. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
15. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the `EM_SSA_USER` roles to which this service template will be available. All users belonging to the selected role can use this service template.
16. Click **Next**. The Create Service Template: Review page appears where you can review the details entered so far.
17. Click **Submit**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page. You can click on the Service Template Name link to view additional details.

23.8 Configuring Chargeback

Optionally, you can configure the chargeback service. See [Chargeback Administration](#).

23.9 Requesting a Pluggable Database

The self service user can now select the service template and create a pluggable database. See [Requesting a Pluggable Database](#)

23.10 Creating Test Master Pluggable Databases and Snapshot Clones

This section provides the following different solutions of creating test master pluggable database and snapshot clones of test master pluggable databases:

- [Creating a Test Master Pluggable Database](#)
- [Creating an Exadata Test Master Pluggable Database](#)
- [Creating a Snapshot Clone of an Exadata Test Master PDB](#)
- [Creating an ACFS Test Master Pluggable Database](#)
- [Creating a Snapshot Clone of an ACFS Test Master PDB](#)

23.10.1 Creating a Test Master Pluggable Database

If you have the 12.1.0.8 Enterprise Manager for Oracle Database plug-in deployed in your system, you can create a test master PDB from a source PDB, using the new Clone PDB Wizard.

To create a test master PDB from a source PDB, follow these steps:

1. From the **Targets** menu, select **Databases**.
2. For **View**, select **Search List**. From the **View** menu, select **Expand All**.

3. Look for the source CDB (the CDB that the source PDB is a part of) in the list, then click the name of the PDB from which you want to create a test master PDB.
4. From the **Oracle Database** menu, select **Cloning**, then select **Create Test Master**.

Alternatively, in Step 3, you can right click the name of the PDB from which you want to create a test master PDB, select **Oracle Database**, select **Cloning**, then select **Create Test Master**.

5. On the Create Test Master Pluggable Database: Source and Destination page, do the following:
 - Specify the SYSDBA credentials for the source CDB. You can choose to use the preferred credentials, use a saved set of named credentials, or specify a new set of credentials.
 - In the Pluggable Database Definition section, specify a name, and a display name for the test master PDB. Enterprise Manager uses the display name to identify the test master PDB target.
 - In the PDB Administrator Credentials section, specify the credentials of the admin user account that you want to use to administer the test master PDB.
 - In the Container Database section, specify the destination CDB (the CDB that the test master PDB must be a part of).
 - In the Credentials section, specify the SYSDBA credentials for the destination CDB, and the host credentials for the destination CDB. Also, if the destination CDB is using Automatic Storage Management (ASM) to manage disk storage, you must specify the ASM credentials.

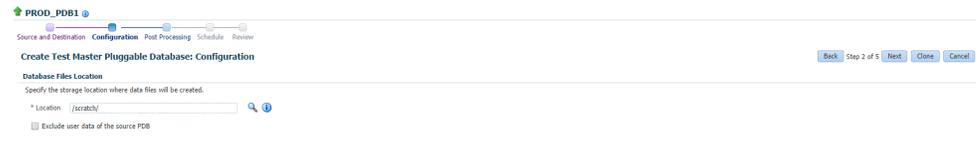
Click **Next**.

6. On the Create Test Master Pluggable Database: Configuration page, do the following:
 - In the Database Files Location section, specify the storage location where the datafiles of the test master PDB must be stored. If the destination CDB is using ASM to manage disk storage, specify the disk group where the datafiles of the test master PDB must be stored.
 - To ensure that only the source PDB data model definition is cloned (and the source PDB data is not cloned), select **Exclude User Data**.
 - In the PDB Administrator Credentials section, specify the credentials of the admin user account that you want to use to administer the test master PDB.
 - In the Advanced Configuration section, specify the storage limits for the maximum size of the test master PDB, and the maximum size of a shared tablespace within the test master PDB. By default, no limits are placed on the values for these

attributes. In the Miscellaneous section, select the logging option that you want to use for the tablespaces created within the test master PDB.

Note that if the destination CDB is part of an Exadata machine, the Access Controls and Permissions section is displayed in place of the Advanced Configuration section. In this case, you must specify the owner and the group that must be granted *read only* permissions on the datafiles.

Click **Next**.

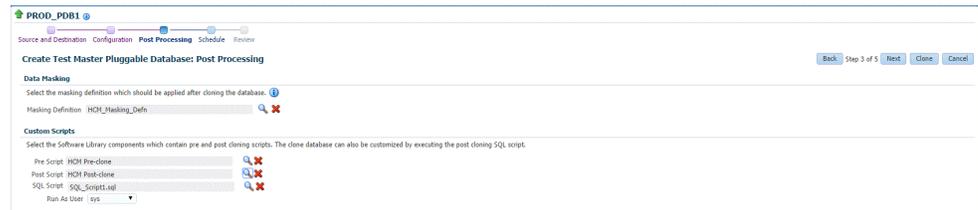


7. On the Create Test Master Pluggable Database: Post Processing page, in the Data Masking section, specify the data masking definition that you want to apply after creating the test master PDB. Data masking masks sensitive data in a database.

For information on how to create a data masking definition, see the *Oracle Data Masking and Subsetting Guide*. Note that you can apply a data masking definition only if you have the Subset-Masking license pack.

In the Custom Scripts section, for **Pre Script** and **Post Script**, specify the Oracle Software Library components that contain the scripts that you want to run before, and after creating the test master PDB respectively. Also, for **SQL Script**, specify the SQL scripts that you want to run after creating the test master PDB. For **Run As User**, select the user account that you want to use to run the SQL scripts.

Click **Next**.



8. Specify an instance name for the deployment procedure. Also, specify the point in time when you want the deployment procedure to begin.

In the Notification section, select the deployment procedure states for which you want to receive e-mail notifications. For example, if you select **Scheduled** and **Succeeded** for **Status for Notification**, you will receive e-mail notifications when the deployment procedure is scheduled, and when it succeeds.

Click **Next**.



- Review all the details you provided. If you want to edit certain details, click **Back** to navigate to the required page.

Click **Clone** to submit the deployment procedure to create a test master PDB from the source PDB.

Note:

The pluggable database cloning procedure contains a prerequisite step that is enabled by default. This step causes the cloning procedure to fail. To disable this step, run the following command:

```
emctl set property -name oracle.sysman.db.pdb.prereq_enabled -
sysman_pwd <sysman password> -value false
```

To enable this step, run the following command:

```
emctl set property -name oracle.sysman.db.pdb.prereq_enabled -
sysman_pwd <sysman password> -value true
```

23.10.2 Creating an Exadata Test Master Pluggable Database

If you have the 12.1.0.8 Enterprise Manager for Oracle Database plug-in deployed in your system, you can create a test master PDB from a source PDB, using the new Clone PDB Wizard.

To create a test master PDB from a source PDB, follow these steps:

- From the **Targets** menu, select **Databases**.
- For **View**, select **Search List**. From the **View** menu, select **Expand All**.
- Look for the source CDB (the CDB that the source PDB is a part of) in the list, then click the name of the PDB from which you want to create a test master PDB.
- From the **Oracle Database** menu, select **Cloning**, then select **Create Test Master**.

Alternatively, in Step 3, you can right click the name of the PDB from which you want to create a test master PDB, select **Oracle Database**, select **Cloning**, then select **Create Test Master**.

- On the Create Test Master Pluggable Database: Source and Destination page, do the following:
 - Specify the SYSDBA credentials for the source CDB. You can choose to use the preferred credentials, use a saved set of named credentials, or specify a new set of credentials.

- In the Pluggable Database Definition section, specify a name, and a display name for the test master PDB. Enterprise Manager uses the display name to identify the test master PDB target.
- In the PDB Administrator Credentials section, specify the credentials of the admin user account that you want to use to administer the test master PDB.
- In the Container Database section, specify the destination CDB (the CDB that the test master PDB must be a part of).
- In the Credentials section, specify the SYSDBA credentials for the destination CDB, and the host credentials for the destination CDB. Also, if the destination CDB is using Automatic Storage Management (ASM) to manage disk storage, you must specify the ASM credentials.

Click **Next**.

6. On the Create Test Master Pluggable Database: Configuration page, do the following:

In the Database Files Location section, specify the disk group where the data files of the test master PDB will be created.

To ensure that only the source PDB data model definition is cloned (and the source PDB data is not cloned), select **Exclude User Data**.

In the Access Controls and Permissions section, specify the owner and the group that must be granted *read-only* permissions on the data files.

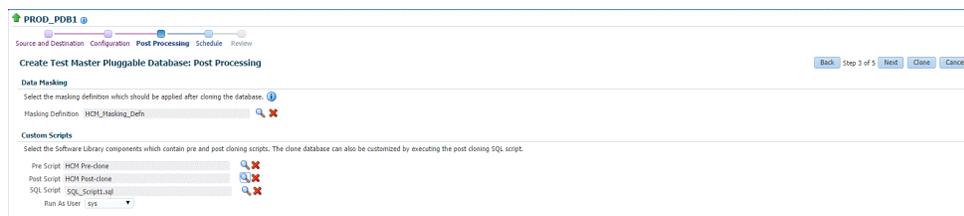
Click **Next**.

7. On the Create Test Master Pluggable Database: Post Processing page, in the Data Masking section, specify the data masking definition that you want to apply after creating the test master PDB. Data masking masks sensitive data in a database.

For information on how to create a data masking definition, see the *Oracle Data Masking and Subsetting Guide*. Note that you can apply a data masking definition only if you have the Subset-Masking license pack.

In the Custom Scripts section, for **Pre Script** and **Post Script**, specify the Oracle Software Library components that contain the scripts that you want to run before, and after creating the test master PDB respectively. Also, for **SQL Script**, specify

the SQL scripts that you want to run after creating the test master PDB. For **Run As User**, select the user account that you want to use to run the SQL scripts. Click **Next**.



- Specify an instance name for the deployment procedure. Also, specify the point in time when you want the deployment procedure to begin.

In the Notification section, select the deployment procedure states for which you want to receive e-mail notifications. For example, if you select **Scheduled** and **Succeeded** for **Status for Notification**, you will receive e-mail notifications when the deployment procedure is scheduled, and when it succeeds.

Click **Next**.



- Review all the details you provided. If you want to edit certain details, click **Back** to navigate to the required page.

Click **Clone** to submit the deployment procedure to create a test master PDB from the source PDB.



23.10.3 Creating a Snapshot Clone of an Exadata Test Master PDB

Note:

You can create snapshot clones of only those test master PDBs that are of version 12.1.0.2.0 or higher.

If you have the 12.1.0.8 Enterprise Manager for Oracle Database plug-in deployed in your system, you can create a snapshot clone of a test master PDB using the new Clone PDB Wizard.

To create a snapshot clone of an exadata test master PDB, follow these steps:

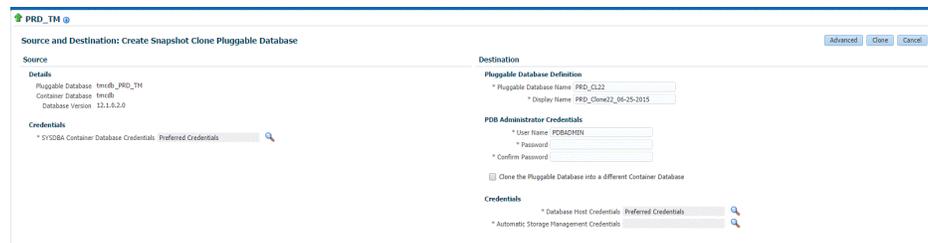
1. From the **Targets** menu, select **Databases**.
2. For **View**, select **Search List**. From the **View** menu, select **Expand All**.
3. Look for the source CDB (the CDB that the source test master PDB is a part of) in the list, then click the name of the test master PDB that you want to clone.
4. From the **Oracle Database** menu, select **Cloning**, then select **Create Snapshot Clone**.

Alternatively, in Step 3, you can right click the name of the test master PDB that you want to clone, select **Oracle Database**, select **Cloning**, then select **Create Snapshot Clone**.

5. On the Source and Destination: Create Snapshot Clone Pluggable Database, do the following:
 - Specify the SYSDBA credentials for the source CDB. You can choose to use the preferred credentials, use a saved set of named credentials, or specify a new set of credentials.
 - In the Credentials section, specify the SYSDBA credentials of the CDB.
 - In the Pluggable Database Definition section, specify the name of the PDB, and a display name of the PDB snapshot clone. Enterprise Manager uses the display name to identify the PDB snapshot clone target.
 - In the PDB Administrator Credentials section, specify the credentials of the Admin user account that you want to use to administer the PDB snapshot clone.

To clone the test master PDB to a CDB different from the source CDB, select **Clone the Pluggable Database into a different Container Database**, then specify the destination CDB.

- In the Credentials section, specify the CDB host credentials. Also, specify the ASM credentials of the ASM that will be used to manage disk storage.



6. If you do not need to specify anymore details, click **Clone**. This submits the deployment procedure to clone a PDB to a CDB that is deployed in a public cloud setup.

To specify other configuration details, mask data, as well as schedule the cloning process, click **Advanced**.

Follow the rest of the steps, if you have selected the Advanced option. The option to **Clone** is available on each page.

- On the Create Snapshot Clone Pluggable Database: Source and Destination page, verify the details specified, and then click **Next**.

- On the Create Snapshot Clone Pluggable Database: Configuration page, do the following:
 - In the Database Files Location section, specify the name of the Sparse disk group where the data files of the PDB snapshot clone will be created.
 - In the Advanced Configuration section, specify the storage limits for the maximum size of the PDB snapshot clone, and the maximum size of a shared tablespace within the PDB snapshot clone. By default, no limits are placed on the values for these attributes.
 - In the Miscellaneous section, select the default logging option for the tablespaces created within the PDB snapshot clone.
 - Click **Next**.

- On the Create Snapshot Clone Pluggable Database: Post Processing section, in the Data Masking section, specify the data masking definition that you want to apply after cloning the PDB. Data masking masks sensitive data in a database.

For information on how to create a data masking definition, see the *Oracle Data Masking and Subsetting Guide*. Note that you can apply a data masking definition only if you have the Subset-Masking license pack.

In the Custom Scripts section, for **Pre Script** and **Post Script**, specify the Oracle Software Library components that contain the scripts that you want to run before cloning, and after cloning the PDB respectively. Also, for **SQL Script**, specify the SQL scripts that you want to run after cloning the PDB. For **Run As User**, select the user account that you want to use to run the SQL scripts.

Click **Next**.

- On the Create Snapshot Clone Pluggable Database: Schedule page, specify an instance name for the cloning deployment procedure. Also, specify the point in time when you want the cloning procedure to begin.

In the Notification section, select the deployment procedure states for which you want to receive e-mail notifications. For example, if you select **Scheduled** and **Succeeded** for **Status for Notification**, you will receive e-mail notifications when the cloning deployment procedure is scheduled, and when it succeeds.

Click **Next**.

- On the Create Snapshot Clone Pluggable Database: Review page, review all the details you provided. If you want to edit certain details, click **Back** to navigate to the required page.

Click **Clone** to submit the deployment procedure to create a snapshot clone of the exadata test master PDB.

23.10.4 Creating an ACFS Test Master Pluggable Database

If you have the 12.1.0.8 Enterprise Manager for Oracle Database plug-in deployed in your system, you can create a test master PDB from a source PDB, using the new Clone PDB Wizard.

To create a test master PDB from a source PDB, follow these steps:

- From the **Targets** menu, select **Databases**.
- For **View**, select **Search List**. From the **View** menu, select **Expand All**.
- Look for the source CDB (the CDB that the source PDB is a part of) in the list, then click the name of the PDB from which you want to create a test master PDB.
- From the **Oracle Database** menu, select **Cloning**, then select **Create Test Master**.

Alternatively, in Step 3, you can right click the name of the PDB from which you want to create a test master PDB, select **Oracle Database**, select **Cloning**, then select **Create Test Master**.

5. On the Create Test Master Pluggable Database: Source and Destination page, do the following:
 - Specify the SYSDBA credentials for the source CDB. You can choose to use the preferred credentials, use a saved set of named credentials, or specify a new set of credentials.
 - In the Pluggable Database Definition section, specify a name, and a display name for the test master PDB. Enterprise Manager uses the display name to identify the test master PDB target.
 - In the PDB Administrator Credentials section, specify the credentials of the admin user account that you want to use to administer the test master PDB.
 - In the Container Database section, specify the destination CDB (the CDB that the test master PDB must be a part of).
 - In the Credentials section, specify the SYSDBA credentials for the destination CDB, and the host credentials for the destination CDB. Also, if the destination CDB is using Automatic Storage Management (ASM) to manage disk storage, you must specify the ASM credentials.

Click **Next**.

The screenshot shows the 'Source and Destination' configuration page. It is divided into two main sections: 'Source' and 'Destination'.
Source Section:
 - Details: Pluggable Database: PROD_CDB1, Container Database: PROD_CDB1, Database Version: 12.1.0.2.0
 - Credentials: SYSDBA Container Database Credentials (Preferred Credentials)
Destination Section:
 - Pluggable Database Definition: Pluggable Database Name: PROD_T11, Display Name: PROD_TestMaster_05-27-2015
 - PDB Administrator Credentials: User Name: PDBADMIN, Password, Confirm Password
 - Container Database: Container Database: PROD_CDB1.us.oracle.com
 - Credentials: SYSDBA Container Database Credentials (Preferred Credentials), Database Host Credentials (Preferred Credentials)

6. On the Create Test Master Pluggable Database: Configuration page, in the Database Files Location section, specify the ACFS mount point storage location where the data files of the test master PDB will be created.

To ensure that only the source PDB data model definition is cloned (and the source PDB data is not cloned), select **Exclude User Data**.

Click **Next**.

The screenshot shows the 'Configuration' page. The 'Database Files Location' section is visible, with the following details:
 - Specify the storage location where data files will be created.
 - Location: /u01/app/oracle/afsmount/PDB_T11
 - Exclude user data of the source PDB:

7. On the Create Test Master Pluggable Database: Post Processing page, in the Data Masking section, specify the data masking definition that you want to apply after creating the test master PDB. Data masking masks sensitive data in a database.

For information on how to create a data masking definition, see the *Oracle Data Masking and Subsetting Guide*. Note that you can apply a data masking definition only if you have the Subset-Masking license pack.

In the Custom Scripts section, for **Pre Script** and **Post Script**, specify the Oracle Software Library components that contain the scripts that you want to run before, and after creating the test master PDB respectively. Also, for **SQL Script**, specify

the SQL scripts that you want to run after creating the test master PDB. For **Run As User**, select the user account that you want to use to run the SQL scripts. Click **Next**.



- Specify an instance name for the deployment procedure. Also, specify the point in time when you want the deployment procedure to begin.

In the Notification section, select the deployment procedure states for which you want to receive e-mail notifications. For example, if you select **Scheduled** and **Succeeded** for **Status for Notification**, you will receive e-mail notifications when the deployment procedure is scheduled, and when it succeeds.

Click **Next**.



- Review all the details you provided. If you want to edit certain details, click **Back** to navigate to the required page.

Click **Clone** to submit the deployment procedure to create a test master PDB from the source PDB.



23.10.5 Creating a Snapshot Clone of an ACFS Test Master PDB

Note:

You can create snapshot clones of only those test master PDBs that are of version 12.1.0.2.0 or higher.

If you have the 12.1.0.8 Enterprise Manager for Oracle Database plug-in deployed in your system, you can create a snapshot clone of a test master PDB using the new Clone PDB Wizard.

To create a snapshot clone of an exadata test master PDB, follow these steps:

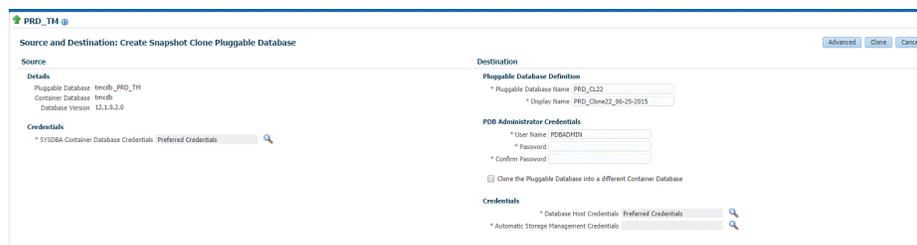
1. From the **Targets** menu, select **Databases**.
2. For **View**, select **Search List**. From the **View** menu, select **Expand All**.
3. Look for the source CDB (the CDB that the source test master PDB is a part of) in the list, then click the name of the test master PDB that you want to clone.
4. From the **Oracle Database** menu, select **Cloning**, then select **Create Snapshot Clone**.

Alternatively, in Step 3, you can right click the name of the test master PDB that you want to clone, select **Oracle Database**, select **Cloning**, then select **Create Snapshot Clone**.

5. On the Source and Destination: Create Snapshot Clone Pluggable Database, do the following:
 - Specify the SYSDBA credentials for the source CDB. You can choose to use the preferred credentials, use a saved set of named credentials, or specify a new set of credentials.
 - In the Credentials section, specify the SYSDBA credentials of the CDB.
 - In the Pluggable Database Definition section, specify the name of the PDB, and a display name of the PDB snapshot clone. Enterprise Manager uses the display name to identify the PDB snapshot clone target.
 - In the PDB Administrator Credentials section, specify the credentials of the Admin user account that you want to use to administer the PDB snapshot clone.

To clone the test master PDB to a CDB different from the source CDB, select **Clone the Pluggable Database into a different Container Database**, then specify the destination CDB.

- In the Credentials section, specify the CDB host credentials. Also, specify the ASM credentials of the ASM that will be used to manage disk storage.



6. If you do not need to specify anymore details, click **Clone**. This submits the deployment procedure to clone a PDB to a CDB that is deployed in a public cloud setup.

To specify other configuration details, mask data, as well as schedule the cloning process, click **Advanced**.

Follow the rest of the steps, if you have selected the Advanced option. The option to **Clone** is available on each page.

- On the Create Snapshot Clone Pluggable Database: Source and Destination page, verify the details specified, and then click **Next**.

- On the Create Snapshot Clone Pluggable Database: Configuration page, do the following:

- In the Database Files Location section, specify the name of the Sparse disk group where the data files of the PDB snapshot clone will be created.
- In the Advanced Configuration section, specify the storage limits for the maximum size of the PDB snapshot clone, and the maximum size of a shared tablespace within the PDB snapshot clone. By default, no limits are placed on the values for these attributes.
- In the Miscellaneous section, select the default logging option for the tablespaces created within the PDB snapshot clone.
- Click **Next**.

- On the Create Snapshot Clone Pluggable Database: Post Processing section, in the Data Masking section, specify the data masking definition that you want to apply after cloning the PDB. Data masking masks sensitive data in a database.

For information on how to create a data masking definition, see the *Oracle Data Masking and Subsetting Guide*. Note that you can apply a data masking definition only if you have the Subset-Masking license pack.

In the Custom Scripts section, for **Pre Script** and **Post Script**, specify the Oracle Software Library components that contain the scripts that you want to run before cloning, and after cloning the PDB respectively. Also, for **SQL Script**, specify the SQL scripts that you want to run after cloning the PDB. For **Run As User**, select the user account that you want to use to run the SQL scripts.

Click **Next**.

- On the Create Snapshot Clone Pluggable Database: Schedule page, specify an instance name for the cloning deployment procedure. Also, specify the point in time when you want the cloning procedure to begin.

In the Notification section, select the deployment procedure states for which you want to receive e-mail notifications. For example, if you select **Scheduled** and **Succeeded** for **Status for Notification**, you will receive e-mail notifications when the cloning deployment procedure is scheduled, and when it succeeds.

Click **Next**.

- On the Create Snapshot Clone Pluggable Database: Review page, review all the details you provided. If you want to edit certain details, click **Back** to navigate to the required page.

Click **Clone** to submit the deployment procedure to create a snapshot clone of the exadata test master PDB.

23.11 Enabling a Test Master Pluggable Database

To convert a pluggable database into a test master, follow these steps:

- Right click on the pluggable database target name that you want to enable as a test master, select **Oracle Database**, select **Cloning**, and then select **Enable as a Test Master**.
- On the Enable as a Test Master page, in the Credentials section, specify the credentials for the container database of the pluggable database, and the credentials of the Oracle Home.
- In the Source section, specify or search for the parent database from which the database has been created. This provides better lineage tracking.
- In the Data Masking section, you can choose to desensitize the data by applying masking templates or by running additional scripts of your choice.
- In the Custom Scripts section, you can select the Software Library components which contain post cloning scripts. The clone database can also be customized by executing the post cloning SQL script.

6. Click **Submit**.

23.12 Disabling a Test Master Pluggable Database

Disabling a test master pluggable database, resets the data files to read-write mode and restarts the pluggable database in open mode. You can make further changes to the database and then enable it as a test master again.

To disable a test master pluggable database, follow these steps:

1. Right click on the test master pluggable database, select **Oracle Database**, select **Cloning**, and then select **Disable as a Test Master**.
2. On the Disable Test Master page, specify the credentials of the container database of the test master pluggable database. Also, specify the credentials of the Oracle Home.
3. Click **Submit**.

Part VIII

Cloning Databases

This section describes how you can create full clones or snap clones either by using profiles or from a live database.

This section contains the following chapters:

- [Supported Cloning Options](#)
- [Creating Full Clones](#)
- [Creating Snap Clones](#)

24

Supported Cloning Options

This chapter describes the different options offered by Enterprise Manager to clone a database. It contains the following sections:

- [About Data Lifecycle Management](#)
- [Supported Cloning Options](#)

24.1 About Data Lifecycle Management

The Data Lifecycle Management (DLM) is a complete end-to-end solution offered by Enterprise Manager that enables administrators to refresh production databases after they are masked and instantly clone large databases on demand. The DLM solution:

- Supports creation of full and thin database clones.
- Is technology agnostic (storage and vendor agnostic).
- Integrates masking of production data and inline patching.
- Can be accessed through the Cloud Self Service Portal and the Database Provisioning dashboard.
- Is available through EMCLI and Rest APIs.

24.2 Supported Cloning Options

IT environments typically require multiple copies of production databases for application development and testing purposes. When an application developer or tester needs a database clone, he or she must typically go through an approval cycle, which then initiates a cumbersome and time-consuming cloning process that may span days. Clones are shared by multiple users and applications, which results in degraded performance due to increased sharing by multiple users. In such an environment, refreshing test data to reflect changes made to a production database is typically done on a fixed schedule, and may not be done as often as needed. As a result, it may often not be feasible to ensure that developers and testers are testing with the latest data.

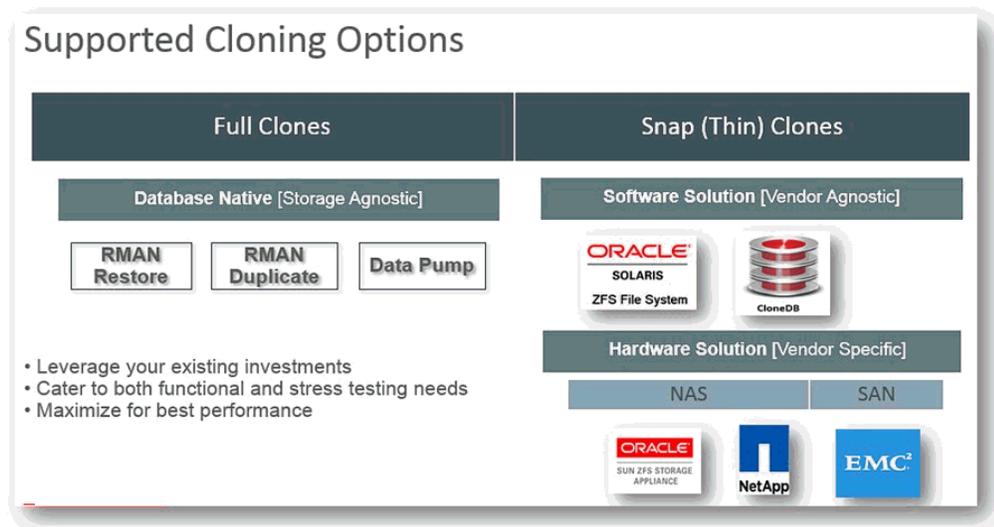
Creating database clones with the latest data involves the following steps:

- Identifying the production database that is to be cloned.
- Taking periodic backups using RMAN Backup, RMAN Image, and so on.
- Masking the sensitive data.
- Mask and Subset Data on the Test Master Database
- Creating a test master which is a sanitized copy of the production database or creating a standby database.
- Creating full clones for performance or stress testing, and snap clones for functional testing.

- Refreshing the clones to keep them in sync with the changes in the production database.

Using Enterprise Manager, you can create full clones or snap clones either from the Administration Dashboard or from the Self Service Portal. The figure below shows the cloning options supported in Enterprise Manager.

Figure 24-1 Supported Cloning Options



Enterprise Manager allows you to create:

- Full Clones: You can make a full or complete copy of the production database using one of the following methods:
 - RMAN Backup
 - RMAN Duplicate
 - Data Pump

For more details, see [Creating Full Clones](#) .

- Snap Clones: You can make a snap clone or a thin clone using copy on write technology of the database. This model requires minimal space, provides instantaneous cloning, and is ideal for functional testing. You can create snap clones using one of the following solutions:
 - Software Solution
 - Hardware Solution

For more details, see [Creating Snap Clones](#) .

25

Creating Full Clones

This chapter describes how to create a full database clone. It contains the following sections:

- [Creating a Full Database Clone Using RMAN Backup from the Self Service Portal](#)
- [Creating a Full Database Clone Using RMAN Duplicate from the Self Service Portal](#)

25.1 Creating a Full Database Clone Using RMAN Backup from the Self Service Portal

Database backups created by RMAN (Recovery Manager) are stored as image copies or backup sets. You can create profiles using these backups and use these profiles to create full database clones.

Table 25-1 Creating a Full Database Clone Using RMAN Backup

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started
2	Create one or more resource providers.	See Creating Resource Providers
4	Configure the request settings.	See Configuring Request Settings
5	Define quotas for each self service user.	See Setting Up Quotas
6	Create one of the following types of profiles: <ul style="list-style-type: none">• RMAN Backup• Existing RMAN Backup	See: <ul style="list-style-type: none">• Creating a Database Provisioning Profile Using RMAN Backup• Creating a Database Provisioning Profile Using Existing RMAN Backup
8	Create a service template based on the profile you have created.	See Create Service Template Using RMAN Backup Profile
9	Configure the Chargeback Service.	See Configuring Chargeback
10	While deploying a database, select the service template you have created.	See Requesting a Database

25.1.1 Creating Resource Providers

You must create one or more resource providers which include:

- PaaS Infrastructure Zones: See [Creating a PaaS Infrastructure Zone](#)
- Database Pool: See [Creating a Database Pool for Database as a Service](#)

25.1.1.1 Creating a Database Pool for Database as a Service

To create a database pool for database as a service, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. Click the **Setup** link next to the Database service family, click the **Database Pool** link and click **Create**.

Figure 25-1 Create Database Pool

3. In the Credentials region, specify the following credentials:
 - **Host:** Required for creating and starting the database.
 - **Root:** This is an optional field. It is required if you plan to use this database pool for database requests based on snap clone profile. See [Creating Snap Clones](#).
 - **Grid Infrastructure:** This is an optional field. It is required if you plan to use this database pool for live cloning using of a database using ASM.
4. Enter a name and description for the database pool.
5. Specify the following details:
 - **PaaS Infrastructure Zone:** Select the PaaS Infrastructure Zone into which the database instance is to be provisioned.
 - **Database Configuration:** Specify the configuration of the database being provisioned. This can either be Single Instance or Cluster Database (RAC) but cannot be a combination of both.
 - **Platform and Version:** Specify the platform and version of the database being deployed.
6. Click **Add** and select one or more Oracle Homes to be added to the database pool.

7. In the Maximum Number of Database Instances (per host), enter the maximum number of database instances that can be running on each host in the pool.

 **Note:**

For RAC databases, the value specified in this field is used to ensure that the nodes on which the database is created meets this criteria.

8. Click **Submit** to create a database pool. The newly created pool will appear in the Database Cloud Self Service Portal Setup: Database Pools page. The database pool can now be added to the Service Template.

25.1.2 Creating a Database Provisioning Profile

You can create either of the following types of profiles:

- RMAN Backup. See [Creating a Database Provisioning Profile Using RMAN Backup](#).
- Existing RMAN Backup. See [Creating a Database Provisioning Profile Using Existing RMAN Backup](#).

 **Note:**

It is recommended that you create the profile from a database that is designated as the test master database. For details on setting up the test master, see [Enabling the Test Master for Snap Clone](#).

25.1.2.1 Creating a Database Provisioning Profile Using RMAN Backup

To create a database provisioning profile, follow these steps:

1. You can access the Database Provisioning page using any of the following ways:
 - From the **Enterprise** menu, select **Cloud**, and then select **Cloud Home**. On the Cloud home page, click **Oracle Cloud**, select **Setup**, and then select **Data Sources**. On the Database: Data Sources page, in the Data Profiles tab, click **Create**.
 - From the Enterprise menu, select **Provisioning and Patching**, and then select **Database Provisioning**. On the Database Provisioning page, in the Profiles section, click **Create**.
 - From the database target home page, click **Oracle Database**, select **Provisioning**, and then select **Create Provisioning Profile**.
2. On the Reference Target page, click the search icon to select a target.
3. In the Search and Select:Targets display box, select the database you want to create a profile for, and then, click **Select**.
4. On the Reference Target page, select the following:
 - **Data Content**

- **Structure and Data** to include physical and structural files from the database.
- **Create**
- **RMAN Backup**

The screenshot shows the 'Create Database Provisioning Profile: Reference Target' page. The 'Reference Target' section includes a search bar and a list of targets. The 'Include' section has checkboxes for 'Database Oracle Home', 'Grid Infrastructure Oracle Home', and 'Data Content'. The 'Structure and Data' section has radio buttons for 'Structure Only' and 'Create'. The 'Create' section has radio buttons for 'RMAN Backup', 'RMAN Database Image', 'Database Template', 'Use Existing RMAN Backup', and 'Export Schema Objects'. The 'Credentials' section shows a table with columns for Target, Credential Type, Credential, and Credential Name. Two entries are visible: 'adc2201753.us.oracle.com' with 'Database Home' type and 'NC_HOST_SRAMMINA' name, and 'db112asm.us.oracle.com' with 'Database' type and 'NC_ORACLE_D_SYS_WELCOME' name.

5. In the Credentials section, select the database. In the Credentials column, you can select **Named Credentials** and then select a credential name from the Credential Name column (or) select **Preferred Credentials**. Click **Next**.
6. The Content Options page appears. On this page, do the following:
 - Select **Online Backup** or **Offline Backup**.
 - Enter the number of channels.

 **Note:**

A channel is the connection between the RMAN and the database. The usage of channels in RMAN backups sets the degree of parallelism. Each channel represents one stream of data to the device type. The more number of channels you allocate, the faster the backup jobs run. The maximum number of channels you can use is 25.

- (optional) Select **Compress files** and then select **High**, **Medium**, or **Low** strength of compression.
- (optional) Select **Use File Encryption** and then, enter the password and confirm the password.
- Select **Directory** for the Backup location, and enter the directory path (or) select **Fast Recovery Area**, which already contains a backup location.

 **Note:**

Ensure that the given location is accessible to the nodes in the database pool.

- Enter the backup file name format. This will be used to generate backup files. backup file tag, control file name, and control file tag.

- Enter the backup file tag. Backup files will be tagged with this tag.
- Enter the control file name. The control file backup will be generated with this name.
- Click **Next**.

7. On the Create Database Provisioning Profile: Page, in the Profile Information section, do the following:
 - Specify or select a profile location in the software library where the database profile will be created.
 - Specify a unique profile name.
For example:
RMAN Backup Profile for HR database
 - Add a description for the profile.
 - Verify the profile version and the vendor.
 - Add any additional notes such as host name, database, data content, data content mode, and the like.

8. In the Schedule section, you can choose to start the profile creation immediately, or you can schedule it for a later time. You can also choose to repeat the creation of the provisioning profile, and set a repeat time.

 **Note:**

If a periodic RMAN profile is being used in a Service Template, then as an SSA_admin, you need to devise a way to synchronously transfer all the backup pieces to a shared location among the Pool. Else, you need to take the backup on a shared nfs directory.

9. In the Purge Policy section, you have three options:
 - **None.** Select this option you do not want to purge any data collected.
 - **Snapshots.** This option enables you to specify the maximum number of snapshots that can be purged.
 - **Day(s).** This option enables you to specify the number of days after which the data component should be purged.
10. Specify or select a working directory. Click **Next**.
11. On the Review page, ensure that the selections you have made in the previous pages are correctly displayed and click **Submit**. Otherwise, click **Back** repeatedly till you reach the page where you want to make changes. Click **Cancel** to abort the provisioning profile creation.

Once you have submitted the provisioning profile creation job, manually refresh the page if View Data has been set to Real Time: Manual Refresh. Else, set View Data to reload after a specific period of time, and then select an execution step from the Procedure Steps tree on the left pane to view the details.

To view the submitted jobs, select the **Procedure Activity** link in the **Data Profiles** tab.

25.1.2.2 Creating a Database Provisioning Profile Using Existing RMAN Backup

To create a database provisioning profile, follow these steps:

1. You can access the Database Provisioning page using either of the following ways:
 - From the **Enterprise** menu, select **Cloud**, and then select **Cloud Home**. On the Cloud home page, click **Oracle Cloud**, select **Setup**, and then select **Data Sources**. On the Database: Data Sources page, in the Data Profiles tab, click **Create**.
 - From the Enterprise menu, select **Provisioning and Patching**, and then select **Database Provisioning**. On the Database Provisioning page, in the Profiles section, click **Create**.
 - From the database target home page, click **Oracle Database**, select **Provisioning**, and then select **Create Provisioning Profile**.
2. On the Reference Target page, click the search icon to select a target.

Reference Target Content Options Profile Review

Create Database Provisioning Profile: Reference Target

Reference Target

* Name 

- In the Search and Select:Targets display box, select the database you want to create a profile for, and then, click **Select**.

Select Targets x

Search

Target Type ▼

Target Name

On Host

Target Name	Target Type	On Host	Status
crs1	Cluster	.us.oracle...	↑
Oemrep_Database	Database Instance	.us.orad...	↑
OraDB11g_home1_18_` .us.o...	Oracle Home	.us.oracle...	n/a
OraDB11g_home2_2_ us.or...	Oracle Home	.us.oracle...	n/a
OraGI11g_home1_2014_04_10_08_5...	Oracle Home	.us.oracle...	n/a
Orasidb11g_home1_2014_04_09_02...	Oracle Home	us.oracle...	n/a
Orasiha11g_home1_2014_04_09_02...	Oracle Home	us.oracle...	n/a
ord	Cluster Database	.us.oracle...	↑
.oracle.com	Database Instance	us.oracle...	↑

Mode: Single Select

- On the Reference Target page, select the following:
 - Data Content**
 - Structure and Data** to include physical and structural files from the database.
 - Use Existing RMAN Backup**

Create Database Provisioning Profile: Reference Target

Reference Target

* Name 

Type Database Instance

Include Database Oracle Home (OraDB12Home1_1_)

Data Content

Structure and Data
 Structure Only

Create
 Database Template

RMAN Backup
 Export Schema Definition

RMAN Database Image

Database Template

Storage Snapshots

Use Existing RMAN Backup

Export Schema Objects

- In the Credentials section, select the database. In the Credentials column, you can select **Named Credentials** and then select a credential name from the Credential Name column (or) select **Preferred Credentials**. Click **Next**.

Back Step 1 of 4 Next Cancel

Credentials

Target	Credential Type	Credential	Credential Name
oracle.com	Database Home	Preferred Credentials	Normal Host Credentials
oracle.com	Database	Preferred Credentials	SYSDBA Database Credentials

- On the Content Options page, select an existing RMAN backup from the list provided.

Note:

The list of existing RMAN backups are fetched from the database. Backups with multiple tags are supported.

Create Database Provisioning Profile: Content Options

Back Step 2 of 4 Next Cancel

Existing Backups

Select an existing backup to create the profile

Backup Name	Start Time	Type	Status
BKUP_120814075913	December 07, 2014	FULL	completed
2014-12-08T03:31:31	December 08, 2014	FULL	completed

Backup Details - BKUP_120814075913

Backup Set	Tag	Name	Completion Time	Device
55	BKUP_120814075913	/mnt2/@a1/first_recovery_area/PROD2/backups/2014_12_08/o1_mf_ancf_BKUP_120814075913_bkpsps9_bkp	December 08, 2014	DISK
56	BKUP_120814075913	/mnt2/@a1/first_recovery_area/PROD2/backups/2014_12_08/o1_mf_anno_BKUP_120814075913_bkpsrf_bkp	December 08, 2014	DISK
57	BKUP_120814075913	/mnt2/@a1/first_recovery_area/PROD2/backups/2014_12_08/o1_mf_ancf_BKUP_120814075913_bkps7h_bkp	December 08, 2014	DISK

Click **Next**.

7. On the Create Database Provisioning Profile: Page, in the Profile Information section, do the following:
 - Specify or select a profile location in the software library where the database profile will be created.
 - Specify a unique profile name.

For example:

Existing RMAN Backup Profile for HR database

- Add a description for the profile.
- Verify the profile version and the vendor.
- Add any additional notes such as host name, database, data content, data content mode, and the like.

Create Database Provisioning Profile: Profile

Profile Information

* Profile Location	Database Provisioning Profiles/12.1.0.1.0/linux_x64	
* Profile Name	RMAN Backup Profile for HR database	
Description	Database Reference Profile 09-12-2014 10:05 AM from test.example.com Version : 12.1.0.1.0	
Profile Version	12.1.0.1.0	Vendor Oracle
Notes	Host Name: host.example.com Database: test.example.com Data Content: Structure and Data Data Content Mode: RMAN Backup Includes: Database gold image.	

8. In the Schedule section, you can choose to start the profile creation immediately, or you can schedule it for a later time. You can also choose to repeat the creation of the provisioning profile, and set a repeat time.

Note:

If a periodic RMAN profile is being used in a Service Template, then as an SSA_admin, you need to device a way to synchronously transfer all the backup pieces to a shared location among the Pool. Else, you need to take the backup on a shared nfs directory.

9. In the Purge Policy section, you have three options:
 - **None.** Select this option you do not want to purge any data collected.
 - **Snapshots.** This option enables you to specify the maximum number of snapshots that can be purged.
 - **Day(s).** This option enables you to specify the number of days after which the data component should be purged.

Schedule

Start Immediately Later (UTC+00:00) GMT

Repeat Do not repeat

Purge Policy

Purge None

Working Snapshots

Day(s) Day(s)

* Path /tmp

10. Specify or select a working directory. Click **Next**.
11. On the Review page, ensure that the selections you have made in the previous pages are correctly displayed and click **Submit**. Otherwise, click **Back** repeatedly till you reach the page where you want to make changes. Click **Cancel** to abort the provisioning profile creation.

Reference Target Content Options Profile **Review**

Create Database Provisioning Profile: Review Back Step 4 of 4 Submit Cancel

<p>Reference Target</p> <p>Target: oracle.com Content: RMAN Backup Database Home Credentials: APHE_S01TH_R00T@DSHAAN Database Credentials: HIC_K0R0UAM_2014-04-11-0007543709M4Q</p> <p>Content Details</p> <p>Oracle Database Backup Using Recovery Manager (RMAN)</p> <p>Type: Offline Channels: 2 Compress file: None Use file encryption: No Backup location: /orastch/orcl_backup Keep local backup: None Backup file name format: backup_%.njb Backup file tag: data_backup_1397201435489 Control file name: control01.ctl</p>	<p>Profile Details</p> <p>Profile Location: Database Provisioning Profiles/11.2.0.3.0/lnx_x64 Profile Name: Existing RMAN Provisioning Profile mydb.example.com Description: Database Reference Profile 11-04-201402:04 AM from database.oracle.com version : 11.2.0.3.0 Profile version: 11.2.0.3.0 vendor: Oracle Notes: Host name: example.us.oracle.com Database: database.oracle.com Data Content: Structure and Data</p> <p>Schedule</p> <p>Start: Immediately</p> <p>Working Directory</p> <p>Path: /tmp</p>
---	--

Once you have submitted the provisioning profile creation job, manually refresh the page if View Data has been set to Real Time: Manual Refresh. Else, set View Data to reload after a specific period of time, and then select an execution step from the Procedure Steps tree on the left pane to view the details.

To view the submitted jobs, select the **Procedure Activity** link in the **Data Profiles** tab.

25.1.3 Configuring Request Settings

You can configure the request settings by specifying when a request can be made, its duration, and so on. See [Configuring Request Settings](#).

25.1.4 Defining Quotas

After configuring the request settings, you must define quotas for each self service user. See [Setting Up Quotas](#).

25.1.5 Create Service Template Using RMAN Backup Profile

1. Log into Enterprise Manager as a user with the EM_SSA_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.

3. Click the **Setup** link next to the Databases option in the left panel. Select Database from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 25-2 Create Service Template (RMAN Backup)

Database Cloud Self Service Portal Setup

General Database Initialization Parameters Customization Roles Review

Database Cloud Self Service Portal Setup: General Back Step 1 of 6 Next Cancel

Describe

Name: RMAN backup
Description: [Text Area]

Source Identification

Create Database: Using Profile Using existing Database
 * Profile: RAC prod2 RMAN backup2 [Search Icon] [Refresh Icon]
 Profile Version: Latest Selected by user at request time

Database Definition

Type: Single Instance Real Application Clusters (RAC)
 Number of nodes: 2
 Database SID: Specify Prefix Specified by user at request time
 SID Prefix: prod2c
 Domain Name: [Text Field]
 Enable Standby Database

Pools and Zones

A service template can be configured to provision databases in one or more pools. Select the zone and associated pools that this service template can provision databases into.

+ Add - Remove + Assign Pool

Name	Resource Pool
Austin Data Center	SI Database Pool

Reference Host: us.oracle.com [Search Icon]
 Shared Location: /scratch/backups [Search Icon]

5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. In the Source Identification section, select the **Using Profile** radio button, click the **Search** icon and select a RMAN Backup profile from the list.
7. In the Profile Version field, you can select either of the following:
 - Latest: This ensures that the latest profile is always used by the self service user.
 - Selected by user at request time: If this option is selected, the self service user can select a revision of the profile that is to be used when creating a service request.
8. In the Database Definition region, specify the following:
 - **Type:** This can be Single Instance or Real Application Cluster (RAC). If you select RAC, specify the Number of Nodes.
 - **Database SID:** This is an optional field. You can select **Specify Prefix** or **Specified by User at Request Time**.
 - **Specify Prefix:** If you choose this option, enter a prefix that is to be used to generate a unique System Identifier (SID) at the time of database creation. The prefix helps to identify databases created using this service template. The prefix can be a maximum of 6 characters.

The new database name generated will be based on the SID Prefix specified here. For example, if the prefix is specified as MYDB, the SID for the new database is generated as MYDB0000, MYDB0001, MYDB0002, and so on.

For existing databases (running databases and in progress requests), a unique SID name is generated for single instance databases, or a unique

- name is generated for real application cluster databases. For example, if the existing SIDs running on a host are MYDB0000, MYDB0001, MYDB0002 And In progress are MYDB0003, MYDB0004, the new SID or database name generated for the new request is MYDB0005.
- **Specified by User at Request Time:** If you choose this option, you can leave this field blank and specify the SID when you are making a database request.
 - **Domain Name:** This is an optional field. Enter a Domain Name to be used for the new database being created. You must ensure that the domain name does not contain a preceding "." (dot).
 - **Enable Standby Database:** Select this checkbox if you want to provision standby databases using this service template. If this checkbox is selected, you have to add standby databases.
9. In the Zones region, click **Add** to select a PaaS Infrastructure Zone into which the database instance is to be provisioned. Click **Assign Pool**. Select a pool from the list and assign this pool to the PaaS Infrastructure Zone. The database will be provisioned into this pool.
 10. After you have selected the zone and the pool, the host target is populated in the Reference Host field.
 11. Specify a Shared Location and click **Next**.
 12. In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number. Click **Next**. The Create Service Template: Database page appears.

Figure 25-3 Create Service Template: Database (RMAN Backup)

Database Cloud Self Service Portal Setup

General Database Initialization Parameters Customization Roles Review

Database Cloud Self Service Portal Setup: Database

Back Step 2 of 6 Next Cancel

Reference Host
The reference host is used to select the necessary database content values like ASM disk group, data file location, listener port that are available on the reference host.

Zone Austin Data Center Pool SI Database Pool1 Host us.oracle.com

Storage type

Automatic Storage Management
Disk Group
File System
Location (ORACLE_BASE)/oradata

Fast Recovery
Specify the location where recovery related files (archived redo logs, RMAN backups and other related files) will be created.

Enable Fast Recovery Area
Automatic Storage Management
File System
Location (ORACLE_BASE)/rfa

Fast Recovery Size(MB) 500
Enable Archiving

Listener Port
Port Number 1531

Administrator Credentials
Specify passwords for the administrative users (SYS, SYSTEM and DESKMP) in the new database. These users are used by the SSA administrator to manage the database. The SSA User has no access to these users.

Use the same password
Password Confirm Password

Use different passwords

User Name	Password	Confirm Pass
SYS	*****	*****
SYSTEM	*****	*****
DESKMP	*****	*****

Non Administrator Credentials
Select users that should not be accessible to the SSA User.

Available Users
OUTLN
ORACLE_DCM
APPOCSYS
WM SYS
EMFSYS
CTSYS
XDB
ORDSYS
ORDATA
ORDPLUGING
SL_INFORMTN_SCHEMA
HDSYS
OLAPSYS

Selected Users
SCOTT

Password Confirm Password

Master Account Privileges
Name MASTER_ACCOUNT
Description New database role to be assigned to master account.

13. In the Reference Host region, the name of the PaaS Infrastructure zone, the database pool, and the reference host you have selected in the Database Cloud Self Service Portal Setup: General page are displayed.

The database values such as a Automatic Storage Management (ASM) disk group, location of the file system, and listener port you select must be available on the reference host.

14. Specify the following:

- **Storage Type:** This can be:
 - **Automatic Storage Management:** The Oracle Automatic Storage Management (ASM) is a volume manager and a file system for database files that supports single-instance and RAC configurations. ASM groups the disks in your storage system into one or more disk groups. If you select ASM, select the Disk Group here.
 - **File System:** The Oracle Database File System creates a standard file system interface on top of files and directories that are stored in database tables. If you select this option, you must specify or select the Location of the File System.
- **Fast Recovery (Optional):** To simplify the management of backup and recovery files, you can create a fast recovery area for your database. Select the **Enable Fast Recovery Area** checkbox to specify the location in which recovery related files must be stored. The fast recovery area can be a ASM disk group or a file system that provides a centralized disk location for backup and recovery file. Specify the location of the Fast Recovery Area and the Fast Recovery Size. The amount of disk space to allocate for the fast recovery area depends on the size and activity levels of your database.

If the **Enable Archiving** check box is selected, the database will not be shut down during a refresh. This allows self service users to schedule backups and restore operations without shutting down the database.

15. In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number.
16. Specify the **Administrator Credentials**. Specify passwords for the system schemas of the new database. These schemas will not be available to the `EM_SSA_USERS`. You can choose to use the same password for all the schemas or different passwords for each schema. If these values are not specified, default values will be used and the `EM_ADMINISTRATOR` can change them.
17. Apart from the system schemas, if you want to restrict access to other schemas, you can select them in the Non-Administrator Credentials region and specify the password. These schemas will be locked and the `EM_SSA_USERS` cannot access them.
18. Enter the name of the Master Account. You can specify the privileges that are to be provided to the master account user by specifying them in the Privileges field. Click **Next**.
19. Click **Next**. The Create Service Template: Initialization Parameters page appears. In this page, you can specify the following:
- **Database Sizes:** Select the database sizes that are to be supported by this service template. You can select sizes such as small, medium, and large. Each database size has a specific memory, storage, CPU cores, and units. Select a size and select **Include in Template** to associate it with the service template. Click **Default** to designate it as the default database size.

- Initialization Parameters: You can configure the values of various initialization parameters that affect the operation of the database instance. Select a parameter and click the **Set** icon to modify the value of the parameter.
20. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.

You can also specify a custom Post SQL Script and select the user who can run the script. For more details, see [Selecting the Post SQL Script](#).
 21. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. These properties will be applied to the database clones that are created. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
 22. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
 23. The Create Service Template: Review page appears. Click **Create**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page.

25.1.6 Configuring Chargeback

Optionally, you can configure the chargeback service. See [Chargeback Administration](#).

25.1.7 Requesting a Database

The self service user can now select the service template based on the database template profile and create a database. See [Requesting a Database](#).

25.2 Creating a Full Database Clone Using RMAN Duplicate from the Self Service Portal

You can use the RMAN Duplicate feature to create a test master and use the test master to create a full database clone.

Table 25-2 Creating a Full Database Clone Using a Live Standby Database

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started .
2	Create one or more resource providers	See Creating Resource Providers .
3	Create the test master by using a live standby database.	See Creating a Service Template Using RMAN Duplicate .
4	Configure the request settings.	See Configuring Request Settings .

Table 25-2 (Cont.) Creating a Full Database Clone Using a Live Standby Database

Step	Task	Role
5	Define quotas for each self service user.	See Defining Quotas .
6	Create a service template based on the live standby database.	See Creating a Service Template Using RMAN Duplicate .
7	Configure the Chargeback Service.	See Configuring Chargeback .
8	While deploying a database, select the service template you have created.	See Requesting a Database .

25.2.1 Creating a Service Template Using RMAN Duplicate

To create a service template using an existing database, follow these steps:

1. Log into Enterprise Manager as a user with the EM_SSA_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select **Database** from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 25-4 Create Service Template: General: RMAN Duplicate

5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. In the Source Identification section, select the **Using Existing Database** radio button, click the **Search** icon and select the test master database that you had created earlier.

7. Specify the host and database credentials.
8. In the Database Definition region, specify the following:
 - **Create:** Select **Full Clone Using RMAN Duplicate**. This option is used to create a full database clone using an existing database.
 - **Type:** This can be Single Instance or Real Application Cluster (RAC). If you select RAC, specify the Number of Nodes.
 - **Database SID:** This is an optional field. You can select **Specify Prefix** or **Specified by User at Request Time**.
 - **Specify Prefix:** If you choose this option, enter a prefix that is to be used to generate a unique System Identifier (SID) at the time of database creation. The prefix helps to identify databases created using this service template. The prefix can be a maximum of 6 characters.

The new database name generated will be based on the SID Prefix specified here. For example, if the prefix is specified as MYDB, the SID for the new database is generated as MYDB0000, MYDB0001, MYDB0002, and so on.

For existing databases (running databases and in progress requests), a unique SID name is generated for single instance databases, or a unique name is generated for real application cluster databases. For example, if the existing SIDs running on a host are MYDB0000, MYDB0001, MYDB0002 And In progress are MYDB0003, MYDB0004, the new SID or database name generated for the new request is MYDB0005.
 - **Specified by User at Request Time:** If you choose this option, you can leave this field blank and specify the SID when you are making a database request.
 - **Domain Name:** This is an optional field. Enter a Domain Name to be used for the new database being created. You must ensure that the domain name does not contain a preceding "." (dot).
9. In the Zones region, click **Add** to select a PaaS Infrastructure Zone into which the database instance is to be provisioned. Click **Assign Pool**. Select a pool from the list and assign this pool to the PaaS Infrastructure Zone. The database will be provisioned into this pool.
10. After you have selected the zone and the pool, the host target is populated in the Reference Host field.
11. Specify a Shared Location and click **Next**.
12. In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number. Click **Next**. The Create Service Template: Database page appears.
13. In the Reference Host region, the name of the PaaS Infrastructure zone, the database pool, and the reference host you have selected in the Database Cloud Self Service Portal Setup: General page are displayed.

The database values such as a Automatic Storage Management (ASM) disk group, location of the file system, and listener port you select must be available on the reference host.
14. Specify the following:
 - **Storage Type:** This can be:

- **Automatic Storage Management:** The Oracle Automatic Storage Management (ASM) is a volume manager and a file system for database files that supports single-instance and RAC configurations. ASM groups the disks in your storage system into one or more disk groups. If you select ASM, select the Disk Group here.
 - **File System:** The Oracle Database File System creates a standard file system interface on top of files and directories that are stored in database tables. If you select this option, you must specify or select the Location of the File System.
 - **Fast Recovery (Optional):** To simplify the management of backup and recovery files, you can create a fast recovery area for your database. Select the **Enable Fast Recovery Area** checkbox to specify the location in which recovery related files must be stored. The fast recovery area can be a ASM disk group or a file system that provides a centralized disk location for backup and recovery file. Specify the location of the Fast Recovery Area and the Fast Recovery Size. The amount of disk space to allocate for the fast recovery area depends on the size and activity levels of your database.

If the **Enable Archiving** check box is selected, the database will not be shut down during a refresh. This allows self service users to schedule backups and restore operations without shutting down the database.
15. In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number.
 16. Specify the **Administrator Credentials**. Specify passwords for the system schemas of the new database. These schemas will not be available to the `EM_SSA_USERS`. You can choose to use the same password for all the schemas or different passwords for each schema. If these values are not specified, default values will be used and the `EM_ADMINISTRATOR` can change them.
 17. Apart from the system schemas, if you want to restrict access to other schemas, you can select them in the Non-Administrator Credentials region and specify the password. These schemas will be locked and the `EM_SSA_USERS` cannot access them. Click **Next**.
 18. Click **Next**. The Create Service Template: Initialization Parameters page appears. In this page, you can specify the following:
 - Database Sizes: Select the database sizes that are to be supported by this service template. You can select sizes such as small, medium, and large. Each database size has a specific memory, storage, CPU cores, and units. Select a size and select **Include in Template** to associate it with the service template. Click **Default** to designate it as the default database size.
 - Initialization Parameters: You can configure the values of various initialization parameters that affect the operation of the database instance. Select a parameter and click the **Set** icon to modify the value of the parameter.
 19. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
 20. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. You can do the following:

- Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
21. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
 22. The Create Service Template: Review page appears. Click **Create**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page.

26

Creating Snap Clones

This chapter describes how to create snap clones. It contains the following sections:

- [About Snap Clones](#)
- [Registering and Managing Storage Servers](#)
- [Creating Test Master Pluggable Databases and Snapshot Clones](#)

26.1 About Snap Clones

Snap Clone provides a storage agnostic approach to creating rapid and space efficient clones of large databases. Clones of the production database are often required for test and development purposes, and it is difficult and time consuming to create these clones, especially if the databases are huge.

Enterprise Manager offers Snap Clone as a way to address this issue, so that thin clones can be created from production databases by using the copy on write technology available in some storage systems. This means that these clones take up little space initially (about 2 GB of writable space required for a thin clone of a multi-terabyte database), and will grow as inserts, updates and deletes are performed.

Enterprise Manager offers two solutions with snap clone:

- **Hardware Solution:** Vendor specific hardware solution which supports NetApps, Oracle Sun ZFS storage appliance, EMC VMAX, and VNX.
- **Software Solution:** Storage agnostic software solution that supports all NAS and SAN storage devices. This is supported through use of the ZFS file system, and the CloneDB feature.

The main features of snap clone are:

- **Self Service Driven Approach:** Empowers the self service user to clone databases as required on an ad-hoc basis.
- **Rapid Cloning:** Databases can be cloned in minutes and not in days or weeks.
- **Space Efficient:** This features allows users to significantly reduce the storage footprint.

26.2 About Data Lifecycle Management

The Enterprise Manager Data Lifecycle Management solution provides a complete end to end automated flow to move data from the production environment to the test environment.

In a production environment, the database administrator will first take a backup of this production database, create a test master database from the backup, then mask the sensitive data, and finally create clones from the test master. The clones then need to be refreshed as required to ensure that the data is in sync with the production data. With the Data Lifecycle Management solution, this process is completely automated

and can be performed either from the Cloning Dashboard or through the Self Service Portal.

26.3 Creating Snap Clones from the Cloning Dashboard

You can create a snap clone from the Administration Dashboard and promote the snap clone as the Test Master Database. This section outlines the following procedures which you can use to create and manage snap clone databases:

- [Creating a Snap Clone Database](#)
- [Creating a Test Master Database](#)
- [Enabling a Test Master Database](#)
- [Disabling a Test Master Database](#)
- [Creating a Test Master Pluggable Database](#)
- [Creating a Storage Test Master](#)
- [Creating a CloneDB Database](#)
- [Managing Clone Databases](#)
- [Refreshing Clone Databases](#)
- [Creating a Snapshot Clone of an Exadata Test Master Database](#)

26.3.1 Creating a Snap Clone Database

To create a Database Snap Clone, follow these steps:

1. On the Databases page, you can access the Database Snap Clone wizard by following any one method:
 - Select the database that you want to clone from the list of the databases displayed. On the Database homepage, click the **Database** menu, select **Cloning**, and then select **Create Snap Clone**.
 - Right click on the database target name, select **Database**, select **Cloning**, and then select **Create Snap Clone**.
 - Right click on the database target name, select **Database**, select **Cloning**, and then select **Clone Management**. On the Clone Management page, in the Snap Clone Databases box, click **Create**.
2. On the Create Snap Clone Database: Source and Destination page, do the following:
 - In the Source section, launch the credentials selector by clicking the search icons for SYSDBA Database and Database Host credentials. Click **OK**.
 - In the Data Time Series section, select **Now** or **Prior Point in Time**.

If you selected Now, specify or search and select the SYSASM ASM Credentials. Now refers to Live Clone.

In the Database Snapshot section specify the location, name, description, version, and vendor of the snapshot profile which will be created as part of the clone database job. You can add additional notes, such as host name, database, data content, and data content mode.

Create Snap Clone Database: Source and Destination

Source

Global Database Name `snpsi`
 Type `Single Instance Database`
 Version `11.2.0.4.0`

* SYSDBA Database Credentials `SYS_WEL_SNPSI` 
 * Database Host Credentials `AIME_2COOL` 

Data Time Series

- Now
- Prior Point in Time

Database Snapshot

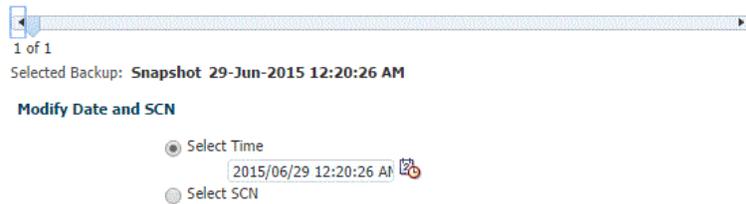
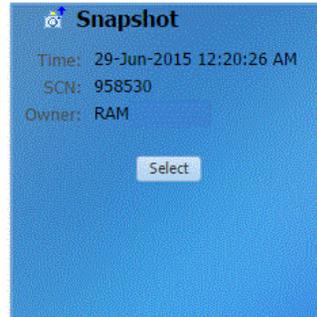
Specify details of the snapshot profile which will be created as part of the clone database job.

* Location `Database Provisioning Profiles/11.2.0.4.0/Linux86_64` 
 * Name `Database snpsi Profile 29-06-2015 02:44 AM`
 Description `Database Reference Profile 29-06-2015 02:44 AM from snpsi`
 Version `11.2.0.4.0` Vendor `Oracle`
 Notes `Host Name: adc
 Database: snpsi
 Data Content: Structure and Data`

- If you selected Prior Point in Time, a carousel of Storage Snapshot images appear. Select the appropriate RMAN backup by clicking **Select** on the image. You can create snap clones by selecting a storage snapshot from the carousel. You can modify this in case you have to create a new clone between these two time periods. Similarly, you can do the same for SCN by selecting the **Select SCN** option.

Data Time Series

- Now
- Prior Point in Time



3. In the Destination Database Definition section, do the following:

- Specify a display name.
- Specify a global database name and SID.

A database is uniquely identified by a Global Database Name. The typical form of a name is `name.domain`. A database is referenced by at least one Oracle instance which is uniquely identified by SID.

- Select one of the following types of databases:

– **Single Instance Database.**

In the Hosts section, specify the Oracle Home location. The host gets specified by default. Next, select the Database Home credentials and the SYSASM ASM credentials.

– **RAC Database**

In the Hosts section, specify or select the cluster target. The Oracle Home location gets specified by default. Next, specify the Database Host credentials, and the SYSASM ASM credentials.

In the Nodes section, select the cluster and Oracle Home to display one or more hosts on which the administrator managed Oracle RAC database will be created.

– **RAC One Node Database**

In the Hosts section, specify or select the cluster target. The Oracle Home location gets specified by default. Next, specify the Database Host credentials, and the SYSASM ASM credentials.

In the Nodes section, select the cluster and Oracle Home to display one or more hosts on which the administrator managed Oracle RAC database will be created.

Click **Next**.

Back Step 1 of 6 Next Cancel

Destination

Database Definition

* Display Name
 * Global Database Name * SID
 Type
 Single Instance Database
 RAC Database
 RAC One Node Database

Hosts

* Oracle Home Location Host
 * Database Host Credentials * Root Credentials

Note:

Oracle supports inline patching as part of clones. When the destination home selected has patches applied such as the latest CPU or PSU, then the cloned database is automatically brought up with that level.

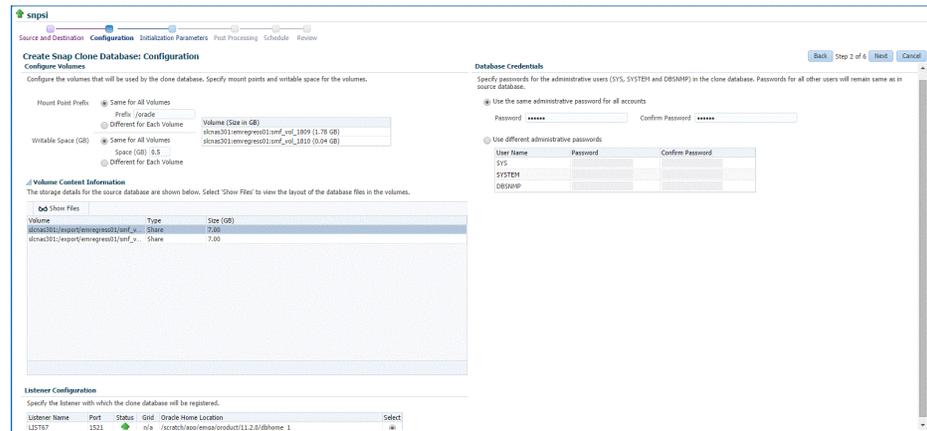
4. On the Create Snap Clone Database: Configuration page, do the following:
 - In the Configure Volumes, configure the volumes that will be used by the clone database, by specifying the following:
 - **Mount Point Prefix:** Specify a new mount point for the database being cloned. This value would be prefixed to an auto-generated mount point where a clone of this volume will be mounted. The volume will be mounted on `/<mount-prefix> <unique-suffix-generated-by-EM> /<source-path>`. The mount point prefix can be the **Same for All Volumes** or **Different for Each Volume**.

Note:

the volumes must be pre-created.

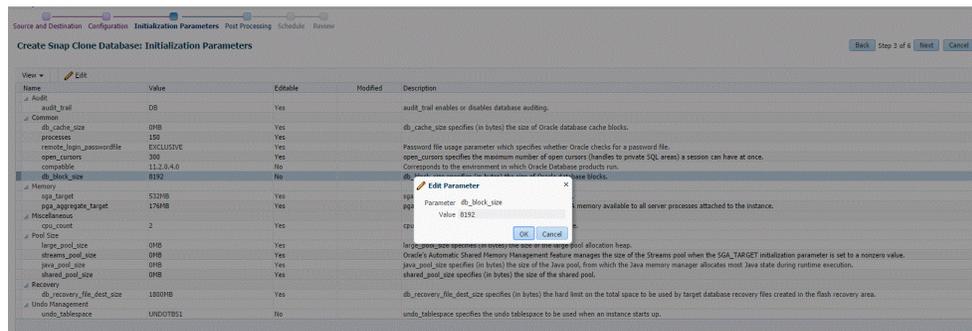
- **Writable Space:** Specify the amount of space required for block changes. The value specified here cannot exceed the Storage Ceiling specified for the server. For example, for minimal data changes, you specify the value as 1% of the original volume size. The writable space can be the Same for All Volumes or Different for Each Volume.
- The storage details of the selected database are displayed in the Volume Content Information section. Click **Show Files** to view the layout of the database files in the volumes.
- In the Listener Configuration section, select the listener targets running under the new Oracle Home, to register the clone database, You can add new listeners by clicking Add, and specifying the listener name and port.
- In the Database Credentials section, specify passwords for the SYS, SYSTEM, and DBSNMP administrative users in the clone database. You can choose to have the same password for all the three users or a different password for each.

Click **Next**.



- On the Create Snap Clone Database: Initialization Parameters page, you can configure the values of various initialization parameters that affect the operation of the database instance. Select the parameter and click **Edit** to modify the value of the parameter.

Click **Next**.



- On the Create Snap Clone Database: Post Processing page, specify the following:
 - Masking Definition:** Data masking is the process of masking sensitive data in test or non-production databases. The masking definition defines the columns to be masked in the format of the masked data. Specify the masking definition to be applied after the database is cloned.

Note:

The masking definition can be used only when you have a Subset-Masking license pack.

- Custom Scripts:** Specify the custom scripts that need to be executed before and after the database is created.

Click **Next**.

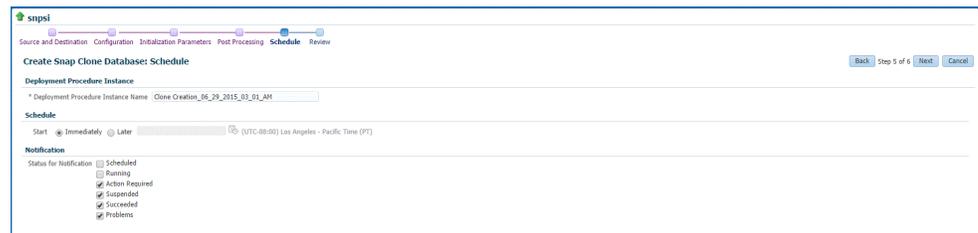


- On the Create Snap Clone Database: Schedule page, specify a unique deployment procedure instance name. You can choose to start the deployment procedure immediately or at a later time.

In the Notification Details section, you can choose to set the following notifications:

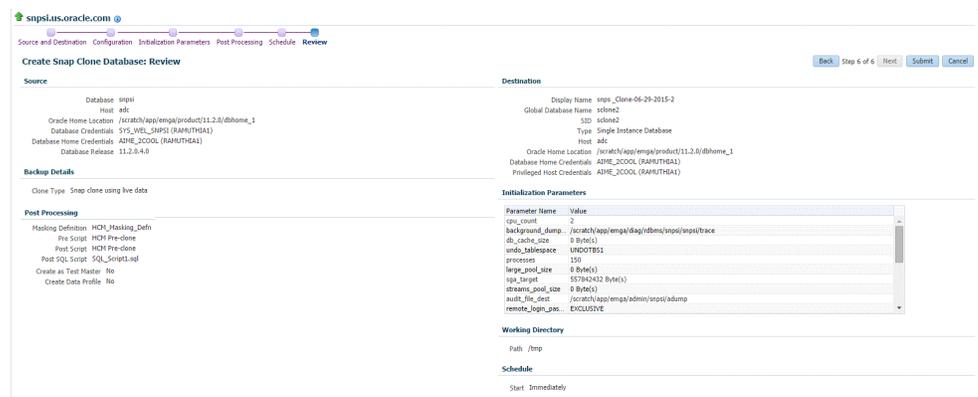
- Scheduled
- Running
- Action Required
- Suspended
- Succeeded
- Problems

Click **Next**.



- On the Create Snap Clone Database: Review page, verify the details of the source database, the data source of the clone, and the destination database.

Click **Submit**.



26.3.2 Creating a Test Master Database

To create a Test Master database, you can use either of the following solutions:

- [Creating a Test Master Database Using the Clone Wizard](#)
- [Creating a Test Master Database Using EM CLI](#)

26.3.2.1 Creating a Test Master Database Using the Clone Wizard

A test master database is a sanitized version of the production database. Production data can be optionally masked before the test master is created. A test master can be created from a snapshot or an RMAN Backup profile taken at a prior point in time and refreshed at specific intervals. This option is useful if the source data has to be masked to hide sensitive data.

To create a test master, follow these steps:

1. On the Databases page, you can access the Full Clone database wizard by following any one method:
 - Select the database that you want to clone from the list of the databases displayed. On the Database home page, click the **Database** menu, select **Cloning**, and then select **Create Test Master**.
 - Right click on the database target name, select **Database**, select **Cloning**, and then select **Create Test Master**.
 - Right click on the database target name, select **Database**, select **Cloning**, and then select **Clone Management**. On the Clone Management page, in the Test Master Databases box, click **Create**.
2. On the Create Test Master Database: Source and Destination page, do the following:
 - In the Source section, launch the credentials selector by selecting the search icons for SYSDBA Database and Database Host credentials. Click **OK**.
 - In the Data Time Series section, select **Now** or **Prior Point in Time**.
If you selected Now, specify or search and select the SYSASM ASM Credentials. Now refers to Live Clone.
If you selected Prior Point in Time, a carousel of RMAN Backup images appear. Select the appropriate RMAN backup by clicking **Select** on the image.
Select a specific time between the selected backup or snapshot and the next (or latest point of source). The backups or dumps are created at specific intervals and the test master that is based on these will reflect the production database at specific points in time. To reflect the latest data in the production database, the test master needs to be periodically refreshed.
3. In the Destination Database Definition section, do the following:
 - Specify a display name.
 - Specify a global database name and SID.
A database is uniquely identified by a Global Database Name. The typical form of a name is name.domain. A database is referenced by at least one Oracle instance which is uniquely identified by SID.
 - Select one of the following types of databases:
 - **Single Instance Database.**

In the Hosts section, specify the Oracle Home location. The host gets specified by default. Next, select the Database Home credentials and the SYSASM ASM credentials.

– **RAC Database**

In the Hosts section, specify or select the cluster target. The Oracle Home location gets specified by default. Next, specify the Database Host credentials, and the SYSASM ASM credentials.

In the Nodes section, select the cluster and Oracle Home to display one or more hosts on which the administrator managed Oracle RAC database will be created.

– **RAC One Node Database**

In the Hosts section, specify or select the cluster target. The Oracle Home location gets specified by default. Next, specify the Database Host credentials, and the SYSASM ASM credentials.

In the Nodes section, select the cluster and Oracle Home to display one or more hosts on which the administrator managed Oracle RAC database will be created.

 **Note:**

Oracle supports inline patching as part of clones. When the destination home selected has patches applied such as the latest CPU or PSU, then the cloned database is automatically brought up with that level.

Click **Next**.

4. On the Create Test Master Database: Configuration page, do the following.

- Database Files Location: Specify the location in which the data files, temporary files, redo log files, and control files will be created.

You can select:

- File System: The Oracle Database File System creates a standard file system interface on top of files and directories that are stored in database tables. If you select this option, you must specify or select the Location of the File System. You can specify a common location for all the files or you can select the **Use Oracle Optimal Flexible Architecture-compliant directory structure (OFA)** checkbox and specify different locations for data files, redo log files, and so on.
- Automatic Storage Management: The Oracle Automatic Storage Management (ASM) is a volume manager and a file system for database files that supports single-instance and RAC configurations. ASM groups the disks in your storage system into one or more disk groups. If you select ASM, select a common location for the database files.
- Recovery Files Location: To simplify the management of backup and recovery files, a fast recovery area can be created for your database. The fast recovery area can be a ASM disk group or a file system that provides a centralized disk location for backup and recovery file. To allow self service users to schedule backups and perform restore operations, you can select the Use Fast

Recovery Area checkbox and specify the location of the Fast Recovery Area and the Fast Recovery Size. The amount of disk space to allocate for the fast recovery area depends on the size and activity levels of your database.

- Listener Configuration: Click **Add** to add one or more listener targets that are to be associated with the new database.
 - Database Credentials: Specify the passwords for the administrative users (SYS, SYSTEM and DBSNMP) of the new database being cloned. You can choose to use the same password for all the schemas or different passwords for each schema.
 - Click **Next**.
5. On the Create Test Master Database: Initialization Parameters page, you can configure the values of various initialization parameters that affect the operation of the database instance.

Select the parameter and click **Edit** to modify the value of the parameter. Some values such as `db_block_size` cannot be modified.

Click **Next**.

6. On the Create Test Master Pluggable Database: Post Processing page, in the Data Masking section, specify the data masking definition that you want to apply after creating the test master PDB. Data masking masks sensitive data in a database.

For information on how to create a data masking definition, see *Oracle Data Masking and Subsetting Guide*. Note that you can apply a data masking definition only if you have the Subset-Masking license pack.

In the Custom Scripts section, for **Pre Script** and **Post Script**, specify the Oracle Software Library components that contain the scripts that you want to run before, and after creating the test master PDB respectively. Also, for **SQL Script**, specify the SQL scripts that you want to run after creating the test master PDB. For **Run As User**, select the user account that you want to use to run the SQL scripts.

Click **Next**.

7. On the Create Test Master Database: Schedule page, specify the schedule for the creation of the test master. It can be created immediately (if physical standby used, it is created immediately and automatically refreshed) or can be created at a later date / time and refreshed at specified intervals.

Click **Next**.

8. On the Create Test Master Database: Review page, review and verify the information specified and click **Submit** to create the test master. After the Test Master has been created, you can refresh the Test Master as required to create a new version of the profile on which the Test Master is based.

26.3.2.2 Creating a Test Master Database Using EM CLI

To create a Test Master database execute the verb `emcli create_clone - inputFile=/tmp/create_test_master.props`, where `create_test_master.props` is the properties file with the parameters and values required to create the Test Master.

Sample properties file (create_test_master.props):

```
CLONE_TYPE=DUPPLICATE
COMMON_DB_DBSNMP_PASSWORD=password
```

```
COMMON_DB_SID=clonedb
COMMON_DB_SYSTEM_PASSWORD=sunrise
COMMON_DB_SYS_PASSWORD=sunrise
DATABASE_PASSWORDS=Sumrise1
COMMON_GLOBAL_DB_NAME=clonedb.xyz.com
DB_ADMIN_PASSWORD_SAME=true
DEST_LISTENER_SELECTION=DEST_DB_HOME
HOST_NORMAL_NAMED_CRED=HOST:SYSCO
IS_TESTMASTER_DATABASE=Y
USAGE_MODE = testMaster
CLOUD_TARGET = true
LISTENER_PORT=1526
ORACLE_BASE_LOC=/scratch/app
ORACLE_HOME_LOC=/scratch/app/product/11.2.0./dbhome_1
EM_USER=sys
EM_PWD=Sunrise1
SRC_DB_CRED=DB:SYSCO
SRC_DB_TARGET_NAME=ora.xyz.com
SRC_HOST_NORMAL_NAMED_CRED=HOST:SYSCO
TARGET_HOST_LIST=b11.xyz.com
```

To verify the status of the Test Master database creation execute the EM CLI verb `emcli get_instance_status -instance={instance GUI}`.

26.3.3 Enabling a Test Master Database

To convert a database to a test master database, follow these steps:

1. From the Targets menu, select Databases.
2. On the Databases page, right click on the database target that you want to enable as a test master database. From the menu that appears, select **Oracle Database**, select **Cloning**, and then select **Enable Test Master**.
3. On the Enable as a Test Master Database page, specify or search and select the SYSDBA database and database host credentials.
4. Specify or search and select the parent database from which the database has been cloned. This provides better lineage tracking.
5. Specify or select a data masking definition if you want to mask data in the cloned database before enabling it as a test master.
6. In the Custom Scripts section, you can select Software Library components that contain post cloning scripts. The clone database can also be customized by executing the post cloning SQL script.
7. In the Access Controls and Permissions section, specify the owner and group that should be given read-only permissions on the datafiles.
8. Click **Submit**.

Enable as a Test Master

This process will help you convert the selected database into a test master by setting the necessary access controls and marking the datafiles as read-only files. For better lineage tracking, you may also identify the parent database from which the database has been cloned. If not already done, you may also choose to de-serialize the data by applying masking templates or by running additional scripts of your choice.

Credentials

* SYSDBA Database Credentials

* Database Host Credentials

Source

Parent Database

Data Masking

Do you want to mask data in this cloned database before enabling it as a test master? [?](#)

Masking Definition

Custom Scripts

Select the Software Library components which contain post cloning scripts. The clone database can also be customized by executing the post cloning SQL script.

Post Script

SQL Script

Run As User

Access Controls and Permissions

Specify the owner and group that should be given read-only permissions on the datafiles.

Data files Owner:

Data files Group:

26.3.4 Disabling a Test Master Database

To disable a test master database, follow these steps:

1. From the Targets menu, select Databases.
2. On the Databases page, right click on the database target that you want to disable as a test master database. From the menu that appears, select **Oracle Database**, select **Cloning**, and then select **Disable Test Master**.
3. On the Disable Test Master page, specify or search and select the SYSDBA database and database host credentials.
4. The Exadata Snapshot Clone Databases sections lists the database snapshot clones that will be deleted as part of the process of disabling the test master.
5. Click **Submit**. This action resets the datafiles to read-write mode and restarts the database in open mode. You can later make further changes to the database and then enable it as test master again, if you choose to.

Disable Test Master

This process will reset the datafiles to read-write mode and restart the database in open mode. You may make further changes to the database and then enable it as a test master again.

Credentials

* SYSDBA Database Credentials: Preferred Credentials

* Database Host Credentials

Exadata Snapshot Clone Databases

The below databases will be deleted as part of the process of disabling test master.

Clone Name	Status	Database Version	Data Masked	Cloud Target	Owner
There are no Exadata Snapshot Clone databases created.					

26.3.5 Creating a Test Master Pluggable Database

To create a Test Master PDB, you can use either of the following solutions:

- [Creating a Test Master Pluggable Database Using the Clone Wizard](#)
- [Creating a Test Master Pluggable Database Using EM CLI](#)

26.3.5.1 Creating a Test Master Pluggable Database Using the Clone Wizard

If you have the 12.1.0.8 Enterprise Manager for Oracle Database plug-in deployed in your system, you can create a test master PDB from a source PDB, using the new Clone PDB Wizard.

To create a test master PDB from a source PDB, follow these steps:

1. From the **Targets** menu, select **Databases**.
2. For **View**, select **Search List**. From the **View** menu, select **Expand All**.
3. Look for the source CDB (the CDB that the source PDB is a part of) in the list, then click the name of the PDB from which you want to create a test master PDB.
4. From the **Oracle Database** menu, select **Cloning**, then select **Create Test Master**.

Alternatively, in Step 3, you can right click the name of the PDB from which you want to create a test master PDB, select **Oracle Database**, select **Cloning**, then select **Create Test Master**.

5. On the Create Test Master Pluggable Database: Source and Destination page, do the following:
 - Specify the SYSDBA credentials for the source CDB. You can choose to use the preferred credentials, use a saved set of named credentials, or specify a new set of credentials.
 - In the Pluggable Database Definition section, specify a name, and a display name for the test master PDB. Enterprise Manager uses the display name to identify the test master PDB target.
 - In the PDB Administrator Credentials section, specify the credentials of the admin user account that you want to use to administer the test master PDB.
 - In the Container Database section, specify the destination CDB (the CDB that the test master PDB must be a part of).
 - In the Credentials section, specify the SYSDBA credentials for the destination CDB, and the host credentials for the destination CDB. Also, if the destination CDB is using Automatic Storage Management (ASM) to manage disk storage, you must specify the ASM credentials.

Click **Next**.

6. On the Create Test Master Pluggable Database: Configuration page, do the following:

In the Database Files Location section, specify the storage location where the datafiles of the test master PDB must be stored. If the destination CDB is using

ASM to manage disk storage, specify the disk group where the datafiles of the test master PDB must be stored.

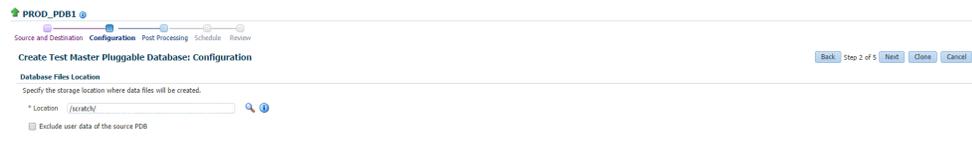
To ensure that only the source PDB data model definition is cloned (and the source PDB data is not cloned), select **Exclude User Data**.

In the PDB Administrator Credentials section, specify the credentials of the admin user account that you want to use to administer the test master PDB.

In the Advanced Configuration section, specify the storage limits for the maximum size of the test master PDB, and the maximum size of a shared tablespace within the test master PDB. By default, no limits are placed on the values for these attributes. In the Miscellaneous section, select the logging option that you want to use for the tablespaces created within the test master PDB.

Note that if the destination CDB is part of an Exadata machine, the Access Controls and Permissions section is displayed in place of the Advanced Configuration section. In this case, you must specify the owner and the group that must be granted *read only* permissions on the datafiles.

Click **Next**.

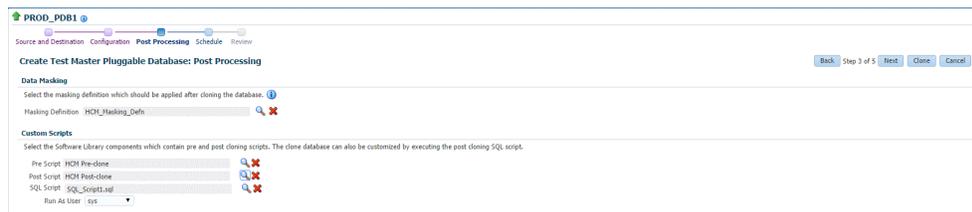


7. On the Create Test Master Pluggable Database: Post Processing page, in the Data Masking section, specify the data masking definition that you want to apply after creating the test master PDB. Data masking masks sensitive data in a database.

For information on how to create a data masking definition, see *Oracle Data Masking and Subsetting Guide*. Note that you can apply a data masking definition only if you have the Subset-Masking license pack.

In the Custom Scripts section, for **Pre Script** and **Post Script**, specify the Oracle Software Library components that contain the scripts that you want to run before, and after creating the test master PDB respectively. Also, for **SQL Script**, specify the SQL scripts that you want to run after creating the test master PDB. For **Run As User**, select the user account that you want to use to run the SQL scripts.

Click **Next**.



8. Specify an instance name for the deployment procedure. Also, specify the point in time when you want the deployment procedure to begin.

In the Notification section, select the deployment procedure states for which you want to receive e-mail notifications. For example, if you select **Scheduled** and **Succeeded** for **Status for Notification**, you will receive e-mail notifications when the deployment procedure is scheduled, and when it succeeds.

Click **Next**.



- Review all the details you provided. If you want to edit certain details, click **Back** to navigate to the required page.

Click **Clone** to submit the deployment procedure to create a test master PDB from the source PDB.



26.3.5.2 Creating a Test Master Pluggable Database Using EM CLI

To create a Test Master pluggable database, execute the command `emcli pdb_clone_management -input_file=data:/xyz/sdf/pdb_test_master.props`, where the sample contents of the `pdb_test_master.props` file is given below.

Sample properties file to create a Test master PDB:

```
SRC_PDB_TARGET=cdb_prod_PDB
SRC_HOST_CREDS=NC_HOST_SYC:SYCO
SRC_CDB_CREDS=NC_HOST_SYC:SYCO
SRC_WORK_DIR=/tmp/source
DEST_HOST_CREDS=NC_SLCO_SSH:SYS
DEST_LOCATION=/scratch/sray/app/sray/cdb_tm/HR_TM_PDB6
DEST_CDB_TARGET=cdb_tm
DEST_CDB_TYPE=oracle_database
DEST_CDB_CREDS=NC_HOST_SYC:SYCO
```

```
DEST_PDB_NAME=HR_TM_PDB6  
IS_CREATE_AS_TESTMASTER=true  
MASKING_DEFINITION_NAME=CRM_Masking_Defn
```



Note:

You will need to add two more parameters (`ACL_DF_OWNER=oracle` and `ACL_DF_GROUP=oinstall`) in case you need to create the Test Master on Exadata ASM.

26.3.6 Creating a Storage Test Master

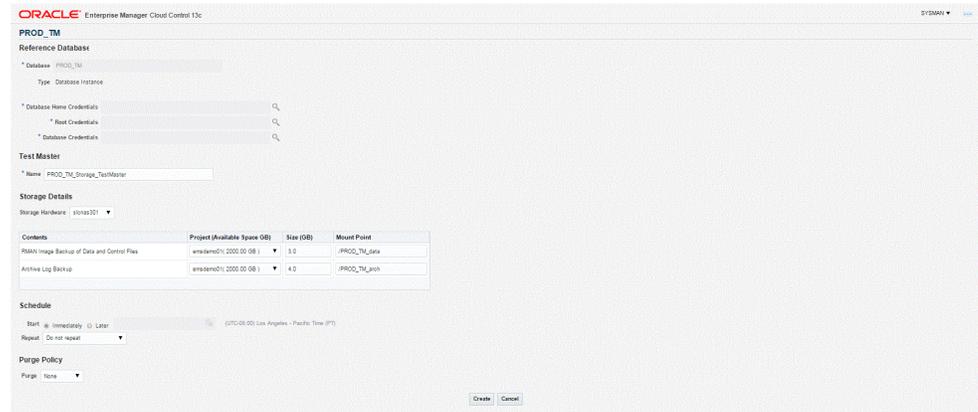
To create a storage test master, follow these steps:

1. From the **Targets** menu, select **Databases**.
2. On the Databases page, click the name of the database target that you want to create a storage test master for.
3. On the database home page, click **Oracle Database**, select **Cloning**, and then select **Create Snapshot Test Master**.
4. On the Create Storage Test Master page, in the Reference Database section, do the following:
 - Specify the database home credentials.
 - Specify the root credentials of the database.
 - Specify the database credentials.
5. In the Test Master field, specify a unique name for the storage test master that you want to create.

For example, `PROD_TM_Storage_TestMaster`.

6. In the Storage Details section, do the following:
 - Select the storage server that you want to use to create a storage test master on.
 - Select the project, size, and mount point for RMAN image backup of data and control files. For example, select `emsdemo01 (2000.00 GB)` as the project, select `3.0 GB` as the size, and specify `/PROD_TM_data` as the mount point.
 - Select the project, size, and mount point for archive log backup. For example, select `emsdemo01 (2000.00 GB)` as the project, select `4.0 GB` as the size, and specify `/PROD_TM_arch` as the mount point.
7. In the Schedule section, you can choose to create the storage test master immediately, or you can select **Later**, and specify a time of your choice. You can also set a specific time or date to repeat the process.
8. In the Purge Policy section, select either of the following:
 - **None** - If you do not want to purge any data.
 - **Snapshots** - If you want to purge the data after a certain number of snapshots has been created. Select the number of maximum snapshots.

- **Day(s)** - If you want to purge the data after a certain number of days. Select the number of days.
9. Click **Create**.



26.3.7 Creating a CloneDB Database

You can create CloneDB databases only when you have RMAN Image backups.

To create a CloneDB database, follow these steps:

1. On the Databases page, you can access the CloneDB wizard by following any one method:
 - Select the database that you want to clone from the list of the databases displayed. On the Database home page, click the **Database** menu, select **Cloning**, and then select **Create CloneDB**.
 - Right click on the database target name, select **Database**, select **Cloning**, and then select **Create CloneDB**.
 - Right click on the database target name, select **Database**, select **Cloning**, and then select **Clone Management**. On the Clone Management page, in the CloneDB Databases box, click **Create**.
2. On the Create CloneDB Database: Source and Destination page, do the following:
 - In the Source section, launch the credentials selector by selecting the search icons for SYSDBA Database and Database Host credentials. Click **OK**.
 - In the Source Data Time Series, **Prior Point in Time** is selected automatically. Select the appropriate RMAN Image backup by clicking **Select** on the image.

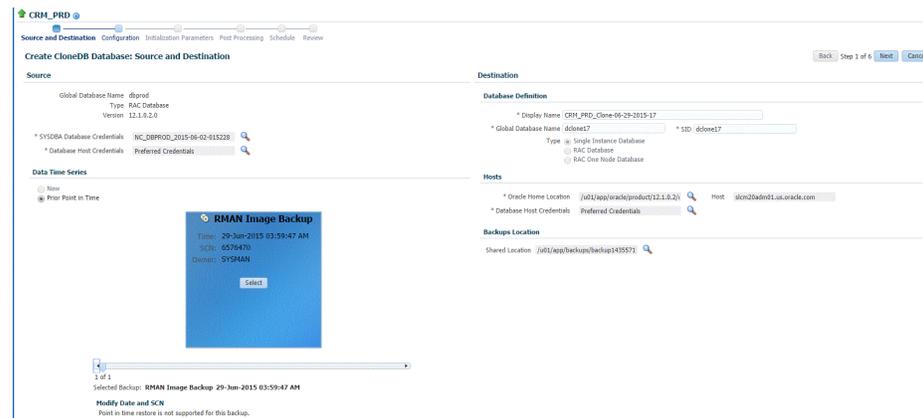
You can create full clones by selecting a backup and optionally modify the time and SCN to do a point in time restore. The **Select Time** option has the minimum limit set to the current backups time and maximum time limit set to the next backup time. You can modify this in case you have to create a new clone between these two time periods. Similarly, you can do the same for SCN by selecting the **Select SCN** option.
3. In the Destination Database Definition section, do the following:
 - Specify a display name.
 - Specify a global database name and SID.

A database is uniquely identified by a Global Database Name. The typical form of a name is name.domain. A database is referenced by at least one Oracle instance which is uniquely identified by SID.

- The RAC Database type is selected by default.

In the Hosts section, specify or select the cluster target. The Oracle Home location gets specified by default. Next, specify the Database Host credentials, and the SYSASM ASM credentials.

In the Nodes section, select the cluster and Oracle Home to display one or more hosts on which the administrator managed Oracle RAC database will be created.



Note:

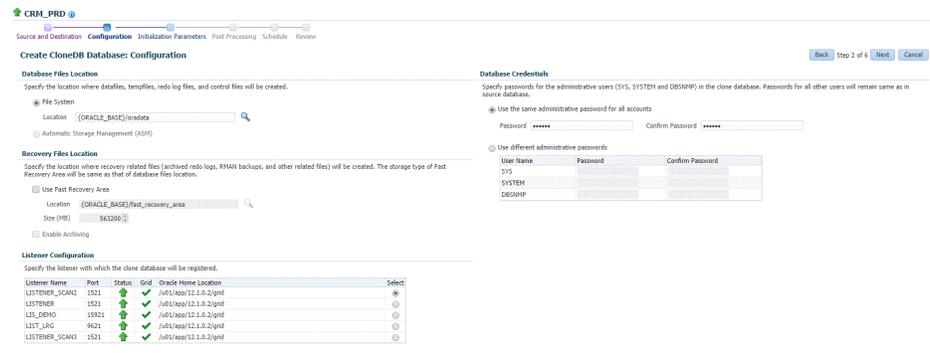
Oracle supports inline patching as part of clones. When the destination home selected has patches applied such as the latest CPU or PSU, then the cloned database is automatically brought up with that level.

Click **Next**.

4. On the Create CloneDB Database: Configuration page, do the following:
 - In the Database Files Location, specify the location where you want the data files, temp files, redo log files, and control files to be created. The **File System** option is selected by default.
 - In the Recovery Files location, specify the location where you want the recovery files, such as archived redo logs, RMAN backups, and other related files to be created. You can choose to use the fast area recovery by selecting **Use Fast Recovery Area**. If you do, specify the fast recovery area size. The fast recovery area size is defaulted to that of source.
 - In the Listener Configuration section, select the listener targets running under the new Oracle Home, to register the clone database.
 - In the Database Credentials section, specify passwords for the SYS, SYSTEM, and DBSNMP administrative users in the clone database. You can

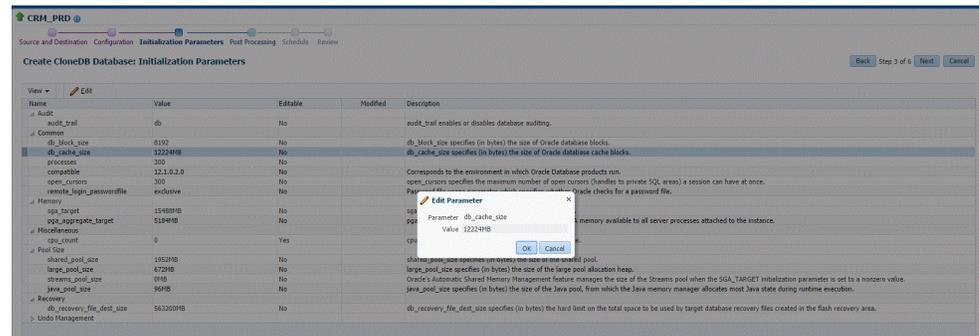
choose to have the same password for all the three users or a different password for each.

Click **Next**.



5. On the Create CloneDB Database: Initialization Parameters page, you can configure the values of various initialization parameters that affect the operation of the database instance. Select the parameter and click **Edit** to modify the value of the parameter.

Click **Next**.



6. On the Create CloneDB Database: Post Processing page, specify the following:

- **Masking Definition:** Data masking is the process of masking sensitive data in test or non-production databases. The masking definition defines the columns to be masked in the format of the masked data. Specify the masking definition to be applied after the database is cloned.

 **Note:**

The masking definition can be used only when you have a Subset-Masking license pack.

- **Custom Scripts:** Specify the custom scripts that need to be executed before and after the database is created.
- **Create Data Profile:** This option enables you to automatically take a backup of the new cloned instance once it is created. When the clone or the Test Master is refreshed, this section displays the existing profiles created for the

database. You can select the profile that has to be refreshed along with the database.

- **Create as Test Master:** This option if you want to create the cloned database as a Test Master database.

Click **Next**.



7. On the **Create CloneDB Database: Schedule** page, specify a unique deployment procedure instance name. You can choose to start the deployment procedure immediately or at a later time.

In the **Notification Details** section, you can choose to set the following notifications:

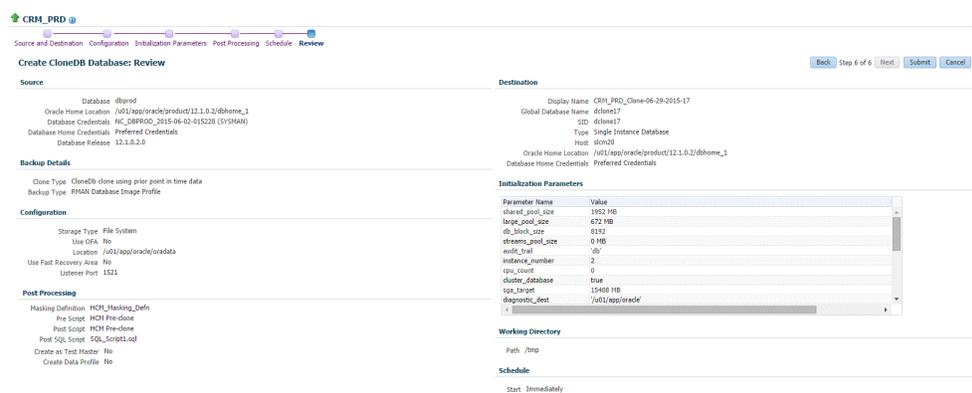
- Scheduled
- Running
- Action Required
- Suspended
- Succeeded
- Problems

Click **Next**.



8. On the **Create CloneDB Database: Review** page, verify the details of the source database, the data source of the clone, and the destination database.

Click **Submit**.



26.3.8 Managing Clone Databases

The Clone and Refresh page enables you to manage clone databases by adding clone databases, removing clone database, and promoting the clone databases as Test Master.

To access the Clone and Refresh page, navigate to an Oracle database target home page. On the home page, click **Oracle Database**, select **Provisioning**, and then select **Clone and Refresh**.

Adding Clone Databases

The **Add** button can be used to add the clones of the current databases which have already been created. To add a database clone instance, click on **Add**. In the Select Targets dialog box that opens, select a database target, and click **Select**. The database instance gets added to the Clones section in the Database Cloning page.

Removing Clone Databases

Only the databases that are added using the **Add** button can be removed using the **Remove** button.

To remove a database clone instance, select the database clone instance that you want to remove, from the Clones section. Click **Remove**.

Promoting Clone Databases as Test Master

To promote a database clone database instance as Test Master, select the clone instance that you want to recreate from the Clone section. Click **Promote as Test Master**.

You can also remove the clone database instance from Test Masters, by selecting the clone database instance from the Clones section, and clicking **Remove from Test Masters**.

Refresh Clone Databases

To refresh a clone database, select the clone database instance from the Clone section, and then click **Refresh**. See [Refreshing Clone Databases](#).

Name	Status	Database Version	Type	Test Master	Data Masked	Cloud Target	Owner	Name	Type	Created	Purge Status
testm3		12.1.0.1.0	Full Clone		-	-	RA/RUTHDBA1	n/a	RMAN Duplicate	Dec 6, 2014	n/a
testm3		12.1.0.1.0	Full Clone		-	-	RA/RUTHDBA1	n/a	RMAN Duplicate	Dec 8, 2014	n/a

Creating Data Profiles

The Data Profiles tab on the Clone and Refresh page displays the data profiles that you have created from the clone database. On the Data Profiles page, you can view the contents of existing data profiles. You can also **Edit** and **Refresh** these data profiles.

Clone and Refresh Switch to Classic Clone

Refresh | Close | **Data Profiles**

Profiles are entities that capture source database information for provisioning. A profile can represent a complete database or a set of related schemas that form an application.

View | Create... | Edit | Refresh Profile | Delete | Search: Name

Name	Profile	Contains	Owner	Removal Overdue	Source Database	Purge Policy	Schedule
Database testm1	Profile 06-12-2014 12:09 PM	3 Snapshot(s)		None	testm1	3 Snapshot(s)	None

Contents: Database testm1 Profile 06-12-2014 12:09 PM

Name	Created	Used By	Status	Procedure Activity
Snapshot_12_06_2014_13_08_PM	06-Dec-2014 01:08:37 PM UTC	None	Active	Create Succeeded n/a
Snapshot_12_08_2014_06_34_AM	08-Dec-2014 06:34:06 AM UTC	None	Active	Succeeded n/a
Snapshot_12_08_2014_09_21_AM	08-Dec-2014 09:21:22 AM UTC	None	Active	Succeeded n/a

You can also create a new data profile by clicking **Create**. This takes you to the Create Provisioning Profile wizard. Refer to *Enterprise Manager Cloud Control Administrator's Guide for information* on how to create a provisioning profile using this wizard.

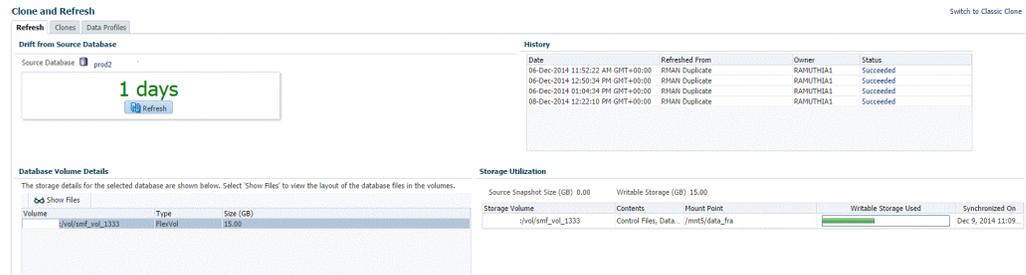
26.3.9 Refreshing Clone Databases

To refresh a clone database, navigate to the Refresh and Clone page by following these steps:

1. From the **Targets** menu, select **Databases**.
2. On the databases home page, select the database clone instance that you want to refresh from the list of databases.
3. On the database target home page, click **Oracle Database**, select **Provisioning**, and then select **Clone and Refresh**.
4. On the Clone and Refresh page, select the **Refresh** tab.

The Refresh page displays the following sections:

- **Drift from Source Database**
This section displays the name of the source database from which this database has been cloned. It shows the number of days since the clone database has been refreshed. Click **Refresh** to refresh the clone database.
- **Database Volume Details**
This section displays the storage details for the selected databases. Click Show files to view the layout of the database files in the volumes. A display box appears that shows the storage layout and file layout of the selected database.
- **History**
This section displays the past refreshes of the database. It shows the date and time of the refresh, where it has been refreshed from, the owner of the database, and the status of the refresh action.
- **Storage Utilization**
This section displays the storage volume of the database, the storage contents, the mount point, the amount of writable storage used, and the synchronization date.



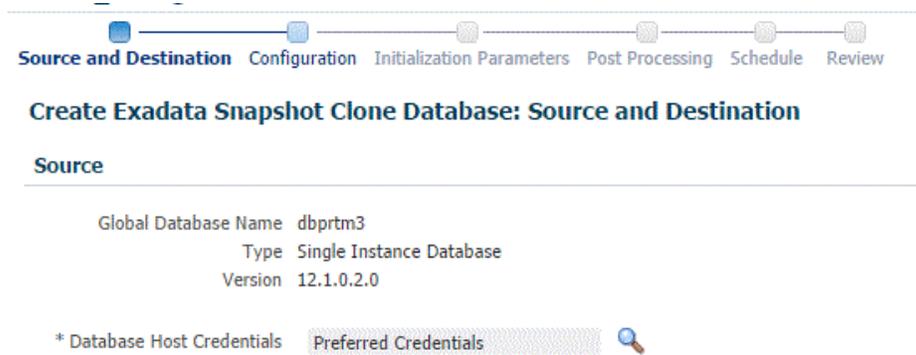
26.3.10 Creating a Snapshot Clone of an Exadata Test Master Database

To create a snapshot clone of an Exadata Test Master database, follow these steps:

1. From the **Targets** menu, select **Databases**.
2. On the Databases page, you can access the Database Snap Clone wizard by following any one method:
 - Select the test master database that you want to clone from the list of the databases displayed. On the Database homepage, click the **Database** menu, select **Cloning**, and then select **Create Snapshot Clone**.
 - Right click on the test master database target name, select **Database**, select **Cloning**, and then select **Create Snapshot Clone**.
3. On the Create Exadata Snapshot Clone Database: Source and Destination page, do the following:
 - In the Source section, launch the credentials selector by clicking the search icons for SYSDBA Database and Database Host credentials. Click **OK**.
 - In the Data Time Series section, **Now** is selected by default.

Now refers to Live Clone.

Specify or select the SYSASM ASM credentials.



4. In the Destination Database Definition section, do the following:

- Specify a display name.
- Specify a global database name and SID.

A database is uniquely identified by a Global Database Name. The typical form of a name is `name.domain`. A database is referenced by at least one Oracle instance which is uniquely identified by SID.

- Select one of the following types of databases:

- **Single Instance Database.**

In the Hosts section, specify the Oracle Home location. The host gets specified by default. Next, select the Database Home credentials and the SYSASM ASM credentials.

- **RAC Database**

In the Hosts section, the cluster field is auto selected from the parent database and disabled. The Oracle Home location gets specified by default. Next, specify the Database Host credentials, and the SYSASM ASM credentials.

In the Nodes section, select the cluster and Oracle Home to display one or more hosts on which the administrator managed Oracle RAC database will be created.

- **RAC One Node Database**

In the Hosts section, specify or select the cluster target. The Oracle Home location gets specified by default. Next, specify the Database Host credentials, and the SYSASM ASM credentials.

In the Nodes section, select the cluster and Oracle Home to display one or more hosts on which the administrator managed Oracle RAC database will be created.

Click **Next**.

Back Step 1 of 6 Next Cancel

Destination

Database Definition

* Display Name

* Global Database Name * SID

Type Single Instance Database

Hosts

* Oracle Home Location Host

* Database Host Credentials

* SYSASM ASM Credentials

 **Note:**

Oracle supports inline patching as part of clones. When the destination home selected has patches applied such as the latest CPU or PSU, then the cloned database is automatically brought up with that level.

5. On the Create Exadata Snapshot Clone Database: Configuration page, do the following:
 - In the Database Files Location, specify the Sparse disk group and the redo log file size.
 - In the Recovery Files location, specify the location where you want the recovery files, such as archived redo logs, RMAN backups, and other related files to be created. You can choose to use the fast area recovery by selecting **Use Fast Recovery Area**. If you do, specify the fast recovery area size. The fast recovery area size is defaulted to that of source.
 - In the Listener Configuration section, select the listener targets running under the new Oracle Home, to register the clone database.
 - In the Database Credentials section, specify passwords for the SYS, SYSTEM, and DBSNMP administrative users in the clone database. You can choose to have the same password for all the three users or a different password for each.

Click **Next**.

Back Step 2 of 6 Next Cancel

Create Exadata Snapshot Clone Database: Configuration

Database Files Location

* Sparse Disk Group

* Redo Log File Size (MB)

Recovery Files Location

Specify the location where recovery related files (archived redo logs, RMAN backups, and other related files) will be created. The storage type of Fast Recovery Area will be same as that of database files location.

Use Fast Recovery Area

Use Past Recovery Area

Location

Size (MB)

Enable Archiving

Listener Configuration

Specify the listener with which the clone database will be registered.

Listener Name	Port	Status	Grid	Oracle Home Location	Select
LIST_LBFS	1521			/u01/app/12.1.0.2/tn12	<input type="radio"/>
LISTENER_SCAN1	1521			/u01/app/12.1.0.2/tn12	<input checked="" type="radio"/>
LISTENER	1521			/u01/app/12.1.0.2/tn12	<input type="radio"/>
LIST_DPMO	15011			/u01/app/12.1.0.2/tn12	<input type="radio"/>

Database Credentials

Specify passwords for the administrative users (SYS, SYSTEM and DBSNMP) in the clone database. Passwords for all other users will remain same as in source database.

Use the same administrative password for all accounts

Password Confirm Password

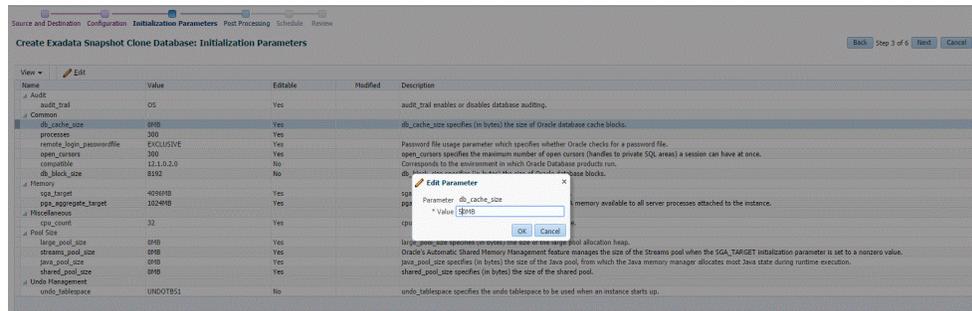
Use different administrative passwords

User Name	Password	Confirm Password
SYS	<input type="password"/>	<input type="password"/>
SYSTEM	<input type="password"/>	<input type="password"/>
DBSNMP	<input type="password"/>	<input type="password"/>

6. On the Create Exadata Snapshot Clone Database: Initialization Parameters page, you can configure the values of various initialization parameters that affect the

operation of the database instance. Select the parameter and click **Edit** to modify the value of the parameter.

Click **Next**.



7. On the Create Exadata Snapshot Clone Database: Post Processing page, specify the following:

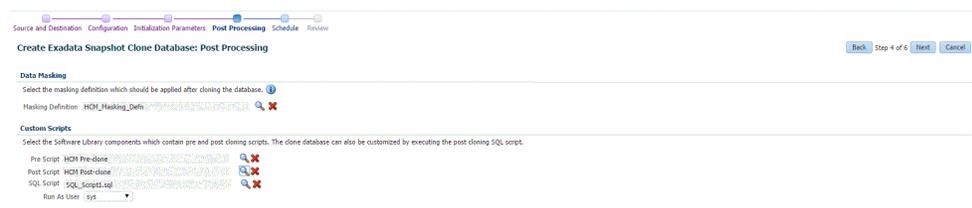
- **Masking Definition:** Data masking is the process of masking sensitive data in test or non-production databases. The masking definition defines the columns to be masked in the format of the masked data. Specify the masking definition to be applied after the database is cloned.

 **Note:**

The masking definition can be used only when you have a Subset-Masking license pack.

- **Custom Scripts:** Specify the custom scripts that need to be executed before and after the database is created.

Click **Next**.



8. On the Create Exadata Snapshot Database: Schedule page, specify a unique deployment procedure instance name. You can choose to start the deployment procedure immediately or at a later time.

In the Notification Details section, you can choose to set the following notifications:

- Scheduled
- Running
- Action Required
- Suspended
- Succeeded

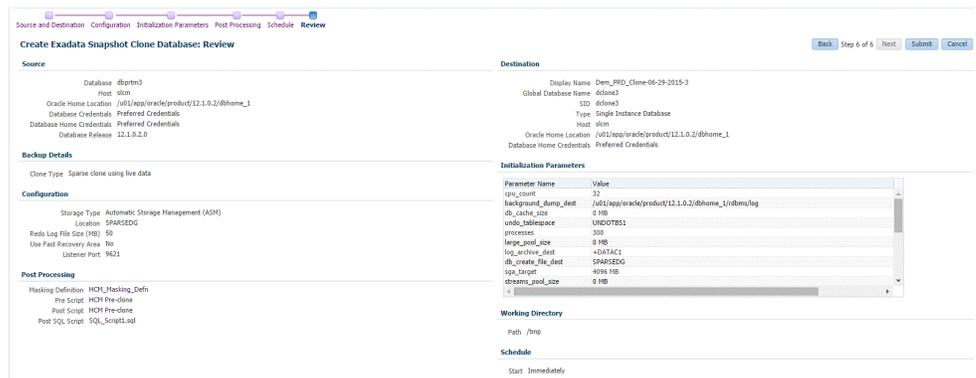
• Problems



Click **Next**.

- On the Create Exadata Snapshot Database: Review page, verify the details of the source database, the data source of the clone, and the destination database.

Click **Submit**.



26.4 Creating Snap Clones from an In-Sync Test Master

You can create snap clones using a standby database that is designated as the test master database. The test master database is always current and in sync with the production database. To create snap clones using this approach, follow these steps:

Table 26-1 Creating Snap Clone (Continuous Flow)

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started .
2	Register storage servers.	See Registering Storage Servers .
3	Create one or more resource providers.	See Creating Resource Providers .
4	Configure the request settings.	See Configuring Request Settings .
5	Define quotas for each self service user.	See Defining Quotas

Table 26-1 (Cont.) Creating Snap Clone (Continuous Flow)

Step	Task	Role
7	Add a standby database and designate it as the test master.	See Using a Physical Standby Database as a Test Master Note: This standby database must be present on a registered storage server (such as NetApp, Sun ZFS, or EMC) that allows creation of snap clones.
6	Enable the test master for snap clone.	See Enabling the Test Master for Snap Clone .
7	Create snapshot profiles from the test master.	Creating a Database Provisioning Profile Using Snapshots .
8	Create a service template.	See Creating Service Template Using Snap Clone Profile
9	Configure the Chargeback Service. (this step is optional)	See Configuring Chargeback .
10	While deploying a database, select the service template you have created.	See Requesting a Database

26.4.1 Getting Started

See [Getting Started](#).

26.4.2 Registering Storage Servers

To register storage servers for:

- NetApp and Sun ZFS Storage Server: See [Registering a NetApp or a Sun ZFS Storage Server](#).
- Solaris File System (ZFS): See [Registering a Solaris File System \(ZFS\) Storage Server](#).
- EMC Storage Server: See [Registering an EMC Storage Server](#).

26.4.3 Creating Resource Providers

You must create one or more resource providers which include:

- PaaS Infrastructure Zones: See [Creating a PaaS Infrastructure Zone](#).
- Database Pool: See [Creating a Database Pool for Database as a Service](#)

26.4.3.1 Creating a Database Pool for Database as a Service

To create a database pool for database as a service, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. Click the **Setup**

link next to the Database service family, click the **Database Pool** link and click **Create**.

Figure 26-1 Create Database Pool

The screenshot shows the 'Create New Pool: Setup' page in the Oracle Cloud console. It includes sections for Pool Details, Credentials, Oracle Homes, Standby Pools, and Placement Constraints. The Credentials section is highlighted in the text, showing fields for Host, Root, Grid Infrastructure, and Automatic Storage Management, each with a 'Select a Credential' dropdown and a plus icon.

3. In the Credentials region, specify the following credentials:
 - **Host:** Required for creating and starting the database.
 - **Root:** Users with these credentials can perform privileged actions like executing root scripts. For snap clone databases, the snapshots must be mounted by a root user. To facilitate this, privileged credentials must be set up to perform typical root user actions with SUDO privileges.
 - **Grid Infrastructure:** This is an optional field and is required only for creating snap clones on EMC storage to create ASM disks.
 - **Automatic Storage Management:** This is an optional field. It is required if you plan to use this database pool for live cloning on any database running on ASM.
4. Enter a name and description for the database pool.
5. Specify the following details:
 - **PaaS Infrastructure Zone:** Select the PaaS Infrastructure Zone into which the database instance is to be provisioned.
 - **Database Configuration:** Specify the configuration of the database being provisioned. This can either be Single Instance or Cluster Database (RAC) but cannot be a combination of both.
 - **Platform and Version:** Specify the platform and version of the database being deployed.
6. Click **Add** and select one or more Oracle Homes to be added to the database pool.
7. In the Maximum Number of Database Instances (per host), enter the maximum number of database instances that can be running on each host in the pool.

 **Note:**

For RAC databases, the value specified in this field is used to ensure that the nodes on which the database is to be created meet this criteria.

8. Click **Submit** to create a database pool. The newly created pool will appear in the Database Cloud Self Service Portal Setup: Database Pools page. The database pool can now be added to the Service Template.

26.4.4 Configuring Request Settings

You can configure the request settings by specifying when a request can be made, its duration, and so on. See [Configuring Request Settings](#) for details.

26.4.5 Defining Quotas

After configuring the request settings, you must define quotas for each self service user. See [Setting Up Quotas](#) for details.

26.4.6 Using a Physical Standby Database as a Test Master

A test master database is a sanitized version of the production database. A test master can be created from a live standby database by using the Oracle Data Guard feature. Profiles or snapshots can be created from the test master (see [Creating a Database Provisioning Profile Using Snapshots](#)) and these profiles can be used to create snap clones (see [Requesting a Database](#)). Since the test master is a physical standby database with live data, you must schedule and create profiles and snapshots on a periodic basis to ensure that the latest data is captured in the profile (see [Creating and Refreshing Snapshots of the Test Master](#)). Self service users can create multiple snap clones from each profile and refresh their snap clones (see [Refreshing a Database](#)) when a new profile or snapshot becomes available.

To create a test master, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select the Database Service family on the left panel. Click the **Test Master Databases** tab.
2. To create a test master from a live standby database, click **Add** and select a standby database that is to be designated as the test master. The newly added database appears in the Test Master Database page and can be used to create the snap clone database instances.

26.4.7 Enabling the Test Master for Snap Clone

After the test master database has been created, you must enable snap clone on the database.

 **Note:**

You need `SNAP_CLONE_TARGET` or `FULL_TARGET` privilege on the database to enable snap clone.

To enable snap clone, follow these steps:

1. On the Storage Registration page, in the Details section, select the **Databases** tab, and then select the database from the table which you want to use for Snap Clone, and then click **Enable Snap Clone**.

The Supported column in the table shows if the databases listed support Snap Clone or not.

Note: If a database listed shows the **Not Supported** icon in the Supported column, you can view the Message column from the **View** menu. This column displays the reason. A possible reason is that the data files are missing on the storage server and may be located on either local disk or some other unregistered storage server. Another reason could be that the data files reside on another storage that is not synchronized.

2. Once snap clone has been successfully enabled, a confirmation message appears. Click **OK**.

To view all the files located on the storage server, click **Show Files**. To view all the projects (aggregates), volumes, and snapshots in the storage server, select the **Contents** tab.

26.4.8 Creating a Database Provisioning Profile Using Snapshots

Prerequisites for Creating a Database Provisioning Profile Using Snapshots

Before you create a database provisioning profile, follow these prerequisites:

- Ensure that the storage server you want to register for storage is available on the network. To register a storage server, refer to [Registering and Managing Storage Servers](#).

 **Note:**

NetApp, Sun ZFS, Solaris ZFS, and EMC storage servers are supported in Enterprise Manager Cloud Control 12c.

- Ensure that the storage server is connected to a Management Agent installed and monitored in Enterprise Manager Cloud Control for communication.
- Ensure that the storage server is registered, and at least one database should be present which is enabled for Snap Clone.
- To create the profile, you must have the `EM_STORAGE_OPERATOR` or `EM_STORAGE_ADMINISTRATOR` privileges.

Creating a Database Provisioning Profile Using Snapshots

To create a database provisioning profile, follow these steps:

 **Note:**

When a snapshot is used by a database, it cannot be deleted. When you remove a snapshot, it becomes obsolete.

This means that you cannot request any new databases using the obsolete snapshot. This is indicated by the red pushpin against the database, which means that the snapshot is pinned and cannot be used.

When the database using that snapshot is deleted, it gets automatically purged in the next run.

1. You can access the Database Provisioning page using any of the following ways:
 - From the **Enterprise** menu, select **Cloud**, and then select **Cloud Home**. On the Cloud home page, click **Oracle Cloud**, select **Setup**, and then select **Data Sources**. On the Database: Data Sources page, in the Data Profiles tab, click **Create**.
 - From the **Enterprise** menu, select **Provisioning and Patching**, and then select **Database Provisioning**. On the Database Provisioning page, in the Profiles section, click **Create**.
 - From the database target home page, click **Oracle Database**, select **Provisioning**, and then select **Create Provisioning Profile**.
2. On the Reference Target page, click the search icon to select a target.
3. In the Search and Select:Targets display box, select the database you want to create a profile for, and then, click **Select**.

 **Note:**

Ensure that the database you select is enabled for Snap Clone. For information refer to [Enabling or Disabling Snap Clone](#).

4. On the Reference Target page, select the following:
 - **Data Content**
 - **Structure and Data** to include physical and structural files from the database
 - **Create**
 - **Storage Snapshots**
5. In the Credentials section, select the database. In the Credentials column, you can select **Named Credentials** and then select a credential name from the Credential Name column (or) select **Preferred Credentials**. Click **Next**.
6. On the Create Database Provisioning Profile: Page, in the Profile Information section, do the following:
 - Specify or select a profile location in the software library where the database profile will be created.
 - Specify a unique profile name.

For example:
Snap Clone Profile for HR database

- Add a description for the profile.
 - Verify the profile version and the vendor.
 - Add any additional notes such as host name, database, data content, data content mode, and the like.
7. In the Schedule section, you can choose to start the profile creation immediately, or you can schedule it for a later time. You can also choose to repeat the creation of the provisioning profile, and set a repeat time.
 8. In the Purge Policy section, you have three options:
 - **None.** Select this option you do not want to purge any data collected.
 - **Snapshots.** This option enables you to specify the maximum number of snapshots that can be purged.
 - **Day(s).** This option enables you to specify the number of days after which the data component should be purged.
 9. Specify or select a working directory. Click **Next**.
 10. On the Review page, ensure that the selections you have made in the previous pages are correctly displayed and click **Submit**. Otherwise, click **Back** repeatedly till you reach the page where you want to make changes. Click **Cancel** to abort the provisioning profile creation.

Once you have submitted the provisioning profile creation job, manually refresh the page if View Data has been set to Real Time: Manual Refresh. Else, set View Data to reload after a specific period of time, and then select an execution step from the Procedure Steps tree on the left pane to view the details.

To view the submitted jobs, select the **Procedure Activity** link in the **Data Profiles** tab.

26.4.8.1 Creating and Refreshing Snapshots of the Test Master

After the snapshot profile has been created, you can refresh the profile at scheduled intervals and create new versions of the profile.

To create a snapshot profile of the test master (or the physical standby database), follow the steps listed in [Creating a Database Provisioning Profile Using Snapshots](#). To refresh a snapshot profile, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select the Database Service family on the left panel. Click the **Data Profiles** tab.
2. Select the snapshot profile that is to be refreshed.

Click **Refresh**. You will see a message indicating that a new snapshot (version) of the profile will be created. Click **Yes** to submit the refresh profile job and create a new snapshot.

26.4.8.1.1 Snapshot Purge Policy

Snapshots can be refreshed at regular intervals to ensure that the latest production data is available to the users. Every time a snapshot is refreshed, a new version of the

snapshot is created. When the self service user refreshes his database to a newer version of the snapshot, the older versions can be deleted. You can delete them manually or define a purge policy while creating the snapshot.

26.4.9 Creating Service Template Using Snap Clone Profile

To create a snap clone based service template, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role. The `EM_SSA_ADMINISTRATOR` role you select must also have the `EM_STORAGE_OPERATOR` privileges.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select Database from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 26-2 Create Service Template: General (Snap Clone)

The screenshot displays the 'Create Service Template: General' page in the Oracle Cloud Self Service Portal. The page is divided into several sections:

- Describe:** Fields for Name (ST_SNAP) and Description.
- Source Identification:** Radio buttons for 'Create Database' (Using Profile, Using existing Database, Using Storage Test Master). A search field for Profile (Profile_SNAP) and Profile Version (Latest, Selected by user at request time).
- Database Definition:** Radio buttons for 'Type' (Single Instance, Real Application Clusters (RAC), Real Application Clusters (RAC) One Node). Number of nodes (2). Database SID (Specify Prefix, Specified by user at request time). SID Prefix (snapdb). Domain Name (us.oracle.com). Check box for 'Enable Standby Database'.
- Pools and Zones:** A table with columns 'Name' and 'Resource Pool'. The table contains one entry: DBAAS_SI_ZONE and DBAAS_SI_POOL.

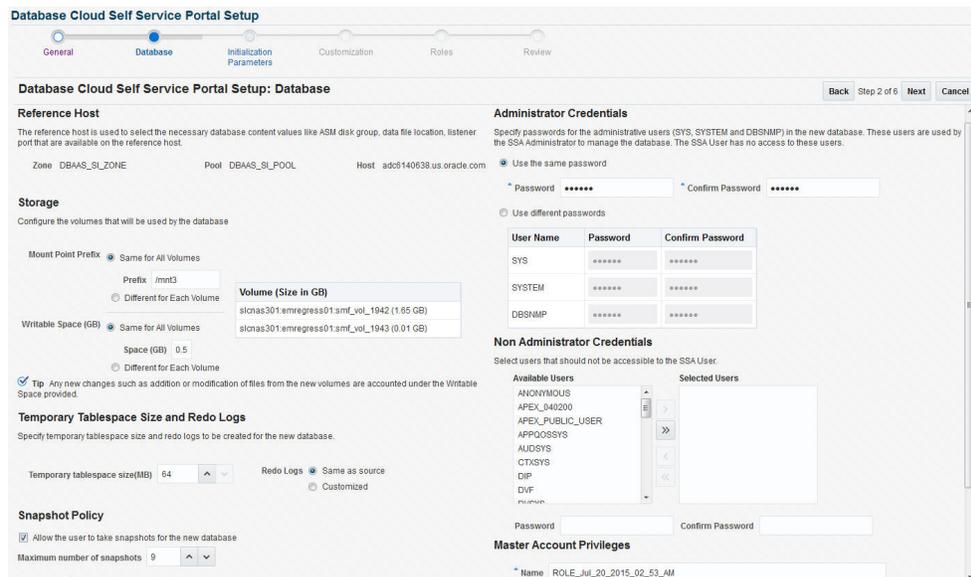
5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. In the Source Identification section, select the **Using Profile** radio button, click the **Search** icon and select the test master database based on the snap clone profile you created.
7. In the Profile Version field, you can select either of the following:
 - Latest: This ensures that the latest profile is always used by the self service user.
 - Selected by user at request time: If this option is selected, the self service user can select the profile to be used when creating a service request.

8. In the Database Definition region, specify the following:
 - **Type:** This can be Single Instance or Real Application Cluster (RAC). If you select RAC, specify the number of nodes.
 - **Database SID:** This is an optional field. You can select **Specify Prefix** or **Specified by User at Request Time**.
 - **Specify Prefix:** If you choose this option, enter a prefix that is to be used to generate a unique System Identifier (SID) at the time of database creation. The prefix helps to identify databases created using this service template. The prefix can be a maximum of 6 characters.

The new database name generated will be based on the SID Prefix specified here. For example, if the prefix is specified as MYDB, the SID for the new database is generated as MYDB0000, MYDB0001, MYDB0002, and so on.

For existing databases (running databases and in progress requests), a unique SID name is generated for single instance databases, or a unique name is generated for real application cluster databases. For example, if the existing SIDs running on a host are MYDB0000, MYDB0001, MYDB0002 And In progress are MYDB0003, MYDB0004, the new SID or database name generated for the new request is MYDB0005.
 - **Specified by User at Request Time:** If you choose this option, you can leave this field blank and specify the SID when you are making a database request.
 - **Domain Name:** This is an optional field. Enter a Domain Name to be used for the new database being created. You must ensure that the domain name does not contain a preceding "." (dot).
9. In the Zones region, click **Add** to select a PaaS Infrastructure Zone into which the database instance is to be provisioned. Click **Assign Pool**. Select a pool from the list and assign this pool to the PaaS Infrastructure Zone. The database will be provisioned into this pool.
10. After you have selected the zone and the pool, the host target is populated in the Reference Host field.
11. Click **Next**. The Database Cloud Self Service Portal Setup: Database page appears.

Figure 26-3 Create Service Template: Database (Snap Clone)



12. In the Reference Host region, the name of the PaaS Infrastructure zone, the database pool, and the reference host you have selected in the Database Cloud Self Service Portal Setup: General page are displayed.

The database values such as the location of the file system and the listener port you select must be available on the reference host.

13. Specify the following details:

- **Storage:** You can configure the volumes that will be used by the database:
 - **Mount Point Prefix:** The mount point prefix can be the **Same for All Volumes** or **Different for Each Volume**.

Specify the prefix for the new mount point for the database being provisioned. This value would be prefixed to an auto-generated mount point where a clone of this volume will be mounted. The volume will be mounted on `/<mount-prefix>_<unique-suffix-generated-by-EM>/<source-path>`. If the Mount Point Prefix is different for each volume, specify a different value for each volume,

- **Writable Space:** The Writable Space can be the **Same for All Volumes** or **Different for Each Volume**.

Specify the amount of space required for block changes. The value specified here cannot exceed the Storage Ceiling specified for the server. For example, for minimal data changes, you specify the value as 1% of the original volume size.

- **Enable Archiving:** If this check box is selected, the database will not be shut down during a refresh. This allows self service users to schedule backups and restore operations without shutting down the database.
- **Snapshot Policy:** Snapshots are sets of historical data for specific time periods. By default, Oracle Database automatically generates snapshots of the performance data once every hour and retains the statistics in the workload repository for 8 days. **Select the Allow the user to take snapshots for the new database** checkbox and specify the **Maximum Number of Snapshots** that can be taken.

Snapshots can be created for a specific point in time. The number of snapshots is determined by the value specified by the self service administrator in the Maximum Number of Snapshots field. Once the snapshot has been taken, the database can be restored to a specific snapshot taken a particular point in time. For example, if there are several snapshots such as *snap1*, *snap2*, and *snap3*, if the database is restored to *snap2*, *snap3* will be deleted.

- In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number.
 - **Administrator Credentials:** Specify passwords for the system schemas of the new database. These schemas will not be available to the `EM_SSA_USERS`. You can choose to use the same password for all the schemas or different passwords for each schema. If these values are not specified, default values will be used and the `EM_ADMINISTRATOR` can change them.
 - **Non Administrator Credentials:** Apart from the system schemas, if you want to restrict access to other schemas, you can select them in the Non-Administrator Credentials region and specify the password.
 - **Master Account Privileges:** Enter the name of the Master Account. You can specify the privileges that are to be provided to the master account user by specifying them in the Privileges field.
14. Click **Next**. The Create Service Template: Initialization Parameters page appears.

Figure 26-4 Create Service Template: Initialization Parameters (Snap Clone)

Name	Value	Editable	Modified	Description
audit_trail	db	Yes		Enable system auditing. Valid Values are none, os, db, (db,extended),xml,(xml,extended).
db_block_size	8192	No		Size of database block in bytes. Multiple of 512. Example 8192.
processes	300	Yes		User processes. Example 200.
compatible	12.1.0.0.0	No		Database will be completely compatible with this software version.
remote_login_passwordfile	EXCLUSIVE	Yes		Password file usage parameter. Valid Values are EXCLUSIVE,NONE,INTERNAL,SHARED.

15. In this page, you can specify the following:
- **Database Sizes:** Select the database sizes that are to be supported by this service template.

Note: The database size definitions must have already been defined using the `emcli create_database_size` command. See [Database Size EM CLI Verbs](#) for details.

You can select sizes such as small, medium, and large. Each database size has a specific memory, storage, CPU cores, and units. Select a size and select **Include in Template** to associate it with the service template. Click **Default** to designate it as the default database size.
 - **Initialization Parameters:** You can configure the values of various initialization parameters that affect the operation of the database instance. Select a parameter and click the **Set** icon to modify the value of the parameter.

16. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.

You can also specify a custom Post SQL Script and select the user who can run the script. For more details, see [Selecting the Post SQL Script](#).

17. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. These properties will be applied to the database clones that are created. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
18. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
19. The Create Service Template: Review page appears. Click **Create**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page.

26.4.10 Configuring Chargeback

Optionally, you can configure the chargeback service. See [Chargeback Administration](#).

26.4.11 Requesting a Database

The self service user can now select the service template based on the database template profile and create a database. See [Requesting a Database](#).

26.4.12 Example: Creating Snap Clones from an In-Sync Test Master

The following example shows how you can create a snap clones from a physical standby database.

1. First, you must make sure that all the prerequisites are met. See [Getting Started](#).
2. The next step is to identify the production database and the physical standby database. The production database is **prod1** and the standby database as **prod1stb**.
3. Next, you must register the storage server. This step validates the storage and discovers **prod1stb** on the storage server. See [Registering Storage Servers](#).
4. You must then create one or more PaaS Infrastructure Zones and one or more database pools. See [Creating Resource Providers](#)
5. Then, you must define the quota that you wish to allocate to the self service users. See [Defining Quotas](#).
6. The next step is to designate the standby database, **prod1stb** as the test master.
7. Next, you must enable **prod1stb** for snap clone. This allows creation of snap clones using snapshot technology. See [Enabling the Test Master for Snap Clone](#).

8. The next step is to create a snapshot profile from **prod1stb**. See [Creating a Database Provisioning Profile Using Snapshots](#)

While creating the profile, specify the **Start Date** as **05/15/2015**, the **Repeat** schedule as **Every N Days** and the Frequency as Every **1** day. Specify the **End By** date as **05/20/2015**. A new version of the snapshot profile will be created every day from the Start date of **05/15/2015**.

In the Purge Policy field, specify the **Number of Snapshots** as **5**. This will ensure that after 5 versions of the snapshot are created, the first or oldest one will be purged.

9. To make this profile available to the self service user, you must create a service catalog entry or a service template. Create a template called **Snap Clone Template**. See [Creating Service Template Using Snap Clone Profile](#). Set the Profile Version field to **Selected by user at request time**. The self service user can choose the profile version that is to be used to create the snap clone.
10. The self service user can then use the **Snap Clone Template**, select a version of the profile and use it to create the snap clone. See [Requesting a Database](#). As and when a new version of the profile is available (see [Creating and Refreshing Snapshots of the Test Master](#)), the self service user can choose to refresh the profile to the latest version. See [Refreshing a Database](#).

Based on the Purge Policy which is set to 5 snapshots, the older versions of the snapshots will be deleted. But if the self service user has a database that is using that snapshot, the profile cannot be deleted until the self service user has refreshed the profile to the latest version.

26.4.13 Creating a Service Template for EMC Snap Clone

Note:

This option can be used only for snapshots created on EMC storage.

Prerequisites

Before you can create snap clones on EMC storage, you must ensure that the prerequisites described in [Configuring EMC Storage Servers](#) are met.

To create a service template using an existing database, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select **Database** from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 26-5 Create Service Template: General: EMC Snap Clone

Database Cloud Self Service Portal Setup: General

Back Step 1 of 6 Next Cancel

Describe

* Name live_clone
Description

Source Identification

Create Database Using Profile Using existing Database

* Database ps3db1.us.oracle.com

* Host Credential NC_HOST_2014-11-07-212143 (SSUBBURA1)

* Database Credential NC_ORACLE_D_2014-11-09-015220 (SSUBBURA1)

Database Definition

Create SnapClone Database Full Clone Using RMAN Duplicate

Type Single Instance Real Application Clusters (RAC)

Number of nodes 2

Database SID Specify Prefix Specified by user at request time

SID Prefix db

Domain Name

Pools and Zones

A service template can be configured to provision databases in one or more pools. Select the zone and associated pools that this service template can provision databases into.

Name	Resource Pool
ADzone	alxpool

Reference Host us.oracle.com

5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. In the Source Identification section, select the **Using Existing Database** radio button, click the **Search** icon and select the test master database that you had created earlier. See [Using a Physical Standby Database as a Test Master](#) for more details.
7. Specify the host and database credentials.
8. In the Database Definition region, the **Create Snap Clone Database** option is selected. Enter the following details:
 - **Type:** This can be Single Instance or Real Application Cluster (RAC). If you select RAC, specify the Number of Nodes.
 - **Database SID:** This is an optional field. You can select **Specify Prefix** or **Specified by User at Request Time**.
 - **Specify Prefix:** If you choose this option, enter a prefix that is to be used to generate a unique System Identifier (SID) at the time of database creation. The prefix helps to identify databases created using this service template. The prefix can be a maximum of 6 characters.

The new database name generated will be based on the SID Prefix specified here. For example, if the prefix is specified as MYDB, the SID for the new database is generated as MYDB0000, MYDB0001, MYDB0002, and so on.

For existing databases (running databases and in progress requests), a unique SID name is generated for single instance databases, or a unique name is generated for real application cluster databases. For example, if the existing SIDs running on a host are MYDB0000, MYDB0001, MYDB0002 And In progress are MYDB0003, MYDB0004, the new SID or database name generated for the new request is MYDB0005.
 - **Specified by User at Request Time:** If you choose this option, you can leave this field blank and specify the SID when you are making a database request.

- **Domain Name:** This is an optional field. Enter a Domain Name to be used for the new database being created. You must ensure that the domain name does not contain a preceding "." (dot).
9. In the Zones region, click **Add** to select a PaaS Infrastructure Zone into which the database instance is to be provisioned. Click **Assign Pool**. Select a pool from the list and assign this pool to the PaaS Infrastructure Zone. The database will be provisioned into this pool.
 10. After you have selected the zone and the pool, the host target is populated in the Reference Host field.
 11. In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number. Click **Next**. The Create Service Template: Database page appears.
 12. In the Reference Host region, the name of the PaaS Infrastructure zone, the database pool, and the reference host you have selected in the Database Cloud Self Service Portal Setup: General page are displayed.

The database values such as a Automatic Storage Management (ASM) disk group, location of the file system, and listener port you select must be available on the reference host.

13. Specify the following:
 - **Storage Type:** Select Automatic Storage Management (ASM). The Oracle Automatic Storage Management (ASM) is a volume manager and a file system for database files that supports single-instance and RAC configurations. ASM groups the disks in your storage system into one or more disk groups. If you select ASM, select the Disk Group here.
 - **Fast Recovery (Optional):** To simplify the management of backup and recovery files, you can create a fast recovery area for your database. Select the **Enable Fast Recovery Area** checkbox to specify the location in which recovery related files must be stored. The fast recovery area can be a ASM disk group or a file system that provides a centralized disk location for backup and recovery file. Specify the location of the Fast Recovery Area and the Fast Recovery Size. The amount of disk space to allocate for the fast recovery area depends on the size and activity levels of your database.

If the **Enable Archiving** check box is selected, the database will not be shut down during a refresh. This allows self service users to schedule backups and restore operations without shutting down the database.
14. In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number.
15. Specify the **Administrator Credentials**. Specify passwords for the system schemas of the new database. These schemas will not be available to the `EM_SSA_USERS`. You can choose to use the same password for all the schemas or different passwords for each schema. If these values are not specified, default values will be used and the `EM_ADMINISTRATOR` can change them.
16. Apart from the system schemas, if you want to restrict access to other schemas, you can select them in the Non-Administrator Credentials region and specify the password. These schemas will be locked and the `EM_SSA_USERS` cannot access them. Click **Next**.

17. Click **Next**. The Create Service Template: Initialization Parameters page appears. In this page, you can specify the following:
 - Database Sizes: Select the database sizes that are to be supported by this service template.

Note: The database size definitions must have already been defined using the `emcli create_database_size` command. See [Database Size EM CLI Verbs](#) for details.

You can select sizes such as small, medium, and large. Each database size has a specific memory, storage, CPU cores, and units. Select a size and select **Include in Template** to associate it with the service template. Click **Default** to designate it as the default database size.
 - Initialization Parameters: You can configure the values of various initialization parameters that affect the operation of the database instance. Select a parameter and click the **Set** icon to modify the value of the parameter.
18. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
19. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
20. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
21. The Create Service Template: Review page appears. Click **Create**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page.

26.5 Creating Snap Clones from a Discretely Synchronized Test Master

You can create snap clones from a discretely synchronized test master if the test master is present on a NAS storage device. This table lists the steps involved in creating a snap clone using a snapshot profile.

Table 26-2 Creating Snap Clone - Discrete Flow

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started
2	Register storage servers.	See Registering Storage Servers
3	Create one or more resource providers.	See Creating Resource Providers .
4	Configure the request settings.	See Configuring Request Settings .

Table 26-2 (Cont.) Creating Snap Clone - Discrete Flow

Step	Task	Role
4	Define quotas for each self service user.	See Defining Quotas
5	Create a test master database from an RMAN Backup.	See Creating a Discretely Synchronized Test Master .
6	Enable the test master for snap clone	See Enabling the Test Master for Snap Clone
6	Create a snap clone profile from the test master.	See Creating a Database Provisioning Profile Using Snapshots
9	Create a service template based on the profile you have created.	See Creating a Service Template Using Snap Clone Profile .
10	Configure the Chargeback Service. (this step is optional)	See Configuring Chargeback .
11	Select the service template you have created and request a database.	See Requesting a Database
12	Refresh the test master and the database instance: <ul style="list-style-type: none"> Refresh the test master. Refresh the snap shot profile. Refresh the snap clone database instance. 	See: <ul style="list-style-type: none"> Refreshing the Test Master Database Refreshing the Snap Shot Profile. Refreshing a Database

26.5.1 Getting Started

See [Getting Started](#).

26.5.2 Registering Storage Servers

See [Registering and Managing Storage Servers](#).

26.5.3 Creating Resource Providers

See [Creating Resource Providers](#).

26.5.4 Configuring Request Settings

See [Configuring Request Settings](#).

26.5.5 Defining Quotas

See [Defining Quotas](#).

26.5.6 Creating a Discretely Synchronized Test Master

A test master database is a sanitized version of the production database. Production data can be optionally masked before the test master is created. A test master can be created from a snapshot or an RMAN Backup profile taken at a prior point in time and

refreshed at specific intervals. This option is useful if the source data has to be masked to hide sensitive data.

To create a test master, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select the Database Service family on the left panel. Select **Data Sources** and click on the **Test Master Databases** tab.
2. To create a new test master, click on the **Create** menu. Select a production database from which the test master is to be created and click **Select**. The Clone Database: Source and Destination page appears.
3. On the Create Test Master Database: Source and Destination page, do the following:

- In the Source section, launch the credentials selector by selecting the search icons for SYSDBA Database and Database Host credentials. Click **OK**.
- In the Data Time Series section, select **Now** or **Prior Point in Time**.

If you selected Now, specify or search and select the SYSASM ASM Credentials. Now refers to Live Clone.

If you selected Prior Point in Time, a carousel of RMAN Backup images appear. Select the appropriate RMAN backup by clicking **Select** on the image.

Select a specific time between the selected backup or snapshot and the next (or latest point of source). The backups or dumps are created at specific intervals and the test master that is based on these will reflect the production database at specific points in time. To reflect the latest data in the production database, the test master needs to be periodically refreshed.

4. In the Destination Database Definition section, do the following:

- Specify a display name.
- Specify a global database name and SID.

A database is uniquely identified by a Global Database Name. The typical form of a name is name.domain. A database is referenced by at least one Oracle instance which is uniquely identified by SID.

- Select one of the following types of databases:

- **Single Instance Database.**

In the Hosts section, specify the Oracle Home location. The host gets specified by default. Next, select the Database Home credentials and the SYSASM ASM credentials.

- **RAC Database**

In the Hosts section, specify or select the cluster target. The Oracle Home location gets specified by default. Next, specify the Database Host credentials, and the SYSASM ASM credentials.

In the Nodes section, select the cluster and Oracle Home to display one or more hosts on which the administrator managed Oracle RAC database will be created.

- **RAC One Node Database**

In the Hosts section, specify or select the cluster target. The Oracle Home location gets specified by default. Next, specify the Database Host credentials, and the SYSASM ASM credentials.

In the Nodes section, select the cluster and Oracle Home to display one or more hosts on which the administrator managed Oracle RAC database will be created.

 **Note:**

Oracle supports inline patching as part of clones. When the destination home selected has patches applied such as the latest CPU or PSU, then the cloned database is automatically brought up with that level.

Click **Next**.

5. On the Create Test Master Database: Configuration page, do the following.

- **Database Files Location:** Specify the location in which the data files, temporary files, redo log files, and control files will be created. You must specify a mount point which must be present on a registered storage volume so that the self service administrator can enable this test master for snap clone.

You can select:

- **File System:** The Oracle Database File System creates a standard file system interface on top of files and directories that are stored in database tables. If you select this option, you must specify or select the Location of the File System. You can specify a common location for all the files or you can select the **Use Oracle Optimal Flexible Architecture-compliant directory structure (OFA)** checkbox and specify different locations for data files, redo log files, and so on.
- **Automatic Storage Management:** The Oracle Automatic Storage Management (ASM) is a volume manager and a file system for database files that supports single-instance and RAC configurations. ASM groups the disks in your storage system into one or more disk groups. If you select ASM, select a common location for the database files.
- **Recovery Files Location:** To simplify the management of backup and recovery files, a fast recovery area can be created for your database. The fast recovery area can be a ASM disk group or a file system that provides a centralized disk location for backup and recovery file. To allow self service users to schedule backups and perform restore operations, you can select the Use Fast Recovery Area checkbox and specify the location of the Fast Recovery Area and the Fast Recovery Size. The amount of disk space to allocate for the fast recovery area depends on the size and activity levels of your database.
- **Listener Configuration:** Click **Add** to add one or more listener targets that are to be associated with the new database.
- **Database Credentials:** Specify the passwords for the administrative users (SYS, SYSTEM and DBSNMP) of the new database being cloned. You can choose to use the same password for all the schemas or different passwords for each schema.

6. Click **Next**. Some values such as `db_block_size` cannot be modified.
7. Click **Next**. The Create Test Master Database: Post Processing page appears. Specify the following details:
 - Masking Definition: Data masking is the process of masking sensitive data in test or non-production databases. The masking definition defines the columns to be masked in the format of the masked data. Specify the masking definition to be applied after the database is cloned. After selecting the masking definition, select the In-Place Masking option to generate a script to replace the sensitive data in-place with masked data on the cloned database. For more details on creating a masking definition, see the *Enterprise Manager Database Testing Guide*.

 **Note:**

The masking definition can be used only when you have the Oracle Data Masking and Subsetting license pack.

- Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
- Specify the path for the SQL script which allows you to run the script against the newly cloned database as a user such as SYS, SYSTEM, or any other specified user. The SQL script allows you to customize the cloned database. For more details, see [Selecting the Post SQL Script](#).
- Select the **Create Data Profile** check box if you wish to create a database provisioning profile that is based on the test master. These profiles can be refreshed automatically or at specified intervals. Different versions of the profile are saved and are available to the self service user until they are purged. This ensures that the test master is periodically updated and the latest data can be used by the self service user. You can create a database provisioning profile if:
 - This version of the test master must be available for cloning in future, even after the test master has been refreshed.

Enter the following details for the profile:

- Profile Type: Select RMAN Backup or RMAN Image.
- Backup Mode: If you select the RMAN Backup profile type, you can select one of the following: Select **Online Backup** to make a backup while the database is up and running. Select **Offline Backup** to shutdown the database for the duration of backup and bring it back once the backup is complete.
- Backup Location: Enter the directory path that already contains a backup location.
- Backup File Tag: Backup files will be tagged with the tag specified here.
- Location: Select the directory for the backup location.
- Enter the name, description, version number, vendor, and additional notes.

- Purge Policy Type: This can be None, Snapshots, or Days. If you select **None**, the profiles will need to be manually deleted as required. If you select **Snapshots**, specify the maximum number of snapshots that can be retained. If you select Day(s), specify the number of days the profile can be retained.
 - Schedule: Specify whether the profile needs to be created immediately or at a later date.
8. Click **Next**. Specify the schedule for the creation of the test master. It can be created immediately (if physical standby used, it is created immediately and automatically refreshed) or can be created at a later date / time and refreshed at specified intervals.
 9. Click **Next**. Review the information entered so far and click **Submit** to create the test master. After the test master has been created, you can refresh the test master as required to create a new version of the profile on which the test master is based.

 **Note:**

You can also use the `emcli create_clone` command to create the test master. See [Creating a Database Clone Using EM CLI Verbs](#) for more details.

26.5.7 Creating a Service Template Using Snap Clone Profile

See [Creating Service Template Using Snap Clone Profile](#).

26.5.8 Configuring Chargeback

Optionally, you can configure the chargeback service. See [Chargeback Administration](#).

26.5.9 Requesting a Database

The self service user can now select the service template based on the database template profile and create a database. See [Requesting a Database](#).

26.5.10 Refreshing the Test Master Database

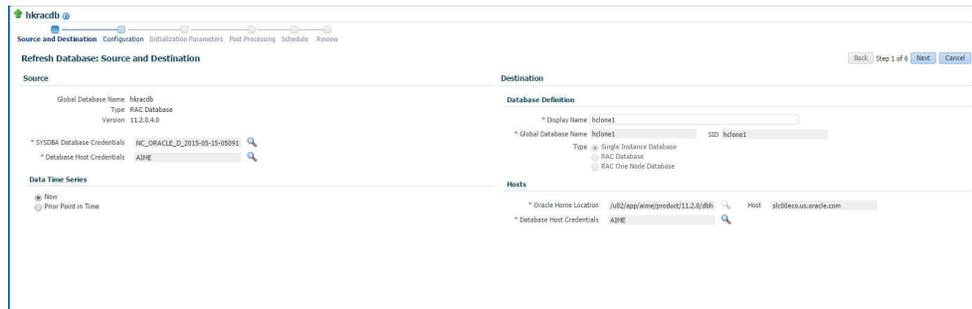
The test master database is created from an RMAN Backup profile of the production database taken at a particular point in time. Since the production database is constantly updated, to ensure that the latest production data is available in the test master, it has to be refreshed at periodic intervals.

To refresh the test master database, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select the Database Service family on the left panel. Click the **Test Master Databases** tab.
2. Select the test master that is to be refreshed and click **Refresh**. The Refresh Database: Source and Destination page appears.

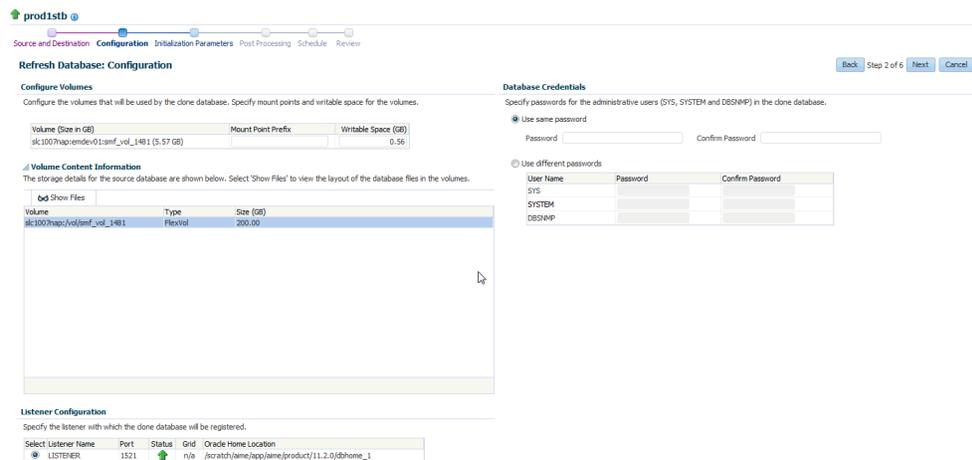
3. Select the **Prior Point in Time** option and select the backup to which the test master is to be refreshed. You can modify the source and destination credentials.
4. If you select the **Now** option, you will see the following screen.

Figure 26-6 Test Master Refresh: Source and Destination (Now)



Click **Next**. The Configuration page appears.

Figure 26-7 Test Master Refresh: Configuration



5. Specify the Mount Point Prefix for the storage volume that will be used by the clone database and the database credentials. Click **Next**.
6. In the Initialization Parameters page, edit the values of various initialization parameters that affect the operation of the database instance. Click **Next**.
7. In the Post Processing page, specify the following:
 - **Masking Definition:** Data masking is the process of masking sensitive data in test or non-production databases. The masking definition defines the columns to be masked in the format of the masked data. Specify the masking definition to be applied after the database is cloned. After selecting the masking definition, select the In-Place Masking option to generate a script to replace the sensitive data in-place with masked data on the cloned database. For more details on creating a masking definition, see the *Enterprise Manager Database Testing Guide*

 **Note:**

The masking definition can be used only when you have the Oracle Data Masking and Subsetting license pack.

- Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
 - Specify the path for the SQL script which allows you to run the script against the newly cloned database as a user such as SYS, SYSTEM, or any other specified user. The SQL script allows you to customize the cloned database. For more details, see [Selecting the Post SQL Script](#).
8. Click **Next**. Specify the schedule for the creation of the test master. It can be created immediately (if physical standby used, it is created immediately and automatically refreshed) or can be created at a later date / time and refreshed at specified intervals.
 9. Click **Next**. Review the information entered so far and click **Submit** to refresh the test master.

 **Note:**

You can use the `emcli refresh_database` command to refresh the database. See [Database Profile EM CLI Verbs](#) for details.

When the test master is refreshed, you can create a new profile based on the updated test master. The self service user can choose to refresh the database instances to the latest profile. The storage space that was used by the older version of the test master will be reclaimed by the updated (refreshed) test master.

26.5.11 Refreshing the Snap Shot Profile

After the test master has been refreshed, you must create a new revision of the snap shot profile. To do so, you must refresh the snap shot profile by following these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select the Database Service family on the left panel. Click **Data Sources**.
2. In the Data Sources page, click the **Data Profiles** tab. The list of the profiles is displayed.

Figure 26-8 Refresh Snap Shot Profile

The screenshot shows the Oracle Cloud console interface for managing database profiles. The main area is titled 'Database: Data Sources' and contains a table of profiles. The 'Profile_SNAP' profile is selected and highlighted in blue. Below this table, the 'Contents: Profile_SNAP' section displays a table of snapshot clones.

Name	Contains	Owner	Removal Overdue	Source Database	Purge Policy	Sc
Database dd11204.us.oracle.com Profile 20-07-2015 07:34 PM	1 Database Te...	SBAMBORE	None	dd11204.us.ora	None	No
Profile_RMAN	1 RMAN Backup...	SSUEBBURA	None	testdb121	None	No
Profile_DBCA	1 Database Te...	SSUEBBURA	None	testdb121	None	No
Profile_SNAP	1 Snapshot(s)	SSUEBBURA	None	snaprefdb	None	No
cnh_instdb4_Profile	1 RMAN Backup...	RSVARANA	None	instdb4	None	No

Name	Created	Used By	Status	Procedure Activity	
				Create	Delete
Snapshot_07_20_2015_02_33_AM	20-Jul-2015 02:33:28 AM PDT	1 database	Active	n/a	n/a

3. Select the profile to be refreshed and click **Refresh Profile**. A confirmation message is displayed. Click **Yes** to submit the refresh profile job.

26.5.12 Example: Creating Snap Clones from Discretely Synchronized Test Master

The following example shows how you can create snap clones from a test master database that is refreshed at discrete intervals.

1. First, you must make sure that all the prerequisites are met. See [Getting Started](#).
2. Next, you must register the storage server. See [Registering Storage Servers](#).
3. You must then create one or more PaaS Infrastructure Zones and one or more database pools. See [Creating Resource Providers](#).
4. Then, you must define the quota that you wish to allocate to the self service users. See [Defining Quotas](#).
5. The next step is to identify the production database (**prod1**) and create an RMAN backup **prod1_backup**.
6. Create a test master (**testmaster1**) based on **prod1_backup**. See [Creating a Discretely Synchronized Test Master](#).
7. Next, you must enable **testmaster1** for snap clone. This allows creation of snap clones using snapshot technology. See [Enabling the Test Master for Snap Clone](#).
8. Next, you must create a profile (**snap_profile**) that is based on **testmaster1**. See [Creating a Database Provisioning Profile Using Snapshots](#)
9. To make this profile available to the self service user, you must create a service catalog entry or a service template. Create a template called **Snap Clone Template1**. See [Creating a Service Template Using Snap Clone Profile](#). In the Service Template, the **Profile Version** field is set to **Latest**. This will ensure that the self service user will always use the latest version of the profile to create database instances.
10. The self service user can then use the **Snap Clone Template1** to create the snap clone. See [Requesting a Database](#).
11. To get the latest production data, the self service administrator refreshes **TestMaster1**. See [Refreshing the Test Master Database](#).

12. Since the test master now contains updated data, a new revision of the profile must be created. See [Refreshing the Snap Shot Profile](#).
13. Now that a new revision of the profile (**snap_profile**) is available, the self service user can refresh his database instance to get the latest production data. See [Refreshing a Database](#). The storage space that was used by the older version of the test master will be reclaimed by the refreshed test master.

26.6 Creating Snap Clones from a Storage Test Master

You can use storage snapshots of the test master to create snap clones. This table lists the steps involved in creating a snap clone using a storage test master.

Table 26-3 Creating Snap Clone - Discrete Flow

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started
2	Register storage servers.	See Registering Storage Servers
3	Create one or more resource providers.	See Creating Resource Providers .
4	Configure the request settings.	See Configuring Request Settings .
4	Define quotas for each self service user.	See Defining Quotas
5	Create a storage test master.	See Creating a Storage Test Master
9	Create a service template based on the storage test master.	See Creating a Service Template from a Storage Test Master .
10	Configure the Chargeback Service. (this step is optional)	See Configuring Chargeback .
11	Select the service template you have created and request a database.	See Requesting a Database
12	Refresh the storage test master and the database instance: <ul style="list-style-type: none"> • Refresh the storage test master. • Refresh the snap clone database instance. 	See: <ul style="list-style-type: none"> • Refreshing the Test Master Snapshots • Refreshing a Database

26.6.1 Getting Started

See [Getting Started](#).

26.6.2 Registering Storage Servers

See [Registering and Managing Storage Servers](#).

26.6.3 Creating Resource Providers

See [Creating Resource Providers](#).

26.6.4 Configuring Request Settings

See [Configuring Request Settings](#).

26.6.5 Defining Quotas

See [Defining Quotas](#).

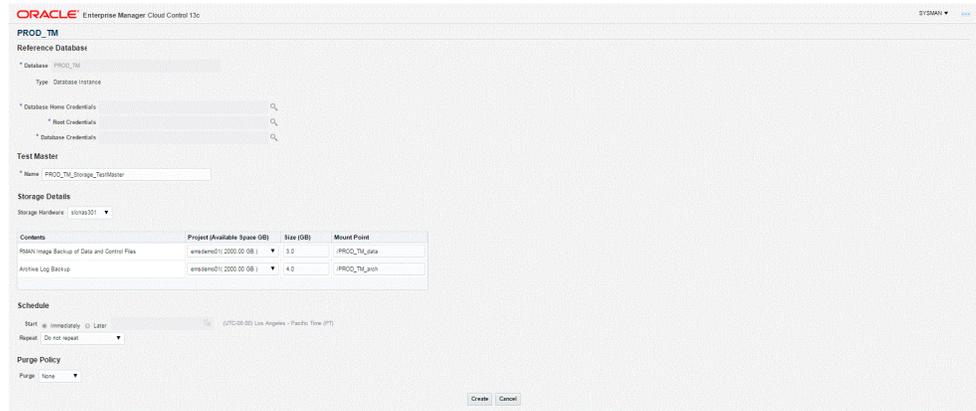
26.6.6 Creating a Storage Test Master

To create a storage test master, follow these steps:

1. From the **Targets** menu, select **Databases**.
2. On the Databases page, click the name of the database target that you want to create a storage test master for.
3. On the database home page, click **Oracle Database**, select **Cloning**, and then select **Create Snapshot Test Master**.
4. On the Create Storage Test Master page, in the Reference Database section, do the following:
 - Specify the database home credentials.
 - Specify the root credentials of the database.
 - Specify the database credentials.
5. In the Test Master field, specify a unique name for the storage test master that you want to create.

For example, `PROD_TM_Storage_TestMaster`.

6. In the Storage Details section, do the following:
 - Select the storage server that you want to use to create a storage test master on.
 - Select the project, size, and mount point for RMAN image backup of data and control files. For example, select `emsdemo01 (2000.00 GB)` as the project, select `3.0 GB` as the size, and specify `/PROD_TM_data` as the mount point.
 - Select the project, size, and mount point for archive log backup. For example, select `emsdemo01 (2000.00 GB)` as the project, select `4.0 GB` as the size, and specify `/PROD_TM_arch` as the mount point.
7. In the Schedule section, you can choose to create the storage test master immediately, or you can select **Later**, and specify a time of your choice. You can also set a specific time or date to repeat the process.
8. In the Purge Policy section, select either of the following:
 - **None** - If you do not want to purge any data.
 - **Snapshots** - If you want to purge the data after a certain number of snapshots has been created. Select the number of maximum snapshots.
 - **Day(s)** - If you want to purge the data after a certain number of days. Select the number of days.
9. Click **Create**.

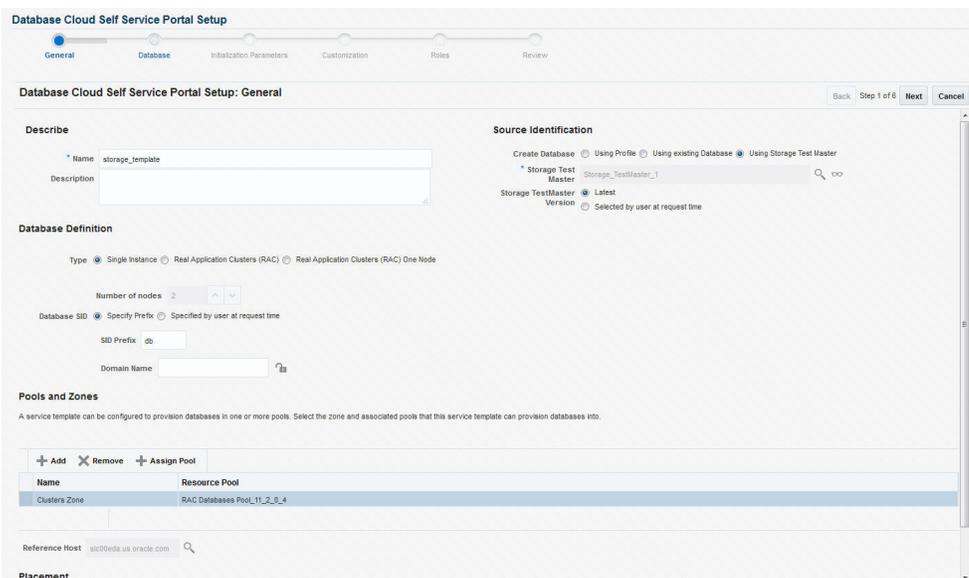


26.6.7 Creating a Service Template from a Storage Test Master

To create a storage test master based service template, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role. The `EM_SSA_ADMINISTRATOR` role you select must also have the `EM_STORAGE_OPERATOR` privileges.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select Database from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 26-9 Create Service Template: General (Storage Test Master)



5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.

6. In the Source Identification section, select the **Using Storage Test Master** radio button, click the **Search** icon and select the storage test master you created.
7. In the Profile Version field, you can select either of the following:
 - **Latest:** This ensures that the latest profile is always used by the self service user.
 - **Selected by user at request time:** If this option is selected, the self service user can select the profile to be used when creating a service request.
8. In the Database Definition region, specify the following:
 - **Type:** This can be Single Instance or Real Application Cluster (RAC). If you select RAC, specify the number of nodes.
 - **Database SID:** This is an optional field. You can select **Specify Prefix** or **Specified by User at Request Time**.
 - **Specify Prefix:** If you choose this option, enter a prefix that is to be used to generate a unique System Identifier (SID) at the time of database creation. The prefix helps to identify databases created using this service template. The prefix can be a maximum of 6 characters.

The new database name generated will be based on the SID Prefix specified here. For example, if the prefix is specified as MYDB, the SID for the new database is generated as MYDB0000, MYDB0001, MYDB0002, and so on.

For existing databases (running databases and in progress requests), a unique SID name is generated for single instance databases, or a unique name is generated for real application cluster databases. For example, if the existing SIDs running on a host are MYDB0000, MYDB0001, MYDB0002 And In progress are MYDB0003, MYDB0004, the new SID or database name generated for the new request is MYDB0005.
 - **Specified by User at Request Time:** If you choose this option, you can leave this field blank and specify the SID when you are making a database request.
 - **Domain Name:** This is an optional field. Enter a Domain Name to be used for the new database being created. You must ensure that the domain name does not contain a preceding "." (dot).
9. In the Zones region, click **Add** to select a PaaS Infrastructure Zone into which the database instance is to be provisioned. Click **Assign Pool**. Select a pool from the list and assign this pool to the PaaS Infrastructure Zone. The database will be provisioned into this pool.
10. After you have selected the zone and the pool, the host target is populated in the Reference Host field.
11. Click **Next**. The Database Cloud Self Service Portal Setup: Database page appears. In the Reference Host region, the name of the PaaS Infrastructure zone, the database pool, and the reference host you have selected in the Database Cloud Self Service Portal Setup: General page are displayed.

The database values such as the location of the file system and the listener port you select must be available on the reference host.
12. Specify the following details:
 - **Storage:** You can configure the volumes that will be used by the database:

- **Mount Point Prefix:** The mount point prefix can be the **Same for All Volumes** or **Different for Each Volume**.

Specify the prefix for the new mount point for the database being provisioned. This value would be prefixed to an auto-generated mount point where a clone of this volume will be mounted. The volume will be mounted on `<mount-prefix>_<unique-suffix-generated-by-EM>/<source-path>`. If the Mount Point Prefix is different for each volume, specify a different value for each volume,

- **Writable Space:** The Writable Space can be the **Same for All Volumes** or **Different for Each Volume**.

Specify the amount of space required for block changes. The value specified here cannot exceed the Storage Ceiling specified for the server. For example, for minimal data changes, you specify the value as 1% of the original volume size.

- **Enable Archiving:** If this check box is selected, the database will not be shut down during a refresh. This allows self service users to schedule backups and restore operations without shutting down the database.
- **Snapshot Policy:** Snapshots are sets of historical data for specific time periods. By default, Oracle Database automatically generates snapshots of the performance data once every hour and retains the statistics in the workload repository for 8 days. **Select the Allow the user to take snapshots for the new database** checkbox and specify the **Maximum Number of Snapshots** that can be taken.

Snapshots can be created for a specific point in time. The number of snapshots is determined by the value specified by the self service administrator in the Maximum Number of Snapshots field. Once the snapshot has been taken, the database can be restored to a specific snapshot taken a particular point in time. For example, if there are several snapshots such as *snap1*, *snap2*, and *snap3*, if the database is restored to *snap2*, *snap3* will be deleted.

- In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number.
- **Administrator Credentials:** Specify passwords for the system schemas of the new database. These schemas will not be available to the `EM_SSA_USERS`. You can choose to use the same password for all the schemas or different passwords for each schema. If these values are not specified, default values will be used and the `EM_ADMINISTRATOR` can change them.
- **Non Administrator Credentials:** Apart from the system schemas, if you want to restrict access to other schemas, you can select them in the Non-Administrator Credentials region and specify the password.
- **Master Account Privileges:** Enter the name of the Master Account. You can specify the privileges that are to be provided to the master account user by specifying them in the Privileges field.

13. Click **Next**. The Create Service Template: Initialization Parameters page appears.

14. In this page, you can specify the following:

- **Database Sizes:** Select the database sizes that are to be supported by this service template.

Note: The database size definitions must have already been defined using the `emcli create_database_size` command. See [Database Size EM CLI Verbs](#) for details.

You can select sizes such as small, medium, and large. Each database size has a specific memory, storage, CPU cores, and units. Select a size and select **Include in Template** to associate it with the service template. Click **Default** to designate it as the default database size.

- Initialization Parameters: You can configure the values of various initialization parameters that affect the operation of the database instance. Select a parameter and click the **Set** icon to modify the value of the parameter.
15. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.

You can also specify a custom Post SQL Script and select the user who can run the script. For more details, see [Selecting the Post SQL Script](#).

16. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. These properties will be applied to the database clones that are created. You can do the following:
- Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
17. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
18. The Create Service Template: Review page appears. Click **Create**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page.

26.6.8 Configuring Chargeback

Optionally, you can configure the chargeback service. See [Chargeback Administration](#).

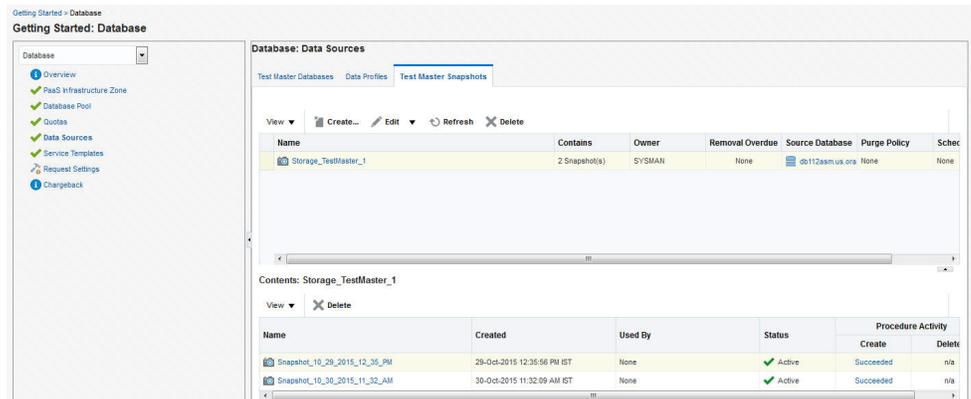
26.6.9 Requesting a Database

The self service user can now select the service template based on the database template profile and create a database. See [Requesting a Database](#).

26.6.10 Refreshing the Test Master Snapshots

You can create a new revision of the storage test master by following these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Setup**, then select the Database Service family on the left panel. Click **Data Sources**.
2. In the Data Sources page, click the **Test Master Snapshots** tab. The list of the snapshots is displayed.

Figure 26-10 Refresh Storage Snapshot

3. Select the profile to be refreshed and click **Refresh**. A confirmation message is displayed. Click **Yes** to submit the refresh profile job.

26.7 Creating a CloneDB Database

The CloneDB feature allows you to clone a database multiple times without copying the data into different locations. Instead Oracle Database creates the files in the Clone DB database using copy-on-write technology, so that only the blocks that are modified in the Clone DB database require additional storage on disk. Clone DB reduces the amount of storage required for testing purposes and enables rapid creation of multiple database clones. Clone DB is supported for database 11.2.0.3 or later versions.

You can create CloneDB databases by using a discretely synchronized test master by following these steps:

Table 26-4 Creating Snap Clone - Discrete Flow

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started
3	Create one or more resource providers.	See Creating Resource Providers .
4	Configure the request settings.	See Configuring Request Settings .
5	Define quotas for each self service user.	See Defining Quotas
6	Create a database provisioning profile using snapshots from an RMAN Image Backup.	See Creating a Database Provisioning Profile Using RMAN Database Image
9	Create a service template based on the profile you have created.	See Creating a Service Template Using RMAN Image Profile .
10	Configure the Chargeback Service. (this step is optional)	See Configuring Chargeback .
11	Select the service template you have created and request a database.	See Requesting a Database

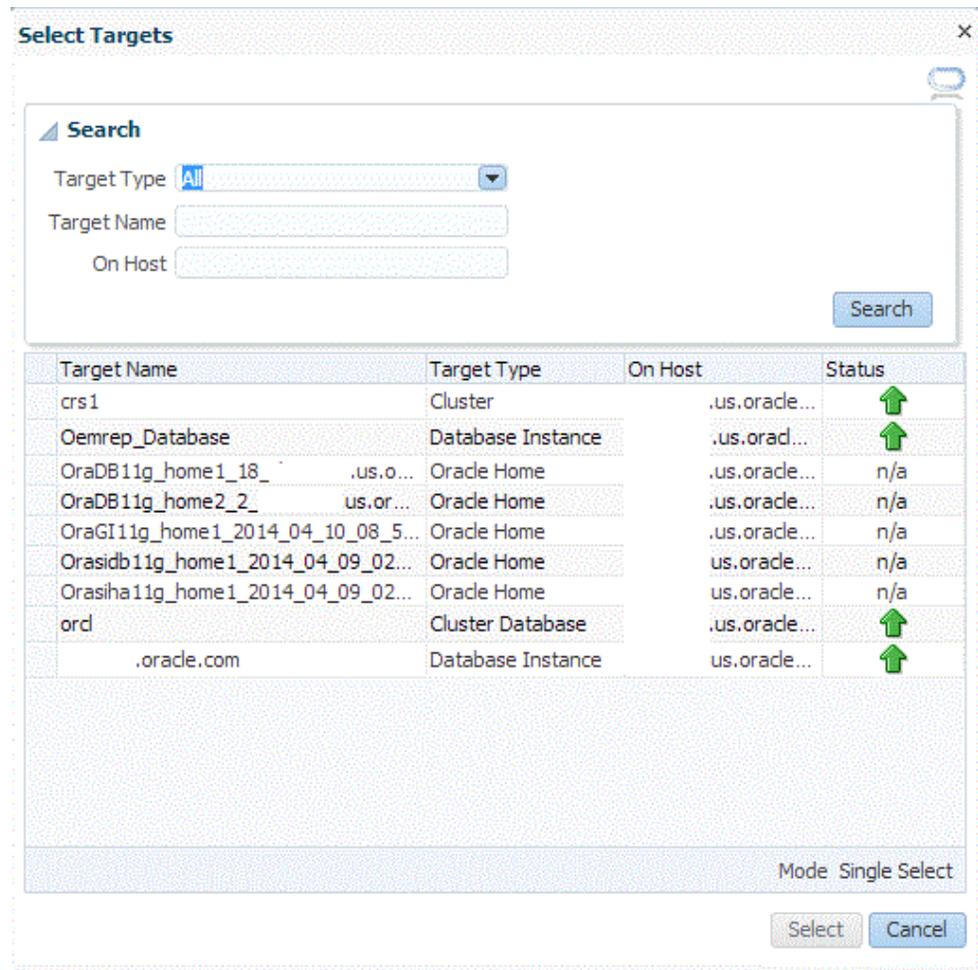
26.7.1 Creating a Database Provisioning Profile Using RMAN Database Image

To create a database provisioning profile, follow these steps:

1. You can access the Database Provisioning page using either of the following ways:
 - From the **Enterprise** menu, select **Cloud**, and then select **Cloud Home**. On the Cloud home page, click **Oracle Cloud**, select **Setup**, and then select **Data Sources**. On the Database: Data Sources page, in the Data Profiles tab, click **Create**.
 - From the Enterprise menu, select **Provisioning and Patching**, and then select **Database Provisioning**. On the Database Provisioning page, in the Profiles section, click **Create**.
 - From the database target home page, click **Oracle Database**, select **Provisioning**, and then select **Create Provisioning Profile**.
2. On the Reference Target page, click the search icon to select a target.



3. In the Search and Select: Targets display box, select the database you want to create a profile for, and then, click **Select**.



4. On the Reference Target page, select the following:
 - **Data Content**
 - **Structure and Data** to include physical and structural files from the database or **Structure Only** to include only the structural files in the template.
 - **Create**
 - **RMAN Database Image**

Reference Target Content Options Profile Review

Create Database Provisioning Profile: Reference Target

Reference Target

* Name

Type Database Instance

Include Database Oracle Home (Orasidb11g_home1_2014_04_09_02_10_19_ us.oracle.com)

Grid Infrastructure Oracle Home (has_slc00exf.us.oracle.com)

Data Content

Structure and Data Structure Only

Create Database Template

RMAN Backup Export Schema Definition

RMAN Database Image

Database Template

Use Existing RMAN Backup

Export Schema Objects

Snap Clone is either not enabled or snapshot is not allowed for this target or sufficient privileges are not a

- In the Credentials section, select the database. In the Credentials column, you can select **Named Credentials** and then select a credential name from the Credential Name column (or) select **Preferred Credentials**. Click **Next**.

Back Step 1 of 4 Next Cancel

Credentials

Target	Credential Type	Credential	Credential Name
oracle.com	Database Home	Preferred Credentials	Normal Host Credentials
oracle.com	Database	Preferred Credentials	SYSDBA Database Credentials

- On the Content Options page, specify the backup location for the RMAN image mode. By default, the backup location selected is **Offline Backup**. You can choose **Online Backup** only if it is enabled.

Then, select **Directory** for the backup location and enter the directory path, or select **Fast Recovery Area**, which already contains a backup location.

Create Database Provisioning Profile: Content Options

RMAN Database Image Profile Contents

RMAN Image Mode Online Backup

Offline Backup

Backup Location Fast Recovery Area

Directory

 **Note:**

- Ensure that the specified location is accessible to all the nodes in the database pool.
- Depending on the database version, the profile (image) may need to be manually staged on an NFS shared location.

Click **Next**.

7. On the Create Database Provisioning Profile: Page, in the Profile Information section, do the following:
 - Specify or select a profile location in the software library where the database profile will be created.
 - Specify a unique profile name.
For example:
RMAN Database Image for HR database
 - Add a description for the profile.
 - Verify the profile version and the vendor.
 - Add any additional notes such as host name, database, data content, data content mode, and the like.

Create Database Provisioning Profile: Profile

Profile Information

* Profile Location	Database Provisioning Profiles/12.1.0.1.0/linux_x64	
* Profile Name	RMAN Database Image for HR database	
Description	Database Reference Profile 09-12-2014 02:38 PM from database.example.com Version : 12.1.0.1.0	
Profile Version	12.1.0.1.0	Vendor Oracle
Notes	Host Name: host.example.com Database: database.example.com Data Content: Structure and Data Data Content Mode: RMAN Database Image Backup	

8. In the Schedule section, you can choose to start the profile creation immediately, or you can schedule it for a later time. You can also choose to repeat the creation of the provisioning profile, and set a repeat time.
9. In the Purge Policy section, you have three options:
 - **None.** Select this option you do not want to purge any data collected.
 - **Snapshots.** This option enables you to specify the maximum number of snapshots that can be purged.
 - **Day(s).** This option enables you to specify the number of days after which the data component should be purged.

Schedule

Start Immediately Later (UTC+00:00) GMT

Repeat

Purge Policy

Purge

Working Directory

* Path

10. Specify or select a working directory. Click **Next**.
11. On the Review page, ensure that the selections you have made in the previous pages are correctly displayed and click **Submit**. Otherwise, click **Back** repeatedly till you reach the page where you want to make changes. Click **Cancel** to abort the provisioning profile creation.

Create Database Provisioning Profile: Review Back Step 4 of 4 Submit Cancel

<p>Reference Target</p> <p>Target: Create RMAN Database Image Profile</p> <p>Content: Create RMAN Database Image Profile</p> <p>Database Home Credentials: AINE_CCOOL</p> <p>Grid Infrastructure Home Credentials: PRODR_CRED5</p> <p>Database Credentials: PRODR_CRED5</p> <p>Content Details</p> <p>RMAN Database Image Profile Contents</p> <p>RMAN Image Mode: Offline Image Backup</p> <p>Backup Location: /mnt2/frs1/frs1_recoveries_mra</p>	<p>Profile Details</p> <p>Profile Location: Database Provisioning Profiles/12.1.0.1.0/linux_x64</p> <p>Profile Name: RMAN Database Image for R database</p> <p>Description: Database Reference Profile 09-12-2014 02:38 PM from database.example.com Version: 12.1.0.1.0</p> <p>Profile Version: 12.1.0.1.0 Vendor: Oracle</p> <p>Notes: Host Name: host.example.com Database: database.example.com Data Content: Structure and Data Data Content Model: RMAN Database Image Backup</p> <p>Schedule</p> <p>Start: Immediately</p> <p>Purge Policy</p> <p>None</p> <p>Working Directory</p> <p>Path: /tmp</p>
---	--

Once you have submitted the provisioning profile creation job, manually refresh the page if View Data has been set to Real Time: Manual Refresh. Else, set View Data to reload after a specific period of time, and then select an execution step from the Procedure Steps tree on the left pane to view the details.

To view the submitted jobs, select the **Procedure Activity** link in the **Data Profiles** tab.

26.7.2 Creating a Service Template Using RMAN Image Profile

To create a service template using RMAN Image Profile, follow these steps:

1. Log into Enterprise Manager as a user with the EM_SSA_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.
3. Click the **Setup** link next to the Databases option in the left panel. Select Database from the drop down menu.
4. Click the **Service Templates** link. The Service Templates page appears. Click **Create**. The Create Service Template: General page appears.

Figure 26-11 Create Service Template: General (CloneDB)

5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. Click the **Search** icon next to the **Profile** field and select the test master database based on the RMAN Image profile.
7. In the Profile Version field, you can select either of the following:
 - Latest: This ensures that the latest profile is always used by the self service user.
 - Selected by user at request time: If this option is selected, the self service user can select the profile to be used when creating a service request.
8. In the Database Definition region, select the following:

- **Create:** Select **CloneDB Database** option. Each file is copied as an image copy which is a bit-for-bit copy of a database file created on disk. Image copies are identical to copies created with operating system commands such as cp on Linux or COPY on Windows, but are recorded in the RMAN repository and so are usable by RMAN. This option allows you reduce the amount of storage and enables rapid creation of multiple databases.

If you are doing an online backup, you must ensure that your Test Master database is in ARCHIVELOG mode and that all of the necessary archived redo log files are saved and accessible to the CloneDB database environment. If you are doing an offline backup, you must ensure that the backup copies are accessible to the CloneDB database environment.

- **Type:** This can be Single Instance or Real Application Cluster (RAC). If you select RAC, specify the Number of Nodes.
- **Database SID:** This is an optional field. You can select **Specify Prefix** or **Specified by User at Request Time**.
 - **Specify Prefix:** If you choose this option, enter a prefix that is to be used to generate a unique System Identifier (SID) at the time of database creation. The prefix helps to identify databases created using this service template. The prefix can be a maximum of 6 characters.

The new database name generated will be based on the SID Prefix specified here. For example, if the prefix is specified as MYDB, the SID for

the new database is generated as MYDB0000, MYDB0001, MYDB0002, and so on.

For existing databases (running databases and in progress requests), a unique SID name is generated for single instance databases, or a unique name is generated for real application cluster databases. For example, if the existing SIDs running on a host are MYDB0000, MYDB0001, MYDB0002 And In progress are MYDB0003, MYDB0004, the new SID or database name generated for the new request is MYDB0005.

- **Specified by User at Request Time:** If you choose this option, you can leave this field blank and specify the SID when you are making a database request.
 - **Domain Name:** This is an optional field. Enter a Domain Name to be used for the new database being created. You must ensure that the domain name does not contain a preceding "." (dot).
9. In the Pools and Zones region, click **Add** to select a PaaS Infrastructure Zone into which the database instance is to be provisioned. Click **Assign Pool**. Select a pool from the list and assign this pool to the PaaS Infrastructure Zone. The database will be provisioned into this pool.
 10. After you have selected the zone and the pool, the host target is populated in the Reference Host field.
 11. In the Reference Host region, the name of the PaaS Infrastructure zone, the database pool, and the reference host you have selected in the Database Cloud Self Service Portal Setup: General page are displayed.
 12. In the Location field, specify the location for the database files. This must be an NFS location.
 13. To simplify the management of backup and recovery files, you can optionally create a fast recovery area for your database. Select the **Enable Fast Recovery Area** checkbox to specify the location in which recovery related files must be stored. The fast recovery area can be a file system that provides a centralized disk location for backup and recovery file. Specify the location of the Fast Recovery Area and the Fast Recovery Size. The amount of disk space to allocate for the fast recovery area depends on the size and activity levels of your database.

If the **Enable Archiving** check box is selected, the database will not be shut down during a refresh. This allows self service users to schedule backups and restore operations without shutting down the database.
 14. If you have chosen to create a CloneDB database, you can optionally allow the user to take a backup copy of the database. Select the **Allow the user to take backup copy for the new database** checkbox. Specify the maximum number of backups allowed and the backup location.
 15. In the Listener Port field, specify listener port number that is to be associated with the new database. If you have selected a 11.2 or later RAC database, you must specify the scan port number.
 16. Specify the **Administrator Credentials**. Specify passwords for the system schemas of the new database. These schemas will not be available to the `EM_SSA_USERS`. You can choose to use the same password for all the schemas or different passwords for each schema. If these values are not specified, default values will be used and the `EM_ADMINISTRATOR` can change them.

17. Apart from the system schemas, if you want to restrict access to other schemas, you can select them in the Non-Administrator Credentials region and specify the password. These schemas will be locked and the `EM_SSA_USERS` cannot access them. Click **Next**.
18. Click **Next**. The Create Service Template: Initialization Parameters page appears. In this page, you can configure the values of various initialization parameters that affect the operation of the database instance. Select the parameter and click the Set icon to modify the value of the parameter.
19. Click **Next**. The Create Service Template: Customization page appears. Specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
20. In the Target Properties region, you can specify global target properties such as Location, Department, Line of Business, and so on. You can do the following:
 - Mark a property as mandatory by selecting the **Required** check box. If a property is marked as mandatory, the self service user must specify a value for this property while requesting a database.
 - Lock a property. When a property is locked, the self service user cannot modify the value of this property while requesting a database.
21. Click **Next**. The Create Service Template: Roles page appears. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
22. The Create Service Template: Review page appears. Click **Create**. The newly created service template will appear in the Database Cloud Self Service Portal Setup: Service Templates page.

Using the DBaaS Self Service Portal

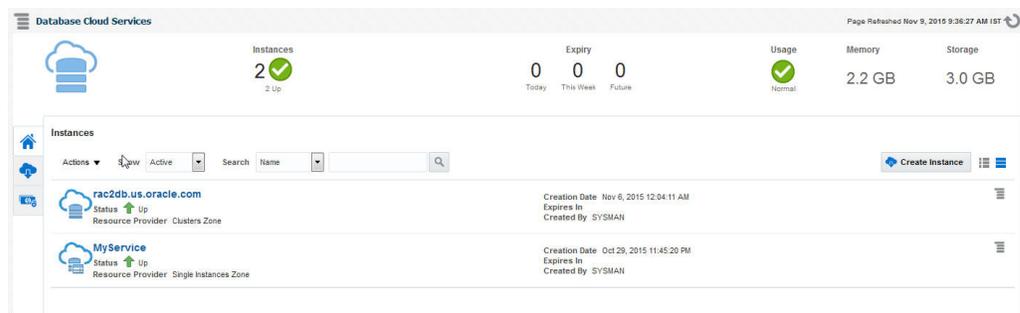
This chapter provides self service users with instructions on using the Database Cloud Self Service Portal to request, monitor, and manage database services. It contains the following sections:

- [About the Database Cloud Self Service Portal](#)
- [Provisioning of Database using Database Cloud Self Service Portal](#)
- [Requesting a Database](#)
- [Refreshing a Database](#)
- [Viewing the History of a Request](#)
- [Database Service Home Page](#)
- [Database Instance Home Page](#)
- [Standby Database Home Page](#)
- [Cluster Database Home Page](#)
- [Pluggable Database Home Page](#)

27.1 About the Database Cloud Self Service Portal

The Database Self Service Portal allows self service users to view, monitor and deploy databases on selected zones, as well as create schemas on running databases. To view the Database Cloud Self Service Portal, log in to Enterprise Manager as a user with `EM_SSA_USER` role or an user with the `EM_SSA_USER_BASE` role. Users with these roles must be part of the DBAAS Cloud Service Family and must have privileges for the DB, Schema, or PDB service types. The Self Service Portal appears. Select **Databases** from the **Manage** drop down list.

Figure 27-1 Database Cloud Self Service Portal



The Database Self Service Portal allows SSA users to view, monitor, deploy databases on selected zones, and create schemas on running databases.

The following details are displayed:

- **Home:** This is the Home page for the Database Self Service Portal. It contains the following sections:
 - **Notifications:** This section shows the number of databases that are expiring in the next 7 days.
 - **Usage:** This region displays the quota that you currently have and how much has been used for the following:
 - * Databases: The number of databases requested so far and the maximum number of databases that can be requested.
 - * Schema Services: The number of schemas requested so far and the maximum number of schemas that can be requested.
 - * Pluggable Databases: The number of PDBs requested so far and the maximum number of PDBs that can be requested.
 - * Memory: The total amount of memory allocated to the user and the memory used by all databases and schemas requested so far.
 - * Storage: The total storage volumes allocated to the user and the storage used by all databases requested so far.
 - **Services:** This table lists the services that you currently own. You can request more databases, schemas, or PDBs by selecting the appropriate option from the **Request New Service** menu. You can also delete any databases you own to release it prior to expiration. Click on the service instance name to drill down to the database details page. This page provides basic monitoring capabilities and provides life cycle operations for the service.
 From the **Actions** menu, you can do the following:
 - * Start / Stop a Service Instance: You can start a service instance that has been stopped or stop a service instance that is running.
 - * View History: Select a service instance and click View History to view the history of operations performed on the service instance.
 - * Grant: You can grant view or full privileges over the service instance to other users or roles. See [Granting, Revoking, and Reassigning Privileges to Service Instances](#).
 - * Revoke: You can revoke privileges that you have granted to other users or roles. See [Granting, Revoking, and Reassigning Privileges to Service Instances](#).
 - **Requests:** This table tracks the requests that you have created, deleted, or refreshed. For each request, the status, request type, service type, and submission date of the request is displayed. You can select a scheduled such as a Create or Delete request and click **Reschedule** to reschedule the request. To delete a scheduled request, select the request and click **Cancel**. If a request that is scheduled such as **Create** gets canceled, all other associated requests are also canceled.
- **Chargeback:** This page displays all the chargeback break-up data for the databases and pricing for different zones. The charge incurred will be calculated from the database requested date to current date. This page contains the following sections:
 - Charge Trend: This graph show the usage and charge trends over time.

- **Aggregate By:** You can aggregate the charge back data for the database by resources or metrics. You can export this data to an external application such as a spreadsheet.
- **Charge Plans:** The charge plans that have been assigned to each are displayed. Select a zone to view the pricing. The rate for each metric in the database zone for a specific time period is displayed.
- **Preferences:** Click this link to set up your preferences such as your default service portal, default PaaS Infrastructure Zone, default email address for notifications, and so on.

27.2 Provisioning of Database using Database Cloud Self Service Portal

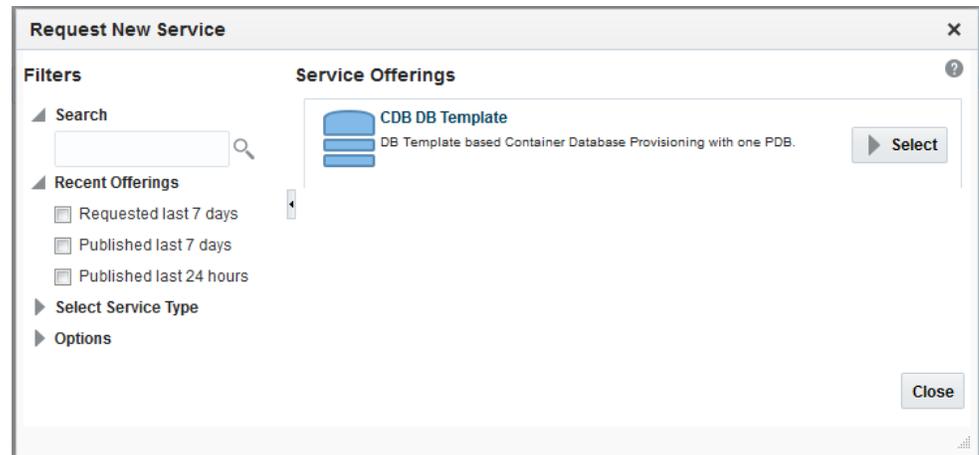
To provision a database using Database Cloud Self Service Portal, follow these steps:

1. Log in to Enterprise Manager as a user with EM_SSA_USER privileges.

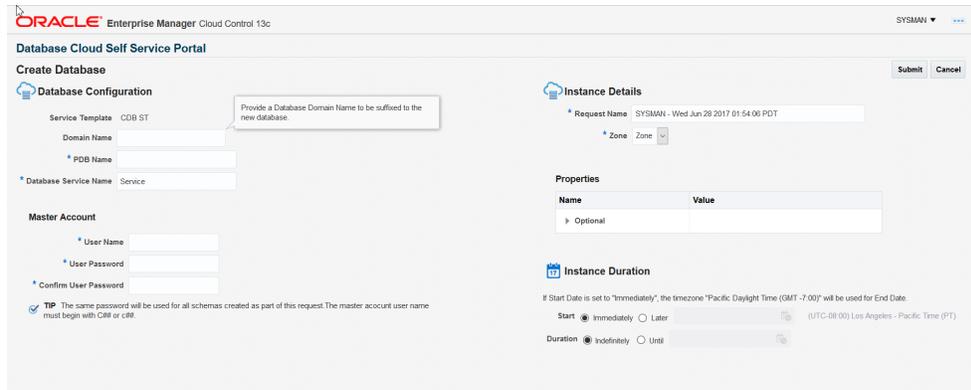
The Database Cloud Service page appears.

Alternative you can select **All Cloud Service** and then select **Databases Cloud Service**.

2. Click **Create Instance**.
3. Choose a service template from the list and click **Select**.



4. Enter the following details:
 - PDB Name
 - Database Service Name
 - User Details in the master account section. The master user name should begin with "C##" or "c##"
5. Click the **Submit**.

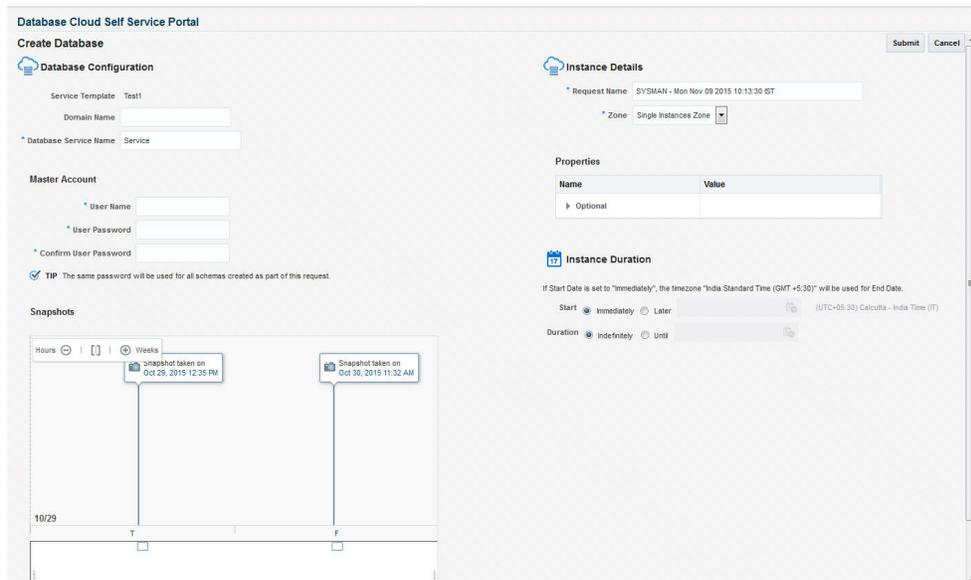


27.3 Requesting a Database

To request a new database, follow these steps:

1. Click the **Request New Service** link on the Database Cloud Self Service Portal. The service offerings window is displayed.
2. In the Service Type drop down, select **All** to view all the service offerings available for the Database Service Family. You can select Database, Pluggable Database, or Schema to view service offerings only for the selected service type.
3. Select a service template from the list and click **Select**. The service template you select can be based on RMAN backup profile, physical standby database, or snapshot based profile. Select the appropriate template according to your requirement.
4. The New Database Service Request page appears.

Figure 27-2 Create Database



Enter the following details:

- **Request Name:** Enter the name of the request.
- **Zone:** Select a PaaS Zone on which the database is to be deployed.
- **Database SID:** This field is displayed if the service template you have selected allows you to specify the database SID at request time. Enter a unique Database SID.
- **Database Service Name:** Enter a unique database service name. The name you specify must be unique across all database, pluggable database, and schema service requests.

You cannot use the same database service name that has been used for future scheduled requests. If a Delete operation failed, you cannot use the name specified in the failed request.

 **Note:**

- You can create a standby database only if the service template you select contains a database pool with standby databases.
- If the service template supports standby databases, depending on the preferences set up the self service administrator, you can choose to create a standby database if required. You can also select from one or more standbys (a subset of what is defined in the service template). If you do not wish to create a standby database and you select only a subset of the topology supported by the service template, you can request one or more of the remaining standbys at a later point in time after the current request has been completed.

- **Deployment Input:** Specify the user name and password for the database. If you have selected an RMAN or snap clone based service template, and you are allowed to choose from the active data points, you can select an RMAN backup or snap shot here.
 - **Schedule Request:** Specify the schedule for the request.
 - **Service Instance Properties:** Any mandatory and optional target properties are displayed here. If a property is marked mandatory, you must enter a value for that property.
5. If the service template you selected is based on a RMAN Backup, Snapshot or RMAN Image profile, the list of available backups, snapshots, or images are listed in the Snapshot region. These snapshots reflect the state of the test master database at any point in time.

Figure 27-3 Create Database (Snapshots)

Select a snapshot from the list and click **Submit** to deploy the database to the selected zone. The new database that is created will be based on the selected snapshot.

27.3.1 Requesting a Schema

You can create a database service with one or more schemas and populate the schema with the required data.

Requesting an Export Profile Based Schema

You can create a schema based on a service template with a schema export profile or an empty service template. To create a schema based on a schema export profile, follow these steps:

1. Log in to Enterprise Manager as a user with `EM_SSA_USER` role or any role that includes `EM_SSA_USER` role.
2. The Database Cloud Self Service Portal page appears. Select **Databases** from the Manage drop down list to navigate to the Database Cloud Self Service Portal.
3. Click **Request New Service** in the Services region.
4. Choose a Schema Service Template with an schema export profile from the list and click **Select**. The Create Schema page appears. The name and description of the service template you have selected is displayed. Enter the following details:
 - **Request Name:** Enter a name for the schema service request.
 - **Zone:** Select the zone in which the schema is to be created.
 - **Database Service Name:** Enter a unique name for the database service.
 - **Workload Size:** Specify the workload size for the service request.
 - **Schema Prefix:** Enter a prefix for the schema. For clustered databases, the service is registered with Grid Infrastructure credentials.

5. Click **Rename Schema** to enter a new name for the schema. If you wish to retain the source schema name, ensure that the Schema Prefix field is blank.
6. Specify the password for the schema. Select the **Same Password for all Schemas** checkbox to use the same password for all the schemas.
7. The Master Account for the schema is displayed. The schema with Master Account privileges will have access to all other schemas created as part of the service request.
8. In the Tablespace Details region, the names of all the tablespaces in the schema are displayed. You can modify the tablespace name and specify a new name in the New Tablespace Name box.
9. Specify the schedule for the request and click **Submit** to create the schema.

Requesting an Empty Schema

To create a schema with an empty schema template, follow these steps:

1. Follow **steps 1 to 3** listed above and in the Select Service Template window, select an empty schema template from the list.
2. Specify the details of the schema as listed in **steps 4 to 7**.
3. In the Tablespace Details region, you can specify a separate tablespace for each schema or use the same tablespace for all the schemas.
4. Specify the schedule for the schema request and click **Submit** to create the schema.

27.3.2 Requesting a Pluggable Database

You can request a pluggable database based on a selected service template. To request a pluggable database, follow these steps:

1. Login to Enterprise Manager as a user with `EM_SSA_USER` role or any role that includes `EM_SSA_USER` role.
2. The Infrastructure Cloud Self Service Portal page appears. Select **Databases** from the Manage drop down list.
3. Click **Request New Service** in the Services region. In the Request New Service window that appears, select **Pluggable Database** from the Service Type drop down.
4. Choose a service template from the list and click **Select**. The Create Pluggable Database page appears.

Figure 27-4 New Pluggable Database Service Request

5. Specify the following details:

- **Request Name:** Enter the name of the request.
- **Zone:** Select a PaaS Infrastructure Zone with the container databases into which the pluggable database is to be deployed.
- **PDB Name:** Enter a unique pluggable database name.

Note:

- The database service name you specify must be unique across all database, pluggable database, and schema service requests.
- You cannot use the same database service name that has been used for future scheduled request.
- If a Delete operation failed, you cannot use the name specified in the failed request.

- **Database Service Name:** Enter a unique database service name.
- **Workload Size:** Workload represents the total CPU, memory, and storage requirements for each service. Select the Workload Size from the drop down list.
- **Deployment Input:** Specify the pluggable database administrator user name and password.
- **Schedule Request:** Specify the schedule for the request.
- **Service Instance Properties:** Any mandatory and optional target properties are displayed here. If a property is marked mandatory, you must enter a value for that property.

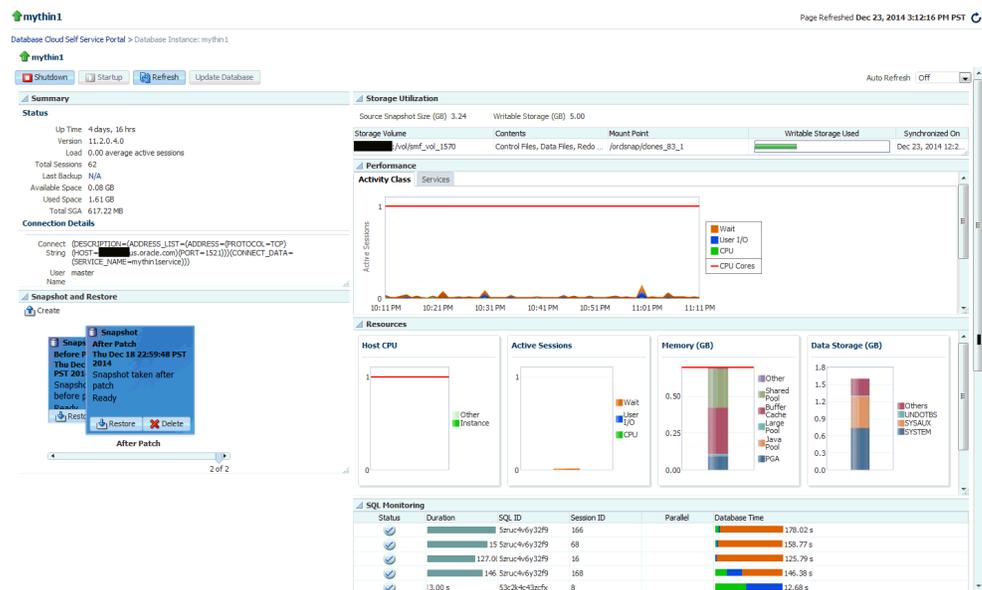
6. Click **Submit** to deploy the database to the selected zone.

27.4 Refreshing a Database

After you have created a database, you can keep the data current and consistent with the production database by refreshing it on a regular basis. To refresh a database, follow these steps:

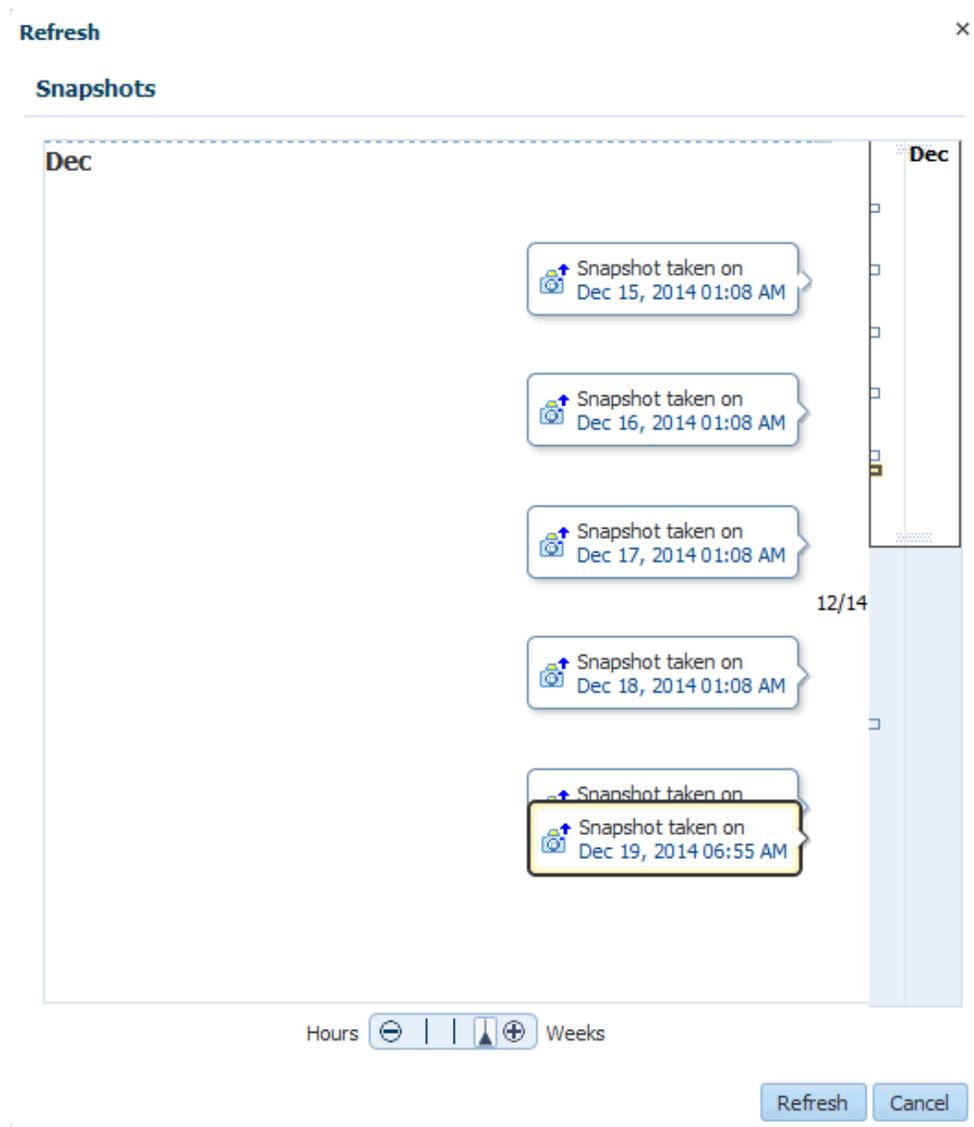
1. In the Database Self Service Portal Home page, click on the Name link in the Services region to drill down to the Database Home page.

Figure 27-5 Refresh Database



2. Click **Refresh**. The list of available snapshots or RMAN backups are displayed.

Figure 27-6 Snapshots



Select a snapshot profile from the list and click **Refresh**. You will see a message that the database will be refreshed to the selected snapshot version and older snapshots will be deleted. Click **Yes** to submit the Refresh Database Request job. On successful completion of the request, the database is refreshed and will be consistent with the selected snapshot profile.

27.5 Viewing the History of a Request

To view the history for a database instance, select the row in the Services column and select **History** from the **Actions** menu. All the requests that have been submitted for the database instance and the status of each request is displayed.

27.6 Database Service Home Page

Database services are logical abstractions for managing workloads in Oracle Database. Services divide workloads into mutually disjointed groupings. Each service represents a workload with common attributes, service-level thresholds, and priorities. The Database Service Home page provides a detailed view of the database service.

It contains the following regions:

- **Summary:** Displays the status of the database service and the database version.
- **Connection Details:** Shows the database connection details including the Connect String and the Master Account Name.
- **Export:** You can do the following:
 - **Export:** Click **Export** to take export dumps of all the schemas that are part of the service. In the Export window, enter the name, description, and specify when the export dump should be scheduled and click **Schedule**.
 - **Import:** Click **Restore** to restore schemas from the selected export dump.
 - **Remove:** Select an export dump and click **Remove** to delete it.
- **Requests:** This region shows the requests that you have created. For each request, the status, type, start date, and submission date of the request is displayed. You can select a scheduled request and click **Reschedule** to reschedule the request. To delete a scheduled request, select the request and click **Cancel**.
- **Schemas:** Displays the name of the schema and tablespace associated with the database service.
- **Resource Usage:** This region displays the workloads associated with the schema. This includes the CPU, Memory, and Storage allocated to the database service.
- **Performance:** This region displays a graph showing the Average Number of Active Sessions over the last 5 minutes.

27.7 Database Instance Home Page

The Database Instance Home page provides a detailed view of the database instance.

This page contains the following regions:

- **Summary:** The region of the Database Instance Home page provides a quick overview of the database status and provides basic information about the database. It shows the current status of the database and includes details such as the time stamp of instance start time, database version, date of the last backup, and so on.
- **Connection Details:** Shows the database connection details including the Connect String and the name of the user accessing the database.
- **Backup and Restore:** If the fast recovery area is configured for the database, you can schedule a daily backup for this database. Click **Schedule Backup** to perform this task. Once backups are available, you can click **Restore** to restore the database to a specific point in time. If the fast recovery area is not configured, your Database Administrator can configure the fast recovery area or publish a new

service template that allows you to request databases with fast recovery area configured at the time of request fulfillment.

 **Note:**

If the database instance has been created using a snap clone based profile, instead of the Backup and Restore region, you will see the Snapshot and Restore region with a list of snapshots. You can click Restore to restore data from a snapshot. See

- **Performance:** Shows the performance monitoring information for the database. Click on the **Active Class** tab to view a bar chart showing the amount of time spent either waiting for a resource or consuming CPU.
- **Resources:** Shows graphs indicating the resource consumption and include Host CPU, Active Sessions, Memory, and Data Storage.
- **SQL Monitoring:** Shows the SQL Response Time chart that shows the current response of the tracked set of SQL versus the reference collection response.
- **Requests:** This region shows the requests that you have created. For each request, the status, type, start date, and submission date of the request is displayed. You can select a scheduled request and click **Reschedule** to reschedule the request. To delete a scheduled request, select the request and click **Cancel**.

Starting and Stopping the Database

Depending on the state of the database, you can click **Shutdown** to shut down the database if the database is open, the **Startup** button if the database is shut down, or the **Shutdown** button if the state of the database is unknown or in a Status Pending state.

27.8 Standby Database Home Page

The Home page for a standby database instance contains the following regions:

- **Summary:** The region provides a quick overview of the database status and provides basic information about the database. It shows the current status of the database and includes details such as the time stamp of instance start time, database version, date of the last backup, and so on.
- **Connection Details:** Shows the database connection details for the primary database, and one or more standby databases. It includes the Connect String and the name of the user accessing the database.
- **Data Guard Summary:** This region shows the Protection Mode for all the databases (primary and standby) and the details of each database such as the type of database, role, redo transport mode, and so on. For more details, see [Creating a Service Template](#).
- **Performance:** Shows the performance monitoring information for the database. Click on the **Active Class** tab to view a bar chart showing the amount of time spent either waiting for a resource or consuming CPU.
- **Resources:** Shows graphs indicating the resource consumption and include Host CPU, Active Sessions, Memory, and Data Storage.

- **SQL Monitoring:** Shows the SQL Response Time chart that shows the current response of the tracked set of SQL versus the reference collection response.
- **Requests:** This region shows the requests that you have created. For each request, the status, type, start date, and submission date of the request is displayed. You can select a scheduled request and click **Reschedule** to reschedule the request. To delete a scheduled request, select the request and click **Cancel**.

27.9 Cluster Database Home Page

Use the Cluster Database Home Page to:

- Determine the current status of the Oracle Real Application Clusters database by viewing a series of metrics.
- Start or stop the cluster database.
- Schedule daily backups and perform a point-in-time-restore of the database.

Note:

The Home Page presents a high level view of the cluster database. Click the arrow key on the left margin to expand the master panel and view the Target Navigation pane. You can select a Database Instance from the left panel to view details for that instance. You can then perform operations such as Startup and Shutdown for the Database Instance.

Home Page Sections

The Cluster Database Home page displays information for the following sections:

- Summary
- Performance
- Configuration Changes
- Resources
- Jobs Running
- SQL Monitor
- Issues

Summary

The Summary section displays the status and diagnostics information about the cluster database.

Status

This section provides a quick view of the status of the cluster database and provides basic information about the cluster database. The status can be Up, Down, Under Blackout, Unmonitored, or Unknown, and the status is mirrored in the arrow icon that appears to the left.

The number of database instances in the cluster, the Up Time, Version, Load, Total Sessions, Available Space and other details are displayed. Following are the fields displayed in this section:

- Instances: Displays the number of cluster database instances that are up.
- Up Time: Displays the total elapsed time since the cluster database was started.
- Availability: Displays the percentage of time that the cluster database was available.
- Version: Displays this version of the Oracle Database.
- Load: Displays the number of average active sessions since this cluster database was started.
- Total Sessions: Displays the total cluster database sessions running.
- Latest Backup: Displays when the last backup of the database was performed.
- Available Space: Displays space available on the cluster database.
- Total SGA: Displays total system global area.
- Problem Services: Displays the services that have problems

Note: QoS Status on Cluster Database Home page shows if the database is enabled for QoS Management. The possible states are:

- Enabled: Indicates that this database is enabled for QoS monitoring.
- Disabled: Indicates that this database is disabled for QoS monitoring.
- Active: Indicates that this database is enabled and monitored by QoS.

The QoS Status shown on the Cluster Database Home page is different from status shown on Quality of Service Dashboard. QoS Dashboard shows overall status of QoS itself in the Cluster.

Jobs Running

This table displays a report of the job executions that shows the scheduled, running, suspended, and problem (stopped/failed) executions for all Enterprise Manager jobs on the cluster database, ordered by submission of the job to the cluster database or to any member instance. If a value other than 0 appears in a field, you can click the number to go to the Job Activity page where you can view information about all scheduled, currently running, and past jobs.

Note: The four job status categories displayed group together job executions of similar status. For a complete list of job status values, refer to [About Job Status](#). Use the Jobs tab to view all jobs or search for jobs of a certain status.

Performance

The Performance section shows active sessions during a one-hour window for activity classes and top services.

Activity Class

The Active Sessions chart shows potential problems inside the database. Categories, called wait classes, show how much of the database is waiting for a resource, such as CPU or disk I/O. The chart displays the load on the instance and identifies bottlenecks in performance.

To quickly identify problem areas, the chart displays a larger block of color to indicate more severe problems. Click the largest wait class on the highest peak, or alternatively click the corresponding wait class (indicated in yellow highlighting). Either action takes you to the Active Sessions Waiting page for the wait class selected, which shows top SQL, sessions, files, and objects for the wait class and also shows the associated wait events.

Services

The Active Sessions chart shows the top services waiting for the corresponding wait event during the time period shown. Only active services are shown. Click on one of the service legends to the right of the chart to go to the Service Activity page, where you can view real-time data showing the sessions load for all wait classes associated with the service.

Resources

The Resources section displays a bar chart showing relative CPU utilization of the Oracle host. This instantaneous value is refreshed every minute from the host by the Agent. The 100% represents the total CPU that the host system provides. The Instances tab is a break down of instance-wise measure of the resources, and the Database tab presents the overall measure.

Host CPU

This section displays a bar chart showing the relative CPU utilization across all hosts in the cluster. This instantaneous value is refreshed every minute by the Agent. The 100% represents the total CPU across all hosts in the cluster. Two values appear in the bar chart. The bottom, darker color corresponds to the Database legend and represents how much of the CPU is consumed by all the instances of this database. Click the Database link to go to the Top Activity page to display all wait classes and related statistics. The upper, lighter color corresponds to the Other legend and represents all other processes. Click the Other link to go to the Host Performance page for a quick glimpse of the utilization statistics (CPU, Memory, Disk I/O, and Program Resource Utilization) for this host.

The Load number is unrelated to the Host CPU chart. The Load number relates to the sum of the current CPU load for all cluster hosts. Click the Load link to go to the Host Performance page for a quick glimpse of the utilization statistics (CPU, Memory, Disk I/O, and Program Resource Utilization) for this host.

Note: The Host CPU section does not appear for pre-10g databases.

Active Sessions

The bar chart shows the amount of time all instances consumed using I/O and CPU, and the amount of time it consumed in bottlenecks. The number shown beside the bar chart is a literal number representing the number of active sessions, rather than the total number of sessions. The chart shows the latest value instead of a historical value. The three session categories are always CPU, User I/O, and Wait.

The **Wait** category represents the value for all wait classes combined, excluding User I/O. All of the links go to the Cluster Database Performance page.

User I/O displays the average active sessions spent on waiting for user I/O. User I/O means that the workload originating from the user causes the database to read data from the disk or write data to the disk. Click the User I/O link to go to the Performance page to view potential problems inside and outside of the current database.

CPU displays the average active sessions spent on using CPU. Click the CPU link to go to the Top Activity page to display all wait classes and related statistics.

The **Maximum CPU** number is the total CPU count across all the cluster database hosts.

Note: The Active Sessions section does not appear for pre-10g databases.

Memory

The chart shows the memory used by the database in GB.

Shared Pool displays various constructs that can be shared among users. For example:

- SQL statements that users implement are cached so that they can be reused if the same statement is used again.
- Information from the data dictionary is cached for quick access and reusability.
- Stored procedures, which are executable code that is stored in the database, can be cached for faster access.

Buffer Cache caches blocks of data retrieved from the database. If a piece of data can be found in the buffer cache, then there is no need to read it from disk. There are subcaches for multiple block sizes, if used.

Large Pool displays optional area used for buffering large I/O requests for various server processes.

Java Pool used for all session-specific Java code and data within the Java Virtual Machine (JVM).

Other SGA displays shared memory area that contains data and control information for the instance. Multiple users can share data within this memory area (controlled by Oracle), and information stored in the SGA can avoid repeated access from physical disk, a time consuming operation.

Data Storage

The chart shows data storage details for tablespaces UNDOTBS, SYSAUX, and SYSTEM.

SQL Monitor - Last Hour

This section lists the SQL monitoring details for the last hour. The real-time SQL monitoring feature of Oracle Database enables you monitor the performance of SQL statements while they are executing. By default, SQL monitoring automatically starts when a SQL statement runs parallel, or when it has consumed at least 5 seconds of CPU or I/O time in a single execution. It lists the status, duration, SQL ID, Session ID, Parallel, and Database Time.

Instances

The Instances table lists the instances for the cluster database, their availability, incidents, compliance score, ASM instance information, and ADDM findings. Click an instance name on the left hand panel to go to the home page for that instance. Click the links in the table to get more information about that particular incident.

27.10 Pluggable Database Home Page

To view the Pluggable Database Home page, click on the PDB name link in the Databases region of the Database Cloud Self Service Portal.

This page contains the following regions:

- **Summary:** The region of the Database Instance Home page provides a quick overview of the database status and provides basic information about the database. It shows the current status of the database and includes details such as the time stamp of instance start time, database version, date of the last backup, and so on.
- **Connection Details:** Displays the connect string used to connect to the database.
- **Resource Usage:** Shows the usage details such as Expected Workload and Actual Workload.
- **Backup and Restore:** If the fast recovery area is configured for the database, you can schedule a daily backup for this database. Click **Schedule Backup** to perform this task. Once backups are available, you can click **Restore** to restore the database to a specific point in time. If the fast recovery area is not configured, your Database Administrator can configure the fast recovery area or publish a new service template that allows you to request databases with fast recovery area configured at the time of request fulfillment.
- **Performance:** Shows the performance monitoring information for the database. Click on the **Active Class** tab to view a bar chart showing the amount of time spent either waiting for a resource or consuming CPU.
- **SQL Monitoring:** Shows the SQL Response Time chart that shows the current response of the tracked set of SQL versus the reference collection response.
- **Requests:** This table tracks the requests that you have created. For each request, the status, type, start date, and submission date of the request is displayed. You can select a scheduled request and click **Reschedule** to reschedule the request. To delete a scheduled request, select the request and click **Cancel**.

Starting and Stopping the Database

Depending on the state of the database, you can use the Shutdown button to shut down the database if the database is open, the Startup button if the database is shut down, or the Shutdown button if the state of the database is unknown or in a Status Pending state.

Part IX

Maintaining and Customizing Databases

This section contains chapters on how to maintain a database pool and how to customize a database. It contains the following chapters:

- [Maintaining the Database Pool](#)
- [Customizing Database as a Service](#)

Maintaining the Database Pool

This chapter covers the database pool maintenance feature. It contains the following sections:

- [About Database Pool Maintenance](#)
- [Creating a Database Gold Image](#)
- [Subscribing to an Image](#)
- [Deploying the Image](#)
- [Updating the Database](#)
- [Performing Ongoing Image Updates](#)

28.1 About Database Pool Maintenance

Enterprise Manager offers a subscription based software maintenance feature that allows self service administrators to maintain the cloud by applying database updates which include:

- **Minor Updates:** Interim one-off patches including quarterly security patch updates (SPUs/CPUs) and Patchset Updates (PSUs).
- **Major Updates:** Patchsets such as (11.2.0.2 to 11.2.0.4) and major version upgrades 11.2.0.x to 12.1.0.x.

Any new database patches, patchsets, or updates are made available in the form of images. An *image* (also referred to as *gold image*) represents the software binary that is patched to the required level. Each newly created image from a new patch or patchset for a specific database version is a new version. For example, an image for Oracle Database version 11.2.0.4 contains gold images (such as Ver. 1, Ver. 2, and so on) at different patch or patchset levels.

A standalone database pool contains databases along with its Oracle Home infrastructure. A RAC database pool contains RAC databases along with Grid Infrastructure Instances and its associated Oracle Homes. Maintaining a database pool involves the following:

- **Subscribe the database pool to an image that has been patched to the required level.** This task has to be performed by a user with the EM_SSA_ADMINISTRATOR role.
- **Deploy the image and switch the database from the old Oracle Home to a new Oracle Home.** This task has to be performed by a user with the EM_SSA_ADMINISTRATOR role.
- **Update the database.** This task can be performed by a user with either the EM_SSA_ADMINISTRATOR role or EM_SSA_USER role.

This maintenance activity can be performed as and when a new patch or patchset update is available. A database pool is considered to be fully compliant if the targets in the pool are associated with the latest version of an image. If the targets are still

associated with an older version of the image, the database pool is considered to be non compliant. The goal of the self service administrator is to ensure all targets in the database pool are 100% compliant.

 **Note:**

- For database upgrades, such as 11.2.0.x to 12.1.0.x, follow the steps in the *Enterprise Manager Lifecycle Management Administrator's Guide* to perform maintenance activities.
- Database pool maintenance can also be performed for Grid Infrastructure targets.

The database pool maintenance feature is useful in:

- Reducing the number of different database software versions and patches in the pool.
- Standardizing the database software versions and patches across the enterprise.
- Streamlining and automating software upgrades and patches.
- Enabling the self service users to move to the new software version and update the database on their own terms.

 **Note:**

You can use EMCLI commands to perform pool maintenance activities. For details, see [Database Fleet Maintenance EM CLI Verbs](#).

Figure 28-1 Database Pool Maintenance Workflow



The following table shows the list of tasks involved in updating and maintaining a database pool.

Table 28-1 Database Pool Maintenance Tasks

Step	Task	Role
1	Creating a Database Gold Image	EM_SSA_ADMINISTRATOR
2	Subscribing to an Image	EM_SSA_ADMINISTRATOR
3	Deploying the Image	EM_SSA_ADMINISTRATOR
4	Updating the Database	EM_SSA_ADMINISTRATOR EM_SSA_USER
5	Performing Ongoing Image Updates	EM_SSA_ADMINISTRATOR

28.2 Creating a Database Gold Image

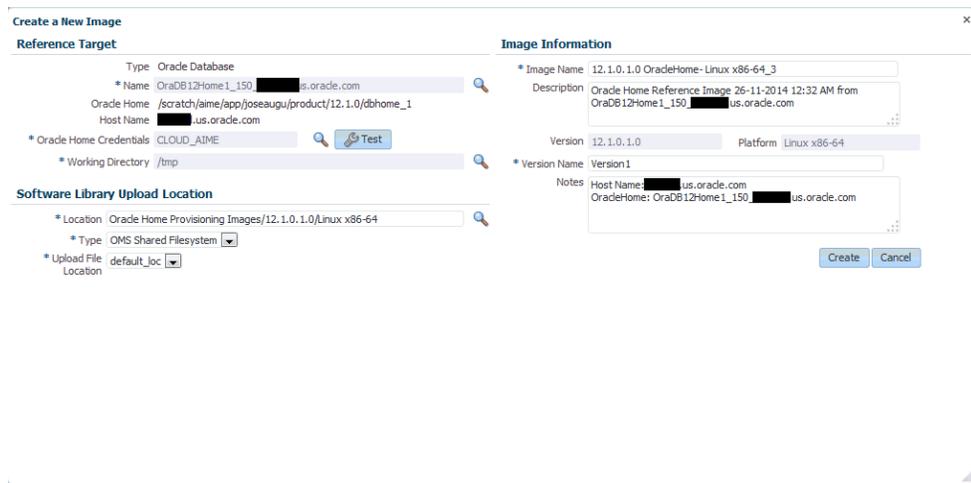
An *image* is the software binary for the target (say Oracle database) on a given platform and release containing the required patch levels. For example, Image DB_11203_Linux represents Database software for 11.2.0.3 release applicable to Linux x86_64 platform containing patches like PSUs and other one-off patches at the needed level. Whenever there is a new patch, you must create a new version of the image from a reference target that contains a zipped up Oracle Home that has been brought to a certain certified or tested patch level.

To maintain the database pool, you must subscribe to an image which contains the latest patches or patchset. If no images exist, you must first create an image and then subscribe the database pool to the image.

To create an image, follow these steps:

1. Log in as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu select **Cloud**, then select **Cloud Home**. From the Oracle Cloud menu, select Resource Providers, and click on a Database Pool in the list to navigate to the Database Pool Home page. From the Database Pool menu, select Members, and then click **Maintenance**. The Maintenance page appears. Click **Manage Subscriptions**.
3. The Manage Subscriptions page appears.
4. Click **Create a New Database Home Image**. The following dialog box appears:

Figure 28-2 Creating a New Image



5. In the Create a New Image dialog box, in the Reference Target section, specify the following details:
 - **Name** of the reference target. You can select the Search icon to select a target from the list provided. Once you select a target, the Oracle Home and Host Name details get automatically added.
 - **Oracle Home credentials**. You can click on the search icon to select existing Oracle Home credentials. Click **OK**. Next, you can click the **Test** button to check if the credentials are valid.
 - **Working Directory**. Specify the working directory or click the Search icon to select one.
6. In the Software Library Upload Location, specify the location, type, and upload file location. These details are already specified by default. You can verify them or change them.
7. In the Image Information section, specify the following details:
 - **Image Name**. Specify a new and unique name for the image. For example, `DB11203_Linux_SALES_XYZ`.
 - **Description** of the image. For example:

DB Image for 11.2.0.3 Database software on Linux x86_64 starting with Oct PSU 2014 patch level

- **Version:** The display name used to refer to the version. For example, based on the description of the image, the version name can be specified as OCT PSU 2014.
 - **Platform:**
 - **Version Name.** Specify a new and unique version name.
 - **Notes:** Specify additional description for the image. For example, you can specify a description as:

```
Database Patchset Update (PSU) October 2014 with additional 5 one-off patches for the Database Software.
```
8. Click **Create**. The newly created image will appear in the Oracle Database Home Images table and you will be subscribed to the newly created image. At this point, the database pool compliance is 0%. To make the database pool 100% compliant, you must do the following:
- Deploy the image. See [Deploying the Image](#)
 - Update the image. See [Updating the Database](#)

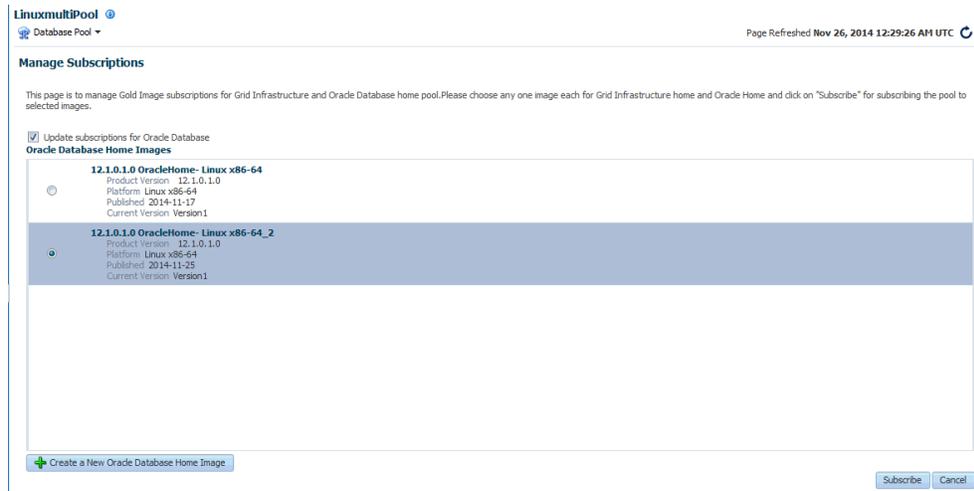
28.3 Subscribing to an Image

When a new image is created, the database pool is automatically subscribed to the image. To begin maintenance, start by deploying the image. Follow steps listed in [Deploying the Oracle Home](#).

If you want to maintain the database pool with another image, you must subscribe to the image. To subscribe to an existing image, follow these steps:

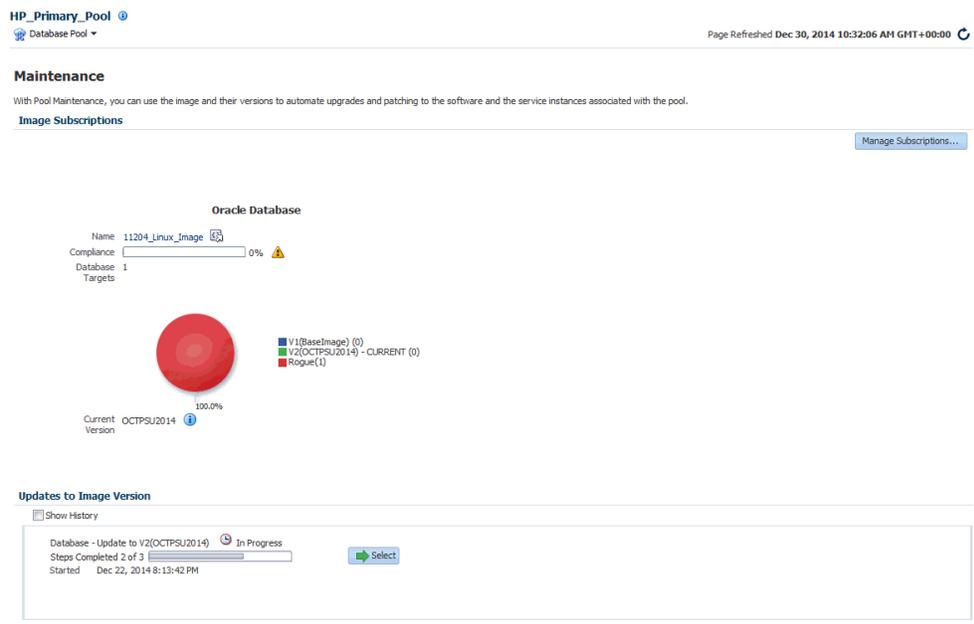
1. Login as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. Click on the Resource Providers link on the page. A list of database pools and PaaS Infrastructure zones are displayed.
3. Click on a **Database Pool** to view the Database Pool page.
4. From the **Database Pool** menu, select **Members**, then select **Maintenance**.
5. Click **Manage Subscriptions**. You will see a list of available and applicable images for Oracle Database. Select the **Update Subscriptions for Oracle Database** checkbox, select an image from the list and click **Subscribe**.

Figure 28-3 Manage Subscriptions Page



A message is indicating that pool is successfully subscribed to the image appears. The newly subscribed image is now available to the database pool and the database pool is 0% compliant. In the **Updates to Image Version** region of the Image Subscriptions page, the actions that need to be performed are listed. To make the database pool 100% compliant, you must deploy the image and update the database.

Figure 28-4 Image Subscriptions Page



The pie chart shows the ratio of distribution of the targets in the database pool with respect to the image and the different versions of the image. Each version is represented as follows:

- System Version Number (Version Display Name) (Number of targets in the version). For example V1 (DEC PSU 2014) (2)

- Each version can have one of the following states:
 - Draft: This is a test version.
 - Restricted: This represents a Beta version that is released to a restricted set of targets.
 - Current: This represents the latest version of the image.

The maintenance goal of the administrator is to move all targets in the pool to the **Current** version of the image to keep the pool is up-to-date and compliant.

28.4 Deploying the Image

After the self service administrator has subscribed the database pool to a new image, the new image must be deployed. To deploy the image, follow these steps:

1. Navigate to the Image Maintenance page. Click the **Select** button in the **Updates to Image Version** region of the page. The following page appears:

Figure 28-5 Deploying the Image

The screenshot shows the Oracle Cloud console interface for a maintenance job titled "Database - Update to V1(11203 PSU10)". The job status is "Pending" with a warning icon and the text "Action required". It indicates "Started: Not Yet" and "Most recent activity: None". A progress bar shows "Steps Completed 0 of 3".

On the left, there is a list of steps:

1. Deploy Oracle Home (Pending)
2. Activate Oracle Home (Pending)
3. Update Database (Pending)

On the right, under "1. Deploy Oracle Home", there is a "Deploy" button and a table with the following data:

Oracle Home	Owner	Image Version	Type	Deploy Status
Oras10b11g_home1_2014_10_06_03_25_10_slcm20adm01...	SYSMAN	N/A	Oracle Home	⚠ Pending

To complete the maintenance process and update the database, 3 steps are required:

- **Deploy:** See [Deploying the Oracle Home](#).
 - **Activate:** See [Activating the New Oracle Home](#)
 - **Update:** See [Updating the Database](#)
2. Specify the schedule for the deployment and click **Submit** to submit the job.

28.4.1 Deploying the Oracle Home

This option copies the image binaries to each of the hosts in the database pool and create new Oracle Homes on all them. When you navigate to this page, the **Deploy** step is highlighted and the status is **Pending**. The list of targets on which the image is to be deployed, the target owner, and the image version is displayed. To deploy the image, follow these steps:

1. Click **Deploy**. The following dialog box appears:

Figure 28-6 Maintenance Activity

2. Specify the name, description, the new Oracle Home location, Working Directory, and Dispatcher Location.
3. Click **Submit** to deploy the image and create new Oracle Homes.

28.4.2 Activating the New Oracle Home

This step sends notifications to the self service users that a new update is available. Activating the newly deployed Oracle Homes also updates the self service template associated with the database pool and redirects any new database service requests to be created from the new Oracle Home. Click **Activate** to activate the Oracle Homes that have been successfully deployed.

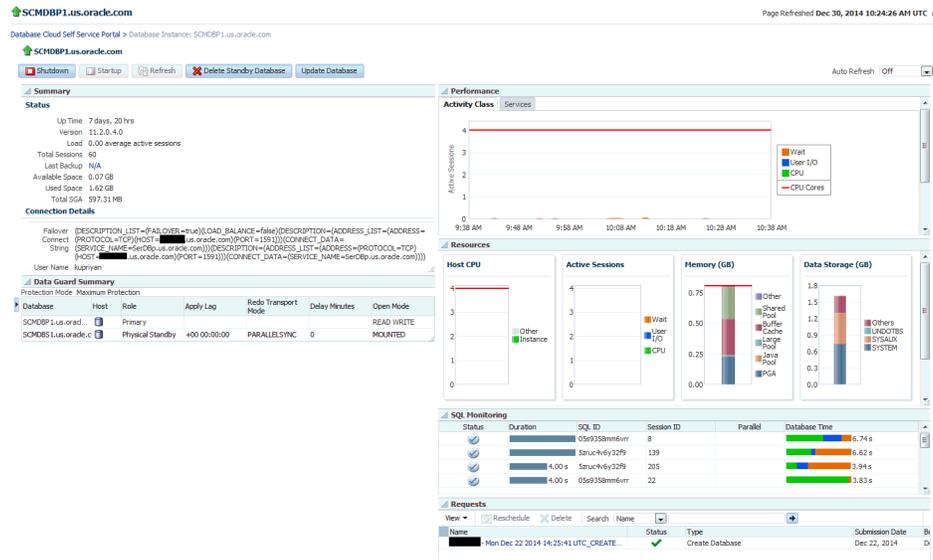
28.4.3 Updating the Database

This step switches the database from the old Oracle Home to the new Oracle Home and completes the post install steps for all the patches related to the image. This step can either be performed by the self service administrator or the self service user.

After deploying the latest version of the image, the self service administrator can do either of the following:

- Apply the latest version and update the database. To update the database targets associated with the pool, select the **Update** option shown in [Figure 28-5](#) and click **Update**. The latest patch will be applied on all the database targets in the pool. The database pool will now be 100% compliant.
- Notify the self service user about the updates by clicking **Yes** in the **Delegate the Responsibility to the Self Service User** field. The self service user can then choose to apply the updates by following these steps:
 1. Log in as a user with the `EM_SSA_USER` role.
 2. In the Self Portal Page, select **Databases** from the **Manage** drop down list. Click on a database for which updates are available to drill down to the Home page.

Figure 28-7 Updating the Database



3. Click **Update** to switch the database to the new Oracle Home.

Note:

- When all the tasks (deploy, activate, and update) have been performed, the pool is successfully subscribed to the new image.
- When the database pool is subscribed to a newer version of an image, the compliance status of the pool changes will be at 0%. After the new version is deployed and all databases associated with the database pool are updated, the compliance will be at 100%.

28.5 Performing Ongoing Image Updates

When a new patch or patchset is available, to deploy the new patch on the database pool, you must ensure that the following tasks are performed:

- [Creating a New Version of the Image](#)
- [Deploying the Image](#)
- [Updating the Database](#)

28.5.1 Creating a New Version of the Image

To create a new version of an image, follow these steps:

1. Login as a user with the EM_SSA_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. Click on the Resource Providers link on the page. A list of database pools and PaaS Infrastructure zones are displayed.

3. Click on a **Database Pool** to view the Database Pool page.
4. From the **Database Pool** menu, select **Members**, then select **Maintenance**. The Image Subscriptions page appears.
5. Click the **Manage Image** link on the page. The Manage Images page appears.

Figure 28-8 Manage Images

Database Images Page Refreshed Dec 5, 2014 4:45:16 PM UTC

Database Images > Manage Image

11.2.0.4.0 OracleHome: Linux x86-64

Subscribed 1
Targets
Compliance 0%

Product Version 11.2.0.4.0
Database Type Database Instance
Platform Linux x86-64

Deployments

Version1

Active Versions (1)

Name	Version	Status	Deployments	Date Created	Owner
Version1	V1	CURRENT	0	12/4/2014	[REDACTED]

Version1

General | Software

Database Type Database Instance
Product Version 11.2.0.4.0
Version
Platform Linux x86-64
State CURRENT
Date Created 12/4/2014
Owner [REDACTED]
Description Oracle Home Reference Image 04-12-2014 06:06 AM from
Oradb11g_home1_1 [REDACTED].us.oracle.com

This page contains the following details:

- **Database Images:** This region displays the name of the image, number of subscribed targets, compliance score, product version, database type, and platform.
 - **Deployments:** This region shows a piechart that consists of the percentage of deployments for each version in the image.
 - **Active Versions:** This region lists the number of active versions, the name of the versions, the version number, the status of the version (Current or Active), the number of deployments for each version, the creation date of each version, and the SSA owner of the version.
 - **General:** The General tab lists the database type, product version, platform, state, description, creation date, and owner of the image. The Software tab lists the location of the Oracle Home, the product name, and the host name. If you have saved a snapshot of the image, you can view it by clicking **View**.
6. Click **Manage Versions** to manage the image versions.

Figure 28-9 Manage Database Image Versions

Database Images > Manage Image > Manage Versions Page Refreshed Nov 26, 2014 2:00:56 AM UTC

Manage Image: 11204_GIHome_sok86_x64

Database Type: Cluster Product Version: 11.2.0.4.0 Platform: Oracle Solaris on x86-64 (64-bit)

View Show Retired

Name	Version	Status	Deployments	Date Created	Owner
11.2.0.4.3DBPSU	V1	CURRENT	0	11/17/2014	SSA_ADMIN11

11.2.0.4.3DBPSU

General **Software**

Database Type: Cluster Date Created: 11/17/2014
 Product Version: 11.2.0.4.0 Owner: SSA_ADMIN11
 Platform: Oracle Solaris on x86-64 (64-bit)
 State: CURRENT
 Description: Grid Infrastructure Home Reference Image 17-11-2014 06:16 AM from OraGI11g_home2_19 [redacted]@oracle.com

This page consists of a table that lists the name of each version, the version number, the status of the version, the number of deployments of each version, the creation date of the version, and the owner of the version.

When you select a version, the General and Software tabs automatically displays the general and software details of the version.

- From the **Actions** menu, select **Create** to create a new version of the image. The Create New Image dialog box appears.
- Follow the steps listed in [Creating a Database Gold Image](#) to create the new image version. The database pool will now be subscribed to the new version.

After the new version has been created, you can click **Set Current Version** to set this version as the current version of the image. You can restrict the users who can use this version by clicking **Set Restricted Version**. If you set the version status as Restricted, no other user can access the version.

Editing an Image

To edit an image version, select the image and click **Edit** from the **Actions** menu. This option allows you to change the name of the image version.

Deleting an Image

To delete a database image, in the Images section, select the image that you want to delete, and then click **Delete**. Click Yes to confirm and delete the image.

PBaaS Fleet Operations

This chapter describes the EMCLI commands that can be used to perform PDBaaS fleet operations. It contains the following sections:

- [Preparing and Subscribing to the Software Image \(SSA Admin\)](#)
- [PDBaaS Pool Operations Performed by SSA Admin \(Option 1\)](#)
- [PBaaS Pool Operations Performed by SSA Admin \(Option 2\)](#)
- [Update CDB \(SSA Admin and SSA User Operations\)](#)
- [PDBaaS Pool Cleanup Operations - SSA Admin](#)

29.1 Preparing and Subscribing to the Software Image (SSA Admin)

To prepare and subscribe to the software image, follow these steps:

- **Create a Software Image of the Oracle Home with patches/patchsets**

```
emcli db_software_maintenance -createSoftwareImage -input_file="data:/scratch/input_rac"
```

where the contents of `input_rac` are:

- IMAGE_NAME=DbGoldImage
- IMAGE_DESCRIPTION=Gold Image for 12c db
- REF_TARGET_NAME=ORACLE_HOME
- IMAGE_SWLIB_LOC=Oracle Home Provisioning Profiles/12.1.0.2.0/linux_x64
- REF_HOST_CREDENTIALS=ZONE_CREDS:TESTSUPERADMIN
- WORKING_DIRECTORY=/tmp
- STORAGE_TYPE_FOR_SWLIB=OmsShared
- STORAGE_NAME_FOR_SWLIB=swlib
- VERSION_NAME=Version1

- **Retrieve the Created Image**

To get the id of the newly created image, run the following command:

```
emcli db_software_maintenance -getImages
```

- **Subscribe the PDBaaS Pool to the Newly Created Image**

```
emcli db_cloud_maintenance -subscribeTarget -pool_name=PDB_POOL -pool_type=pdbaas_pool -image_id=438AA95015F34E25E053FB7BB10A9E3B
```

This command subscribes the PDBaaS pool, the CDB members and the PDBs associated with the CDBs. This is a **db_cloud_maintenance** operation and not a **db_software_maintenance** operation.

- **Verify the PDBaaS Target and Its Subscriptions**

To verify the PDBaaS target and its subscriptions, run the following command:

```
emcli db_software_maintenance -getSubscriptionsForContainer -target_name="RAC
Pool" -target_type=pdbaas_pool -image_id=FE55AD7AB28974EFE04313B2F00AD4A0
```

29.2 PDBaaS Pool Operations Performed by SSA Admin (Option 1)

The PDBaaS pool operations that can be performed by SSA Admin are:

- **Deploy the Oracle Home from the subscribed image on the targets**

```
emcli db_cloud_maintenance -performOperation -purpose="DEPLOY_DB_SOFTWARE/
DEPLOY_RAC_SOFTWARE" -pool_name="PDB_POOL" -pool_type="pdbaas_pool" -
name="Deploy Patch OH for Pool" -target_type=oracle_home -description="Deploys
the Patched Oracle home on target nodes" -input_file="data:/scratch/
data_backup/deploboh.properties"
```

The contents of the `deploboh.properties` are:

- NEW_ORACLE_HOME_LIST=/u01/app/oracle/product/patchedHome2
- WORK_DIR_LOC=/tmp
- DISPATCHER_LOC=/tmp

The following parameters can be added if the prerequisite checks need to be skipped during the **Deploy** operation:

- SKIP_PREREQUISITE_CHECKS=true
- SKIP_CVU_CHECK=true

This step retrieves the list of Oracle Homes associated with the CDB members of the pool and creates a new Oracle Home for each, using the software image provided and creates a Oracle Home Lineage.

- **Migrate the Listeners**

Run the following command to migrate the listeners:

```
emcli db_cloud_maintenance -performOperation -purpose="MIGRATE_LISTENER" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Migrate Listeners" -
description="Migrate the listeners to the new Oracle Home, if any"
```

- **Create / Deploy CDB**

To create or deploy the CDB, run the following command:

```
emcli db_cloud_maintenance -performOperation -purpose="DEPLOY_CDB" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Deploy CDB" -
target_type=rac_database -description="Deploy a new CDB on the new OH for
every CDB on the Pool using the prefix " -db_prefix="racdb"
```

This step creates a new CDB for every CDB member of the pool by using the member CDBs structure only template. The new CDBs that are created will use the `db_prefix` for their names.

```
emcli db_cloud_maintenance -performOperation -purpose="DEPLOY_CDB" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Deploy CDB for a given
target" -target_type=rac_database -description=" Deploy a new CDB on the new
```

```
OH for the selected CDB target " -db_name="slspc" -
target_list="sales.us.oracle.com"
```

This step creates a new CDB for the selected CDB member of the pool specified in the `target_list` option, using its structure only template. The new CDBs that are created will use the `db_prefix` for their db name.

The CDBs created using this command will be marked as Passive and will be part of the pool's member list. There will also be a lineage created between the CDBs.

- **Activate CDB**

```
emcli db_cloud_maintenance -performOperation -purpose="ACTIVATE_CDB" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Activate the CDBs" -
target_type=oracle_database/rac_database -description="Activates the newly
created CDBs"
```

This step marks all the new CDBs in the pool that were created in the above step as Active and the existing CDBs as Inactive. Any further SSA requests will be forwarded to the newly activated CDBs.

```
emcli db_cloud_maintenance -performOperation -purpose="ACTIVATE_CDB" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Activate the CDBs" -
target_type=oracle_database/rac_database -description="Activates the newly
created CDBs" -target_list="sales.us.oracle.com"
```

This step the given CDBs in the `target_list` as Active and is predecessor CDBs as Inactive. Any further SSA requests will be forwarded to the newly activated CDB.

29.3 PBaaS Pool Operations Performed by SSA Admin (Option 2)

The following operations can be performed by the SSA Admin:

- **Attach an existing CDB to the pool**

```
emcli db_cloud_maintenance -performOperation -purpose="ATTACH_CDB" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Attach an existing CDB" -
target_type=oracle_database/rac_database -description="Attach an existing CDB
as the successor" -destinationCDB="subjects.us.oracle.com" -
target_list="crm.us.oracle.com"
```

This step will attach the destination CDB as the successor of the member CDB specified in the `target_list`. This will bypass the Deploy OH, Migrate Listener, Deploy CDB steps and will create the necessary lineage for Oracle home and CDB. The destination CDB should be in the same zone associated with the pool and on the same cluster. The newly attached CDB will be marked as Passive once it has been attached.

- **Activate the CDB**

```
emcli db_cloud_maintenance -performOperation -purpose="ACTIVATE_CDB" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Activate the CDBs" -
target_type=oracle_database/rac_database -description="Activates the newly
created CDBs"
```

This step marks all the new CDBs in the pool that were created in the above step as Active and the existing CDBs as Inactive. Any further SSA requests will be forwarded to the newly activated CDBs.

```
emcli db_cloud_maintenance -performOperation -purpose="ACTIVATE_CDB" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Activate the CDBs" -
target_type=oracle_database/rac_database -description="Activates the newly
created CDBs" -target_list="sales.us.oracle.com"
```

This step marks the specified CDBs in the `target_list` as Active and is predecessor CDBs as Inactive. Any further SSA requests will be forwarded to the newly activated CDB.

29.4 Update CDB (SSA Admin and SSA User Operations)

This section lists the Update CDB operations:

- **Update PDB — SSA Admin**

```
emcli db_cloud_maintenance -performOperation -purpose="UPDATE_PDB" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Update PDB to new CDB" -
target_type=oracle_pdb -description="Relocates the PDB from its inactive CDB
to newly active CDB" -target_list="crm.us.oracle.com_SDB1"
```

The SSA Admin can update a PDB from its predecessor to the newly activated CDB.

- **Update PDB – SSA User – UI**

The SSA User will see an **Update Database** button on the PDB home page once the new CDB has been activated and is available for update. The SSA User can schedule an update of the PDB with no additional inputs.

- **Update PDB – SSA User — RESTful API**

The SSA can submit a Update PDB request using the RESTful API request.

```
https://<host>:<port>/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/
<requestid>
Content-Type: application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json
Accept: application/oracle.com.cloud.common.PluggableDbPlatformInstance+json
Body:
{
  "operation" : "UPDATE_DATABASE",
  "update_schedule" : ""
}
Method: POST
```

29.5 PDBaaS Pool Cleanup Operations - SSA Admin

The following pool cleanup operations can be performed by the SSA Admin:

- **Deactivate the CDB**

If there are any issues with the newly activated CDB, the SSA Admin can deactivate them and use the old CDB as their member active CDB for new requests until the time the issue is sorted with the new CDB or they are removed from the pool (given that they do not service any PDB's)

```
emcli db_cloud_maintenance -performOperation -purpose="DEACTIVATE_CDB" -
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Deactivate the CDBs" -
target_type=oracle_database/rac_database -description="Deactivates the newly
created CDBs"
```

This step marks all the new CDBs in the pool that were created in the above step as Passive and their predecessor CDBs as Active. Any further SSA requests will be forwarded to the newly activated CDBs.

```
emcli db_cloud_maintenance -performOperation -purpose="DEACTIVATE_CDB" -  
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Deactivate the CDBs" -  
target_type=oracle_database/rac_database -description="Deactivates the newly  
created CDBs" -target_list="sales.us.oracle.com"
```

This step the given CDBs in the target_list as Passive and is predecessor CDBs as Active. Any further SSA requests will be forwarded to the newly activated CDB.

- **Rollback the PDB**

In case the PDB update has any issues with the CDB to which it was updated, the admin (and admin only) can do a rollback of the PDB to the CDB that was the predecessor of the currently active CDB.

```
emcli db_cloud_maintenance -performOperation -purpose="ROLLBACK_PDB" -  
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Activate the CDBs" -  
target_type= oracle_pdb -description="Rolls back the PDB to its parent CDB"
```

This step rolls back the PDBs associated with the pool to their respective parent CDBs.

```
emcli db_cloud_maintenance -performOperation -purpose="ROLLBACK_PDB" -  
pool_name="PDB_POOL" -pool_type="pdbaas_pool" -name="Activate the CDBs" -  
target_type= oracle_pdb -description="Rolls back the PDB to its parent CDB" -  
target_list="sales.us.oracle.com_FIN"
```

This step rolls back the given PDBs in the target_list to their parent CDB.

30

Customizing Database as a Service

This chapter describes how to customize Database as a Service. It contains the following sections:

- [Pre and Post Request Creation / Deletion Scripts](#)

30.1 Pre and Post Request Creation / Deletion Scripts

You can run custom scripts before and after a service instance has been created. These requests can range from some additional host commands on the machine on which the database was created or commands to perform additional book activities and other operations on the newly provisioned database.

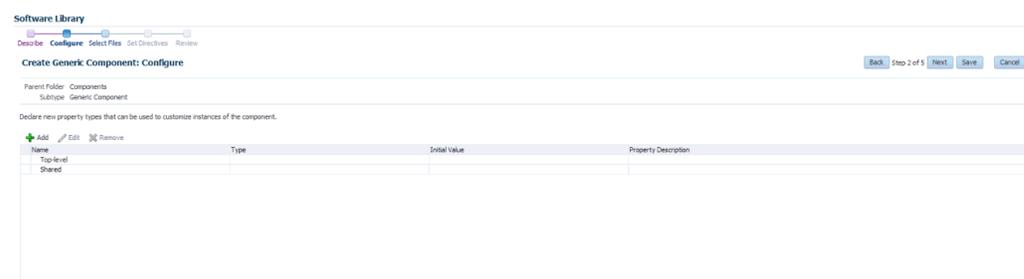
Similarly, you can run scripts after a service instance has been deleted if you need to undo the changes made during service cleanup.

The custom script must follow certain guidelines and consists of four parts:

- **Response File:** The response file contains the service template and request specific information. Before the custom script is executed, the request procedure, the request procedure generates a response file (file with name-value pairs) containing the data from the service template as well as the request-specific data such as the SID that is auto computed, the hosts on which the database will be deployed, and so on.
- **Driver Script:** This is the key driver script that will be invoked by the request procedure. The driver script accepts only one argument which specifies the location of the response file.
- **Other Scripts:** Apart from the driver script, you can specify other perl or sql scripts. These scripts must be invoked from the driver script.
- **Additional Variables:** You can include a file containing additional variables that can be used by the custom script as applicable.

After the scripts have been created, they must be uploaded as a directive into the Software Library. In the Describe page, the name of the directive and the description is displayed. Click the **Configure** tab.

Figure 30-1 Pre or Post Database Script: Configure



The driver script accepts one command line argument which must be in the `INPUT_FILE` format. This variable will be used at run-time to specify the location of the generated response file. Click the **Select Files** tab.

Figure 30-2 Pre or Post Database Script: Select Files

The screenshot shows the 'Select Files' step of a wizard. It includes sections for 'Specify Destination' and 'Specify Source'. The 'Specify Source' section contains a table with the following data:

Name	Size	Mime Type	Status
sdscript.ed	289 bytes	application/octet-stream	New

Specify any additional files that are required by the custom script. You can run the script from the same host on which the database instance or the database service was created or deleted.

Note:

if you need to change the content of the script, you must upload a newer version of the script to the Software Library. To use the latest version of the script, you must launch the Edit Service Template wizard and select the updated version of the script and save the template. This ensures that the latest version of the script will be used.

30.1.1 Selecting the Post SQL Script

A post SQL script can be created and uploaded to the Software Library. The self service administrator can select the script during service template creation. To specify the script, follow these steps:

1. Log in as a user with `EM_SSA_ADMINISTRATOR` role.
2. From the Enterprise menu, select Cloud. From the Cloud Home menu, select Service Template and then Create.
3. Select the Service Template type as Database and click Create.
4. Navigate to the Configuration page. Click the Search icon next to the Post SQL Script field and select the script from the Software Library.
5. In the Run As User drop down, the SYS user is selected by default.

If this user is selected, the SYS password provided on Database page in the wizard is used to run the post database creation SQL script.

If any other user is selected including Master Account, the password provided by the self service user for the Master Account while creating a service request will be used.

Note:

If the user account is locked, an error message is displayed. The user account must be open in the source database.

30.1.2 Sample Scripts

Sample scripts are available in the Software Library. To view the sample scripts, from the **Enterprise** menu, select **Provisioning and Patching**, then select **Software Library**. Select the **DBaaS** folder, then select **Directives**, and click the **Samples** folder to see the custom scripts.

Figure 30-3 Sample Scripts

Name	Type	Subtype	Revision	Status	Maturity	Owner	Description	Internal ID
Software Library								
Application Server Provisioning Utilities						ORACLE	Root Folder for So...	oracle:defaultServ...
ATIDeploy						ORACLE	Entities belongin...	oracle:defaultServ...
Bare Metal Provisioning						ORACLE	Deploy Entities	oracle:defaultServ...
BPFLProvisioning						ORACLE	Bare Metal Provis...	oracle:defaultServ...
Business Intelligence Provisioning Utilities						ORACLE	BPFL Provisioning Ent	oracle:defaultServ...
Cloud						ORACLE	S/W Library Entity	oracle:defaultServ...
Coherence Node Provisioning						ORACLE	Cloud	oracle:defaultServ...
Common Provisioning Utilities						ORACLE	Coherence Node P...	oracle:defaultServ...
Components	Component	Generic Component	0.1	Ready	Untested	SYSMAN	Directives belongin...	oracle:defaultServ...
Post SQL SCRIPT	Component	Generic Component	0.1	Ready	Untested	SYSMAN	Components Folder	oracle:defaultServ...
Directives						SYSMAN	Directives Folder	oracle:defaultServ...
Images						SYSMAN	Images Folder	oracle:defaultServ...
Networks						SYSMAN	Networks Folder	oracle:defaultServ...
Subsets						SYSMAN	Subsets Folder	oracle:defaultServ...
CompositeDeploy						ORACLE	CompositeDeploy Ent	oracle:defaultServ...
CIU Prerequisite-Flup components						ORACLE	CIU Prerequisite-fl...	oracle:defaultServ...
Database Backup Appliance						ORACLE	Directives and Comp	oracle:defaultServ...
Database Configuration						SYSMAN	Database Configur...	oracle:defaultServ...
Database Provisioning CIU Downloads						SYSMAN	Database Provision...	oracle:defaultServ...
Database Provisioning Profiles						SYSMAN	Database Provision...	oracle:defaultServ...
DB Provisioning						ORACLE	Directives and Comp	oracle:defaultServ...
Cloud						ORACLE	Directory for Data...	oracle:defaultServ...
ELU BTH Observer						ORACLE	ELU BTH Observer	oracle:defaultServ...
FMV Cleanup Utilities						ORACLE	Directives belongin...	oracle:defaultServ...
Fusion Applications Provisioning Utilities						ORACLE	S/W Library Entities	oracle:defaultServ...
Fusion Instance Service						ORACLE	S/W Library Entity...	oracle:defaultServ...
Fusion Middleware Provisioning Utilities						ORACLE	Directives belongin...	oracle:defaultServ...
High Availability						ORACLE	Directives and Co...	oracle:defaultServ...
Java EE Provisioning						ORACLE	Java EE Application P	oracle:defaultServ...
Load Balancer Configuration						ORACLE	Load Balancer Con...	oracle:defaultServ...

30.1.3 Input Parameters for Pre and Post Database Scripts

This section lists the following:

- [Input Parameters for DBaaS Pre and Post Request Creation Scripts](#)
- [Input Parameters for DBaaS Pre and Post Request Deletion Scripts](#)
- [Input Parameters for SaaS Pre and Post Request Creation Scripts](#)
- [Input Parameters for SaaS Pre and Post Request Deletion Scripts](#)
- [Input Parameters for PDBaaS Pre and Post Request Creation Scripts](#)
- [Input Parameters for PDBaaS Pre and Post Request Deletion Scripts](#)
- [Sample Input Files](#)
- [Sample PDBaaS Post Scripts](#)

30.1.3.1 Input Parameters for DBaaS Pre and Post Request Creation Scripts

This table lists the input parameters for the DBaaS pre and post request creation scripts.

Table 30-1 DBaaS: Input Parameters for Pre and Post Request Creation Scripts

Variable Name	Description	Example
ssaRequestId	The Request ID of the SSA user request.	3
ssaUser	The SSA user name.	Ssa_user1
ssaTargetName	The zone target name.	Myzone1
ssaTargetType	The zone target type.	Self_service_zone
zoneTargetName	The zone target name.	Myzone1
zoneTargetType	The zone target type.	Self_service_zone
DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN	The URN of the directive in the software library which will be executed before the creation of the PDB target.	oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1
DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN	The URN of the directive in the software library which will be executed after the creation of the PDB target.	oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1
SEL_HOST	The host selected as part of placement where the new database will be created.	Myhost.oracle.com
MEM_SIZE	The memory size of the requested database. This shall be the sum of sga and pga aggregate size or the total memory size.	2324
STORAGE_SIZE	The total storage size of the requested database	2324
HOST_CREDS	The credentials of the host where the database will be created.	Mycred1:dbaas_admin
PROFILE_COMPONENT_URN	The profile component URN.	oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_DbProfile:E9C8A650EFA5291DE04354B2F00AFF3E:0.1
WORK_DIR	The temporary working directory used for staging provisioning related files	/tmp
DB_ADMIN_PASSWORD_SAME	Indicates if the password provided for the sys, system and dbnmp are same or different	true
DB_ORACLE_HOME_LOC	The oracle home in the selected host, from where the new Database will be created.	/scratch/aime/oraclehomes/dbbase/112030/dbhome1
DB_ORACLE_BASE_LOC	The oracle base of the selected oracle home.	/scratch/aime/oraclehomes/dbbase
TOTAL_MEMORY	The total memory for the chosen database if the memory management type is AMM.	0
SGA_MEMORY	The SGA memory value set for the database.	1744

Table 30-1 (Cont.) DBaaS: Input Parameters for Pre and Post Request Creation Scripts

Variable Name	Description	Example
PGA_MEMORY	The PGA target value set for the database.	580
INIT_PARAMS	The list of initialization parameter values that are set in the service template. The values are stored as paramName=paramValue[,paramName=paramValue]	processes=150,cluster_database=FALSE,db_name=,open_cursors=300,sga_target=1828716544,db_block_size=8192,audit_file_dest={ORACLE_BASE}/admin/{DB_UNIQUE_NAME}/adump,diagnostic_dest={ORACLE_BASE},*.cpu_count=0,db_recovery_file_dest={ORACLE_BASE}/fast_recovery_area,log_archive_format=%t_%s_%r.dbf,compatible=11.2.0.0.0,audit_trail=DB,remote_login_passwordfile=EXCLUSIVE,undo_tablespace=UNDOTBS1,db_recovery_file_dest_size=4322230272,control_files=("{ORACLE_BASE}/oradata/{DB_UNIQUE_NAME}/control01.ctl", "{ORACLE_BASE}/fast_recovery_area/{DB_UNIQUE_NAME}/control02.ctl"),pga_aggregate_target=608174080
DATABASE_TYPE	Type of database that will be provisioned as part of the request.	oracle_database or rac_database
USER_NAME	User Name (cannot be any of Oracle default accounts) which will be treated as the master account and will be used to login to the requested database.	Useracct1
INSTANCE_COUNT	Number of database instances that will be created in case if the request is for a RAC Database.	1
COMMON_DATABASE_SID	The SID Prefix that has been provided in the Service Template with which a unique database name will be generated.	db000000
COMMON_DOMAIN_NAME	The Database Domain name provided in the Service Template which will be used to create the Database Target in Enterprise Manager.	Mycompany.com
LISTENER_PORT	The port number of the listener in the host to which the database will be attached.	1521
REF_ZONE	The reference zone used for the validations.	Myzone1
REF_POOL	The pool selected on the reference zone.	Mypool1

Table 30-1 (Cont.) DBaaS: Input Parameters for Pre and Post Request Creation Scripts

Variable Name	Description	Example
REF_HOST	The reference host chosen from the pool.	Myhost1.oracle.com
REF_TGT	The reference host chosen from the pool	Myhost1.oracle.com
COMMON_GLOBAL_DB_NAME	The global database domain name.	db000000.myhost.oracle.com

30.1.3.2 Input Parameters for DBaaS Pre and Post Request Deletion Scripts

This table lists the input parameters for DBaaS pre and post request deletion scripts.

Table 30-2 DBaaS: Input Parameters for Pre and Post Request Deletion Scripts

Variable Name	Description	ExampleDB
DB_SID	The database SID of the database which is chosen for deletion. This can be used to connect to the database.	db000000
HOST_NAME	The host name where the DB chosen for deletion, resides.	Myhost.oracle.com
DATABASE_TGT_GUID	The guid of the database which is chosen for deletion	E9C5A1149C266846E04354B2F00A9D7B
HOST_CREDS	The credentials to login to the database host to access the oracle home.	MYCREDS:DBAAS_ADMIN
ROOT_CREDS	The root credentials to login to the host as super user as specified in the pool.	MYROOTCREDS:DBAAS_ADMIN
TARGET_GUID	The guid of the database which is chosen for deletion.	E9C5A1149C266846E04354B2F00A9D7B
BACKUP_ENABLED	If the backup has been enabled for snap clone database target.	True
WORK_DIR	Temporary working directory used for deletion.	/tmp/workdir1
CUSTOM_DELETION_SCRIPTS_URN	The URN of the directive in the software library which will be executed before the deletion of the Schema.	oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1
CUSTOM_DELETION_POST_SCRIPTS_URN	The URN of the directive in the software library which will be executed after the deletion of the Schema.	oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1

30.1.3.3 Input Parameters for SchaaS Pre and Post Request Creation Scripts

This table lists the input parameters for schema as a service pre and post request creation scripts.

Table 30-3 SchaaS: Input Parameters for Pre and Post Request Creation Scripts

Variable Name	Description	ExampleDB
ssaRequestID	The Request ID of the SSA User request.	3
ssaUser	The SSA user name.	Ssa_user1
ssaTargetName	The zone target name.	Myzone1
ssaTargetType	The zone target type.	Self_service_zone
zoneTargetName	The zone target name.	Myzone1
zoneTargetType	The zone target type.	Self_service_zone
SCHAAS_CUSTOM_PRE_SCRIPTS_URN	The URN of the directive in the software library which will be executed before the creation of the schema target.	oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1
REQUEST_NAME	The name of the request	SYSMAN - Tue Oct 29 02:04:21 PDT 2013_CREATE_4_41
SERV_TEMPLATE_GUID	The service template guid.	E9C5A1149C266846E04354B2F00A9D7B
CREATE_SCHEMA_OPTION	Option to differentiate between creating empty schemas or schemas from profile. Possible values, EMPTY_SCHEMAS/SCHEMAS_FROM_PROFILE	EMPTY_SCHEMAS
MAX_NUMBER_OF_SCHEMAS	Maximum number of schemas permissible if the user does not select a profile. Applicable only when the Create Empty Schemas option is selected.	4
MASTER_ACCOUNT	The master account from the list of schemas selected.	MySchema
ROLE_NAME	Name of the database role which will assigned to all the schemas.	Mynewrole1
SCHEMA_PRIVILEGES	List of schema privileges that will be applied on the user accounts.	CREATE VIEW, CREATE DIR
ENFORCE_STORAGE_CONSTRAINT	Enforces the storage constraint on the service request. Possible values true/false	True
INITIAL_BLOCK_SIZE	The initial size of the tablespace.	2048M
AUTO_EXTEND_BLOCK_SIZE	The auto extend block size.	100M
TABLESPACE_ENCRYPTION_ALGORITHM	The algorithm used for tablespace encryption	AES128

Table 30-3 (Cont.) SchaaS: Input Parameters for Pre and Post Request Creation Scripts

Variable Name	Description	ExampleDB
SHARED_STORAGE_LOCATION	Shared staging location where the dump files are location across the hosts in the selected pool. Will be specified only if the create schema option is from an existing profile.	/oradbnfs/dumpfiles/
DBSERVICE_NAME	Database service name that will be provided during the request.	Service_88A370FC0FC1
DB_ORACLE_HOME_LOC	The Oracle Home for the Database where the new schema is created.	/scratch/aime/app/aime/11.2.0/dbhome_1
COMMON_DB_SID	The service name with which the Database can be connected in the host.	Mydb1
REMAP_SCHEMA_LIST	The list of schemas will that will be created on the target.	MySchema

30.1.3.4 Input Parameters for SchaaS Pre and Post Request Deletion Scripts

This table lists the input parameters for schema as a service pre and post request deletion scripts.

Table 30-4 SchaaS: Input Parameters for Pre and Post Request Deletion Scripts

Variable Name	Description	Example
DB_CONNECT_STRING	The connection string to establish a connection to the database.	DESCRIPTION = (ADDRESS = (PROTOCOL = TCP)(HOST = myhost.oracle.com)(PORT = 1521)) (CONNECT_DATA = (SERVER = DEDICATED)(SID= Myservice1)))
SCHEMA_NAME	Schema name selected for deletion.	Myservice1
PERM_TABLESPACE_NAME	The primary table space.	Myschema1
HOST_NAME	The host name where the DB chosen for deletion, resides.	Myhost.oracle.com
DATABASE_CREDS	The named credentials used for connecting to the database.	MYDBCREDS:DBAAS_ADMIN
GI_CREDS	The named credentials used for connecting to the Grid Infrastructure in case of RAC.	MYHOSTCREDS:DBAAS_ADMIN
WORK_DIR	Temporary working directory	/tmp/myworkdir1
CUSTOM_DELETE_SCRIPTS_URN	The URN of the directive in the software library which will be executed before the deletion of the Schema	oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1

Table 30-4 (Cont.) SchaaS: Input Parameters for Pre and Post Request Deletion Scripts

Variable Name	Description	Example
CUSTOM_DEL_POST_SCRIPTS_URN	The URN of the directive in the software library which will be executed after the deletion of the Schema	oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1

30.1.3.5 Input Parameters for PDBaaS Pre and Post Request Creation Scripts

This table lists the input parameters for PDB as a service pre and post request creation scripts.

Table 30-5 PDBaaS: Input Parameters for Pre and Post Request Creation Scripts

Variable Name	Description	Example
ssaRequestId	The Request ID of the SSA User request.	3
ssaUser	The SSA user name.	Ssa_user1
ssaTargetName	The zone target name.	Myzone1
ssaTargetType	The zone target type.	Self_service_zone
PDBAAS_CUSTOM_PRE_SCRIPTS_URN	The URN of the directive in the software library which will be executed before the creation of the PDB target.	oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1
PDBAAS_CUSTOM_POST_SCRIPTS_URN	The URN of the directive in the software library which will be executed after the creation of the PDB target.	oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1
CREATE_PDB_OPTION	Option for creating Pluggable Database that includes empty PDB or PDB from profile. Possible values, EMPTY_PDB/PDB_FROM_PROFILE	EMPTY_PDB
PDB_CONNECT_STRING	The connection string to establish a connection to the pluggable database.	(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP) (HOST=myhost.mycompany.com)(PORT=1531))) (CONNECT_DATA=(SERVICE_NAME=svc_mypdb) (INSTANCE_NAME=CDB01) (UR=A) (SERVER=DEDICATED)))
PDB_NAME	Name of the PDB target being created.	mypdb

Table 30-5 (Cont.) PDBaaS: Input Parameters for Pre and Post Request Creation Scripts

Variable Name	Description	Example
CDB_CONNECT_STRING	The connection string to establish a connection to the container database.	(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=myhost.mycompany.com)(PORT=1531)))CONNECT_DATA=(SID=CDB01)))
MAX_TABLESPACE_ALLOWED	Maximum number of tablespaces allowed for pluggable database as a service.	10
ENFORCE_STORAGE_CONSTRAINT	Enforces the storage constraint on the service request. Possible values true/false.	True
TABLESPACE_ENCRYPTION_ALGORITHM	The algorithm used for tablespace encryption.	AES128
TABLESPACE_SIZE	The SID Prefix that has been provided in the Service Template with which a unique database name will be generated.	mydb
PDB_SID_PREFIX	SID Prefix for the new pluggable database.	Mypdb1
SHARED_STAGE_LOCATION	Shared staging location where the dump file are location across the hosts in the selected pool.	/oradbfnfs/dumpfiles/
PDB_ADMIN_USER_NAME	Administrator user name for the new pluggable database.	Myadmin
PDB_SERVICE_NAME_PREFIX	The service name prefix for the pluggable database.	Service
PDBSERVICE_NAME	Pluggable database service name.	Service_000
DB_ORACLE_HOME_LOC	The Oracle Home for the Database where the new schema is created.	/scratch/aime/app/aime/11.2.0/dbhome_1
COMMON_DB_SID	The service name with which the Database can be connected in the host.	Mydb1
ROLE_OPTION	Role Option Custom New Role/ Existing Roles which will assigned to Pluggable database administrator.	CUSTOM_NEW_ROLE
INIT_PARAMS	The list of initialization parameter values that are set in the service template. The values are stored as paramName=paramValue[,paramName=paramValue].	*.open_cursors 300,*.cursor_sharing EXACT
CUSTOM_ROLE_NAME	The name of the database role which will assigned to Pluggable database administrator.	PDBAAS_OCT_29_2013_02_27_AM

Table 30-5 (Cont.) PDBaaS: Input Parameters for Pre and Post Request Creation Scripts

Variable Name	Description	Example
CUSTOM_ROLE_DESCRIPTION	The description for the new role to be created.	New db role to be assigned to pluggable database administrator.
PRIVILEGES	List of privileges of custom new role that will be applied on pluggable database administrator.	CREATE SESSION, ALTER SESSION, CREATE DIMENSION, CREATE INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE ANY INDEX, CREATE JOB, CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY TRIGGER, CREATE ANY TYPE, CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY, SELECT ANY DICTIONARY
ROLES	Name of the database role which will be assigned to all the schemas.	Mynewrole1
DB_ORACLE_HOME_LOCATION	The oracle home of the chosen Container database.	/scratch/aime/oraclehomes/dbbase/121010/dbhome1
COMMON_DB_SID	The Database sid for the selected Container Database where the new PDB will be created.	cdb

30.1.3.6 Input Parameters for PDBaaS Pre and Post Request Deletion Scripts

This table lists the input parameters for PDB as a service for pre and post request deletion scripts.

Table 30-6 SchaaS: Input Parameters for Pre and Post Request Deletion Scripts

Variable Name	Description	Example
DB_CONNECT_STRING	The connection string to establish a connection to the database.	DESCRIPTION = (ADDRESS = (PROTOCOL = TCP)(HOST = myhost.oracle.com)(PORT = 1521)) (CONNECT_DATA = (SERVER = DEDICATED)(SID= mypdb0001)))
PDB_NAME	PDB target name selected for deletion.	Mypdb001
HOST_NAME	The host name where the PDB chosen for deletion, resides.	Myhost.oracle.com
DATABASE_CREDS	The named credentials used for connecting to the database.	MYDBCREDS:DBAAS_ADMIN

Table 30-6 (Cont.) SchaaS: Input Parameters for Pre and Post Request Deletion Scripts

Variable Name	Description	Example
GI_CREDS	The named credentials used for connecting to the Grid Infrastructure in case of RAC.	MYHOSTCREDS:DBAAS_ADMIN
WORK_DIR	Temporary working directory	/tmp/myworkdir1
CUSTOM_DEL_PRE_SCRIPTS_URN	The URN of the directive in the software library which will be executed before the deletion of the PDB target.	oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1
CUSTOM_DEL_POST_SCRIPTS_URN	The URN of the directive in the software library which will be executed after the deletion of the PDB target.	oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1

30.1.3.7 Sample Input Files

This section contains a few sample input files for DBaaS, Schema as Service, and PDB as a Service.

Example 30-1 Sample Input File for DBaaS

```

ssaRequestId=2
ssaUser=ssa_user1
ssaTargetName=My Zone
ssaTargetType=self_service_zone
zoneTargetName=My Zone
zoneTargetType=self_service_zone
SEL_HOST=myhost.oracle.com
MEM_SIZE=2324
STORAGE_SIZE=2324
HOST_CREDS=AIME:SYSMAN
INIT_PARAMS=processes=150,cluster_database=FALSE,db_name=,open_cursors=300,
sga_target=1828716544,db_block_size=8192,audit_file_dest={ORACLE_BASE}/admin/
{DB_UNIQUE_NAME}/adump,diagnostic_dest={ORACLE_BASE},*.cpu_count=0,db_recovery
_file_dest={ORACLE_BASE}/fast_recovery_area,log_archive_format=%t_%s
_%r.dbf,compatible=11.2.0.0.0,audit_trail=DB,remote_login
_passwordfile=EXCLUSIVE,undo_tablespace=UNDOTBS1,db_recovery_file_dest
_size=4322230272,control_files=("{ORACLE_BASE}/oradata/{DB_UNIQUE
_NAME}/control01.ctl", "{ORACLE_BASE}/fast_recovery_area/{DB_UNIQUE
_NAME}/control02.ctl"),pga_aggregate_target=608174080
PROFILE_COMPONENT_URN=oracle:defaultService:em:provisioning:1:cmp:COMP
_Component:SUB_DbProfile:E9C8A650EFA5291DE04354B2F00AFF3E:0.1
DATABASE_TYPE=oracle_database
WORK_DIR=/tmp
DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN=oracle:defaultService:em:provisioning:1:cmp:COMP
_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1
USER_NAME=rv
INSTANCE_COUNT=2
DB_ADMIN_PASSWORD_SAME=true
COMMON_DB_SID=db000000
COMMON_DOMAIN_NAME=mycompany.com

```

```

LISTENER_PORT=1527
COMMON_GLOBAL_DB_NAME=db000000.myhost.oracle.com
DB_ORACLE_HOME_LOC=/scratch/aime/oraclehomes/dbbase/112030/dbhome1
DB_ORACLE_BASE_LOC=/scratch/aime/oraclehomes/dbbase
TOTAL_MEMORY=0
SGA_MEMORY=1744
PGA_MEMORY=580
MEM_SIZE=2324
STORAGE_SIZE=2324
REF_ZONE=My Zone
REF_POOL=dbpool1
REF_HOST=myhost.oracle.com
REF_TGT= myhost.oracle.com

```

Example 30-2 Sample SQL Script

```

REM --- your custom sql script ---
REM --- sample: select * from v$database ---
REM --- If there are more than one sql file all files can be uploaded to the same
component, and be called from the main script using
@/<staging location>/sqlfile1.sql ----

```

Example 30-3 Sample Input File for Schema as a Service

```

ssaRequestId=1
ssaUser=SYSMAN
ssaTargetName=My Zone
ssaTargetType=self_service_zone
zoneTargetName=My Zone
zoneTargetType=self_service_zone
REQUEST_NAME=SYSMAN - Tue Oct 29 02:04:21 PDT 2013_CREATE_4_41
SERV_TEMPLATE_GUID=E9C5A1149C266846E04354B2F00A9D7B
CREATE_SCHEMA_OPTION=EMPTY_SCHEMAS
MAX_NUMBER_OF_SCHEMAS=4
REMAP_SCHEMA_LIST=MySchema
MASTER_ACCOUNT=MySchema
ROLE_NAME=schtemplatel_Oct_29_2013_02
SCHEMA_PRIVILEGES=CREATE SESSION,CREATE DIMENSION,CREATE INDEXTYPE,CREATE
OPERATOR,CREATE PROCEDURE,CREATE SEQUENCE,CREATE TABLE,CREATE TRIGGER,CREATE
TYPE,CREATE VIEW,CREATE SYNONYM
ENFORCE_STORAGE_CONSTRAINT=false
SCHAAS_CUSTOM_PRE_SCRIPTS_URN=oracle:defaultService:em:provisioning:1:cmp:COMP
_Directives:none:E9DE463D356E7433E04354B2F00A56C6:0.1
DBSERVICE_NAME=Service_88A370FC0FC1
DB_ORACLE_HOME_LOC=/scratch/aime/oraclehomes/dbbase/112030/dbhome1
COMMON_DB_SID=refdb

```

Example 30-4 Sample Input File for PDB as a Service

```

ssaRequestId=3
ssaUser=SYSMAN
ssaTargetName=My Zone
ssaTargetType=self_service_zone
zoneTargetName=My Zone
zoneTargetType=self_service_zone
CREATE_PDB_OPTION=EMPTY_PDB
MAX_TABLESPACE_ALLOWED=2
ENFORCE_STORAGE_CONSTRAINT=true
TABLESPACE_ENCRYPTION_ALGORITHM=None
PDBAAS_CUSTOM_POST_SCRIPTS_URN=oracle:defaultService:em:provisioning:
1:cmp:COMP_Directives:none:0008270085383BBDE0535C56F20AB27E:0.5
PDB_SID_PREFIX=PDB

```

```

PDB_ADMIN_USER_NAME=oracle
PDB_SERVICE_NAME_PREFIX=svc_pdbps1
PDBSERVICE_NAME=svc_pdbps1
ROLE_OPTION=CUSTOM_NEW_ROLE
INIT_PARAMS=*.open_cursors=300,*.cursor_sharing=EXACT
CUSTOM_ROLE_NAME=PDBAAS_JUN_12_2014_23_16_PM
CUSTOM_ROLE_DESC=New db role to be assigned to pluggable database administrator.
PRIVILEGES=CREATE SESSION,ALTER SESSION,CREATE DIMENSION,CREATE INDEXTYPE,CREATE ANY
OPERATOR,CREATE ANY PROCEDURE,CREATE ANY SEQUENCE,CREATE ANY INDEX,CREATE JOB,CREATE
ANY MATERIALIZED VIEW,CREATE ANY TABLE, CREATE ANY TRIGGER, CREATE ANY TYPE, CREATE
ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY, SELECT ANY DICTIONARY
DB_ORACLE_HOME_LOC=/scratch/12c_rdbms/product/12.1.0/dbhome_1
COMMON_DB_SID=CDB06
PDB_NAME=pdbps1
PDB_CONNECT_STRING=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)
(HOST=xx.example.com)(PORT=1531)))(CONNECT_DATA=(SERVICE_NAME=svc_pdbps1)
(INSTANCE_NAME=CDB06)(UR=A)(SERVER=DEDICATED)))
CDB_CONNECT_STRING=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)
(HOST=xx.example.com)(PORT=1531)))(CONNECT_DATA=(SID=CDB06)))

```

30.1.3.8 Sample PDBaaS Post Scripts

This section includes sample perl and sql scripts for PDBaaS.

Example 30-5 Sample PDBaaS Perl Script

```

use Getopt::Long;
use File::Path;
use File::Spec;

#Store the passed input file path in a variable
my $fileName = $ARGV[0];

#Print the input file content as it is...
print "Printing the variable values received from cloud request ...\n";
open IN,"<",$fileName or die "Can't open file due to :$!";
while(<>){
    print $_;
}
close IN;

#Reads a text file with var=values pairs line delimited
#Setting the values in the environment
sub readDat {
#Grab the passed parameter
    my $filename = $_[0];
    my @Data;

#The ubiquitous $i counter
    my $i = 0;

#Register a filehandle
    local (*DATFILE);

#Open the file for read
    open (DATFILE, $filename) or print ( "Can't open $filename: $!");

#Read through the file one line at a time
    FORA:while (<DATFILE>) {

#Skip over any comments

```

```

        if ( /#.* / ) {
            next FORA;
        }

#Clean up any extraneous garbage
    chomp;
    # no newline
    s/^\s+//;
# no leading white
    s/\s+$//;
# no trailing white

#       If clean up eliminated any data worth reading

#l     ets skip to the next line
next unless length;

#       We can't load the lines with $VARS as we will
#loose any values so we'll make sure to escape them
#(the $'s that is)
    s/\$/\\$/g;

#localizing $var and $value to make sure
# they are clean out on every read.
    my ($var, $value) = split(/=/,$_);

#       Load variable into enviroment
    $ENV{$var}="$value";

        $i++;
    }
}
print "Loading custom variables into ENV..\n";
readDat("custom_sample_variables.txt");
print "Print custom variables...\n";
print "VAR1=" . $ENV{'VAR1'} . "\n" ;
print "VAR2=" . $ENV{'VAR2'} . "\n";
print "VAR3=" . $ENV{'VAR3'} . "\n";

print "Loading cloud variables into ENV..\n";
readDat($fileName);

my $service_name="$ENV{'COMMON_DB_SID'}";
$ENV{"ORACLE_HOME"}="$ENV{'DB_ORACLE_HOME_LOC'}";

#find sid by parsing pmon process.
my $pmon_ora = ".*pmon_". $service_name. ".*";
my $process = `ps -eaf |grep $pmon_ora |grep -v grep`;
chomp($process);
my $sid = ( split "pmon_", $process )[-1 ];

    $ENV{"ORACLE_SID"}= $sid;

print "Executing attached SQL ... \n";
my $CMD = $ENV{"ORACLE_HOME"} . "/bin/sqlplus / as sysdba
\@sample.sql $ENV{\\"PDB_NAME\\"}";

print "Firing SQL ... \n";
print "$CMD\n";

```

```
system($CMD);
my $ERROR_CODE = $?;
print "Error code is $ERROR_CODE \n";
if ( $ERROR_CODE == 0 )
{
    print "Script Completed\n";
}
else
{
    print "Error occurred while executing \n";
}
```

Example 30-6 Sample PDBaaS SQL Script

```
alter session set container=&l;
REM --- you custom sql goes here ---
select name, con_id from v$pdb;
exit;
```

Example 30-7 Sample PDBaaS RAC Script

```
alter session set container=&l;
REM --- you custom sql goes here ---
select name, con_id from gv$pdb;
exit;
```

31

DB Onboarding on DBaaS Cloud

This chapter covers the database onboarding on DBaaS cloud feature. It contains the following sections:

- [Introduction](#)
- [Pre-requisites](#)
- [DB Onboarding on DBaaS Cloud: EMCLI Command and Input File Properties](#)

31.1 Introduction

Database as a Service supports Database Lifecycle Management operations like Database Creation/Deletion, Startup/Shutdown, Backup/Restore, Patching etc. via Self Service Portal.

Self Service users have been able to provision and manage new Database services using these operations.

While adopting Database as a Service, an existing Database can now be assigned to Self Service user owning the database, for management of DB from Self Service portal. This can be achieved by discovering an EM managed DB instance as an EM Cloud instance.

31.2 Pre-requisites

- Target Oracle Database must be discovered in Enterprise Manager.
- Database Host(s) must be added to a destination PaaS Infrastructure Zone.
- Database Software Home(s) must be added to a destination Database Software Pool.

31.3 DB Onboarding on DBaaS Cloud: EMCLI Command and Input File Properties

This section provides details on DB Onboarding on DBaaS cloud using EMCLI command:

```
$ emcli db_cloud_maintenance -relocateService -discoverOnly=true -  
input_file="data:<absolute_path_to_input_file>"
```

Input file properties:

```
DEST_TARGET_NAME=<EM Target name of the DB Target to be managed via Self Service  
Portal>  
DEST_TARGET_TYPE=<oracle_database|rac_database>  
DEST_POOL_NAME=<Name of the DB Software Pool which contains the target DB  
ORACLE_HOME>  
DEST_POOL_TYPE=oracle_cloud_zone
```

```
DB_SERVICE_NAME=<Name of the new DB service that will be created for the DB Target>  
DEST_DB_CRED=<EM Named Credential for Target DB SYS user in the format  
CREDENTIAL_NAME:CREDENTIAL_OWNER>  
MASTER_USER_CREDS=<EM Named Credential for DB Master Account user in the format  
CREDENTIAL_NAME:CREDENTIAL_OWNER. Master account user will be created in the DB>  
SSA_USER=<Username of EM SSA user with EM_SSA_USER role privileges>
```

 **Note:**

- In case the target DB is in Dataguard Configuration, only primary DB will be discovered.
- This is an administrator driven operation to be initiated by an EM administrator with EM_SSA_ADMINISTRATOR role privileges.

32

DB Relocation

This chapter covers the database relocation feature. It contains the following sections:

- [Introduction](#)
- [Pre-requisites](#)
- [DB Relocation: EMCLI Command and Input File Properties](#)

32.1 Introduction

Typically, a database outlives the hosting platform. EM Database as a Service now provides support to migrate an existing database to a new DB Software Pool. This functionality will allow the DB administrators to migrate DBs to a new platform when existing platform is obsolete.

32.2 Pre-requisites

- If the target DB is in NOARCHIVELOG mode, ARCHIVELOG mode would be enabled.
- Oracle Home owner must be consistent across source and destination DB Software Pools.
- PaaS Infrastructure Zone hosting the destination DB Software Pool must be different from the PaaS Infrastructure Zone hosting the DB Target.
- DB versions for source and destination DB Software Pools must be same.
- Destination DB Software Pool must be added to the Service Template associated with the Target DB
- The host where you are going to relocate the source DB should also have the same listener port discovered in the EM as the source DB.
- In case of a DB in Dataguard Standby configuration, destination DB software pool for primary DB must be added to Primary Pools in the Service template and destination DB software pool for Standby DB must be added to:
 - standby pools for the destination pool for primary database and
 - standby pools in the service template.

32.3 DB Relocation: EMCLI Command and Input File Properties

This section provides details on DB Relocation using EMCLI command:

```
$ emcli db_cloud_maintenance -relocateService -  
input_file="data:<path_to_input_file>"
```

Input file properties:

```
#Mandatory properties
SRC_TARGET_NAME=<EM target name of the source DB>
SRC_TARGET_TYPE=<oracle_database|rac_database>
DEST_HOST_NAME=<EM target name of the destination host>
DEST_POOL_NAME=<Destination Pool>
SRC_DB_CRED=<EM Named Credential for Target DB SYS user in the format
CREDENTIAL_NAME:CREDENTIAL_OWNER>
#Optional properties
DELETE_SRC_TARGET=Y #If you want to delete the target DB and EM target for the
target DB
DEST_TARGET_NAME=<New EM target name for the destination DB>
SELECT_ORACLE_HOME_OPTION=RUNTIME #If destination host in the destination pool is to
be selected automatically
DEST_DATABASE_AREA=<absolute_path_to_destination_datafiles_location> #Only required
if different at destination
DEST_FAST_RECOVERY_AREA=<absolute_path_to_destination_fast_recovery_area> #Only
required if different at destination
```

 **Note:**

- This functionality is not supported for Thin Clone Database(s).
- This is an administrator driven operation to be initiated by an EM administrator with EM_SSA_ADMINISTRATOR role privileges.

33

PDB Onboarding on DBaaS Cloud

This chapter covers the PDB Onboarding on DBaaS Cloud feature. It contains the following sections:

- [Introduction](#)
- [Pre-requisites](#)
- [PDB Onboarding on DBaaS Cloud: EMCLI Command and Input File Properties](#)

33.1 Introduction

Currently, Database as a Service for multitenant DB architecture supports Pluggable Database Lifecycle operations like Creation/Deletion, Start/Stop, Backup/Restore, Patching etc. With PDBaaS adoption in EM environments with existing Pluggable Database(s), an existing Pluggable Database can now be assigned to a Self Service user owning the database, for management of PDB from Self Service portal.

33.2 Pre-requisites

- Target Pluggable Database must be discovered in Enterprise Manager
- Pluggable Database Host(s) must be added to a destination PaaS Infrastructure Zone.
- Parent Container Database(s) for Pluggable Database must be added to a destination Pluggable Database Pool.

33.3 PDB Onboarding on DBaaS Cloud: EMCLI Command and Input File Properties

This section provides details on PDB Onboarding on DBaaS Cloud using EMCLI command:

```
$ emcli db_cloud_maintenance -relocateService -discoverOnly="true" -  
input_file="data:<absolute_path_to_input_file>"
```

Input file properties:

```
DEST_PDB_NAME=<EM Target name of the Pluggable Database>  
DEST_CDB_TARGET_NAME=<EM Target name of the destination Container Databas>  
DEST_CDB_TARGET_TYPE=<oracle_database|rac_database>  
PDBSERVICE_NAME=<Name of the service to be created for the target Pluggable Database>  
DEST_CDB_POOL_NAME=<Destination Pluggable Database Pool name>  
DEST_CDB_CRED=<EM Named Credential for Target Container Database SYS user in the  
format CREDENTIAL_NAME:CREDENTIAL_OWNER>  
MASTER_USER_CREDS=<EM Named Credential for Master Account user to be created in  
Target Pluggable Database in the format CREDENTIAL_NAME:CREDENTIAL_OWNER>  
PDBAAS_SSA_USER=<Username of EM SSA user with EM_SSA_USER role privileges>
```

 **Note:**

This is an administrator driven operation to be initiated by an EM administrator with EM_SSA_ADMINISTRATOR role privileges.

34

PDB Relocation

This chapter covers the PDB Relocation feature. It contains the following sections:

- [Introduction](#)
- [Pre-requisites](#)
- [PDB Relocation: EMCLI Command and Input File Properties](#)

34.1 Introduction

Enterprise Manager Pluggable Database as a Service now provides support to migrate an existing pluggable database to a new Pluggable Database pool. This functionality will allow the DB administrators to migrate PDBs to a new platform when existing platform is obsolete.

34.2 Pre-requisites

- Destination CDB must either be part of the same Pluggable Database Pool as the target PDB or it must be a part of a Pluggable Database pool on a PaaS Infrastructure Zone different than the target PDB.
- Destination Pluggable Database Pool must be added to the Service Template associated with the target PDB.
- Source and Destination Pluggable Database Pool version must be same.

34.3 PDB Relocation: EMCLI Command and Input File Properties

This section provides details on PDB Onboarding on DBaaS Cloud using EMCLI command:

```
$ emcli db_cloud_maintenance -relocateService -  
input_file="data:<absolute_path_to_input_file">
```

Input file properties:

```
SRC_PDB_TARGET_NAME=<EM Target name of the PDB to be relocated>  
DEST_CDB_TARGET_NAME=<EM Target name of the destination Target Container DB>  
DEST_CDB_TARGET_TYPE=<oracle_database|rac_database>  
STORAGE_LOCATION=<Optional, Storage location for destination PDB>  
DEST_WORK_DIR=<Optional, absolute path to temporary work directory at destination>  
SELECT_TARGET_OPTION=RUNTIME<Optional, needed if destination CDB needs to be  
selected automatically>  
DEST_CDB_POOL_NAME=<Optional, Destination Pluggable Database Pool name needed only  
when SELECT_TARGET_OPTION parameter is specified>  
USE_SAME_STORAGE_LOCATION=Y<Optional, needed in case PDB relocation is to be  
performed without moving PDB datafiles, target PDB datafile(s) storage location must  
also be accessible to destination Container DB>
```

 **Note:**

If Storage location is not in the input file, then it will be picked from the associated Service Template.

This is an administrator driven operation to be initiated by an EM administrator with EM_SSA_ADMINISTRATOR role privileges.

35

PDB Upgrade using Fleet Maintenance

This chapter covers the PDB Upgrade using Fleet Maintenance feature. It contains the following sections:

- [Introduction](#)
- [Pre-requisites](#)
- [Pre-Configuration for Upgrade](#)
- [Upgrading PDB](#)

35.1 Introduction

Fleet Maintenance provides solution for upgrading PDBs provisioned on Enterprise Manager DBaaS cloud. This solution implements an out of place upgrade of a PDB by relocating the target PDB to a Container Database at a higher version and other existing PDBs running in the container are not impacted.

35.2 Pre-requisites

- Create a successor pluggable database pool containing CDBs at a higher version to which the target PDB will be relocated as part of upgrade. For example, if you want to upgrade PDB version 12.1.0.2 to 12.2.0.1, create a successor PDB pool with CDBs at DB version 12.2.0.1.
- Create a successor service template which is configured to provision in the successor pool.
- Oracle Application Express version on the source CDB hosting the target PDB and CDBs in the successor pool must be same.
- PDB pool must have privileged credentials configured.
- Update implication of request settings to the discovered instance.

35.3 Pre-Configuration for Upgrade

This section provides details on pre-configuration details for upgrade:

Configure a successor pool running following command:

```
$ emcli db_cloud_maintenance -performOperation -purpose="ATTACH_POOL" -  
pool_name="<Pluggable Database Pool name hosting the target PDB>" -  
pool_type="pdbaas_pool" -name="Attach successor pool" -description="Attach pool" -  
destPool="<EM Target name of the successor Pluggable Database Pool >" -  
destPoolType="pdbaas_pool"
```

Configure a successor service template running following command:

```
$ emcli db_cloud_maintenance -performOperation -purpose="ATTACH_ST" -stName="<Name  
of the service template associated with PDB target to be upgraded>" -name="Attach
```

```
successor ST" -description="Attach ST" -destST="<Name of the successor service  
template"
```

35.4 Upgrading PDB

This section provides details on upgrading PDB using EMCLI command:

```
$ emcli db_cloud_maintenance -performOperation -purpose="UPGRADE_PDB" -  
pool_name="<Pluggable Database Pool name hosting the target PDB>" -  
pool_type="pdbaas_pool" -name="Upgrade PDB to new CDB" -target_type=oracle_pdb -  
description="Relocates the PDB" -target_list="<EM Target name of the PDB to be  
upgraded>" -input_file="data:<absolute path to input file> " -destCDB=<EM Target  
name of the destination CDB>
```

Optional Parameter:

destCDB=<EM Target name of the target CDB to which PDB target is relocated as part
of upgrade process.>

Input file Parameters:

WORKLOADS=<Workload size name from the successor service template to be associated
with upgraded PDB>

USE_SAME_STORAGE_LOCATION=Y #Optional parameter to be used only with -destCDB, when
PDB is to be upgraded without moving the datafiles.

Part X

Setting Up Middleware as a Service

This section describes how to set up and use WebLogic as a Service (WLaaS), SOA as a Service (SOAaaS) and OSB as a Service (OSBaaS) service types. It contains the following chapters:

- [Setting Up the WebLogic Self Service Portal](#)
- [Setting Up the SOAaaS or the OSBaaS Self Service Portal](#)
- [Using the MWaaS Self Service Portal](#)

36

Setting Up the WebLogic Self Service Portal

This chapter describes the procedure to set up the Middleware Self Service Portal for WebLogic as a Service. It contains the following sections:

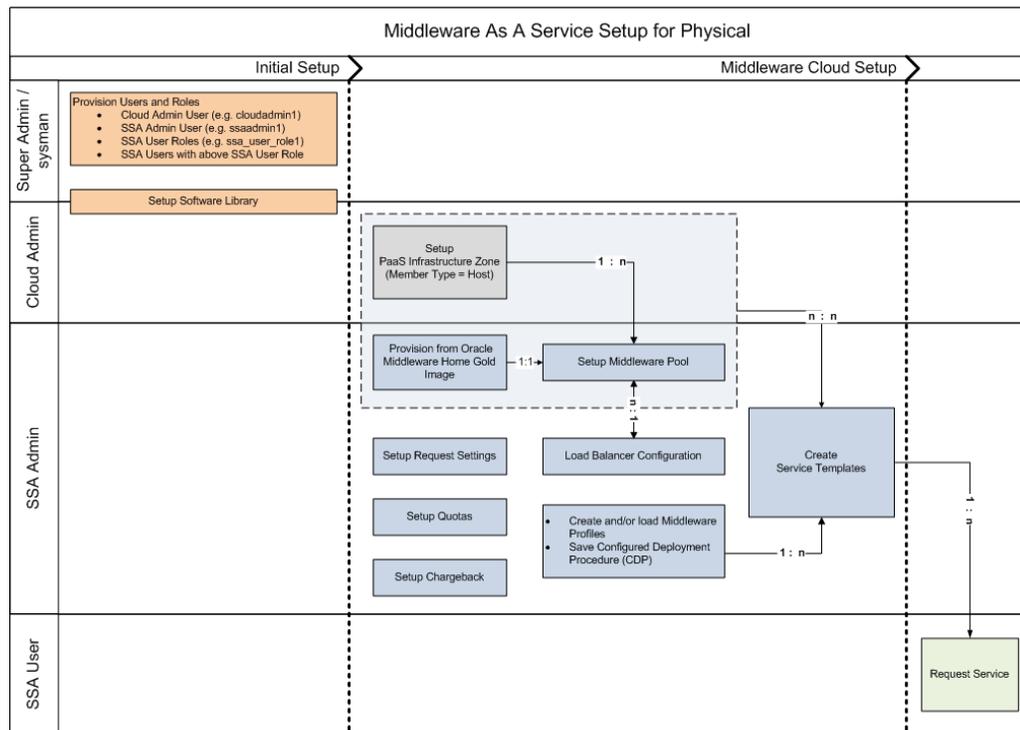
- [Setting Up the WebLogic Self Service Portal](#)
- [Creating a Middleware Pool](#)
- [Configuring Request Settings](#)
- [Creating a Load Balancer Configuration](#)
- [Setting Up Quotas](#)
- [Creating a WebLogic Service Template](#)
- [Configuring Chargeback](#)

36.1 Setting Up the WebLogic Self Service Portal

The `EM_SSA_ADMINISTRATOR` can configure and set up the WebLogic Cloud Self Service Portal by creating middleware pools, setting up quotas, defining request settings, configuring the load balancer, creating service templates, and configuring chargeback.

[Figure 36-1](#) diagram shows the initial setup and the relationship between the various entities involved in setting up the WebLogic Middleware Self Service Portal.

Figure 36-1 Setting Up WebLogic as a Service



Prerequisites

- One or more PaaS Infrastructure zones must have been created. See [Creating a PaaS Infrastructure Zone](#) for details.

To set up the WebLogic as a Service, follow these steps:

- Set up one or more PaaS Infrastructure zones. See [Creating a PaaS Infrastructure Zone](#) for details.
- Create a Middleware Pool. See [Creating a Middleware Pool](#).
- Optionally, you can configure an external load balancer. See [Creating a Load Balancer Configuration](#).
- Configure request settings. See [Configuring Request Settings](#).
- Define quotas for each self service user role. See [Setting Up Quotas](#).
- Create service templates. You can create service templates that can be used to provision an instance of a service in a set of selected zones. See [Creating a WebLogic Service Template](#).
- Optionally, you can configure the Chargeback Service. See [Configuring Chargeback](#).

36.2 Creating a Middleware Pool

A Middleware Pool contains a set of resources that can be used to provision a service instance within a PaaS Infrastructure Zone.

To create a Middleware Pool, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. The common tasks that need to be performed before setting up a specific service family is displayed. Click the **Setup** link next to Middleware service family in the left panel.
4. Select **WebLogic** from the service type drop down list.
5. Click **Middleware Pools**. The existing middleware pools are listed on the Middleware Pools page.
6. Click **Create**. The Create Middleware Pool: General page appears. Enter a name and description for the Middleware Pool. Select the PaaS Infrastructure Zone in which the middleware pool is to be created.

Note: You can also navigate to this page by selecting **Resource Providers** from the **Cloud Home** menu. The Resource Provides Home page appears. Click **Create** and select Middleware Pool as the type of the resource provider to be created to launch the Create Middleware Pool wizard.

Figure 36-2 Create Middleware Pool: General

The screenshot displays the 'Create Middleware Pool: General' configuration page. At the top, there is a breadcrumb trail: 'Cloud Resource Provider' > 'General' > 'Members' > 'Credentials' > 'Placement Constraints' > 'Characteristics' > 'Roles' > 'Review'. Below this, the page title is 'Create Middleware Pool: General' with a progress indicator 'Step 1 of 7' and buttons for 'Back', 'Next', and 'Cancel'. The main form area contains several input fields: 'Target Name' with the value 'mw_pool', 'Name' with the value 'mw_pool', and a 'Description' field. At the bottom, there is a 'PaaS Infrastructure Zone' dropdown menu with the selected value 'my_zone_1'.

7. Click **Next**. In the Members page, specify the following:
 - Exalogic: Select **Yes** if all the member host targets are on Exalogic.
 - Exalogic with Multiple Racks: If the hosts are on Exalogic, select **Yes** if the host targets are from multiple Exalogic racks thereby providing high availability across the racks.
 - Operating System and Platform: Specify the operating system and platform.
8. Click **Add** to add one or more hosts to the middleware pool. Click **Next**.
9. The Create Middleware Pool: Placement Constraints page appears. The placement constraints are used to set maximum limits on resource utilization for each host. In the Maximum Number of Java Servers (per host) field, enter the maximum number of Java Server instances that can be running on each host in the pool. Click **Next**.
10. In the Characteristics region, specify the following:
 - Domain Home Base Directory: This is a mandatory field. Specify the base directory in which the domain or the instances provisioned with this middleware pool are to be placed.

- **Middleware Home Base Directory:** This is a mandatory field. Specify the directory under which the Oracle Homes are to be created. Oracle Homes will be shared across services of the same type and version.
- **Shared Oracle Home:** If this field is set to **Yes**, all hosts in this middleware pool will use this Shared Oracle Home even if other Oracle Homes are present on these hosts.

 **Note:**

If you are using a Shared Oracle Home, you must ensure that Write permissions are available on the `$WL_HOME/common/lib` directory. This is applicable for WebLogic Server versions 12.1.1 or earlier.

11. In the Target Properties region, specify the characteristics that will be used to tag and identify the target properties. Click **Next**.
12. Review the information and click **Submit** to create the middleware pool. The newly created pool middleware pool can now be used to create the Middleware Service Template.

36.3 Creating a Load Balancer Configuration

You can configure external pre-configured load balancers such as Oracle HTTP Server (versions 11x are supported but it is recommended that you use 11g PS6), Oracle Traffic Director (versions 11x are supported but it is recommended that you use OTD 11x PS6) or a third party load balancer.

Note: If you are using a 11g PS6 managed or collocated OHS load balancer, you must ensure that no change is done through the Admin / MBean interfaces. The as-a-service solution modifies the OHS files directly on the file system, so any changes made on a collocated OHS may not be replicated to the Administration Server. Additionally, any changes made through the Admin interfaces (such as MBean, WLST, and so on), may override the changes made directly to the `*.conf` files.

If you want to configure a third party load balancer, you must use a custom script to update the load balancer configuration. For more details on this script, see [Custom Script Guidelines](#). A Middleware Pool or a Deployment Plan can be associated with only one of the load balancer configurations.

 **Note:**

Setting up the Load Balancer Configuration is an optional step.

Prerequisites

- OTD and OHS load balancers being configured must be installed on an Enterprise Manager monitored host and is used to route Web traffic to one or more MWaaS service instances. When a MWaaS service instance is created, updated (scaled up or scaled down), or deleted, the load balancer configuration is automatically updated.

- To route HTTPS Web traffic, you must do the following:
 - Create an OTD configuration (This is required only if you are configuring an Oracle Traffic Director type of load balancer).
 - Create or install a certificate.

For more details configuring SSL authentication, refer to the *Oracle Traffic Director Administrator's Guide* and the *Oracle HTTP Server Administrator's Guide*.

To configure a load balancer, follow the steps below:

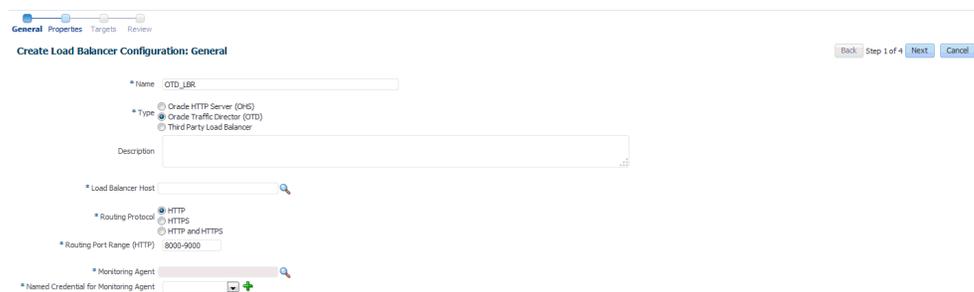
1. Log into Enterprise Manager as a user with the EM_SSA_ADMINISTRATOR role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. The common tasks that need to be performed before setting up a specific service family is displayed. Click the **Setup** link next to Middleware service family in the left panel.

 **Note:**

You can use a different navigation path to reach this page. From the **Cloud Home** menu, select **Setup**, **Service Settings**, then click **Middleware**.

4. Select **WebLogic** from the service type drop down list and click the **Load Balancer Configuration** link.
5. Click **Create** to create a new load balancer configuration.

Figure 36-3 Load Balancer Configuration: General



6. Enter the following details:
 - Name of the load balancer configuration.
 - Select the type of load balancer being configured. This can be Oracle HTTP Server (OHS), Oracle Traffic Director (OTD), or a Third Party Load Balancer.
 - If you are using OHS and OTD, select the host on which the load balancer is installed. This must be an Enterprise Manager monitored host. If you are using the OTD load balancer, you must enter **OTD 11g Admin Server** here.

Note: If you are using another third party load balancer, select a host on which the load balancer can be configured either locally or remotely.

- Specify the Routing Protocol (HTTP, HTTPS, or both) and the Free Routing Port Range.
- Select the Monitoring Agent (Management Agent) and specify the Named Credentials.

 **Note:**

- For OTD and OHS, the Monitoring Agent must be present on the same host on which the OTD/OHS load balancer instance is running. For third party load balancers, the Monitoring Agent must be present on the host on which the load balancer is being configured.
- For third party load balancers, the Monitoring Agent may not be present on the same host on which the load balancer is running. In this case, you can select any other monitoring agent (which is available on other host) from which the third party load balancer can be accessed or configured by executing the custom script.

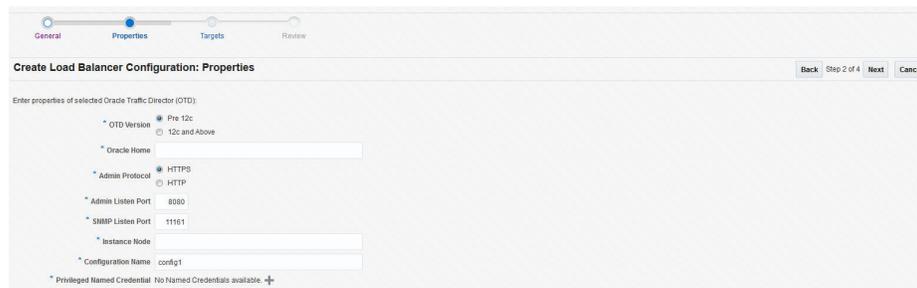
7. Click **Next**. If you have selected the Load Balancer Type as Oracle HTTP Server, you must enter the following details:

- **Instance Home:** The directory in which the configuration data and binary files pertaining to Oracle HTTP Server instance is stored.
- **Component Name:** The component in the specific instance that is to be configured.

If you have selected the Load Balancer Type as:

- **Oracle HTTP Server:** Enter the following details:
 - **Instance Home:** The directory in which the configuration data and binary files pertaining to Oracle HTTP Server instance is stored.
 - **Component Name:** The component in the specific instance that is to be configured.
- **Oracle Traffic Director:** The following page appears:

Figure 36-4 Load Balancer Configuration: Properties (Oracle Traffic Director - Pre12c)



- **Oracle Home:** The directory in which the Oracle Traffic Director binaries are installed.

- **Admin Protocol:** Specify the protocol (HTTP or HTTPS) to be used by the Oracle Traffic Director Administration Server to forward requests. By default, this is HTTPS.
 - **Admin Listen Port:** Specify the Administration Server listen port number.
 - **SNMP Port:** The SNMP port configured for Oracle Traffic Director. The default port number is 11161.
 - **Instance Node:** Specify the Oracle Traffic Director Instance node name.
 - **Configuration Name:** This field is optional and is required only if you have selected HTTPS or HTTP_HTTPS as the Routing Protocol in the Load Balancer Configuration: General section. If you select the HTTP Admin Protocol, and do not specify a value in this field, the OTD Configuration Name is created as config1 by default. If the OTD Configuration has already been created, it must be a managed target in Enterprise Manager.
- Note:** If you select the HTTP protocol, it is recommended that an OTD Configuration is created manually and discovered as a managed target in Enterprise Manager.
- **Certificate Name:** This field is optional. If you selected HTTPS or HTTPS or HTTP_HTTPS as the Routing Protocol in the Load Balancer Configuration: General section, enter the name of the self signed certificate.
 - **Virtual Server Name:** The name of the virtual server. If the virtual server does not exist, a virtual server with the name specified here will be created. In this release, host patterns are not defined for each virtual server in the configuration.
 - **Privileged Named Credentials:** Specify the Named Credentials for the Administration Server.

If you selected the OTD version as **12c**, the following fields appear:

Figure 36-5 Load Balancer Configuration: Properties (Oracle Traffic Director - 12c)

The screenshot shows a configuration window titled "Create Load Balancer Configuration: Properties". At the top, there are four tabs: "General", "Properties", "Targets", and "Review", with "Properties" selected. Below the tabs, there are navigation buttons: "Back", "Step 2 of 4", "Next", and "Cancel". The main content area is titled "Enter properties of selected Oracle Traffic Director (OTD):". It contains several fields with radio buttons and text boxes:

- OTD Version:** Radio buttons for "Pre 12c" and "12c" (selected).
- Oracle Home:** A text input field.
- Admin Server Protocol:** Radio buttons for "HTTPS" (selected) and "HTTP".
- Admin Server Port:** A text input field containing "8080".
- Instance Node:** A text input field.
- Configuration Name:** A text input field containing "config1".
- Certificate Name:** A text input field.
- Virtual Server Name:** A text input field.
- Weblogic Administration Server Credentials:** A dropdown menu with a plus sign icon.

Enter the following details:

- **Oracle Home:** The directory in which the Oracle Traffic Director binaries are installed.
- **Admin Server Protocol:** Specify the protocol (HTTP or HTTPS) to be used by the Administration Server of the OTD 12c WebLogic Domain.

- **Admin Server Port:** Specify the OTD12c Weblogic Domain Administration Server listen port number.
- **WebLogic Machine:** The host machine which the OTD load balancer is to be configured.
- **Configuration Name:** This field is optional and is required only if you have selected the HTTPS or HTTP and HTTPS Admin Protocol. If you select the HTTP Admin Protocol, and do not specify a value in this field, the OTD Configuration Name is created as **config1** by default. If the OTD configuration has already been created, it needs to be discovered as a target in Enterprise Manager.

 **Note:**

If you have selected the HTTP Routing Protocol, it is recommended that the OTD configuration is created manually and discovered as a managed target in Enterprise Manager.

- **Certificate Name:** This field is optional. If you selected the HTTPS or HTTP and HTTPS Admin Protocol, enter the name of the created self signed certificate.
 - **Virtual Server Name:** This field is optional and is required only if you have selected the HTTPS or HTTP and HTTPS Admin Protocol. Enter the name of the virtual server within the Oracle Traffic Director server instance that provides a unique IP address (or host name) and port combination through which Oracle Traffic Director can serve requests for one or more domains.
 - **WebLogic Administration Server Credentials:** Enter the credentials for the OTD 12c Domain WebLogic Administration Server.
 - **Third Party Load Balancer:** Select a script to configure the load balancer. This script must have been uploaded to the Software Library and the Software Library Directive URN must be specified as the input for the script.
8. Click **Next**. The Create Load Balancer Configuration: Targets page appears.
 9. Click **Add** to add one or more middleware pools (See [Creating a Middleware Pool](#)) with which the load balancer will be associated.

 **Note:**

A Middleware Pool can be associated with only one load balancer configuration.

10. Click **Next**. Review the configuration and click Submit to create the Load Balancer Configuration. The newly created load balancer configuration appears in the Load Balancer Configurations table. Click the **Load Balancer Name** link in the table to view the load balancer configuration details. This shows the targets associated with the load balancer configuration and middleware service instances that are using the configuration.

36.3.1 Custom Script Guidelines

You can use a custom script to configure the load balancer. This script must be present in the Software Library as a directive. The directive must follow these guidelines:

- **LBR_WORK_DIRECTORY:** Specifies the directory in which the `lbr.properties` file will be staged. The name-value pairs present in the `lbr.properties` file are extracted by the custom script and these values are used to configure the load balancer.
- The following properties must be present in the `lbr.properties` file:
 - **THIRDPARTY_ROUTING_PROTOCOL:** This can be HTTP, HTTPS, or HTTP_HTTPS.
 - **HTTP_PORT_RANGE:** The range of ports (separated by hyphen '-') that can be used to configure for HTTP protocol. For example, 5000-6000.
 - **HTTPS_PORT_RANGE:** The range of ports (separated by hyphen '-') that can be used to configure for HTTPS protocol. For example, 7000-8000.
 - **LBR_HOST:** The host on which the load balancer is installed.
 - **UNIQUE_URI_REFERENCE:** This is the Service Instance Id (which is an unique value). This maps to the service instance (WebLogic Domain). If required, it can be used to uniquely identify an entity, such as the virtual server, route, and so on.
 - **CONFIGURATION_ACTION:** The actions that can be performed are:
 - * **CREATE:** To create a service instance.
 - * **ADD_SERVERS:** To scale up or add one or more servers.
 - * **DELETE_SERVERS:** To scale down or delete one or more servers.
 - * **REMOVE:** To delete a service instance.
 - **HTTP_WLS_MANAGED_SERVER_PORT_LIST:** A comma separated `host:port` (Managed Servers) list where `port` is a http port. For example, abc:123, xyz:456.
 - **HTTPS_WLS_MANAGED_SERVER_PORT_LIST:** A comma separated `host:port` (Managed Servers) list where `port` is an SSL port. For example, abc:123, xyz:456.

36.3.1.1 Sample Script (Oracle Cloud Application 12.1.0.8 or Earlier)

This sample script is applicable if are using 12.1.0.8 or earlier versions of the Oracle Cloud Application plugin.

Sample Script I

```
#!/usr/bin/perl
use File::Path;
#use File::Spec();
use File::Spec;
use Cwd;

my $dir = getcwd();
my $WORK_DIR = $ARGV[0];

print "The Input Parameters to the Third Party Script are as follows : ". "\n";
print "lbrWorkDirectory = ".$WORK_DIR. "\n";
print "===== ". "\n";
```

```

print "The lbr.property file contents accessible to this script are as follows
"."\\n";
my $textfile = "lbr.properties";

my @prop;
chdir($WORK_DIR) or die "Can't chdir to $WORK_DIR $!";
#Create Hash from properties
open FILE, "<$textfile" or die("Could not open text file ' " . $textfile . "' : $!");
my %hash;
while ($line4 = <FILE>)
{
chomp($line4);
my ($key, $val) = split(/=/,$line4);
print $key."= ".$val."\\n";
$hash{$key}=$val;
}
close FILE;
print "=====."\\n";
my $ACTION      = $hash{'CONFIGURATION_ACTION'};
if ( $ACTION eq "CREATE" ) {
print " The Configuration Action is Create \\n";
} elsif ( $ACTION eq "ADD_SERVERS" ) {
print " The Configuration Action is Scale Up \\n";
} elsif ( $ACTION eq "DELETE_SERVERS" ) {
print " The Configuration Action is Scale Down \\n";
} elsif ( $ACTION eq "REMOVE" ) {
print " The Configuration Action is Remove \\n";
} else {
print " Unsuppported Configuration Action".$ACTION."\\n";
}
print "=====."\\n";
#
# logic to configure the LBR goes here
#

```

36.3.1.2 Sample Script (Oracle Fusion Middleware 12.1.0.7 or Later)

This sample script is applicable if you are using 12.1.0.7 or later versions of the Oracle Fusion Middleware plugin.

Sample Script II

```

#!/usr/bin/perl
use File::Path;
#use File::Spec();
use File::Spec;
use Cwd;

my $dir = getcwd();
my $WORK_DIR = $ARGV[0];

print "The Input Parameters to the Third Party Script are as follows : "."\\n";
print "lbrWorkDirectory = ".$WORK_DIR."\\n";
print "=====."\\n";
print "The lbr.property file contents accessible to this script are as follows
"."\\n";
my $textfile = "lbr.properties";

my @prop;
chdir($WORK_DIR) or die "Can't chdir to $WORK_DIR $!";
#Create Hash from properties

```

```

open FILE, "<$textfile" or die("Could not open text file '" . $textfile . "' : $!");
my %hash;
while ($line4 = <FILE>)
{
chomp($line4);
my ($key, $val) = split(/=/,$line4);
print $key."= ".$val."\n";
$hash{$key}=$val;
}
close FILE;

print "TP
OUTPUT:FRONT_END_HOST_VALUE=example.host.com#FRONT_END_HTTP_PORT_VALUE=9000#FRONT_END
_HTTPS_PORT_VALUE=9090#URI_PREFIX=appl#" . "\n";
#
# logic to configure the LBR goes here
#

print "=====." . "\n";

```

 **Note:**

If you are using Oracle Fusion Middleware 12.1.0.7 or later, the script must meet the following guidelines:

- After successfully completing the configuration, you must exit the program with command status '0'.
- If the configuration fails, you must exit the program with a 'non-zero' command status.
- Print the following information in the exact format as given below:

```

print "TP OUTPUT:FRONT_END_HOST_VALUE=<host-
name>#FRONT_END_HTTP_PORT_VALUE=<http_port>#FRONT_END_HTTPS_PORT_VALU
E=<https_port>#URI_PREFIX=<uri-prefix-if-applicable>#" . "\n";

```

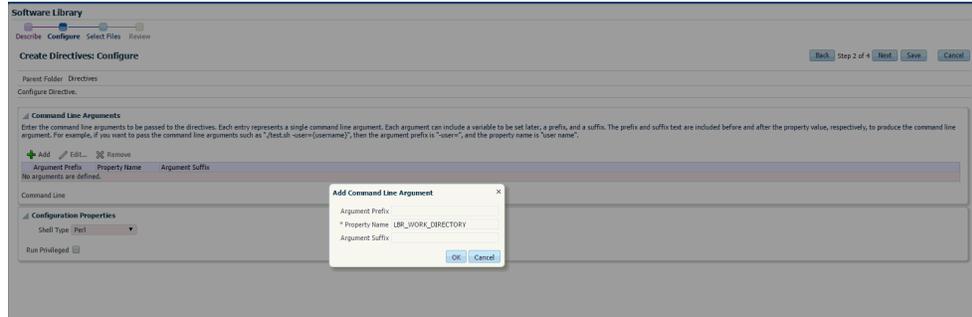
36.3.2 Adding the Third Party LBR Configuration to the Software Library

To add the third party LBR configuration script as a directive in the Software Library, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Software Library**.
2. From the **Actions** menu, select **Create Entity** and click **Directive** to launch the Create Entity: Directives wizard.
3. On the Describe page, enter the Name and Description. Click **Next**.
4. On the Configure page, click **Add** and specify the command line arguments that will be used configure the directive. The Add Command Line Arguments dialog box appears.

- In the Add Command Line Arguments dialog box, enter `LBR_WORK_DIRECTORY` in the Property Name field and leave the other two fields (Argument Prefix and Argument Suffix fields) blank.

Figure 36-6 Software Library: Configure Page



- In the Configuration Properties section, select either Bash or Perl as defined in the script. Click **Next**.
- On the Select Files page, you can select one or more files to be associated with the entity. Select the Upload Files option and select the Upload Location.
- In the Specify Source section, select Local Machine, and click **Add**. In the Add File dialog box, click **Browse** to select the third party LBR configuration script file from the source location, and give a unique name, and click **OK**.

Figure 36-7 Software Library: Select Files Page



- On the Review page, review all the details, and click **Save and Upload** to create the directive and upload it on the Software Library.

The third party LBR configuration script is now present as a directive in the Software Library. This directive can be selected as the third party Directive URN parameter in the Load Balancer Configuration Create page. For more details on creating a Software Library directive, see the *Enterprise Manager Cloud Control Administrator's Guide*.

 **Note:**

If the third party load balancer is used for more than one service (WLaaS, SBaaS, or SOAaaS), you must set the following properties to ensure that a unique identity is maintained for each service type:

- **SVC_INST_ID:** Unique service instance ID. The custom script uses this ID to uniquely identify the service instance.
- **SVC_Name:** Name of the service. The custom script can identify the service type of the current service instance. This makes the service instance uniquely identifiable across the service types.
- **LBR_WORK_DIRECTORY:** The directory in which the `lbr.properties` file is staged.

36.4 Configuring Request Settings

You can configure the request settings by specifying when a request can be made, its duration, and so on. To configure the request settings, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. The common tasks that need to be performed before setting up a specific service family is displayed. Click the **Setup** link next to Middleware service family in the left panel.

 **Note:**

You can use a different navigation path to reach this page. From the **Cloud Home** menu, select **Setup**, **Request Settings**, then select **Middleware**, and click **WebLogic**.

4. Select **WebLogic** from the service type drop down list and click **Request Settings**.
5. You can specify the following parameters to set the global settings or settings for a specific role.
 - **Future Reservation:** How far in advance can a request be made.
 - **Request Duration:** Maximum duration for which a service can exist.
 - **Archive Policy:** Maximum duration after which archived requests are automatically deleted.
 - **Service Instance Approval:** Select this checkbox if all requests need to be approved by the self service administrator.
 - **Service Instance Share Settings:** A service instance can be shared with another user or a role. You can select either or both the checkboxes:
 - Enable SSA User to share service instances with other Users.

- Enable SSA User to share service instances with Roles.

See [Configuring Request Settings](#) for details on how to set these parameters.

6. Click **Apply**.

36.5 Setting Up Quotas

Quota is the aggregate amount of resources that can be granted to each self service user belonging to a certain role. This quota applies only to the service instances provisioned through the Middleware Self Service Portal. Each service instance that is provisioned including new service requests and scale up of existing service instances is subject to the quota allocated to the self service user. When the self service user has used up his allocated quota, he cannot make new service requests until a higher quota is allocated or his existing service instances have been reclaimed.

To define a quota, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.

Note:

You can use a different navigation path to reach this page. From the **Cloud Home** menu, select **Setup**, **Quotas**, then click **Middleware**.

3. Click on the **Setup** link next to the Middleware Service family and select the WebLogic service type from the drop down list.
4. Click the **Quotas** link and then click **Create**.

Note:

Quota validation ensures that a request is executed only if the user's current usage is within the limits specified for the roles to which the user belongs. Only the direct roles are considered for the quota determination, and not nested ones.

5. In the Create Quota window, select the Role Name for which the quota is to be granted. Specify the quota limits for the role as follows:
 - **Memory:** The maximum memory that can assigned to the instances owned by a specific user.
 - **Java Servers:** The number of Java Servers that can be owned by a user at any point in time.
 - **Number of Non Oracle JVMs:** Specify the number of Non Oracle JVMs.



Note:

Only users that have the Cloud Self Service Portal privileges (users belonging to the `EM_SSA_USER_BASE` role) are displayed in the Select Roles dialog box.

36.6 Creating a WebLogic Service Template

A service template can be used to provision an instance of a service into a set of selected PaaS Infrastructure zones.

Prerequisites

- Set up and enable MWaaS as described in [Getting Started with Middleware as a Service](#).
- A PaaS Infrastructure Zone must have been created.
- A WebLogic domain provisioning profile (see [Creating a WebLogic Domain Provisioning Profile](#)) with appropriate values must be present in the Software Library.
- A middleware pool must have been created.
- Named Credentials must be created. The user creating the service template must be the owner of the Named Credentials.



Note:

You can edit a service template that has active instances and modify the configuration parameters. When a service template is modified:

- New instances created after the changes have been made will use the new parameters.
- Old instances or instances created before the template was modified will use the earlier values.
- Changes made to zones and roles will be applicable to both old and new instances.

To create a WebLogic Service Template, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**.

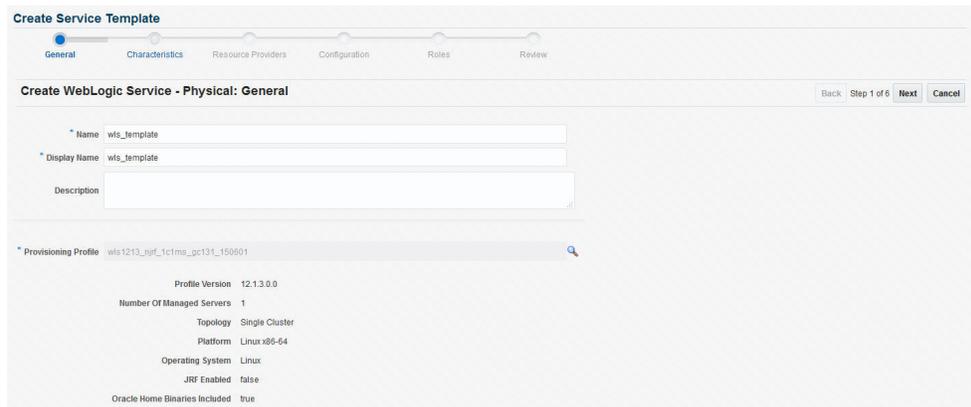
 **Note:**

You can use a different navigation path to reach this page. Select **Service Templates** from the **Oracle Home** menu, click **Create** and select **WebLogic** service type.

3. Click on the **Setup** link next to the Middleware Service family and select the **WebLogic** service type from the drop down list.
4. Click the **Service Templates** link. You can create service templates that can be used to provision an instance of a service in a set of selected zones. Click **Create**.
5. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
6. In the Provisioning Profile field, click the **Search** icon and select a WebLogic Domain Provisioning profile. The WebLogic Domain Provisioning Profile you select can contain either of the following:
 - One cluster with one or more WebLogic Servers. You can scale up or scale down by adding or deleting WebLogic servers to this cluster.
 - One WebLogic Server. In this case, the Scale Up and Scale Down options are not available.

The details of the selected profile such as profile version, number of managed servers, topology, and so on are displayed.

Figure 36-8 Create WebLogic Service Template: General



Create Service Template

General Characteristics Resource Providers Configuration Roles Review

Create WebLogic Service - Physical: General Back Step 1 of 6 Next Cancel

* Name

* Display Name

Description

* Provisioning Profile 

Profile Version	12.1.3.0.0
Number Of Managed Servers	1
Topology	Single Cluster
Platform	Linux x86-64
Operating System	Linux
JRF Enabled	false
Oracle Home Binaries Included	true

7. Click **Next**. The Characteristics page appears.

Figure 36-9 Create WebLogic Service Template: Characteristics

Service Characteristics

Name	Value	Visible	Require	Lock
Distribute WebLogic servers of a...	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
Distribute load on available hosts?	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
Enable Load Balancer?	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
Expose Advanced Settings to SS...	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
Expose WebLogic Admin Consol...	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
JRF Enabled Profile?	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>

Target Properties

These characteristics will be applied to the service instances as target properties

Name	Value	Visible	Require	Lock
Contact		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
Cost Center		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
Department		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
Downtime Contact		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
Lifecycle Status		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>
Line of Business		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="lock"/>

In the Service Characteristics region, specify the following:

- **Distribute WebLogic Servers of a service instance on hosts from different Exalogic Racks:** Select **Yes** if the WebLogic Servers in a service instance are to be uniformly distributed on available Exalogic racks. Select **No** if the hosts are to be placed on the first available rack.
- **Distribute Load on Available Hosts:** Select **Yes** if the WebLogic Servers are to be uniformly distributed on available hosts. If you select **No**, the maximum number of servers possible will be provisioned on the first available host before provisioning on other hosts.
- **Enable Load Balancer:** Select **Yes** to enable the load balancer configuration for all the service instances that are created with this service template.

 **Note:**

If the **Enable Load Balancer** field is set to 1 in the Create New Service Template: Configuration page, when you click **Search**, only middleware pools associated with a load balancer configuration are displayed. If there are no middleware pools associated with load balancer configurations, the list will be blank.

- **Expose Advanced Settings for the SSA User:** When set to **Yes**, the self service user will have access to advanced options such as Operating System, Enable sharing Service Instances with other SSA Users, Setting Target Properties for Monitoring Templates, and so on.
- **Expose WebLogic Admin Console and Fusion Middleware Control to SSA User:** If you select **Yes**, the users with the `EM_SSA_USER` role will have access to the WebLogic Admin Console and Fusion Middleware Control for each service instance created using this service template.

 **Note:**

This field must be set to **Yes** only if the `EM_SSA_USER` needs to have complete control over the WebLogic Server and Fusion Middleware Control consoles. The `EM_SSA_USER` will then be able to perform all configuration changes and life cycle management operations from each console.

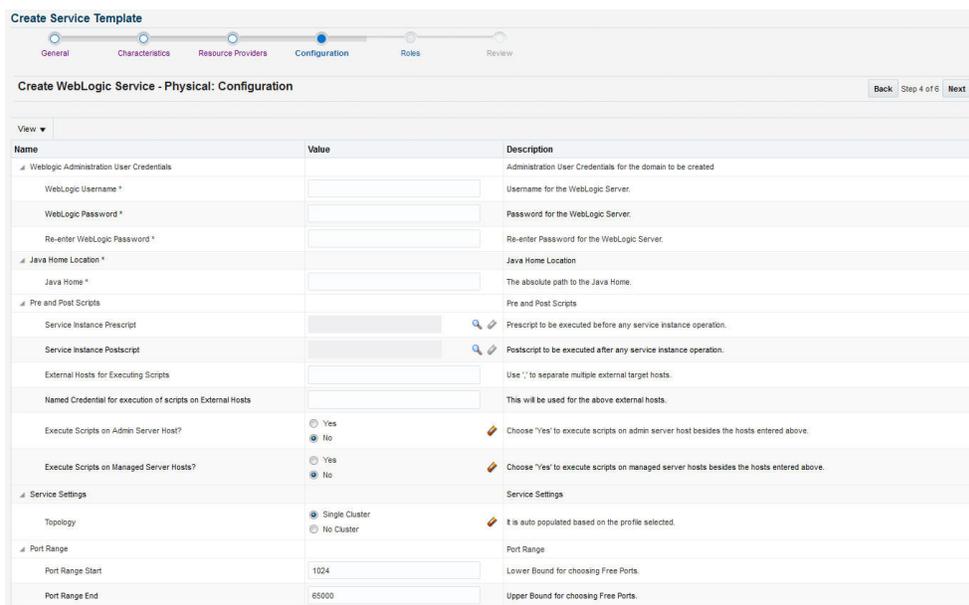
- **JRF Enabled Profile:** Indicates if the selected profile is JRF enabled. If set to **Yes** for WebLogic Server 12.1.2 and 12.1.3 instances, the self service user will be prompted for the database connection string and schema password while requesting a service.

The self service user can either use a database that is cloned using the DBaaS RMAN Backup option, or a database that has been cloned outside DBaaS but discovered in Enterprise Manager. In the case of the latter option, after discovering the database, you must grant view privileges on the Database target to the self service user.

A JRF enabled profile cannot be used to create a non-JRF WebLogic domain. If the value for this field has been set to **Yes**, it is recommended that the value is not changed

8. In the Target Properties region, specify the characteristics that will be used to tag and identify the target properties. Service instances created from the template will have the characteristics.
9. Click **Next**. In the Create Middleware Service Template: Resource Providers page, click **Add** to select the Middleware Pool into which that the service instances are to be provisioned. The PaaS Infrastructure Zone with which the middleware pool is associated is displayed.
10. Click **Next**. The Configuration page appears.

Figure 36-10 Create WebLogic Template: Configuration



Name	Value	Description
WebLogic Administration User Credentials		
WebLogic Username *	<input type="text"/>	Username for the WebLogic Server.
WebLogic Password *	<input type="password"/>	Password for the WebLogic Server.
Re-enter WebLogic Password *	<input type="password"/>	Re-enter Password for the WebLogic Server.
Java Home Location *		
Java Home *	<input type="text"/>	The absolute path to the Java Home.
Pre and Post Scripts		
Service Instance Prescript	<input type="text"/>	Prescript to be executed before any service instance operation.
Service Instance Postscript	<input type="text"/>	Postscript to be executed after any service instance operation.
External Hosts for Executing Scripts	<input type="text"/>	Use ';' to separate multiple external target hosts.
Named Credential for execution of scripts on External Hosts	<input type="text"/>	This will be used for the above external hosts.
Execute Scripts on Admin Server Host?	<input type="radio"/> Yes <input checked="" type="radio"/> No	Choose 'Yes' to execute scripts on admin server host besides the hosts entered above.
Execute Scripts on Managed Server Hosts?	<input type="radio"/> Yes <input checked="" type="radio"/> No	Choose 'Yes' to execute scripts on managed server hosts besides the hosts entered above.
Service Settings		
Topology	<input checked="" type="radio"/> Single Cluster <input type="radio"/> No Cluster	It is auto populated based on the profile selected.
Port Range		
Port Range Start	<input type="text" value="1024"/>	Lower Bound for choosing Free Ports.
Port Range End	<input type="text" value="65000"/>	Upper Bound for choosing Free Ports.

Enter the following details:

- **WebLogic Administration Credentials:**
 - **WebLogic Username:** Enter a value of minimum 8 characters as the name of the user logging into the WebLogic server. This is a mandatory field.
 - **WebLogic Password:** Enter a value of minimum 8 characters as the password for the WebLogic server user. This is a mandatory field.
- **Java Home Location:** Specify the absolute path to the Java Home. This field must be specified if the WebLogic Domain Provisioning Profile selected earlier contains Middleware Home binaries.
- **Pre and Post Scripts**
 - **Prescript for Service Instance:** Select the script that should be executed before creating, deleting, scaling up, or scaling down a service instance.
 - **Postscript for Service Instance:** Select the script should be executed after creating, deleting, scaling up, or scaling down a service instance.
 - **External Hosts for Executing Scripts:** Specify the external hosts on which these scripts should be executed.
 - **Named Credential for execution of scripts on external hosts:** Specify the credentials required to run the scripts on external hosts.
 - **Execute Scripts on Admin Server Host:** Select **Yes** if the scripts are to be executed on the Administration Server Host.
 - **Execute Scripts on Managed Server Hosts:** Select **Yes** if the scripts are to be executed on the Managed Server Hosts.

 **Note:**

Zone level credentials are used to run these scripts on the Administration Server Host and the Managed Server Host.

The scripts must meet the following guidelines:

- Directive that is created should be a PERL directive.
- An input parameter named `INPUT_FILE_LOCATION` must be defined.
- The path to the location of a property file must be specified in the `INPUT_FILE_LOCATION` parameter.
- The property file contains information about the service instance and the domain.

See [Sample Postscript](#) for a sample script file, properties file, and the generated output.

- **Service Settings:**
 - **Topology:** This field is automatically set based on the profile you have selected in the Create Middleware Service Template for Physical: General page.

- **Port Range (Start - End):** Enter the port range for the WebLogic Server. The default start range is 1024 and the end range is 65000.
 - **Placement Parameters:**
 - **Memory Usage Per Instance:** Specify the memory required for each additional WebLogic Server instance. This parameter must be specified (cannot be left blank) and the value must match the -Xmx value specified in the profile. For example, if the profile specifies -Xmx512m, the memory required value must be set to 0.5. Similarly, a profile value of -Xmx1024m would need a memory required value of 1, and so on.
 - **CPU Usage Per Instance:** Specify the CPU required for each additional WebLogic Server instance.
 - **Server Startup Arguments**
 - **Managed Server Startup Arguments:** Specify the memory and Java arguments required to start the managed server. These arguments are used to control the memory size of the JVM server and create multiple templates with the same profile. For example, you can specify `-Xms1280m -Xmx1280m -XX:PermSize=128m -XX:MaxPermSize=256m -Dweblogic.security.SSL.ignoreHostnameVerification=true`.

Note: If the Expose Advanced Settings for the SSA User flag is set to **True**, the self service user can modify these arguments while requesting a service.
 - **Resource Management Script Parameters**
 - **Resource Management Script:** Specify the script for dynamic management of resources which allows you to increase or decrease the size of the middleware pool. This script must be present in the Software Library as a directive.
 - **Host for Executing Resource Management Script:** Select the host on which the resource provisioning script is to be executed.
 - **Named Credentials for Host:** Specify the named credentials for the selected host
11. Click **Next**. In the Create Middleware Service Template for Physical: Roles page, click **Add** to select the self service user roles to which this service template will be available. All users belonging to the selected role can use this service template.
 12. Click **Next**. The Create Middleware Service Template for Physical: Review page appears. Review the information entered so far and click **Submit**. The newly created service template will appear in the Middleware Cloud Self Service Portal Setup: Service Templates page. You can click on the Service Template Name link to view additional details.

To edit an existing MWaaS service template, follow these steps:

1. Click **Edit** in the Service templates page to launch to the Edit Service Template wizard.
2. In this mode, you can modify the description, user name, password, and port range of the WebLogic Server instance being provisioned, add or remove PaaS Infrastructure Zones, Software Pools into which the template is being deployed, and add or remove users who can use this template.

36.6.1 Sample Postscript

This sample postscript prints the contents of the properties file and also prints details regarding the managed server, administration server, and so on.

36.6.1.1 Sample Properties File

The properties file contains the following:

```
OPERATION= CREATE
SERVICE_INSTANCE= inst_01
DOMAIN_NAME= inst_01_SSA_USER1
DOMAIN_HOME= /middleware/inst_01_SSA_USER1
MW_HOME= /middleware
WLS_HOME= /middleware/wlserver_10.3
ADMIN_SERVER= example.com,27877,8142
MANAGED_SERVERS= example.com,13614,1488,4166;
EXTERNAL_HOSTS= example.com
EXECUTE_SCRIPTS_ON_ADMIN_SERVER_HOST= Yes
EXECUTE_SCRIPTS_ON_MANAGED_SERVER_HOSTS= Yes
```

36.6.1.2 Sample Script

A sample script is given below:

```
#!/usr/bin/perl
use File::Path;
#use File::Spec();
use File::Spec;
use Cwd;

my $dir = getcwd();
my $inputFile = $ARGV[0];

print "Input File Location = ".$inputFile."\n";
print "======"."\n";
print "The properties file contents accessible to this script are as follows ".$inputFile."\n";

my @prop;
#Create Hash from properties
open FILE, "<$inputFile" or die("Could not open text file '" . $inputFile . "': $!");
my %hash;
while ($line4 = <FILE>)
{
    chomp($line4);
    my ($key, $val) = split(/=/,$line4);
    print $key."=" . $val."\n";
    $hash{$key}=$val;
}
close FILE;
print "======"."\n";
my $ACTION = $hash{'OPERATION'};
if ( $ACTION eq "CREATE" ) {
    print " This is Service Instance Creation Operation \n";
} elsif ( $ACTION eq "SCALEUP" ) {
    print " This is Scale Up Operation \n";
} elsif ( $ACTION eq "SCALEDOWN" ) {
    print " This is Scale Down Operation \n";
}
```

```

} elif ( $ACTION eq "DELETE" ) {
    print " This is Delete Service Instance Operation \n";
} else {
    print " Unsupported Configuration Action".$ACTION."\n";
}
print "=====\n";

my $ADMIN_SERVER = $hash{'ADMIN_SERVER'};

print "=====-Admin Server Details Begins=====\n";
my @fields = split (/,/, $ADMIN_SERVER);
my $arraySize = @fields;
if ($arraySize == 4) {
    print "Admin Server Name is ".$fields[0]."\n";
    print "Admin Server Host Name is ".$fields[1]."\n";
    print "Admin Server NON SSL Port is ".$fields[2]."\n";
    print "Admin Server SSL Port is ".$fields[3]."\n";
} else {
    print "Admin Server Host Name is ".$fields[0]."\n";
    print "Admin Server NON SSL Port is ".$fields[1]."\n";
    print "Admin Server SSL Port is ".$fields[2]."\n";
}
print "=====-Admin Server Details Ends=====\n";

print "\n";

print "=====-Managed Server's Details Begins=====\n";
my $MANAGED_SERVERS = $hash{'MANAGED_SERVERS'};
my $managedServer;
my @noOfManagedServers = split (/,/, $MANAGED_SERVERS);
for ($count = 0; $count < @noOfManagedServers; $count++) {
    $managedServer = $noOfManagedServers[$count];
    @fields = split (/,/, $managedServer);
    $arraySize = @fields;
    if ( $ACTION eq "SCALEDOWN" || $ACTION eq "DELETE" ) {
        print "Managed Server Name is ".$fields[0]."\n";
        print "Managed Server Host Name is ".$fields[1]."\n";
        print "Managed Server NON SSL Port is ".$fields[2]."\n";
        print "Managed Server SSL Port is ".$fields[3]."\n";
    } else {
        print "Managed Server Host Name is ".$fields[0]."\n";
        print "Managed Server NON SSL Port is ".$fields[1]."\n";
        print "Managed Server SSL Port is ".$fields[2]."\n";
    }
    print "\n"
}
print "=====-Managed Server's Details Ends=====\n";

print "\n";

print "=====-External Host's Details Begins=====\n";
my $EXTERNAL_HOSTS = $hash{'EXTERNAL_HOSTS'};
my @hosts = split (/,/, $EXTERNAL_HOSTS);
for ($count = 0; $count < @hosts; $count++) {
    print "External Host is ".$hosts[$count]."\n";
}

print "=====-External Host's Details Ends=====\n";

```

36.6.1.3 Sample Script Output

The output of the directive is given below:

```

Input File Location = /jan1215/work/agentStateDir/1422547083465.properties
=====
The properties file contents accessible to this script are as follows
OPERATION= CREATE
SERVICE_INSTANCE= inst_01
DOMAIN_NAME= inst_01_SSA_USER1
DOMAIN_HOME= /middleware/inst_01_SSA_USER1
MW_HOME= /middleware
WLS_HOME= /middleware/wlserver_10.3
ADMIN_SERVER= example.com,27877,8142
MANAGED_SERVERS= example.com,13614,1488,4166;
EXTERNAL_HOSTS= example.com
EXECUTE_SCRIPTS_ON_ADMIN_SERVER_HOST= Yes
EXECUTE_SCRIPTS_ON_MANAGED_SERVER_HOSTS= Yes
=====
  This is Service Instance Creation Operation
=====
=====Admin Server Details Begins=====
Admin Server Host Name is example.com
Admin Server NON SSL Port is 27877
Admin Server SSL Port is 8142
=====Admin Server Details Ends=====

=====Managed Server's Details Begins=====
Managed Server Host Name is example.com
Managed Server NON SSL Port is 13614
Managed Server SSL Port is 1488

=====Managed Server's Details Ends=====

=====External Host's Details Begins=====
External Host is example.com
=====External Host's Details Ends=====

```

36.6.2 Resource Management Script

The Resource Management Script specifies the location of the property file which contains a list of name value pairs. The content of the file varies based on the Create, ScaleUp, ScaleDown, and Delete operations.

36.6.2.1 Create Operation

The content of the file for the **Create** operation are:

```

ACTION=CREATE
ZONE_NAME=<value>
POOL_NAME=<value>
NUMBER OF SERVERS BEFORE THIS REQUEST=<value>
NUMBER OF SERVERS REQUESTED=<value>
NUMBER OF SERVERS POSSIBLE WITH AVAILABLE RESOURCES=<value>

```

```
NUMBER OF SERVERS NEEDED=<value>  
MAXIMUM SERVERS ALLOWED PER HOST=<value>  
MIDDLEWARE_HOME=<value>  
EXPECTED CPU UTILIZATION IN PERCENTAGE=<value>  
EXPECTED MEMORY CONSUMPTION IN GB=<value>
```

36.6.2.2 Scaleup Operation

The content of the file for the **Scaleup** operation are:

```
ACTION=SCALEUP  
ZONE_NAME=<value>  
POOL_NAME=<value>  
NUMBER OF SERVERS BEFORE THIS REQUEST=<value>  
NUMBER OF SERVERS REQUESTED=<value>  
NUMBER OF SERVERS POSSIBLE WITH AVAILABLE RESOURCES=<value>  
NUMBER OF SERVERS NEEDED=<value>  
MAXIMUM SERVERS ALLOWED PER HOST=<value>  
MIDDLEWARE_HOME=<value>  
DOMAIN_NAME=<value>  
EXPECTED CPU UTILIZATION IN PERCENTAGE=<value>  
EXPECTED MEMORY CONSUMPTION IN GB=<value>
```

36.6.2.3 Scaledown Operation

The content of the file for the **Scaledown** operation are:

```
ACTION=SCALEDOWN  
ZONE_NAME=<value>  
POOL_NAME=<value>  
NUMBER OF SERVERS BEFORE THIS REQUEST=<value>  
NUMBER OF SERVERS BEING REMOVED=<value>  
HOSTS FROM WHERE SERVERS BEING REMOVED=<value>  
MIDDLEWARE_HOME=<value>  
DOMAIN_NAME=<value>
```

36.6.2.4 Delete Operation

The content of the file for the **Delete** operation are:

```
ACTION=DELETE
```

ZONE_NAME=<value>

POOL_NAME=<value>

NUMBER OF SERVERS BEFORE THIS REQUEST=<value>

NUMBER OF SERVERS BEING REMOVED=<value>

HOSTS FROM WHERE SERVERS BEING REMOVED=<value>

MIDDLEWARE_HOME=<value>

DOMAIN_NAME=<value>

36.7 Configuring Chargeback

Click the **Chargeback** tab to add the middleware pools to the Chargeback Application. On this page, you can determine chargeback zones, services, items, and prices. After Chargeback is set up, you can view charges and plan details.

You can configure chargeback and metering data based on the configuration and monitoring metrics collected from associated targets such as the host, managed server, and the PaaS Infrastructure Zone. The charge plans are based on the host, WebLogic (domain, cluster, and server), PaaS Infrastructure Zone, and configuration such as the WebLogic Domain version, OS version, vendor, and so on.

For details on setting up the Chargeback Service, see [Chargeback Administration](#).

37

Setting Up the SOAaaS or the OSBaaS Self Service Portal

This chapter describes the procedure to set up and enable the SOA Self Service Portal or the OSB Self Service Portal. It contains the following sections:

- [Getting Started with SOAaaS and OSBaaS](#)
- [Setting Up DBaaS used to Clone a SOA Repository](#)
- [Prerequisites for Creating a SOA or an OSB Provisioning Profile](#)
- [Setting Up the SOA and OSB Cloud Self Service Portal](#)
- [Creating a SOA Instance](#)

37.1 Getting Started with SOAaaS and OSBaaS

This section helps you get started by providing an overview of the steps involved in setting up SOA as a Service (SOAaaS) and OSB as a Service (OSBaaS) to provision a service instance on one or more physical hosts.

Table 37-1 Getting Started with Middleware as a Service

Step	Task
1	Clone the database used by the Source SOA domain or OSB domain. Oracle recommends using the DBaaS feature available in Enterprise Manager. See Setting Up DBaaS used to Clone a SOA Repository .
2	Meet the Prerequisites for creating the SOA/OSB provisioning profiles: See Prerequisites for Creating a SOA or an OSB Provisioning Profile
3	Setting Up SOA and OSB Self Service Portal. See Setting Up the SOA and OSB Cloud Self Service Portal

37.2 Setting Up DBaaS used to Clone a SOA Repository

Following are the high-level steps to setup the Database Self Service Portal and request for a database instance that can be used for setting up the SOA Self Service Portal. Cloning method followed for setting up database instance for SOA is using RMAN backup. Following are the high-level steps:

Table 37-2 Provisioning Databases Using RMAN Backup Profile

Step	Task	Role
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started

Table 37-2 (Cont.) Provisioning Databases Using RMAN Backup Profile

Step	Task	Role
2	Set up one or more PaaS Infrastructure Zones. Note: Oracle recommends using the same Infrastructure zone for Database and SOA/OSB.	See Creating a PaaS Infrastructure Zone
3	Create a database provisioning profiles using the RMAN Backup option. Note: Select the SOA/OSB dehydration store database used by the source SOA/OSB domain to create the profile.	See Creating a Database Provisioning Profile Using RMAN Backup
4	Create a database pool.	See Creating a Database Pool for Database as a Service
5	Create a database service template for SOA. Create a database service template for OSB.	See "Creating a Database Service Template for SOA Profile" See "Creating a Database Service Template for OSB Profile"
6	While deploying a database for SOA/OSB, select the service template you have created.	See Requesting a Database

-  **Note:**
 - The same user credentials that are used to create the Database Service instance should be used for creating the SOA/OSB Service instance. If you instead use other credentials, you must ensure that the SOA Service user has been granted the required accesses on the database.
 - Along with DBaaS, PDBaaS is also supported for cloning a SOA repository.

Prerequisite to publish JRF template

To publish a template for a JRF 12.1.x domain follow this procedure as a prerequisite:

1. JRF 12.1.x domain contains data sources. The administrator must create a profile of the source database and publish a DBaaS template.
2. The user should request for a database service using the previously created template.
3. The user should request for a complete JRF domain using the previously requested database for the data sources in the domain.

37.2.1 Creating a Database Service Template for SOA Profile

Prerequisite:

To truncate the business data present inside the SOA dehydration store (source environment), use the truncate script provided as a part of the SOA product. For this,

you must first create a Generic Component and upload `truncate_soa_oracle.sql` script to Software Library. For more information on this, see the *Enterprise Manager Cloud Control Administrator's Guide*.

Note that the truncate script (`truncate_soa_oracle.sql`) is located in the following directory path: `/MW_HOME/SOA_ORACLE_HOME/rcu/integration/soainfra/sql/truncate`

To create the service template for a SOA Profile, follow these steps:

1. Follow the steps listed in [Creating a Database Provisioning Profile Using RMAN Backup](#) to create the database profile.
2. On the Create Service Template: Customization page, specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
3. Click **Next**. The Create Service Template: Roles page is displayed.
4. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
5. On the Create Service Template: Review page review the field entries and click **Create**.

The newly created service template is displayed on the Database Cloud Self Service Portal Setup: Service Templates page.

37.2.2 Creating a Database Service Template for OSB Profile

Prerequisite (*Applicable only for OSB 11g targets*)

OSB uses Logging Last Resource (LLR) transaction optimization feature which creates LLR tables in the OSB schema for each managed server in the OSB domain, including the Administration Server.

As part of cloning the OSB database, you need to drop these tables. Otherwise, startup of the cloned OSB domain will fail. To drop these tables, you can create a Generic Component and upload `llr_table.sql` script to the Software Library.

To create the script for each for each LLR table present in source OSB environment, add the following statement to the SQL script:

```
TRUNCATE table WL_LLRLR_<SERVER_NAME>
```

For example, if the OSB domain has administrator server and two managed servers with name `OSB_SERVER1` and `OSB_SERVER2`, then the content of the sql script would look like:

```
TRUNCATE table WL_LLRLR_ADMINSERVER
```

```
TRUNCATE table WL_LLRLR_OSB_SERVER1
```

```
TRUNCATE table WL_LLRLR_OSB_SERVER2
```

To create the service template for OSB profile, follow these steps:

1. Follow the steps listed in [Creating a Database Provisioning Profile Using RMAN Backup](#) to create the database profile.

2. On the Create Service Template: Customization page, specify the custom scripts that need to be executed before and after the database is created. See [Pre and Post Request Creation / Deletion Scripts](#) for details.
3. Click **Next**. The Create Service Template: Roles page is displayed.
4. Click **Add** to select the SSA user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
5. On the Create Service Template: Review page review the field entries and click **Create**.

The newly created service template is displayed on the Database Cloud Self Service Portal Setup: Service Templates page.

37.3 Prerequisites for Creating a SOA or an OSB Provisioning Profile

Meet all the prerequisites mentioned in the *Enterprise Manager Lifecycle Management Administrator's Guide* before creating a SOA or an OSB provisioning profile.

37.4 Setting Up the SOA and OSB Cloud Self Service Portal

The `EM_SSA_ADMINISTRATOR` can configure and set up the SOA/OSB Cloud Self Service Portal by creating middleware pools, setting up quotas, defining request settings, configuring the load balancer, creating service templates, and configuring chargeback.



Note:

To create a database profile for SOA or OSB domain, you must use a Single Instance database or a RAC database. For a RAC database, use GridLink data source. Multi datasource is not supported.

The following table lists the tasks that must be performed, and the user roles that can perform the task.

Step	Task	User Role
1	Set up one or more PaaS Infrastructure Zones. See Creating a PaaS Infrastructure Zone	EM_CLOUD_ADMINISTRATOR

Step	Task	User Role
2	<p>Creating SOA Provisioning Profiles.</p> <p>Meet the prerequisites mentioned in Prerequisites for Creating a SOA or an OSB Provisioning Profile.</p> <p>For steps on how to create the SOA profile, see the <i>Enterprise Manager Lifecycle Management Administrator's Guide</i>.</p> <p>Note: Ensure that you grant privileges on the profile to the <code>SSA_USER</code> role. A basic requirement is that the <code>SSA_USER</code> role has view privileges on the SOA profile. To grant privileges, follow these steps:</p> <ol style="list-style-type: none"> 1. In Cloud Control, from Enterprise menu, select Provisioning and Patching, then click Software Library. 2. On the Software Library home page, expand Fusion Middleware Provision option and the Profiles menu, to view all the SOA/OSB profiles. 3. Select one of the profiles, and from Actions menu, select Grant/Revoke Privileges. 4. On the Grant/Revoke Privileges page, click Add to select the <code>SSA_USER</code> role, then grant view privilege. 	EM_SSA_ADMINISTRATOR
3	Creating a SOAaaS and OSBaaS Pool	EM_SSA_ADMINISTRATOR
4	Creating a Load Balancer Configuration	EM_SSA_ADMINISTRATOR
5	Configuring Request Settings	EM_SSA_ADMINISTRATOR
6	Setting Up Quotas	EM_SSA_ADMINISTRATOR
7	Creating SOA and OSB Service Templates	EM_SSA_ADMINISTRATOR
8	Configuring Chargeback	EM_SSA_ADMINISTRATOR

37.4.1 Creating a SOAaaS and OSBaaS Pool

A Middleware Pool contains a set of resources that can be used to provision a service instance within a PaaS Infrastructure Zone. You must create separate Middleware pools in the PaaS Infrastructure Zone for each WebLogic version of Middleware Home.

To create a SOA Pool or an OSB Pool, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. The common tasks that need to be performed before setting a specific service family is displayed. Click the **Setup** link next to Middleware service family in the left panel.

4. Select **SOA Infrastructure** or **Oracle Service Bus** from the drop down list, and then click **Middleware Pool**. The Middleware Pool page appears.
5. On the Middleware Pool page, click **Create**.
6. Enter the Target Name, a name, and description for the middleware pool.
7. Select the PaaS Infrastructure Zone in which the middleware pool is to be created. Click **Next**.
8. Click **Add** to add one or more hosts to the middleware pool. Click **Next**.
9. On the Placement Constraints page, in the Maximum Number of WebLogic Servers (per host) field;, enter the maximum number of server instances that can be running on each host in the pool.
10. On the Characteristics page, specify the characteristics that will be used to tag and identify the target properties. The following options are possible:
 - To use a shared location, select **Yes** from the Shared Oracle Home menu, and provide an NFS path for the Middleware Home Base Directory. In this case, the SSA Administrator should make sure that the NFS path is mounted on all the hosts in the Middleware Resource Provider (used for SOA and OSB).
 - To use a local path, select **No** from Shared Oracle Home menu, and provide a location that is consistent across hosts in the Middleware Resource Provider.

11. On the Review page, click **Submit** to create a SOA or an OSB pool. The newly created pool can now be used to create the corresponding SOA and OSB Service Templates.

37.4.2 Creating SOA and OSB Service Templates

A Service Template is a service definition that can be used to provision a service instance on a middleware pool.

Prerequisites

- A PaaS Infrastructure Zone must have been created.
- A Middleware Pool must have been created.
- A Middleware Provisioning Profile with appropriate values must be present in the Software Library. The owner of the profile must grant View privileges on the profile to the SSA user.

- The database service template for a SOA profile and OSB profile are different. For information on how it can be created, see [Creating a Database Service Template for SOA Profile](#) and [Creating a Database Service Template for OSB Profile](#).
- If the SOA or OSB setup is configured with OHS or OTD settings, you must configure the Service Template also with these settings. To do so, on the Service Template creation page, ensure that you select **Enabled** for Load Balancer and provide the necessary OHS or OTD details. If not, the deployment procedure will fail and the Service Template will not get created.

 **Note:**

You can edit a service template that has active instances and modify the configuration parameters. When a service template is modified:

- New instances created after the changes have been made will use the new parameters.
- Old instances or instances created before the template was modified will use the earlier values.
- Changes made to zones and roles will be applicable to both old and new instances.

To create a Middleware Service Template, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. The common tasks that need to be performed before setting a specific service family is displayed. Click the **Setup** link next to Middleware service family in the left panel.
4. Select **SOA Infrastructure** or **Oracle Service Bus** from the drop down list and click **Service Templates**.
5. On the Service Templates page, click **Create**.
6. On the General page, enter a name and description for the service template. The name must be unique and the description should provide information on the type of service template being created.
7. In the Profile SOA field, click the **Search** icon and select a Provisioning profile. For information on how to create these profiles, see the *Enterprise Manager Lifecycle Management Administrator's Guide*. Click **Next**.
8. On the Characteristics page, specify the characteristics that will be used to tag and identify the target properties. Service instances created from the template will have the characteristics. Click **Next**.
9. On the Resource Providers page, click **Add** to select the Middleware Pool into which that the service instances can be provisioned. The PaaS Infrastructure Zone with which the middleware pool is associated is displayed. Click **Next**.
10. On the Configuration page, enter the following details:

Table 37-3 SOA Configuration Details

Name	Description
Middleware Home Base Path and Java Home	<p>Middleware Home Base Path: If you have set the NFS path while creating resource provider, then that path is populated here by default, and you are recommended to retain the same path. However, if the path was not set while creating resource provider, the Middleware Home base path from the profile is displayed, which can be updated if required.</p> <p>Domain Home Base Path: Enter the absolute path to the base directory where this domain should be created, or provide the relative path to the Middleware Home Base Path as follows: '\$MIDDLEWARE_HOME/' prefix. For example, \$MIDDLEWARE_HOME/domains.</p> <p>Alternatively, you can set this from the Resource Provider Characteristics page. If you have set the values already, they will appear pre-populated here.</p> <p>Note: For a shared middleware home, this domain home base path should be an absolute value.</p> <p>Java Home: The Java home path used by source domain (from where the profile is created) is displayed here. You can change this path, if required. Ensure that same java version is used by destination domain as well.</p> <p>Note: If you are using a Windows operating system, ensure that the Java home path does not have any spaces.</p> <p>Work Directory: The files are staged in this directory during provisioning. Specify an absolute path or a path relative to middleware home base path. For example, \$MIDDLEWARE_HOME/work</p>
Placement Parameters	<p>Expected Memory Consumption: Approximate CPU used by each additional instance in percentage. The memory consumption should be greater than or equal to the sum of Xms and MaxPermSize.</p> <p>For example, -Xms1280m, MaxPermSize=256m. Sum = 1280 MB+256 MB= 1536 MB (1.536 GB). Make sure that the value entered for memory consumption is greater than or equal to 1.5 GB.</p> <p>Expected CPU Utilization: Approximate Memory required by each additional instance in GB</p> <p>Note: These properties will be used to assign hosts with sufficient resources available for instance creation.</p>
Server Startup Arguments	<p>Managed Server Startup Arguments: Enter memory and java arguments to start the server.</p> <p>Example: -Xms512m -Xmx1536m -XX:CompileThreshold=8000 -XX:PermSize=512m -XX:MaxPermSize=512m -Dweblogic.security.SSL.ignoreHostnameVerification=true"</p> <p>Note: Coherence configuration is done automatically; there is no need to specify the coherence parameters here.</p>
Weblogic Administration User Credentials	<p>Username: This is the WebLogic username used to create a profile. The user name will be populated by default, and should not be updated.</p> <p>Password: This will be set as password for created weblogic account.</p>

Table 37-3 (Cont.) SOA Configuration Details

Name	Description
Pre and Post Scripts	<p>Prescript for Service Instance: Select the script that should be executed before creating, deleting, or scaling up service instance.</p> <p>Postscript for Service Instance: Select the script that should be executed after creating, deleting, or scaling up service instance.</p> <p>Note: If you have upgraded from FMW plug-in 12.1.0.7 to FMW plug-in 12.1.0.8, then you will need to create a consolidated Prescript and a Postscript for your service. This script must include operations like create, delete, and scale-up. Save the file as a directive in the Software Library. Following this, you must edit the existing service template Configuration page, to include the newly created scripts.</p> <p>Hosts for Executing Scripts: Hosts discovered in Enterprise Manager, on which the scripts should run. Use ',' to separate multiple target hosts.</p> <p>Named Credentials for execution of scripts: Enter the Named Credentials for the hosts on which the scripts should run. Note that SSA Administrator should have View privileges on these Named Credentials. For example, CredName:CredOwner.</p> <p>Execute Scripts on Admin Server Hosts: Enter 1 (YES) to execute scripts on Managed Server Host, and 0 (NO) to Skip Administrator Server Host.</p> <p>Execute Scripts on Managed Server Hosts: Enter 1 (YES) to execute scripts on the Administrator Server Host, and 0 (NO) to Skip Managed Server Hosts.</p> <p>Note: After an upgrade the value of this flag gets reset. Make sure that you edit the existing service template, and set the flag value appropriately.</p> <p>The scripts must meet the following guidelines:</p> <ul style="list-style-type: none"> • Directive that is created should be a PERL directive. • An input parameter named <code>INPUT_FILE_LOCATION</code> must be defined. • The path to the location of a property file must be specified in the <code>INPUT_FILE_LOCATION</code> parameter. • The property file contains information about the service instance and the domain. <p>See Sample Postscript for a sample script file, properties file, and the generated output.</p>
Port Range	<p>Port Range Start: Lower bound for choosing Free Ports</p> <p>Port Range End: Upper Bound for choosing Free Ports.</p> <p>Note: The port range will be used to assign ports for servers and nodemangers. It should be between 1024-65535.</p> <p>Enable Load Balancer: Enter Yes to enable and No to disable the Load Balancer. Note that if you select 'YES', there should be a load balancer configured with the selected resource providers.</p>
Load Balancer	<p>Select Yes only if the source domain used in the service template has already been configured with a load balancer. If the source domain is not configured with a load balancer, you must select No.</p> <p>Note: If the source profile used in the service template has been configured with OHS or OTD, then select Yes to enable the load balancer. If not, the service template creation will fail.</p>

Name	Value	Description
Provisioning Directories		
Middleware Home Base Path*	<input type="text" value="/home/oracle/app/soa12cMiddleware"/>	The absolute path to the base directory where the Middleware will get installed. If Middleware Home Base Directory is available in resource provider characteristics, it will be used
Domain Home Base Path*	<input type="text" value="/home/oracle/app/soa12cDomains"/>	The absolute path to the base directory where this domain should be created or Use "SMIDDLEWARE_HOME/" prefix to specify relative path to Middleware Home Base Path
Java Home*	<input type="text" value="/home/oracle/jdk1.7.0_65"/>	The absolute path to the Java Home
Work Directory*	<input type="text" value="SMIDDLEWARE_HOME/work"/>	The work directory where files will be staged during provisioning. Specify an absolute path or a path relative to middleware home base path
Placement Parameters		
Expected Memory Consumption (For Use By Placement Logic)*	<input type="text" value="1.34"/>	Memory required by each Managed Server must be greater than Xmx * MaxPermSize and should be in GB.
Expected CPU Utilization (For Use By Placement Logic)*	<input type="text" value="10"/>	CPU required by each Managed Server in percentage.
Server Startup Arguments		
Managed Server Startup Arguments	<input type="text"/>	Memory and java arguments to start the managed servers. Example: -Xms1280m -Xmx1280m -XX:PermSize=128m -XX:MaxPermSize=256m -Dweblogic.security.SSL.IgnoreHostnameVerification=true
Weblogic Administration User Credentials		
Username*	<input type="text" value="weblogic"/>	Username for the WebLogic Server
Password*	<input type="password" value="*****"/>	Password for the WebLogic Server
Pre and Post Scripts		
Prescript for Service Instance Creation	<input type="text"/>	Script that is invoked before service instance creation
Postscript for Service Instance Creation	<input type="text"/>	Script that is invoked after service instance creation
Hosts for Executing Scripts	<input type="text"/>	Use ";" to separate multiple target hosts
Named Credential for execution of scripts	<input type="text"/>	Enter the EM Named Credentials to be used for the above hosts in the 'Host for Executing Scripts' field
Execute Scripts on Admin Server Host?	<input type="radio"/> Yes <input checked="" type="radio"/> No	Choose 'Yes' to execute scripts on Admin Server host besides the hosts entered above
Execute Scripts on Managed Server Hosts?	<input type="radio"/> Yes <input checked="" type="radio"/> No	Choose 'Yes' to execute scripts on Managed Server hosts besides the hosts entered above
Port Range		
Port Range Start*	<input type="text" value="1024"/>	Lower Bound for choosing Free Ports
Port Range End*	<input type="text" value="65535"/>	Upper Bound for choosing Free Ports
Load Balancer		
Enable*	<input type="radio"/> Yes <input checked="" type="radio"/> No	Choose 'Yes' to enable Load Balancer

Click **Next**.

- On the Roles page, click **Add** to select the self service user roles to which this service template will be available. All users belonging to the selected role can use this service template. Click **Next**.
- On the Review page, review the information entered so far and click **Submit**. The newly created service template will appear in the Middleware Cloud Self Service Portal Setup: Service Templates page. You can click on the Service Template Name link to view additional details.

37.4.3 Sample Postscript

This sample postscript prints the contents of the properties file and also prints details regarding the managed server, administration server, and so on.

37.4.3.1 Sample Properties File

The properties file contains the following:

```
OPERATION= CREATE
SERVICE_INSTANCE= inst_01_14b3668772c
DOMAIN_NAME= inst_01_14b3668772c_SSA_USER1
DOMAIN_HOME= /scratch/middleware_ps4/inst_01_14b3668772c_SSA_USER1
MW_HOME= /scratch/middleware_ps4
WLS_HOME= /scratch/middleware_ps4/wlserver_10.3
ADMIN_SERVER= example.com,27877,8142
MANAGED_SERVERS= example.com,13614,1488,4166;
EXTERNAL_HOSTS= example.com
EXECUTE_SCRIPTS_ON_ADMIN_SERVER_HOST= Yes
EXECUTE_SCRIPTS_ON_MANAGED_SERVER_HOSTS= Yes
```

 **Note:**

Similar to Create operation, you can perform a Delete or a Scale Up operation.

37.4.3.2 Sample Script

A sample script is given below:

```
#!/usr/bin/perl
use File::Path;
#use File::Spec();
use File::Spec;
use Cwd;

my $dir = getcwd();
my $inputFile = $ARGV[0];

print "Input File Location = ".$inputFile."\n";
print "======"."\n";
print "The properties file contents accessible to this script are as follows ".$inputFile;

my @prop;
#Create Hash from properties
open FILE, "<$inputFile" or die("Could not open text file '" . $inputFile . "': $!");
my %hash;
while ($line4 = <FILE>)
{
chomp($line4);
my ($key, $val) = split(/=/,$line4);
print $key."=" ."$val."\n";
$hash{$key}=$val;
}
close FILE;
print "======"."\n";
my $ACTION = $hash{'OPERATION'};
if ( $ACTION eq "CREATE" ) {
print " This is Service Instance Creation Operation \n";
} elsif ( $ACTION eq "SCALEUP" ) {
print " This is Scale Up Operation \n";
} elsif ( $ACTION eq "DELETE" ) {
print " This is Delete Service Instance Operation \n";
} else {
print " Unsupported Configuration Action".$ACTION."\n";
}
print "======"."\n";

my $ADMIN_SERVER = $hash{'ADMIN_SERVER'};

print "====Admin Server Details Begins===="."\n";
my @fields = split (/,/, $ADMIN_SERVER);
my $arraySize = @fields;
if ($arraySize == 4) {
print "Admin Server Name is ".$fields[0]."\n";
print "Admin Server Host Name is ".$fields[1]."\n";
print "Admin Server NON SSL Port is ".$fields[2]."\n";
print "Admin Server SSL Port is ".$fields[3]."\n";
}
```

```

} else {
    print "Admin Server Host Name is ".$fields[0]."\n";
    print "Admin Server NON SSL Port is ".$fields[1]."\n";
    print "Admin Server SSL Port is ".$fields[2]."\n";
}
}
print "=====Admin Server Details Ends=====."\n";

print "\n";

print "=====Managed Server's Details Begins=====."\n";
my $MANAGED_SERVERS = $hash{'MANAGED_SERVERS'};
my $managedServer;
my @noOfManagedServers = split (//, $MANAGED_SERVERS);
for ($count = 0; $count < @noOfManagedServers; $count++) {
    $managedServer = $noOfManagedServers[count];
    @fields = split (//, $managedServer);
    $arraySize = @fields;
    if ( $ACTION eq "DELETE" ) {
        print "Managed Server Name is ".$fields[0]."\n";
        print "Managed Server Host Name is ".$fields[1]."\n";
        print "Managed Server NON SSL Port is ".$fields[2]."\n";
        print "Managed Server SSL Port is ".$fields[3]."\n";
    } else {
        print "Managed Server Host Name is ".$fields[0]."\n";
        print "Managed Server NON SSL Port is ".$fields[1]."\n";
        print "Managed Server SSL Port is ".$fields[2]."\n";
    }
}
print "\n"
}
print "=====Managed Server's Details Ends=====."\n";

print "\n";

print "=====External Host's Details Begins=====."\n";
my $EXTERNAL_HOSTS = $hash{'EXTERNAL_HOSTS'};
my @hosts = split (//, $EXTERNAL_HOSTS);
for ($count = 0; $count < @hosts; $count++) {
    print "External Host is ".$hosts[count]."\n";
}

print "=====External Host's Details Ends=====."\n";

```

37.4.3.3 Sample Script Output

The output of the directive is given below:

```

Input File Location = /ade/jan1215/oracle/work/agentStateDir/1422547083465.properties
=====
The properties file contents accessible to this script are as follows
OPERATION= CREATE
SERVICE_INSTANCE= inst_01_14b3668772c
DOMAIN_NAME= inst_01_14b3668772c_SSA_USER1
DOMAIN_HOME= /scratch/middleware_ps4/inst_01_14b3668772c_SSA_USER1
MW_HOME= /scratch/middleware_ps4
WLS_HOME= /scratch/middleware_ps4/wlserver_10.3
ADMIN_SERVER= example.com,27877,8142
MANAGED_SERVERS= example.com,13614,1488,4166;
EXTERNAL_HOSTS= example.com
EXECUTE_SCRIPTS_ON_ADMIN_SERVER_HOST= Yes
EXECUTE_SCRIPTS_ON_MANAGED_SERVER_HOSTS= Yes
=====

```

```
This is Service Instance Creation Operation
=====
=====Admin Server Details Begins=====
Admin Server Host Name is example.com
Admin Server NON SSL Port is 27877
Admin Server SSL Port is 8142
=====Admin Server Details Ends=====

=====Managed Server's Details Begins=====
Managed Server Host Name is example.com
Managed Server NON SSL Port is 13614
Managed Server SSL Port is 1488

=====Managed Server's Details Ends=====

=====External Host's Details Begins=====
External Host is example.com
=====External Host's Details Ends=====
```

37.4.4 Resource Management Script

The Resource Management Script specifies the location of the property file which contains a list of name value pairs. The content of the file varies based on the Create, ScaleUp, and Delete operations.

37.4.4.1 Create Operation

The content of the file for the **Create** operation are:

```
ACTION=CREATE
ZONE_NAME=<value>
POOL_NAME=<value>
NUMBER OF SERVERS BEFORE THIS REQUEST=<value>
NUMBER OF SERVERS REQUESTED=<value>
NUMBER OF SERVERS POSSIBLE WITH AVAILABLE RESOURCES=<value>
NUMBER OF SERVERS NEEDED=<value>
MAXIMUM SERVERS ALLOWED PER HOST=<value>
MIDDLEWARE_HOME=<value>
EXPECTED CPU UTILIZATION IN PERCENTAGE=<value>
EXPECTED MEMORY CONSUMPTION IN GB=<value>
```

37.4.4.2 Scaleup Operation

The content of the file for the **Scaleup** operation are:

```
ACTION=SCALEUP
ZONE_NAME=<value>
POOL_NAME=<value>
```

```
NUMBER OF SERVERS BEFORE THIS REQUEST=<value>
NUMBER OF SERVERS REQUESTED=<value>
NUMBER OF SERVERS POSSIBLE WITH AVAILABLE RESOURCES=<value>
NUMBER OF SERVERS NEEDED=<value>
MAXIMUM SERVERS ALLOWED PER HOST=<value>
MIDDLEWARE_HOME=<value>
DOMAIN_NAME=<value>
EXPECTED CPU UTILIZATION IN PERCENTAGE=<value>
EXPECTED MEMORY CONSUMPTION IN GB=<value>
```

37.4.4.3 Delete Operation

The content of the file for the **Delete** operation are:

```
ACTION=DELETE
ZONE_NAME=<value>
POOL_NAME=<value>
NUMBER OF SERVERS BEFORE THIS REQUEST=<value>
NUMBER OF SERVERS BEING REMOVED=<value>
HOSTS FROM WHERE SERVERS BEING REMOVED=<value>
MIDDLEWARE_HOME=<value>
DOMAIN_NAME=<value>
```

37.5 Creating a SOA Instance

This section provides the prerequisites and steps for creating a SOA instance. This procedure should be performed by logging in as a SSA user.

37.5.1 Prerequisites for Creating a SOA Instance

Meet the following prerequisites before creating a SOA instance:

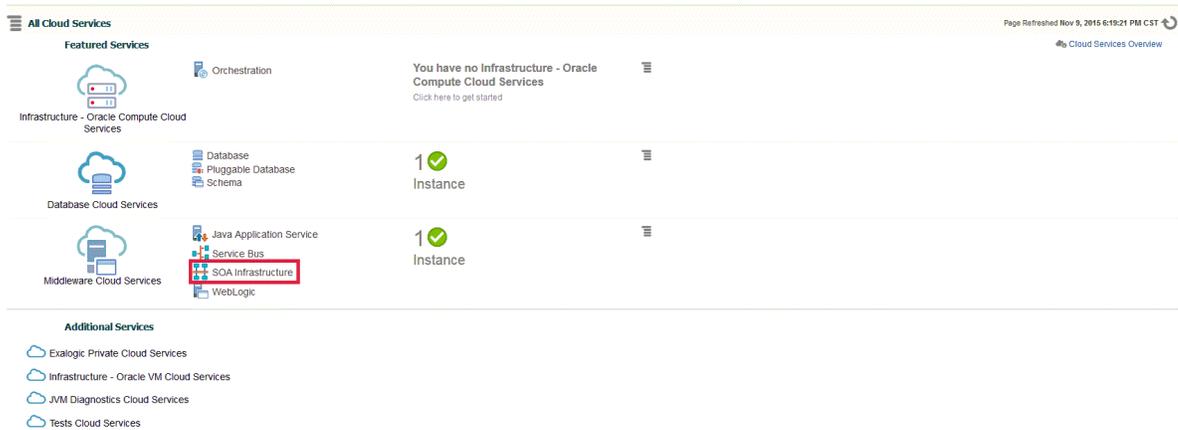
- A database instance should be ready. To create a database instance see [Requesting a Database](#).
- The EM SSA Administrator should have created a SOA service template. For the steps to create a SOA service template, see [Creating SOA and OSB Service Templates](#).

37.5.2 Procedure for Creating a SOA Instance

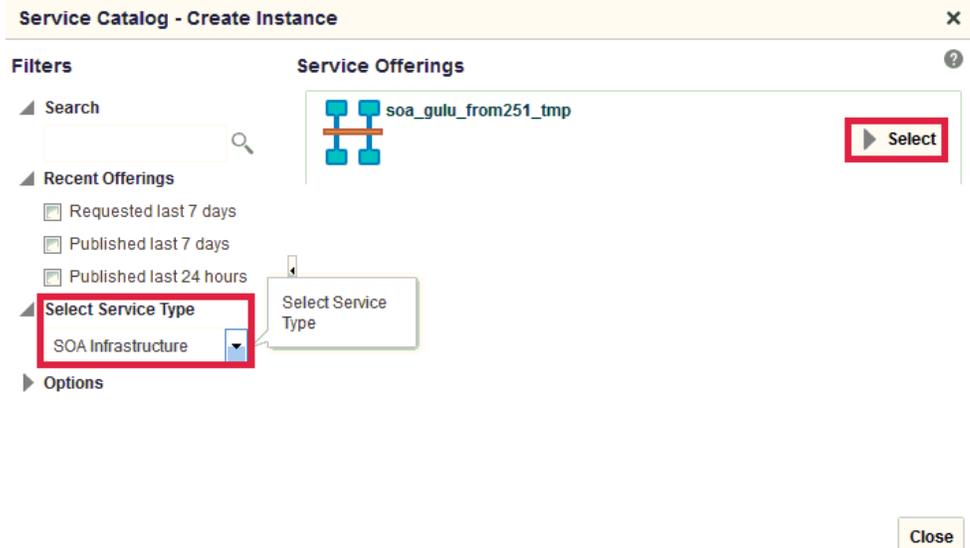
Follow the steps below to create a SOA instance:

1. Log in to Enterprise Manager Cloud Control as a SSA user.

2. From the **Enterprise** menu, select **Cloud**, and then select **Self Service Portal**.
3. On the All Cloud Services page, click **SOA Infrastructure**.



4. On the Middleware Cloud Services page, click **Create Instance** button.
5. In the Service Catalog - Create Instance window, click **Select Service Type** drop-down box, select **SOA Infrastructure**, and then click **Select** against the desired Service Offering.



6. On the Create Instance page, enter the Instance Details and click **Next**.

The screenshot shows the 'Instance Details' and 'Instance Duration' configuration pages. The 'Instance Details' section includes fields for Name (Sample_SOA), Description, and PaaS Infrastructure Zone. The 'Instance Duration' section includes fields for Creation Date (Immediate) and End Date (Indefinite).

7. Optionally, on the Characteristics page, enter the Target Properties and click **Next**.
8. On the Configuration page, select the **Database Instance** and enter the **Schema Password**. In the Create WebLogic User Account section, enter the **WebLogic User Name**, **WebLogic Password**, and **Confirm WebLogic Password** in their respective boxes and click **Next**.

The screenshot shows the 'Configuration' page with several sections: 'SOA Dehydration Store' (Database Instance: ds12emsec, Schema Password), 'SOA Token Configuration' (No SOA Tokens found), 'Managed Server Startup Arguments' (Example: -Xms1280m -Xmx1280m -XXPermSize=128m -XXMaxPermSize=256m -Dweblogic.security.SSL.IgnoreHostnameVerification=true), and 'Create WebLogic User Account' (WebLogic User Name: weblogic1, WebLogic Password, Confirm WebLogic Password).

9. On the Confirmation page, click **Submit**.

The newly created SOA Infrastructure is displayed on the Middleware Cloud Services page.



Note:

OSBaaS allows projects to be deployed on a single node as well as the cluster. It is strongly recommended that you **do not** deploy projects on individual nodes. Deploy projects on the cluster.

38

Setting Up the JVMaaS Self Service Portal

This chapter describes the procedure to set up the Middleware Self Service Portal for JVM as a Service. It contains the following sections:

- [Setting Up the Java Application Service Self Service Portal](#)
- [Creating a Customized Middleware Profile](#)
- [Uploading the Middleware Profile to Software Library](#)
- [Creating a Service Template Based on Java Applications Profile](#)

38.1 Setting Up the Java Application Service Self Service Portal

The `EM_SSA_ADMINISTRATOR` can configure and set up the JVM Cloud Self Service Portal by creating middleware pools, setting up quotas, defining request settings, creating service templates, and configuring chargeback.

To set up the Java Application Service, follow these steps:

1. Set up one or more PaaS Infrastructure zones. See [Creating a PaaS Infrastructure Zone](#) for details.
2. Create a Middleware Pool. See [Creating a Middleware Pool](#).
3. Configure request settings. See [Configuring Request Settings](#).
4. Define quotas for each self service user role. See [Setting Up Quotas](#).
5. Create service templates. See [Creating a Service Template Based on Java Applications Profile](#).
6. Optionally, you can configure the Chargeback Service. See [Configuring Chargeback](#).

38.2 Creating a Customized Middleware Profile

For creating your own custom profile, you must create an XML file with all the mandatory and the optional parameters. This is explained using the following example which describes how to create a profile for the `tomcatService`.

1. Enter all the mandatory details required to define the profile like **Internal Name**, **Owner**. You can additionally provide a display name and a short description about your profile. Next, you must provide the platform information, the product list, a display name for the product, and so on:

 **Note:**

If you plan to export the middleware profile to another Enterprise Manager system using the Export functionality offered by Software Library, you must ensure that the **Display Name** and the **Internal Name** for the profile in the customized XML script are the same. If not, the export/import operation will fail.

```
<?xml version="1.0"?>
<mw:profile xmlns:mw="http://xmlns.oracle.com/mw/profile"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://xmlns.oracle.com/mw/
profile ../../../../../../FmwProvisioningPojo/src/oracle/sysman/fmw/
provisioning/pojo/profile/genericProfile.xsd"
name="TomcatProfile4" vendor="Oracle" version="1.0"
content="softwareOnly">
  <mw:displayName>
    Tomcat As A Service with Free Ports
  </mw:displayName>
  <mw:description>
    Profile for Provisioning single Node Tomcat Server with Bundled Application.
  </mw:description>

  <mw:platformInfo os="Linux" platform="x86-64" platformId="226"/>
  <mw:products>
    <mw:product name="Tomcat" version="10.3.6.0">
      <mw:displayName>
        Tomcat Bundled With Application
      </mw:displayName>
    </mw:product>
  </mw:products>
```

- Each services instance that is provisioned using this profile will be provided with free ports. These can be used as desired by the profile. You must provide values for: `-PORT_RANGE_START`, `PORT_RANGE_END`, and `PORTS_COUNT`.

`PORT_RANGE_START` and `PORT_RANGE_END` defines the range of the port values to be specified. If you do not specify anything, by default, 2000 and 3000 is considered respectively.

`PORTS_COUNT` defines the number of ports required by the service. If not defined, no ports will be allotted to the service.

```
<mw:properties>
  <mw:stringProperty name="PORT_RANGE_START" value="2000"/>
  <mw:stringProperty name="PORT_RANGE_END" value="3000"/>
  <mw:stringProperty name="PORTS_COUNT" value="3"/>
</mw:properties>
```

- Actions defined in the profile XML file like Provision, Start, Stop, and Delete will be performed at different phases of the service instance life cycle.
 - The Provision action determines how the service instance is created the first time. The software setup and configuration is performed as a part of this step. Importantly, you must define the following parameters here:
 - Payload:** The actual application that is part of the profile.
 - Procedure:** The variables that are dynamically replaced at runtime.

- The Start action defines how the software that is provisioned is started.
- The Stop action defines how the software that is provisioned is stopped.
- The Delete action deletes the service instances. The cleanup actions are performed as part of this step.

Provision: This action provisions your application in Enterprise Manager.

```
<!-- [Mandatory] Action list -->
<mw:actions default="provision">
  <mw:action name="provision" retryFrom="first">
    <!-- [Optional] Display name and description -->
    <mw:displayName>
      Provision Tomcat Server
    </mw:displayName>
    <mw:description>
      This action provisions only the Oracle Home from the profile.
    </mw:description>
    <!-- [Mandatory] Define the complete command including the executable and
parameters -->
    <!-- EL is supported, variables can be taken from 3 sources: env,
procedure and profile -->
    <mw:command name="createDirectory" executable="mkdir"
errorMode="continue">
      <mw:param value="-p"/>
      <mw:param value="{procedure.STAGING_DIRECTORY}" required="true"/>
    </mw:command>
    <mw:command name="unpack" executable="{procedure.JAVA_HOME}/bin/jar"
directory="{procedure.STAGING_DIRECTORY}">
      <mw:param value="-xvf"/>
      <mw:param value="{payload:tomcat_app.jar}" required="true"/>
    </mw:command>
    <mw:command name="configure" executable="/bin/sh"
directory="{procedure.STAGING_DIRECTORY}">
      <mw:param value="{payload:fixpath_tc.sh}" required="true"/>
      <mw:param value="{procedure.FREE_PORTS}"/>
      <mw:env name="SERVICE_HOME" value="{procedure.STAGING_DIRECTORY}" />
    </mw:command>
  </mw:action>
```

As a part of the Provision step, you must create the `service.out` file at the staging directory, and the file must define the variables `jvm_jmx_port` and `jvm_service_console_url`.

For example, in the above XML file, there is a shell script called `fixpath_tc.sh` which prints the `jvm_jmx` port and the `jvm` service URL. The contents of the script are as follows:

```
echo "jvm_jmx_port=${PORT_LIST[1]}" >> $SERVICE_HOME/service.out
echo "jvm_service_console_url=http://$HOSTNAME:${PORT_LIST[0]}/tc_hello/
HelloWorld" >> $SERVICE_HOME/service.out
```

Note that the `service.out` file must be located in the staging directory. This file contains the values of the variables defined. For example:

```
jvm_jmx_port=2610
jvm_service_console_url=http://blr2201958.idc.oracle.com:2482/tc_hello/HelloWorld
```

Note: This step is mandatory if you want to discover the Java Application Service target in Enterprise Manager Cloud Console.

Start: This action starts the provisioned application.

```

<mw:action name="start">
  <!-- [Optional] Display name and description -->
  <mw:displayName>
    Start Tomcat Server
  </mw:displayName>
  <mw:description>
    This action Starts the provisioned Tomcat Server
  </mw:description>

  <!-- [Mandatory] Define the complete command including the executable and
parameters -->
  <!-- EL is supported, variables can be taken from 3 sources: env,
procedure and profile -->

  <mw:command name="StartTomcat" executable="/bin/sh" errorMode="continue"
background="true" directory="#{procedure.STAGING_DIRECTORY}">
  <mw:param value="#{procedure.STAGING_DIRECTORY}/apache-tomcat-7.0.54/bin/
startup.sh" required="true"/>
  </mw:command>

</mw:action>

```

Stop: This action stops the provisioned application.

```

<mw:action name="stop">
  <!-- [Optional] Display name and description -->
  <mw:displayName>
    Start Tomcat Server
  </mw:displayName>
  <mw:description>
    This action stops the provisioned Tomcat Server
  </mw:description>
  <!-- [Mandatory] Define the complete command including the executable and
parameters -->
  <!-- EL is supported, variables can be taken from 3 sources: env,
procedure and profile -->

  <mw:command name="stopTomcat" executable="/bin/sh" errorMode="continue"
directory="#{procedure.STAGING_DIRECTORY}" >
  <mw:param value="apache-tomcat-7.0.54/bin/shutdown.sh" required="true"/
>
  </mw:command>

</mw:action>

```

```

  <mw:action name="delete">
  <!-- [Optional] Display name and description -->
  <mw:displayName>
    Remove Tomcat Server
  </mw:displayName>
  <mw:description>

```

Delete: This action stops and removes the provisioned application.

```

  </mw:description>
  <!-- [Mandatory] Define the complete command including the executable and
parameters -->
  <!-- EL is supported, variables can be taken from 3 sources: env,
procedure and profile -->

```

```

        <mw:command name="stopTomcat" executable="/bin/sh" errorMode="continue"
directory="#{procedure.STAGING_DIRECTORY}" >
        <mw:param value="apache-tomcat-7.0.54/bin/shutdown.sh" required="true"/
>
    </mw:command>

    <mw:command name="removeTomcat" executable="rm" errorMode="continue"
directory="#{procedure.STAGING_DIRECTORY}" >
        <mw:param value="-rf"/>
        <mw:param value="#{procedure.STAGING_DIRECTORY}" required="true"/>
    </mw:command>

</mw:action>

</mw:actions>

```

4. Discovery of JVM targets in Enterprise Manager is supported by default. To do so, run the `oracle.sysman.emas.mwc.jvmaas.discovery.JVMTargetDiscovery` script as follows:

```

    <mw:discovery
className="oracle.sysman.emas.mwc.jvmaas.discovery.JVMTargetDiscovery"
dpName="JVMDiscovery"/>
</mw:profile>

```

38.3 Uploading the Middleware Profile to Software Library

To create a profile using the custom XML script that you have created, run the following command:

```

emcli create_mw_profile -input_file=propertiesXml:"/scratch/profile/genericProfiles/
profile/tomcatService.xml"
-host=blr2201958.idc.oracle.com
-files="/scratch/profile/genericProfiles/profile/tomcat_app.jar,/scratch/profile/
genericProfiles/profile/fixpath_tc.sh"

```

Where,

tomcatService.xml is the input file that describes the characteristics of the profile.

blr2201958.idc.oracle.com is the host target where the stored during provisioning.

tomcat_app.jar and fixpath_tc.sh are the files that have to be uploaded to Software Library.

Once the profile is created, to access the profile, you must log in to Enterprise Manager Cloud Console, and navigate to the Software Library home page. To do so, from **Enterprise** menu, select **Patching and Provisioning**, then click **Software Library**. On the Software Library home page, you will see your new profile under the Middleware Provisioning Generic profile folder. Alternatively, you can run the `emcli list_mw_profile` command to view the details of your profile.

Note: To list all the parameters used in a particular action of a profile, use the `emcli` command `list_prov_parameters`. For example, all the parameters used in the action provision in the tomcatService profile, run the following command:

```

emcli list_prov_parameters -profile="Middleware Provisioning/Generic Profile/
tomcatService"
-action="provision"

```

38.4 Creating a Service Template Based on Java Applications Profile

Prerequisites

- Create a customized middleware provisioning profile using XML file. See [Creating a Customized Middleware Profile](#) for details.
For creating a generic provisioning profile, see [Creating Middleware Provisioning Profiles](#).
- Upload the profile to Software Library. See [Uploading the Middleware Profile to Software Library](#) for details.

A Middleware Service Template is a service definition that can be used to provision a service instance on a middleware pool.



Note:

You can edit a service template that has active instances and modify the configuration parameters. When a service template is modified:

- New instances created after the changes have been made will use the new parameters.
- Old instances or instances created before the template was modified will use the earlier values.
- Changes made to zones and roles will be applicable to both old and new instances.

To create a Java Applications Profile, follow these steps:

1. Log into Enterprise Manager as an user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the Oracle Cloud menu, select **Setup**, then select **Getting Started**. The common tasks that need to be performed before setting a specific service family are displayed. Click the **Setup** link next to Middleware service family in the left panel.
4. Select **Java Application Service** from the drop down menu, and then click **Service Template**.
5. On the Java Application Service: Service Templates page, click **Create**.
6. Enter a name and description for the service template. The description must be unique and provide information on the type of service template being created.
7. Select the Java Application Profile that you want to use to create the template. Click the search icon, from the Select Software Library Component dialog box, select the template and click **Select**.

8. Click **Next**. On the Characteristics page, specify the characteristics that will be used to tag and identify the target properties. Service instances created from the template will have the characteristics.
9. Click **Next**. In the Create Middleware Service Template: Resource Providers page, click **Add** to select the Middleware Pool into which that the service instances can be provisioned. The PaaS Infrastructure Zone with which the middleware pool is associated is displayed.
10. Click **Next**. On the Configuration page, you can see all the parameters (the name-value pair) defined in the custom XML file with the procedure variable, or as a part of the `input.properties` file. You can enter a new value or update an existing value for a property using this page. Additionally, features like lock and hide are supported that allow you to lock or hide the value of a parameter, by selecting the corresponding check box on the page for the parameter.

For example, if you have locked the value of `Oracle_INVENTORY` in your service template, then at the time of requesting for a service using this template, you will notice that the parameter is read-only and cannot be edited.

Profile Required Parameters

Below are the properties required by the profile. These properties are either fetched from the attach input properties file or are defined as procedure parameters in profile.xml.

Parameter Name	Parameter Value	Self Service Portal settings	
		Read Only	Hidden
ORACLE_INVENTORY	/scratch/nishriva/test1/inventory	<input checked="" type="checkbox"/>	<input type="checkbox"/>
STAGING_DIRECTORY	/scratch/nihalplain	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ORACLE_HOME	/scratch/nishriva/test1/middleware	<input checked="" type="checkbox"/>	<input type="checkbox"/>
WLS_PASSWORD	welcome1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
JAVA_HOME	/usr/local/packages/jdk7	<input type="checkbox"/>	<input type="checkbox"/>
DOMAIN_HOME	/scratch/nishriva/test1/domains/HappyDomain	<input type="checkbox"/>	<input type="checkbox"/>
WLS_USERNAME	weblogic	<input checked="" type="checkbox"/>	<input type="checkbox"/>

11. Click **Next**. On the Roles page, click Add to select the self service user roles to which this service template will be available. All users belonging to the selected role can use this service template.
12. Click **Next**. Review all the information entered, and click Submit. The newly created service template will appear in the Middleware Cloud Self Service Portal Setup: Service Templates page. You can click on the Service Template Name link to view additional details.

39

Using the MWaaS Self Service Portal

This chapter provides Self Service Application users with instructions on using the MWaaS Self Service Portal to request and monitor middleware services. It contains the following sections:

- [Using the MWaaS Self Service Portal](#)
- [Requesting a Middleware Service](#)
- [Middleware Service Home Page](#)
- [SOA/OSB Service Home Page](#)
- [Java Application Service Instance Home Page](#)
- [Uploading a Java EE Component to the Software Library](#)
- [Application Home Page](#)

39.1 Using the MWaaS Self Service Portal

The Middleware Self Service Portal allows self service users to view, monitor, and request middleware services. Users can request middleware services using any of the predefined service templates. They can deploy, undeploy applications, create data sources, scale up, and scale down services with minimal or zero intervention by the self service administrator.

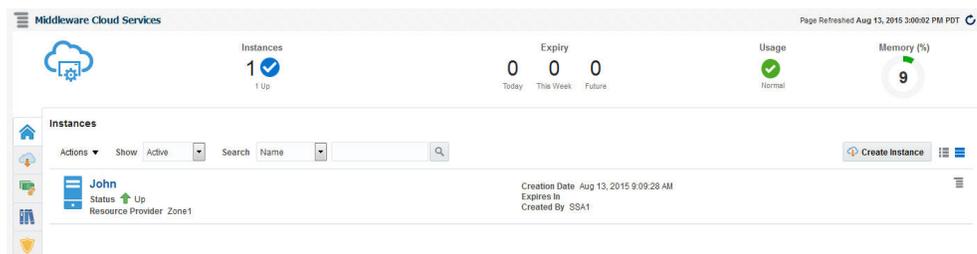
Prerequisites

To view the Middleware Cloud Self Service Portal, log in to Enterprise Manager as a user with `EM_SSA_USER` role or an user with the `EM_SSA_USER_BASE` role. Users with these roles must be part of the Middleware Cloud Service Family and must have privileges for the Service Bus, SOA Infrastructure, and WebLogic service types.

To view the MWaaS Self Service Portal, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_USER` role. The All Cloud Services page appears. This page shows the list of all the available service offerings.
2. Click on the Middleware Cloud Services column to navigate to the Middleware Cloud Self Service Portal Home page.

Figure 39-1 Middleware Cloud Services



3. The top region of this page shows the following icons:
 - **Instances:** This icon shows the number of service instances that have been created and their status.
 - **Expiry:** The number of instances due to expire today, next day, and in the future.
 - **Usage:** Shows the total quota (servers and memory) used so far by self service user, including all the services that the user has created. This table shows the amount of quota being used by each of your service instances. Your quota includes both the total maximum heap memory and the total number of WebLogic servers you are allowed to use across all of your middleware service instances.
 - **Memory:** Shows the total memory used so far by the self service user.
4. The Instances table shows the list of middleware services owned by the self service user and any other services for which the user has view privileges. For each service, the name, status, resource provider with which the service is associated, the date on which the service was created, expiry date, and name of the user who created the service instance. You can perform the following actions:
 - **Create:** To create a new service instance, click Create Instance.
 - **View:** Click on the Name link to drill down to the Middleware Service Home page.
 - **Delete:** Select a service from the table and click Delete to delete the service instance.
 - **Extend:** Select a service and click Extend to extend the life of the service instance. You are prompted for the End Date. Enter a date later than the current one and click OK to extend the service instance.
 - **Start:** Select a service from the table and from the Actions menu, select Start. A request to start the service is submitted.
 - **Stop:** Select a service from the table and from the Actions menu, select Stop. A request to stop the service is submitted.
 - **Grant:** You can grant view, manage, or full privileges over the service instance to other users and roles.
 - **Revoke:** You can revoke privileges that you have granted to other users and roles.
5. Apart from these, the The Middleware Cloud Services page contains the following tabs:
 - **Requests:** Click on this tab to view a list of all requests. For each request, the status, type, start date, and submission date of the request is displayed. Click on the status icon to view the execution details of the request. These details are helpful in troubleshooting a failed request,

Select columns from the View menu to view more details about the request. You can select a scheduled request and click Reschedule to reschedule the request. To delete a scheduled request, select the request and click Delete. If a request that is scheduled such as Create gets deleted, all other associated requests are also deleted.
 - **Chargeback:** This tab displays all the chargeback break-up data for the service. The charge incurred will be calculated from the service requested date to current date. This page contains the following regions:

- **Charge Trend:** This graph show the usage and charge trends over time.
- **Details:** You can aggregate the chargeback data for the service by resources of metrics. You can export this data to an external application such as a spreadsheet.
- **Charge Plans:** The charge plans that have been assigned to each PaaS Infrastructure Zone are displayed. Select a zone to view the pricing. The rate for each metric in the zone for a specific time period is displayed.

For details on setting up the Chargeback Service, see [Chargeback Administration](#).

- **Library:** This tab displays a list of Java EE application components that are available to the SSA user. You can do the following:
 - **Upload:** You can upload a new Java EE application component to the Software Library. See [Uploading a Java EE Component to the Software Library](#) for details.
 - **Delete:** Select a Java EE component from the list and click **Delete** to remove it from the library.
 - **Share / Stop Sharing:** You can share a component with one or more users and roles. Select the component and click **Share**. The Select and Share: Users and Roles window appears. From the **Type** drop list, select User or Role and click **Search**. The users or roles with which the component can be shared. Select one or more users or roles and click **Share**. The selected component is shared with the specified users and roles. To stop sharing the component, select the component and click **Stop Sharing**.
- **Policies:** Click the **Policies** tab to view the list of policies that you have defined. You can create a new Performance or Schedule Based Policy or a Policy Group for one or more middleware services and define Scale Up or Scale Down on these policies. See [Defining Dynamic Elasticity Policies for Middleware Services](#).

39.1.1 Setting the Preferences

From the **User** menu in the top right hand corner of the page, select **Preferences** and then select **SSA Portal Settings** to set up your preferences such as the Default Service Type, Default Email Address for Notifications, Default Locale, Default PaaS Infrastructure Zone, and so on. To set the Middleware Cloud Self Service Portal as the default page that appears when you log in to the Self Service Portal, select **Middleware** in the **Default Service Type** drop down list and click **Apply**. For more details on setting the preferences, see [Viewing Preferences](#).

39.1.2 Defining Dynamic Elasticity Policies for Middleware Services

Note:

These policies are applicable only for the WebLogic Service type.

To define a policy, follow these steps:

1. Log into Enterprise Manager as a user the `EM_SSA_USER` role.
2. Click the **Policies** tab.
3. To create a policy, from the **Create** menu, you can select either of the following:
 - Schedule Based Policy
 - Performance Based Policy

39.1.2.1 Creating a MWaaS Schedule Policy

For instance, if you want to create a schedule based policy that states that a middleware service must be scaled up every Monday, follow these steps:

1. From the **Create** menu, select **Schedule Policy**. The following page appears:

Figure 39-2 Create Schedule Policy

2. Enter a name and description for the policy.
3. In the Policy Action field, select **Scale Up** and enter 2 as the Value in the Action Parameters field.
4. In the Start field, specify the date from which this policy must be effective.
5. In the Repeat field, select Specify Days of the Week and in the Days of the Week field, select Monday. Thus the service will be scaled up by 2 every Monday.
6. Click **OK** to create the policy. You will return to the Policies page where the policy you have defined will appear in the Policies table. To apply these policy for a target, click Add in the Associations region and select a target with which this policy must be associated.

39.1.2.2 Defining a MWaaS Performance Policy

Performance policies are formed based on the performance metrics of a specific target type and its associated targets. You can create conditions and rules for the policy based on the metrics. To define a performance policy, follow these steps:

1. Click the **Policies** tab in the Middleware Self Service Portal. The Policy page appears.
2. Click **Create** and select the **Performance** Policy type.
3. In the General Information page, enter the name and description of the policy.
4. In the Rules and Relationships page, select a metric from the right panel and click **Add to Definition**. Specify the condition, value, and number of occurrences. When these conditions are met, the policy is executed.

5. Click **Next**. The Create Performance Policy: Rules page appears. The policy rule is displayed.
6. Select **Scale Up** or **Scale Down** from the Action drop down list.
7. In the Action Parameters field, enter a value next to the Number of WebLogic Servers. The value specified here is used to either increment or decrement the Number of WebLogic Servers depending on the Action selected.
8. Click Next. The Create Performance Policy: Review page appears. Review the policy details and click **Save** the policy and return to the Middleware Service Portal: Policies page.
9. In the Associations region, click **Add** and select one or more targets to be associated with this policy. The associated targets are listed in the Associations region.

Click on the target link to view a list of policies associated with the target. Once the targets have been associated, the policy is activated. Click **View History** to view the policy action history.

39.2 Requesting a Middleware Service

You can use the **Request New Service** option to request a new middleware service. You can request the following types of middleware services:

- WebLogic Service, see [Requesting a WebLogic Service](#)
- SOA/OSB Service, see [Requesting an Oracle Service Bus or SOA Infrastructure Service](#)

39.2.1 Requesting a WebLogic Service

You can request a new WebLogic service on this page.

To request a service, follow these steps:

1. Click **Create Instance** in the Home page of the Middleware Cloud Self Service Portal.
2. The Service Catalog - Create Instance window appears. A list of service templates available to the self service user is displayed. Choose a WebLogic service template and click **Select** to launch the Create Instance wizard.

Figure 39-3 Create Instance: Instance

The screenshot shows a web-based wizard for creating a new instance. At the top, there are four steps: Instance, Characteristics, Configuration, and Confirmation. The current step is 'Instance'. The title of the wizard is 'Create WLS1212_NJRF_2MS_template: Instance'. There are navigation buttons: 'Back', 'Step 1 of 4', 'Next', and 'Cancel'. The main content area is divided into two sections: 'Instance Details' and 'Instance Duration'. In 'Instance Details', there are three input fields: 'Name' with the value 'wls_instance', 'Description', and 'PaaS Infrastructure Zone' with a dropdown menu showing 'Zone1'. In 'Instance Duration', there are two rows of controls. The first row is for 'Creation Date', with 'Immediate' selected, 'Later' selected, and a date/time picker showing '8/13/2015 3:56:56 PM' and '(UTC-08:00) Los Angeles - Pacific Time (PT)'. The second row is for 'End Date', with 'Indefinite' selected, 'Custom' selected, and a date/time picker showing '8/20/2015 3:51:56 PM' and '(UTC-08:00) Los Angeles - Pacific Time (PT)'.

3. Enter a name for the instance and select the PaaS Infrastructure Zone in which the new service is to be deployed.
4. In the Instance Duration region, specify the schedule for the instance.
 - **Start Date:** You can choose **Immediately** (request is executed immediately) or **Later**. If you select the **Later** option, specify the date from which the service is to be available.
 - **End Date:** Select **Indefinitely** to make the service available for an indefinite period of time. If you select **Until**, specify the date on which it will be deleted and no longer available.

Click **Next**. The Characteristics page appears.

Figure 39-4 Create Instance: Characteristics

The screenshot shows the 'Create Instance: Characteristics' page. At the top, there is a progress bar with four steps: Instance, Characteristics, Configuration, and Confirmation. The current step is 'Characteristics'. Below the progress bar, the page title is 'Create WLS1212_NJRF_2MS_template: Characteristics'. There are 'Back', 'Step 2 of 4', 'Next', and 'Cancel' buttons. The main content area is divided into two sections:

Service Characteristics

Name	Value
Distribute WebLogic servers o...	No
Distribute load on available ho...	Yes
Enable Load Balancer?	No
Expose Advanced Settings to ...	Yes
Expose WebLogic Admin Cons...	Yes
JRF Enabled Profile?	No

Target Properties

These characteristics will be applied to the service instance as target properties

Name	Value
Contact	
Cost Center	
Department	
Downtime Contact	
Lifecycle Status	
Line of Business	

5. In the Service Characteristics region, specify the following:
 - **Distribute WebLogic Servers of a service instance on hosts from different Exalogic Racks:** Select **Yes** if the WebLogic Servers in a service instance are to be uniformly distributed on available Exalogic racks. Select **No** if the hosts are to be placed on the first available rack.
 - **Distribute Load on Available Hosts:** Select **Yes** if the WebLogic Servers are to be uniformly distributed on available hosts. If you select **No**, the maximum number of servers possible will be provisioned on the first available host before provisioning on other hosts.
 - **Enable Load Balancer:** Select **Yes** to enable the load balancer configuration for all the service instances that are created with this service template.

 **Note:**

If the **Enable Load Balancer** field is set to 1 in the Create New Service Template: Configuration page, when you click **Search**, only middleware pools associated with a load balancer configuration are displayed. If there are no middleware pools associated with load balancer configurations, the list will be blank.

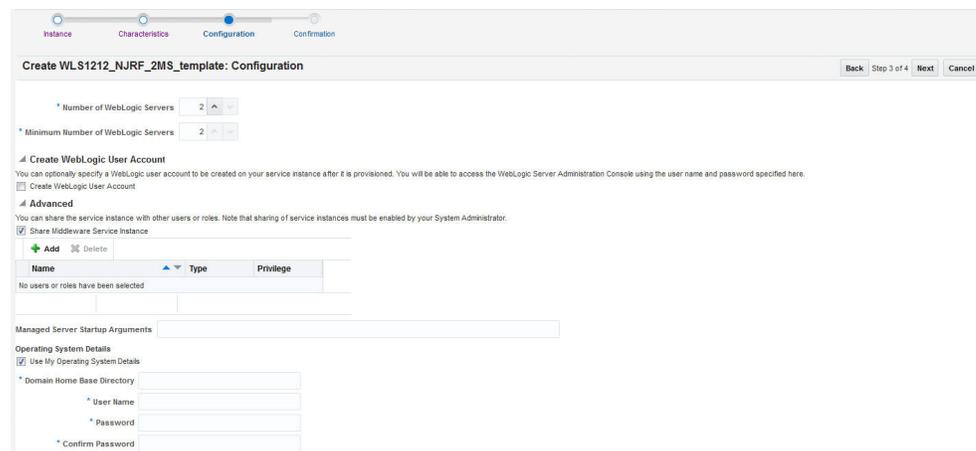
- **Expose Advanced Settings for the SSA User:** When set to **Yes**, the self service user will have access to advanced options such as Operating System, Enable sharing Service Instances with other SSA Users, Setting Target Properties for Monitoring Templates, and so on.
- **Expose WebLogic Admin Console and Fusion Middleware Control to SSA User:** If you select **Yes**, the users with the `EM_SSA_USER` role will have access to the WebLogic Admin Console and Fusion Middleware Control for each service instance created using this service template.

 **Note:**

This field must be set to **Yes** only if the `EM_SSA_USER` needs to have complete control over the WebLogic Server and Fusion Middleware Control consoles. The `EM_SSA_USER` will then be able to perform all configuration changes and life cycle management operations from each console.

6. In the Target Properties region, specify the characteristics that will be used to tag and identify the target properties. Service instances created from the template will have the characteristics.
7. Click **Next**. The Configuration page appears.

Figure 39-5 Create Instance: Configuration



Enter the following:

- **Number of WebLogic Servers:** If the service template you have selected is based on a profile that contains a cluster with one or more WebLogic servers, specify the initial number of servers that can be present in the new service instance.

 **Note:**

The Number of WebLogic servers you specify here cannot be less than the number of servers specified in the profile.

- **Minimum Number of WebLogic Servers:** Specify the minimum number of WebLogic servers that must be present in the middleware service instance. The value specified here must be less than or equal to the value specified in the Number of WebLogic Servers field.

If you have a profile with data sources, the Data Sources region appears. A list of all the data sources (either JRF or other application specific data sources) present in the profile are displayed. Before you create the service instance, you must configure the data sources present in the profile.

- **A single data source:** Select the data source to be configured and click **Edit**. The Edit Data Source window appears. Specify the following details:
 - * **Select Database Service Instance:** In the Edit Data Source Window, you can either select the database service instance or specify the database URL. If you have selected a JRF enabled profile, the listed Data Sources need to be configured with a database (Database Service Instance or the Database URL) that contains the relevant JRF schema.
 - * **Database User Name and Password:** Specify the user name and password for the selected database and click **Test Connection** to test the connection. Click **Submit** to return to the Configuration page.
- **Multiple data sources:** You can select two or more data sources and click **Edit**. In the Edit Data Source window, you can either select the database service instance or specify the database URL. While editing multiple data sources, you can enter one or more values for all the selected data sources. For example, you can set the password for all selected data sources to welcome1. While updating multiple data sources, you can choose to leave one or more fields blank. Only non empty fields are applied to the selected data sources. Click **Submit** to return to the Configuration page.
- **Create WebLogic User Account:** You can optionally choose to create a WebLogic user account on your service instance after it is provisioned. You will be able to access the WebLogic Server Administration Console using the user name and password specified here. Select the Create WebLogic User Account checkbox and specify the user name and password.

Note: The Create WebLogic User Account will appear only if the **Expose WebLogic Admin Console** and **Fusion Middleware Control to SSA User** field was set to **Yes** when the template was created.

8. If the self service administrator has granted access to the Advanced Settings in the service template, you will see the **Advanced** region here. You can specify the following:
 - **Share Middleware Service Instance:** Select this checkbox to share the service instance with other users and roles. The Add region appears. Click **Add** and in the Grant Privilege window, select the user or role to which the privilege is to be granted. From the **Privilege to Grant** drop down list, select

the privilege you want to grant which can be **View**, **Manage**, or **Full** and click **Grant**.

 **Note:**

Privileges must be explicitly granted by the self service administrator through the Request Settings option. See [Granting, Revoking, and Reassigning Privileges to Service Instances](#) for details.

- **Managed Server Startup Arguments:** Specify the memory and Java system property arguments that are to be used when starting all the managed servers in the middleware service instance. For example, you can specify:

```
-Xms1280m -Xmx1280m -XX:PermSize=128m -XX:MaxPermSize=256m -  
Dweblogic.security.SSL.ignoreHostnameVerification=true
```

These parameters will override the value specified in the service template.

- **Operating System Details:** Select this checkbox to specify custom operating system credentials. You need to specify the following:
 - **Domain Home Base Directory:** Specify the base directory in which the instance is to be created. The path specified here will override the path specified in the middleware pool.
 - **User Name:** The operating system user name with privileges to write to the specified base directory.
 - **Password:** The password for the operating system user.

 **Note:**

Default values for the user name and password can be set using the Preferences option on the Middleware Self Service Portal page. If these values are set, they will be displayed here.

- In the Database region, select the database that was cloned from the same WebLogic domain as the one in the Middleware profile of the selected template.

 **Note:**

The Database region is displayed only if the selected template is based on a JRF enabled profile (12.x or later versions).

Specify the following:

- **Select Database Service Instance:** Select this option and choose a Database Service Instance from the drop down list.
- **Specify Database URL:** Enter the URL for the database.
- **Schema Password:** Enter the schema password.

9. Click **Next**, review the information entered so far and click **Submit** to create the service request. This request will now appear in the Request page in the Middleware Self Service Portal. You can monitor the status of this request in this table. When the request has been completed, you can refresh the page to view the new service in the Instances table.

39.2.2 Requesting an Oracle Service Bus or SOA Infrastructure Service

Log in with `SSA_USER` role to view, monitor, and request for SOA/OSB services using the Middleware Self Service portal.

Prerequisite

Oracle recommends that the database is cloned using DBaaS. If database is cloned using another SSA User account (for example, user1), then user1 needs to grant access on the database service instance to user2, assuming user2 is requesting for SOA / OSB instance. To request for a service, follow these steps:

1. On the Middleware Cloud Self Service Portal, click **Request New Service**.
2. The Request New Service dialog box appears. A list of service templates available in the zones that the SSA user can access, is displayed. Choose a service template and click Select to launch the Service Request page.
3. On the General page, enter a name for the service, and select the PaaS Infrastructure Zone in which the new service is to be deployed.
4. Specify the schedule for the service request.
 - Start Date: Choose Immediately (request is executed immediately) or Later. If you select Later, specify the date from which the service is to be available.
 - End Date: Select Indefinitely to make the service available for a indefinite period of time. If you select Until, specify the date on which the service will be deleted, and no longer available.
5. On the Configuration page, provide the following details:
 - For a SOA Service Template
 - In the SOA Dehydration Store section, select a database that you want to use as SOA Dehydration Store, and provide the schema password.

The following options are possible: You can select a database which is cloned using DBaaS RMAN Backup option, or a database which is cloned outside DBaaS but discovered in Cloud Control. If you use the latter option, then after discovering the database, you must grant view privileges on the Database target to the SSA User.
 - In the SOA Token Configuration section, click the Value field to customize the SOA token values.
 - In the Managed Server Startup Arguments, enter the memory and java arguments to start the managed server.

- For an Oracle Service Bus Template:
 - Select the database instance and provide the OSB schema password.

6. In the Create WebLogic User Account region, specify a WebLogic user account to be created for your service after it is provisioned. Enter a WebLogic User Name and WebLogic Password. These credentials will be used to access the WebLogic Administration Server console and the Fusion Middleware Console.

In addition to this, for an OSB service instance, the credentials you have provided in this section, can you used to access the OSB Console.

Click **Next**.

7. On the Review page, review all the configuration details.
8. Click Submit to create the service request. This request will now appear in the Requests table in the Home page of the Middleware Self Service Portal. You can monitor the status of this request in this table. When the request has been completed, you can refresh the page to view the new service in the Services table.

39.3 Middleware Service Home Page

The Middleware Service Home page provides detailed information about the services you have requested using the Request Service option. To view the Middleware Service Home page, click the **Name** link in the Middleware Services region in the Middleware Cloud Self Service Portal: Home tab. This page contains the following regions:

- **Summary:** Shows the availability status of the service, status summary of the WebLogic Servers, and the performance metrics for the underlying WebLogic cluster associated with this service. The following charts are displayed.
 - **Availability:** The availability status of the service.
 - **Resource Usage:** Shows the CPU and Heap Usage charts for all the servers in the cluster.
 - **Response and Load:** Shows the request processing time and number of requests per minute for the current service.
 - **General:** Shows charts for various performance metrics for the service.
- **Applications:** Lists all the applications deployed to this service. For each application, the name, status, and the key metrics such as Active Sessions, Request Processing Time, and Request per Minute are displayed. Click the **Name** link to drill down to the Application Home page. You can do the following: :
 - **Deploy:** Click **Deploy** to deploy the application to the service. See [Deploying and Redeploying an Application](#) for details.
 - **Delete:** Select an application and click **Delete** to undeploy an application.
 - **Redeploy:** If you have an updated Java EE application component, you can select the application and click **Redeploy** to redeploy the application. See [Deploying and Redeploying an Application](#) for details.
 - **Start / Stop:** Select an application and click **Start** or **Stop** to start or stop the application.
 - **Test:** Select an application and click the **Test** icon. A list of URLs is displayed in the Application URLs dialog box. Click the URL to navigate to the associated page.
- **Libraries:** If any applications have been deployed as libraries, they are listed here. You can do the following:
 - **Deploy:** Click **Deploy** to deploy the application to the service. See [Deploying an Application](#) for details.
 - **Delete:** Select an application and click **Delete** to undeploy an application.
 - **Redeploy:** If you have an updated Java EE application component, you can select the application and click **Redeploy** to redeploy the application.

 **Note:**

If you select a library that is being referenced by an application, the **Redeploy** and **Delete** buttons are disabled and this library cannot be deleted or redeployed.

When deploying using the Self Service Portal you can create the deployment as a normal application or a library. Libraries are deployments that can be shared with other deployments. The Middleware Service home page shows normal applications in the Applications table and libraries in the Libraries table. Libraries may be deleted and redeployed, but only if they are not being referenced by any applications.

- **Data Sources:** This region is displayed only for WebLogic services. It shows all the data sources that are available for this service. For each data source, the Name, Database Service Name, JNDI name and the URL for the database is displayed. If the data source has been created using a database service, the name is displayed in the Database Service column. Click on the name to drill down to the Database Service Home page. You can create new data sources, edit or delete existing data sources, and test the connection of any specified data source.
- **Requests:** This table shows all the requests that have submitted for this service. These include requests such as Deploy, Undeploy, Redeploy, Scale Up, Scale Down, Start, Stop, Create, Edit, and Delete Data Source.

The following options are available from the Middleware Service Instance menu:

- **Set End Date:** Select this option to specify an end date for the middleware service. You can set the end date for a service. Select a service from the table and click Set End Date. In the popup window that appears, you can specify a new End Date for the middleware service instance. If you do not want the service to expire, select Indefinitely and click OK.
- **Start and Stop:** You can start or stop the service by selecting the appropriate option from the Middleware Service menu.
- **Scale Up and Scale Down:** See [Scaling Up and Scaling Down a Service](#).
- **Service Instance Settings:** This shows the current value of the Minimum Number of WebLogic Servers and allows you to modify this value.
- **Select Metrics:** Click **Select Metrics** to add new charts, remove existing ones, and drag and drop metrics to charts. In the Metric Palette window that appears, select a metric or drag and drop a metric into an existing chart or create a new chart. By default, all new charts are displayed in the General section but you can drag and drop them to a different section. You can remove a metric/chart by unchecking a box in the Metric Palette or by clicking the x on the drag bar on the right side of the chart. You can move charts within their section by dragging them by that bar.
- **Restore Default Charts:** Click **Restore Default Charts** to restore the charts to the default settings. All chart additions, modifications and deletions are applicable to a specific service. An SSA user can have different charts for each service.
- **Log Messages:** Click **Log Messages** to view a list of messages sorted by message type, date, and so on. Select the date range, message type, and specify other filters in the Message field. Click **Add Fields**, select other fields

to be included in the message, and click **Search**. The first 1000 messages that meet the search criteria are displayed. Click **Export Messages to File** to export the messages to a log file in `.txt`, `.xml`, or `.csv` format.

- **WebLogic Server Administration Console:** Click this option to launch the WebLogic Administration Console.
- **Fusion Middleware Control:** Click this option to launch the Fusion Middleware Control console.

 **Note:**

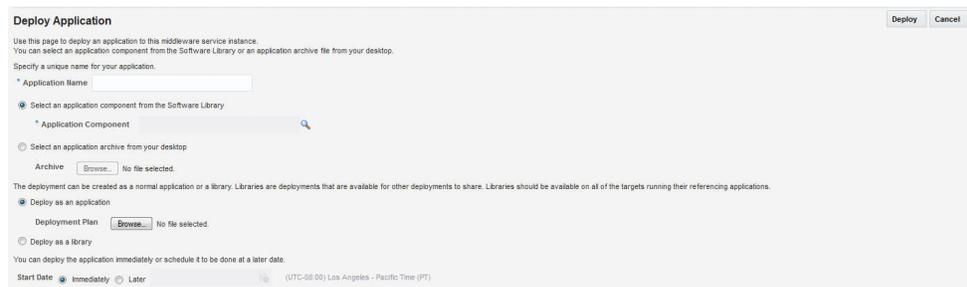
The WebLogic Server Administration Console and the Fusion Middleware Control interfaces allow you to manage and monitor the Oracle Fusion Middleware components. The **WebLogic Server Administration Console** and **Fusion Middleware Control** options are available in the **Middleware Service** menu only if the Expose WebLogic and FMW Console URLs to SSA User field has been set to **Yes** in the Middleware Service Template. See [Creating a WebLogic Service Template](#) for details.

39.3.1 Deploying and Redeploying an Application

You can deploy a preconfigured Java EE application to a Service Instance. To deploy an application, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_USER` role and navigate to the Middleware Cloud Self Service Portal page.
2. Click on a **Name** link in the Middleware Services region. The Middleware Service Home page appears.
3. Click **Deploy** in the Applications table. The Deploy Application page appears.

Figure 39-6 Deploy Application



Deploy Application Deploy Cancel

Use this page to deploy an application to this middleware service instance.
You can select an application component from the Software Library or an application archive file from your desktop.
Specify a unique name for your application.

* Application Name

Select an application component from the Software Library

* Application Component 

Select an application archive from your desktop

Archive No file selected.

The deployment can be created as a normal application or a library. Libraries are deployments that are available for other deployments to share. Libraries should be available on all of the targets running their referencing applications.

Deploy as an application

Deployment Plan No file selected.

Deploy as a library

You can deploy the application immediately or schedule it to be done at a later date.

Start Date Immediately Later (UTC-08:00) Los Angeles - Pacific Time (PT)

4. Enter the following details:
 - **Application Name:** Enter a name for the application that is to be deployed.
 - **Application Component:** You can choose to:
 - **Select an application component from the Software Library:** Click the **Search** icon and select a Java EE application component from the Software Library.

- **Select an application archive from your desktop.** Click **Browse** and select an application archive from your desktop.
 - **Deploy as an application:** The deployment can be created as a normal application or as a library. If you select this option, click **Browse** in the Deployment Plan field and select a `.xml` file that contains the deployment options. This file overrides the deployment plan (if any) specified with the application component.
 - **Deploy as a library:** You can deploy the application as a library. Libraries are deployments that can be shared by other deployments. Libraries should be available on all of the targets running their referencing applications.
5. Specify when the deploy operation should occur and click **Deploy**. After the request to deploy the application has been created, you will return to the Middleware Service Home page where a confirmation message is displayed.

39.3.1.1 Redeploying an Application

You can redeploy an application that has been deployed to a Service Instance. To redeploy an application, select a deployed application from the Applications table and click **Redeploy**. In the Redeploy Application page, select the Application Component that is to be redeployed, the deployment plan if any, and click **Redeploy**. You will see a confirmation message indicating that the application has been redeployed.

39.3.1.2 Deleting an Application

You can delete (undeploy) an application that has been deployed. Select the application to be deleted from the Applications table and click **Delete**. A confirmation message is displayed. Click **Yes** to undeploy the application.

39.3.2 Scaling Up and Scaling Down a Service

You can scale up or scale down a service.

Note:

The Scale Up and Scale Down options are available only if the service is based on a middleware service template that contains a middleware provisioning profile with one cluster. If the profile does not contain a cluster, these menu options will not be available.

On the Middleware Service Home page, select the following options from the Middleware Service menu:

- **Scale Up:** You can scale up a service by adding one more servers. The number of servers you can add is limited by your quota. Click **Scale Up** and enter the number of servers by which the service is to be scaled up. Click **Submit** to submit the scale up request and add more servers.
- **Scale Down:** Click **Scale Down** and enter the number of servers by which the service is to be scaled down. Click **Submit** to submit the scale down request and reduce the number of servers.

39.3.3 Creating a Data Source

In a WebLogic Server, you configure database connectivity by adding data sources to your WebLogic domain. WebLogic JDBC data sources provide database access and database connection management. Before an application can access a database, it must be configured to use the JDBC data source.

To create a data source for a service, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_USER` role and navigate to the Middleware Cloud Self Service Portal page.
2. Click **Create** in the Data Sources table in the Middleware Service Home page. The Create Data Source page appears.

Figure 39-7 Create Data Source

Create Data Source

Use this page to create a data source on this middleware service.

* Data Source Name
JNDI Name
* Database Driver Class

Select the database by choosing a database service or by entering the database URL.

Select Database Service
Database Service
URL

Specify Database URL
* URL

Specify the database credentials, then test the connection if desired.

* Database User Name
* Password
* Confirm Password

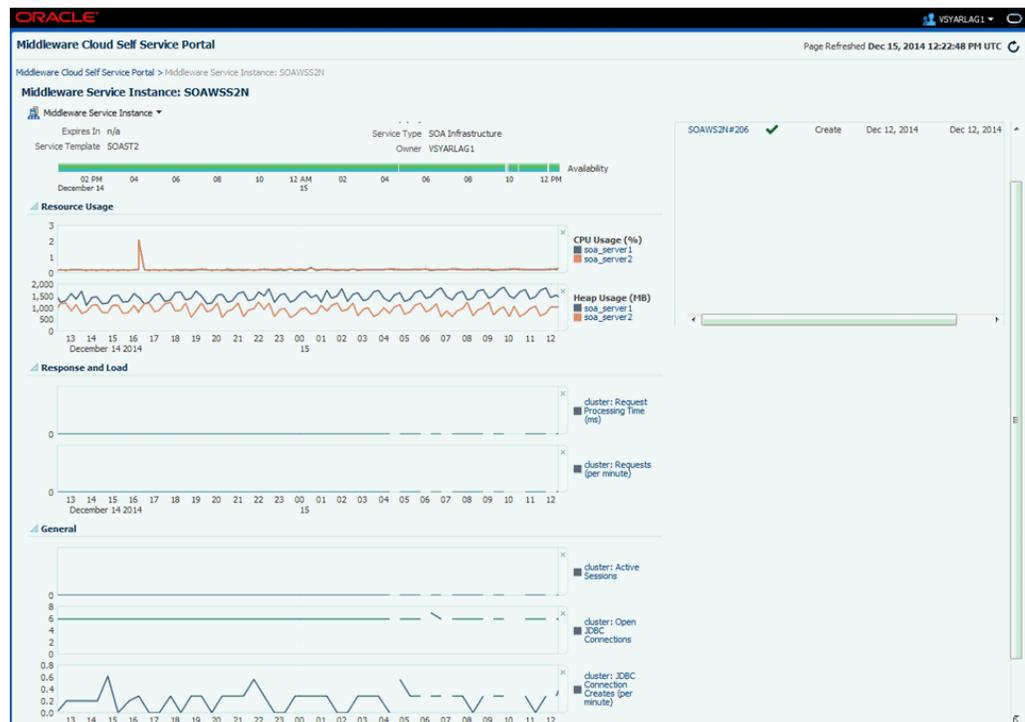
3. Enter the Data Source Name and the JNDI Name.
4. Select the Database Driver Class.
5. If you have a database service instance configured, you can select the Database Service and the corresponding URL is displayed. If not configured, you must manually enter the Database URL.
6. Specify the Database User Name and Password.
7. Click **Create** to create the data source.

39.3.3.1 Editing a Data Source

You can edit the properties of a data source. Click the **Name** link in the Data Sources table in the Middleware Service Home page. The Edit Data Source page appears. You can edit the properties of the data source. If some of the properties are changed, the data source needs to be redeployed and applications using this data source need to be restarted.

39.4 SOA/OSB Service Home Page

The SOA Home page provides detailed information about the services you have requested using the Requests option. To view the Middleware Service Home page, click the **Name** link in the Middleware Services region in the Middleware Cloud Self Service Portal: Home tab.



This page contains the following regions:

- **Performance Summary:** Shows the availability status of the service, status summary of the WebLogic Servers, and the performance metrics for the underlying WebLogic cluster associated with this service. The following charts are displayed.
 - **Availability:** The availability status of the service.
 - **Resource Usage:** Shows the CPU and Heap Usage charts for all the servers in the cluster.
 - **Response and Load:** Shows the request processing time and number of requests per minute for the current service.

- **General:** Shows charts for various performance metrics for the service.
- **Requests:** This table shows all the requests that have submitted for this service.
The following options are available from the Middleware Service Instance menu:
 - **Set End Date:** Select this option to specify an end date for the middleware service.
 - **Start and Stop:** You can start or stop the service by selecting the appropriate option from the Middleware Service menu.
 - **Scale Up and Scale Down:** See [Scaling Up and Scaling Down a Service](#).
 - **Select Metrics:** Click **Select Metrics** to add new charts, remove existing ones, and drag and drop metrics to charts. In the Metric Palette window that appears, select a metric or drag and drop a metric into an existing chart or create a new chart. By default, all new charts are displayed in the General section but you can drag and drop them to a different section. You can remove a metric/chart by unchecking a box in the Metric Palette or by clicking the **x** on the drag bar on the right side of the chart. You can move charts within their section by dragging them by that bar.
 - **Restore Default Charts:** Click **Restore Default Charts** to restore the charts to the default settings. All chart additions, modifications and deletions are applicable to a specific service. An SSA user can have different charts for each service.
 - **Log Messages:** Click **Log Messages** to view a list of messages sorted by message type, date, and so on. Select the date range, message type, and specify other filters in the Message field. Click **Add Fields**, select other fields to be included in the message, and click **Search**. The first 1000 messages that meet the search criteria are displayed. Click **Export Messages to File** to export the messages to a log file in `.txt`, `.xml`, or `.csv` format.
 - **WebLogic Server Administration Console:** Click this option to launch the WebLogic Administration Console.
 - **Fusion Middleware Control:** Click this option to launch the Fusion Middleware Control console.

**Note:**

The WebLogic Server Administration Console and the Fusion Middleware Control interfaces allow you to manage and monitor the Oracle Fusion Middleware components. The **WebLogic Server Administration Console** and **Fusion Middleware Control** options are available in the **Middleware Service** menu only if the Expose WebLogic and FMW Console URLs to SSA User field has been set to 1 in the Middleware Service Template. .

39.5 Java Application Service Instance Home Page

The General section displays a URL that can be used to access your service. Click **Download JVM D Agent** to download the JVM Diagnostics Agent war file. Ensure that you deploy the war file on the WebApps folder of the Application Server that is to be monitored. This enables the JVM Diagnostics Agent to start monitoring the Java Application target in Cloud Control.

The Java Application Service History section provides a quick view of the event log for your application, along with the time stamp. Basically details like when a particular application starts or when it was created, is captured and logged in this section.

Parameters that are printed to the `service.out` file is displayed in the Service Details section. This is particularly useful, when you want to view the port numbers assigned to the JVM JMX port.

In addition to this, memory usage and performance summary details are also available on this page.

39.6 Uploading a Java EE Component to the Software Library

You can upload pre-configured `ear`, `war`, `jar`, or `rar` files to the Software Library. These files are uploaded to the Software Library as Java EE Application components, which are then deployed to your service. To upload a file to the Software Library, click the **Library** tab. The Upload to Software Library field appears.

Figure 39-8 Upload to Software Library

Enter the name and description of the file being uploaded. You can then choose to upload files as follows:

- **Individual Files:** If you choose the **Upload Files Individually** option, you need to specify the following:
 - **Archive:** Select the archive file to be uploaded to the Software Library. This can be an `ear`, `war`, `jar`, or `rar` file. You can also optionally specify the following:
 - * **Deployment Plan:** This is an `xml` file containing the deployment options for the Java EE Application component.
 - * **Pre Deploy Script:** This is a script containing WLST commands. The Management Agent runs this script on the Administration Server associated with each instance before the application is deployed. You can use this script to create data sources, JMS end points, and any other resources that might be needed by the application that is being deployed.
 - * **Post Deploy Script:** This is a WLST script that is executed by Management Agent on the Administration Server after the application is

deployed. You can use this script to perform any post deployment configuration. For example, if you need to roll back and undo the changes made by the pre deploy script, you can select this option.

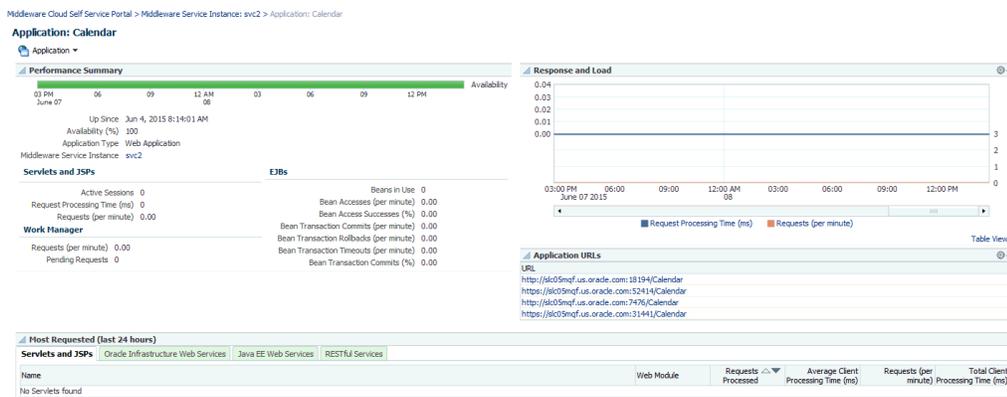
- **Zip File:** If you select the **Upload Zip File** option, you must upload a zip file that contains the `JavaEEAppComp.manifest` file that describes the contents of the zip file.

Click **Upload** to upload the file to the Software Library.

39.7 Application Home Page

To view the Application Home page, select an application, and click the **Name** link in the Applications table on the Middleware Service Home page.

Figure 39-9 MWaaS Application Home



This page displays performance and availability for the application, along with a chart that shows response and load. You can redeploy, delete (undeploy), start, or stop the application using options from the **Application** menu.

Part XI

Monitoring the PaaS Cloud

This section describes how to administer and monitor Database as a Service (DBaaS) and Middleware as a Service (MWaaS). It contains the following chapter:

- [Administering and Monitoring a PaaS Cloud](#)

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Administering and Monitoring a PaaS Cloud

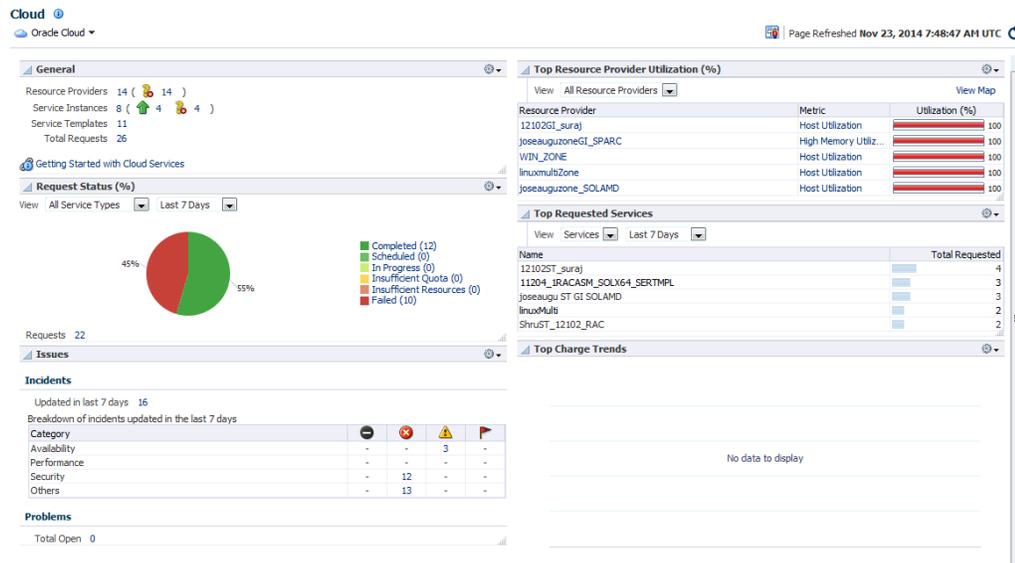
This chapter describes the different options that are available to monitor the DBaaS and MWaaS services. It contains the following sections:

- [Viewing the Cloud Home Page](#)
- [Viewing the List of Resource Providers](#)
- [Viewing the List of Service Templates](#)
- [Viewing the List of Service Instances](#)
- [Viewing the Cloud Request Dashboard](#)
- [Viewing All Cloud Requests](#)
- [Viewing the PaaS Infrastructure Zone Home Page](#)
- [Viewing the Database Pool Home Page](#)
- [Viewing the Schema Pool Home Page](#)
- [Viewing the Pluggable Database Pool Home Page](#)
- [Viewing the Middleware Pool Home Page](#)
- [Viewing the Cloud Services Reports](#)

40.1 Viewing the Cloud Home Page

After the cloud services have been set up, and one or more self service users have submitted requests, you can view a unified view of the different service types on the Cloud Home page. You can use the rolled up data to identify problem areas and drill down for more details. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home** to navigate to this page.

Figure 40-1 Cloud Home Page



Note:

- To view this page, you must have **View** privilege on the Cloud target. Out-of-the-box user roles have this privilege by default.
- You can use the **Personalize** option to customize the Cloud Home page. This option allows you to add or delete regions, change the page layout, and so on.

- General: This region shows the following:
 - Resource Providers: The total number of PaaS Infrastructure zones and software pools that have been created is displayed. Click on the link to drill down to the Resource Providers page.
 - Service Templates: The total number of service templates that have been defined.
 - Total Requests: The total number of requests for configured cloud services. Click on the link to drill down to the All Requests page.
 - Service Instances: The total number of members that are up or down. Click on the link to drill down to the Service Instances page.
- Request Status: The status of service requests during a specific period. By default, the request status over the last 24 hours is displayed but you can select another duration such as 7 days, 30 days, and so on. You can view the request status for all requests or for a specific service type. To view the status for a specific service type, select type from the View drop down list.
- Issues: The availability, performance, security, and other incidents across all the configured service providers.

- **Top Resource Provider Utilization:** This region shows the Top level resource utilization for the configured resource providers. For example, the CPU and Memory Utilization for a PaaS Infrastructure Zone. To view more details, click the **View Map** link at the top of the region. This displays the Heat Map page with detailed information on the resource provider utilization. The number of resource providers and the threshold value to calculate color can be configured by using the **Personalization** feature.
- **Daily Charge for the Last 30 Days:** Shows rolled up chargeback data across all service types.
- **Top Requested Services:** This region lists the most requested service templates. You can see service utilization trend by user or service template for a selected period which can be 24 hours, 7 days, or 30 days.

The following options are available from the Cloud Home menu.

 **Note:**

The following pages can be accessed only by users with the `EM_SSA_ADMINISTRATOR` role. To modify these pages, the users must have **Manage** privilege on the corresponding services and families. Out-of-the-box administrators have this privilege by default.

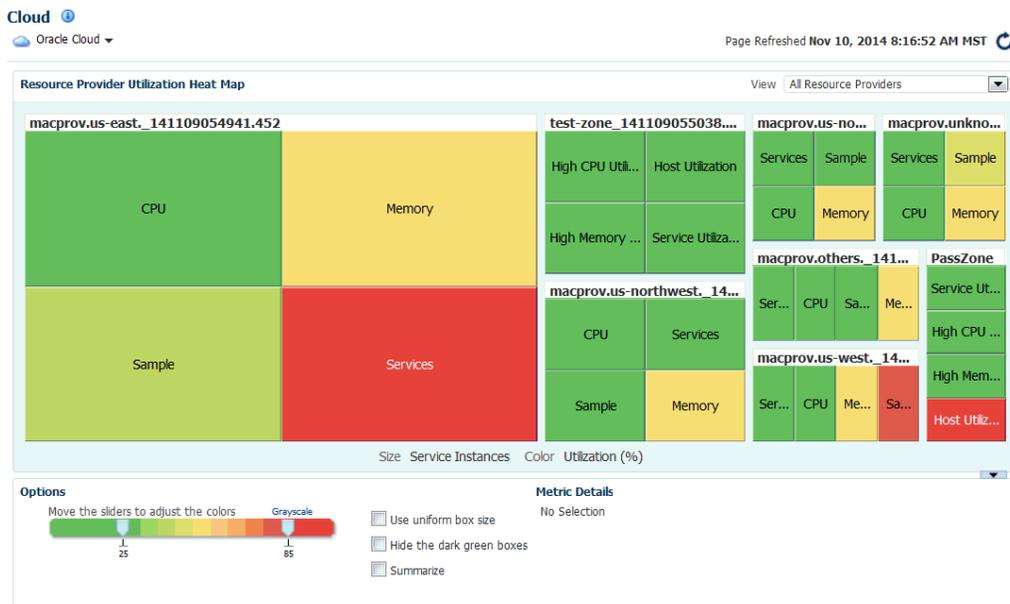
- **Resource Providers:** You can see the list of resource providers for which you have at least View Target Privilege. You can create a new resource provider, edit, or delete an existing resource provider. See [Resource Providers Page](#).
Note: To create a new service provider, you must have Create Target Privilege on that resource provider target type.
- **Service Templates:** Use this option to the Service Templates page from where you can create, edit, and delete service templates across different service families. See [Service Templates Page](#) for details.
- **Services Instances:** Shows a list of service instances. See [Service Instances Page](#) for details.
- **Requests:** Use this option to view all the requests, or view a summary in the Request Dashboard page.
- **Setup:** The Setup menu allows you to define global settings across the different service types. The following options are available:
 - **Getting Started:** The Getting Started page lists the minimum tasks that are required to configure a service type and the order in which these tasks must be completed. This page is useful to self service administrators who are not familiar with the product.
 - **Service Settings:** Allows you to specify service specific settings such as Load Balancer Settings for MWaaS.
 - **Request Settings:** Allow you to specify request settings at many different levels (from all services to a specific service type). See [Configuring Request Settings](#).
 - **Quotas:** Allows you to define quota for each service family. See [Setting Up Quotas](#).

- Data Sources: Used to launch the Create Profile and Create Test Master wizards if required by the service type.

40.1.1 Viewing the Resource Provider Utilization Heat Map

From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. On the Cloud Home page, click the View Map link in the Top Resource Provider Utilization% region to view the Resource Provider Utilization Heat Map.

Figure 40-2 Resource Provider Utilization Heat Map



This page shows the utilization metrics for all resource providers such as PaaS Infrastructure Zones, Database Pools, and Middleware Pools. The heat map provides a graphical representation of the resource provider utilization. On the Heat Map view, metrics are represented as boxes and the size and color of each box depicts potential problem areas. Select a box and click on a metric value to navigate to the Metric History page.

40.2 Viewing the List of Resource Providers

A resource provider is an entity that contains the actual resources required to provision the cloud services of a specific service type. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home** to navigate to the Cloud Home page. From the **Cloud Home** menu, select **Resource Providers** to see a list of resource providers.

Figure 40-3 Resource Providers Page

Cloud [?]
Oracle Cloud [?] Page Refreshed Nov 10, 2014 1:32:00 PM GMT+00:00

Resource Providers

View [?] Create Edit Delete Search Name Advanced Search

Name	Type	Owner	Parent	Type	Members	Count	Service I
WINzone_Suraj	PaaS Infrastructure Zone	SURARAY1	n/a	Host		1	
HPIA_zone_dnd_ramuthia	PaaS Infrastructure Zone		n/a	Host		2	
LIN_SLC04kh_ZONE	PaaS Infrastructure Zone		n/a	Host		1	
WINDOWS_SL_SLC09CMZ	PaaS Infrastructure Zone		n/a	Host		1	
zone_ADX	PaaS Infrastructure Zone		n/a	Host		1	
joseauguzone_SOLAMD	PaaS Infrastructure Zone		n/a	Host		1	
ADzone_Suraj	PaaS Infrastructure Zone		n/a	Host		1	
pool_ADX	Database Pool		zone_ADX	Oracle Home		1	
POOL_LINUX_SHA	Database Pool		LIN_SLC04kh_ZO...	Oracle Home		2	
12102_hpia_ramuthia_1526	Database Pool		HPIA_zone_dnd_r...	Oracle Home		1	
joseauguPool_SOLAMD	Database Pool		joseauguzone_SO...	Oracle Home		1	
WIN_DBPOOL	Database Pool		WINDOWS_SL_SL...	Oracle Home		2	
aixpool_suraj	Database Pool	SURARAY1	ADzone_Suraj	Oracle Home		1	
winpool_suraj	Database Pool	SURARAY1	WINzone_Suraj	Oracle Home		2	

- **Name:** The name of the resource provider.
- **Type:** The type of resource provider. This can be:
 - PaaS Infrastructure Zone
 - Middleware Pool
 - Database Pool
 - Schema Pool
 - Pluggable Database Pool
- **Owner:** The user who created the resource provider.
- **Parent:** If the resource provider has a parent, it is listed here. For example, a PaaS Infrastructure Zone is the parent for a middleware or database pool.
- **Members:** The members associated with the resource provider (this includes member type and number of members).
- **Service Instances:** The service instance associated with the resource provider. Click on the link to drill down to the Home page.
- **Description:** A description of the resource provider specified by the administrator while creating the resource provider.

You can create a resource provider, edit an existing one, or delete a resource provider.

40.3 Viewing the List of Service Templates

From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Service Templates** to view this page.

Figure 40-4 Service Templates Page

Display Name	Service Family	Service Type	Owner	Resource Providers	Service Instances	Description
ADST_Suraj	Databases	Database	SURARAY1	1	1	
LINUX_11203_11204_DBTMP	Databases	Database		1	1	
LINUX_DBCA_1124_UPGRADE	Databases	Database		1	1	
Orchestration	Infrastructure - Nimbus	Orchestration	SYSMAN	n/a	0	Create a set of Oracle VM instances with cus...
SHA_WINDOWS_112045_PATCH_CM	Databases	Database		1	4	
ST_AD_TM_PROFILE	Databases	Database		1	0	
Simple Orchestration	Infrastructure - Nimbus	Orchestration	SYSMAN	n/a	0	Create one or more Oracle VM instances wit...
VM Instance	Infrastructure - Nimbus	Oracle VM Instance	SYSMAN	n/a	0	Create an Oracle VM Instance
WINST_Suraj	Databases	Database	SURARAY1	1	1	
joseauguSOLAMD ST	Databases	Database		1	0	
new st ak	Databases	Database		1	1	

This page shows a list of all the service templates that are available to the self service administrator across the different service families. For each service template, the following details are displayed:

- Name of the service template
- The service family to which belongs (for example, Database, Middleware, and so on).
- The type of service.
- The owner of the service.
- The resource providers associated with the service template.
- The number of service instances associated with the service template.
- A description of the service template.

You can perform the following actions:

- **Create:** Select this option to launch the Create Service Template wizard.
- **Create Like:** Select this option to create a copy of an existing service template.
- **Edit:** Select a service template and click **Edit** to modify an existing template. Click **Submit** after modifying the template to update the template.
- **Delete:** Select a service template and click **Delete** to delete the template.
- **Grant and Revoke Privileges:** The `EM_SSA_ADMINISTRATOR` can grant or revoke service template privileges to other users with the `EM_SSA_ADMINISTRATOR` role.

40.3.1 Granting, Revoking, and Reassigning Service Template Privileges

The owner (the self service administrator who has created the template, or the `SUPER_USER`) can grant or revoke privileges over a service template to one or more users or roles. Only the `SUPER_USER` can grant or revoke privileges over all service templates to other users and roles.

- **Grant Privileges:** Select the service template for which privileges are to be granted and select **Grant** from the **Actions** menu.

To grant privileges to other users, select **User** in the Type drop down list and click **Search**. A list of users to whom the privileges can be granted is displayed. Select one or more users from the list and click **Grant** to grant the privilege.

In the Select **Privilege to Grant** drop down list, select **Manage** or **Full** to grant the privilege to the user. To allow users to edit, and modify the configuration in the service template, select **Manage** access. To allow users to edit, delete, and modify the service template, select **Full** access.

To grant privileges to one or more user roles, select **Role** in the Type drop down list and click **Search**. A list of roles to whom the privileges can be granted is displayed. Select one or more roles from the list and click **Grant** to grant the privilege.

- **Revoke:** Select a service template for which privileges have been granted and click **Revoke**. In the **Search** drop down list, you can select one of the following:
 - Name: The name of the user to whom the privilege has been granted.
 - Type: Select the type which can either be User or Role to whom the privilege has been granted.
 - Privilege: The type of privilege that has been granted which can be View, Manage, or Full.

Based on the search criteria, the list of users or roles to whom the privileges have been granted is displayed. Select the users or roles for whom the privileges are to be revoked and click **Revoke**.

- **Reassigning a Service Template:** Login as a Super Administrator user, select the template and click **Reassign** to reassign the ownership of the service template to another user. Select the user and click **Reassign** to reassign the service template.

40.4 Viewing the List of Service Instances

The Service Instance page shows the list of all service instances. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Service Instances** to view this page.

Figure 40-5 Service Instances Page

Name	Status	Service Type	Resource Provider	Service Template	Created By	Policies	Creation Date	Expires In
db000009	Running	Database	SOLX64_POOL	11204_IRACASM...	SSA_USER.11		0 Nov 18, 2014	
db000008	Running	Database	SOLX64_POOL	11204_IRACASM...	SSA_USER.11		0 Nov 18, 2014	

The following details are displayed:

- **Service Instance Name:** The name associated with the service instance. Click on the link to drill down to the target home page.
- **Status:** The status of the service instance.
- **Service Instance Type:** The type of request (Middleware or Database).
- **Resource Provider:** The Resource Provider with which the instance is associated.
- **Service Template:** The service template that was used to create the service instance.

- **Policies:** The number of policies associated with the service instance. Click on the link to drill down to the Policies page.
- **Created By:** The user who created this service instance.
- **Creation Date:** The date on which the service was created.
- **Expiry Date:** The date on which the service will expire and no longer be available.

You can perform the following actions:



Note:

You must have **Manage** privilege on the service types on which these operations are to be performed. This privilege is assigned to the out-of-the-box self service administrators roles by default.

- **Start:** Select a service instance that has been stopped and click **Start** to start the service.
- **Stop:** Select a service that is running and click **Stop** to stop the service.
- **Delete:** Select a service and click **Delete**. You are prompted to specify the schedule and indicate whether the service instance is to be deleted immediately or at a later date. Select the schedule and click **OK** to delete the request.
- **History:** Select a service and click **History** to view a list of all actions that have been performed on the service instance.
- **Grant, Revoke, and Reassign Privileges:** See [Granting, Revoking and Reassigning Privileges to Service Instances](#).

40.4.1 Granting, Revoking, and Reassigning Privileges to Service Instances

The self service administrator can grant or revoke privileges over a service instance to one or more users or roles. Self service users can also grant or revoke privileges over service instances they own. The user who created the service instance (owner) or the SUPER_USER can reassign the ownership of a service instance to another user.

To grant or revoke access to a service instance, the self service administrator must select **Enterprise > Cloud Home > Setup > Request Settings** and enable the following flags:

- Enable self service user to share service instances with other Users.
- Enable self service user to share service instance Roles.

These settings can be defined either at global level, service family level, or at other User or Role level. See [Creating a PaaS Infrastructure Zone](#) for details.

- **Grant Privileges:** Select the service instance for which privileges are to be granted and select **Grant** from the **Actions** menu.

To grant privileges to other users, select **User** in the Type drop down list and click **Search**. A list of users to whom the privileges can be granted is displayed. Select one or more users from the list and click **Grant** to grant the privilege.

In the Select **Privilege to Grant** drop down list, select **View**, **Manage**, or **Full** to grant the privilege to the user. To allow users to edit, and modify the configuration in the service instance, select **Manage** access. To allow users to edit, delete, and modify the service instance, select **Full** access. To provide users with read only access, select **View** access.

To grant privileges to one or more user roles, select **Role** in the Type drop down list and click **Search**. A list of roles to whom the privileges can be granted is displayed. Select one or more roles from the list and click **Grant** to grant the privilege.

- **Revoke**: Select a service instance for which privileges have been granted and click **Revoke**. In the **Search** drop down list, you can select one of the following:
 - Name: The name of the user to whom the privilege has been granted.
 - Type: Select the type which can either be User or Role to whom the privilege has been granted.
 - Privilege: The type of privilege that has been granted which can be View, Manage, or Full.

Based on the search criteria, the list of users or roles to whom the privileges have been granted is displayed. Select the users or roles for whom the privileges are to be revoked and click **Revoke**.

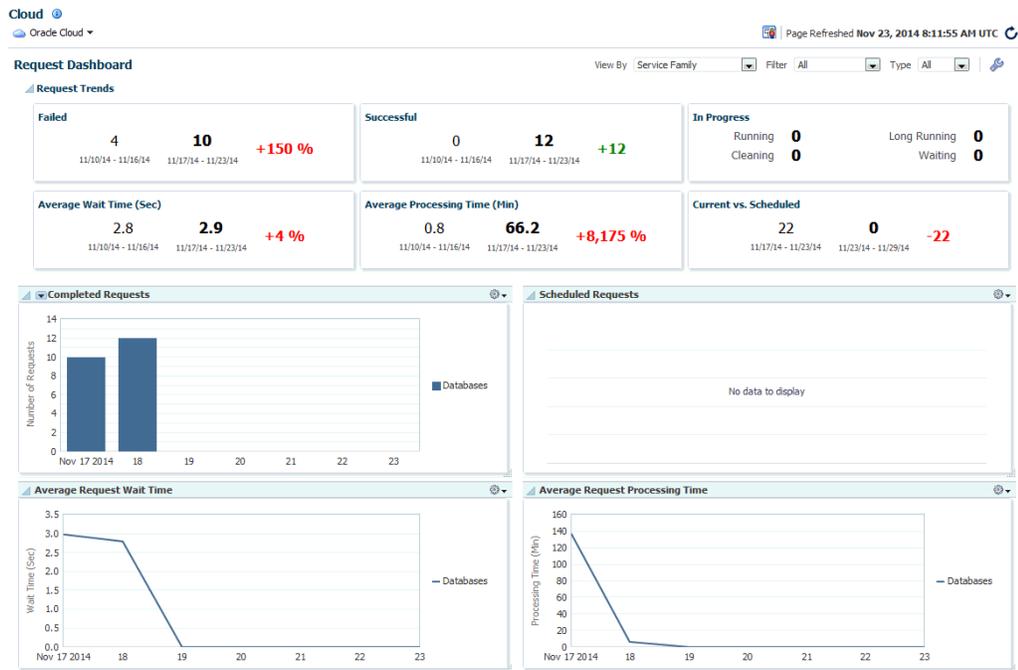
- **Reassigning a Service Instance**: Login as a Super Administrator user, select the instance and click **Reassign** to reassign the ownership of the service instance to another user. Select the user and click **Reassign** to reassign the service instance.

40.5 Viewing the Cloud Request Dashboard

The self service administrator can use the Cloud Request Dashboard to track the status of all database and middleware requests. The self service administrator can view the requests across all resource providers for all users. The requests the self service administrator can view depends on the instance level privileges. All trends and graphs on this page apply to the current filter and time period specified. By default, the status across all services over the last 7 days is displayed.

From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Requests**, then select **Dashboard** to view the cloud request dashboard.

Figure 40-6 Cloud Request Dashboard



The following charts are displayed:

- **Request Trends:** You can view recent trends for Failed, Successful, Average Wait Time, Average Processing Time and Scheduled requests. Trends are shown across two time periods (for example, previous week, current week). Click the drop down list in the Completed Requests chart to filter and view failed, successful, partially successful, or completed requests.
- **Average Request Wait Time:** The elapsed time from which a request is scheduled to start and its actual start time.
- **Average Request Processing Time (Zone):** The average time taken to process the request for the selected criteria. For example, if a specific service template is selected as the filter criteria, then the average time taken to create the service instance from the selected service template in the specified time period (last 24 hours, last 7 days, or last 30 days) is displayed.

You can choose to filter the requests listed on the page by selecting a value in the **View By** drop down list and specifying the **Filter** value and the **Type**. For example, if you select **Resource Provider** in the **View By** drop down list, and **All** in the **Filter** column, and **Create** in the Type column, you will see the Create requests for all resource providers.

You can click the **Edit** (wrench icon) option to edit the layout of the Request Dashboard page. The following service settings can be modified:

- **Summary Columns:** The number of columns that can be displayed in the Summary region.
- **Long Running Threshold:** The percentage of average processing time used to determine if the time taken to complete a request is longer than normal.

- **Maximum Chart Items:** The maximum number of resource providers, service types or service families that can be shown in each chart. The remaining items are listed in the All Others category.
- **Include Archived Requests:** Select this check box to include deleted but not yet purged requests in the charts. This option is useful in providing a more accurate picture of the total number of requests processed during the time periods
- **Chart Time Period:** The default view period (7 days) for the chart.

Modify the values as required and click **OK**. To restore the earlier settings, click **Restore Defaults**.

40.6 Viewing All Cloud Requests

From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. From the **Oracle Cloud** menu, select **Requests**, then select **Show All** to view a list of all cloud service requests.

Figure 40-7 All Cloud Requests

The screenshot shows the Oracle Cloud interface for viewing requests. At the top, there are navigation links for 'Reschedule', 'Delete', and 'Clean Up', along with a search bar and a status dropdown menu. Below this is a table of requests. The table has the following columns: Name, Status, Type, Created By, Submission Date, and Begin Date. The 'Status' column contains green checkmarks, indicating that all requests are successful. The 'Type' column lists various database and schema operations. The 'Created By' column shows the user who submitted the request, and the 'Submission Date' and 'Begin Date' columns show the timing of the request.

Name	Status	Type	Created By	Submission Date	Begin Date
Startup_db000008_18-11-2014 22:44:57#26	✓	Startup Database	SSA_USER11	Nov 18, 2014	Nov 18, 2014
Shutdown_db000008_18-11-2014 22:44:04#25	✓	Shutdown Database	SSA_USER11	Nov 18, 2014	Nov 18, 2014
SSA_USER11 - Tue Nov 18 2014 22:07:33 UTC_C...	✓	Create Database	SSA_USER11	Nov 18, 2014	Nov 18, 2014
Startup_db000008_18-11-2014 12:20:52#23	✓	Startup Database	SSA_USER11	Nov 18, 2014	Nov 18, 2014
Shutdown_db000008_18-11-2014 12:20:11#22	✓	Shutdown Database	SSA_USER11	Nov 18, 2014	Nov 18, 2014
... - Tue Nov 18 2014 08:47:51 UTC_CRE...	✓	Create Database	...	Nov 18, 2014	Nov 18, 2014
... - Tue Nov 18 2014 07:46:08 UTC_CRE...	✓	Create Database	...	Nov 18, 2014	Nov 18, 2014
SSA_USER11 - Tue Nov 18 2014 07:12:49 UTC_C...	✓	Create Database	SSA_USER11	Nov 18, 2014	Nov 18, 2014
... - LinuxMulti_CREATE_4_40#13	✓	Create Database	...	Nov 17, 2014	Nov 17, 2014
... - LinuxMulti_CREATE_26_49#12	✓	Create Database	...	Nov 17, 2014	Nov 17, 2014
... - Mon Nov 17 2014 08:11:24 UTC_C...	✓	Create Database	...	Nov 17, 2014	Nov 17, 2014
SURARAY1 - Mon Nov 17 2014 08:07:35 UTC_CR...	✓	Create Database	SURARAY1	Nov 17, 2014	Nov 17, 2014

For each request, the name of the request or job, status of the request, the request type (Create, Delete, and so on), the user who submitted the request, service type (database, schema, WebLogic, and so on), date on which the request was submitted, and so on is displayed. Click on the Name link to drill down to the Job Activity page. The Status link shows the Request Details popup window.

You can do the following:

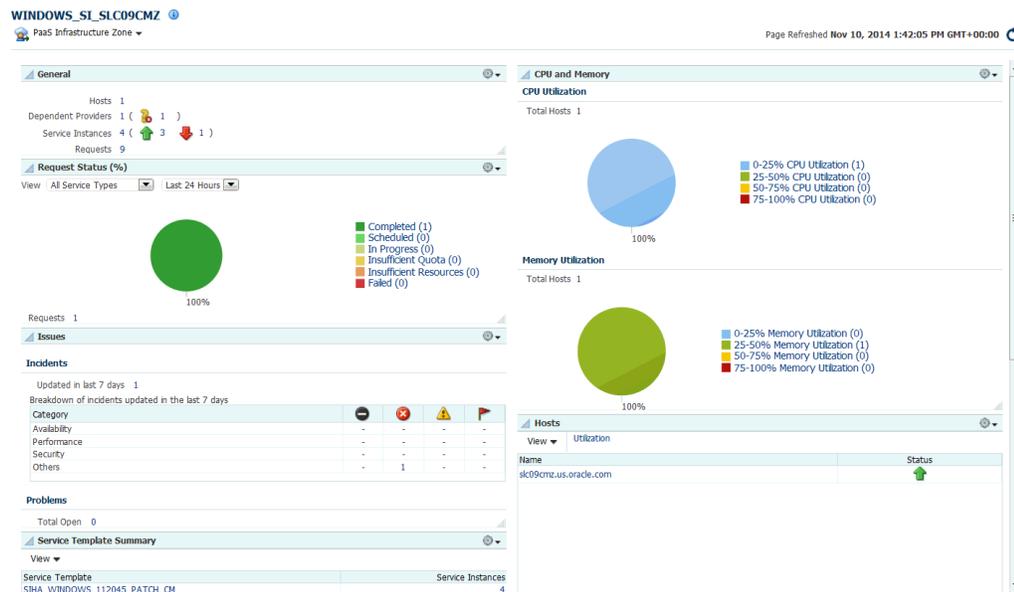
- **Reschedule:** Select a request that is scheduled to run at a future date and click **Reschedule** to change the date on which the request should be initiated.
- **Delete:** Select a request and click **Delete** to delete the request. Deleted requests are still present in the repository and will be purged according the purge policy defined in the Request Settings page. See [Configuring Request Settings](#) for details.
- **Clean Up:** Use this option to clean up failed requests. This may include shutting down any partially configured services and deleting any partially configured storage used for the failed service.

Note: Failed provisioning requests cannot be deleted unless they have been cleaned up.

40.7 Viewing the PaaS Infrastructure Zone Home Page

A zone is a logical entity that allows homogenous resources to be grouped together. The resources consist of components (servers, storage, networks, operating systems, applications) that are required to create new services. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. Click on a resource provider link on the Cloud Home page to navigate to the Resource Providers page and click on the **PaaS Infrastructure Zone** link to drill down to the PaaS Infrastructure Zone Home page.

Figure 40-8 PaaS Infrastructure Home



The PaaS Infrastructure Zone Home page contains the following regions:

- **General:** This region lists the total number of Hosts, Dependent Providers (Software Pool), Requests, and Service Instances in the zone. It also shows the Placement Policy Constraints that have been defined for the zone.
- **Request Summary:** Shows the percentage of requests that are in progress, failed, successful, partially successful, or scheduled.
- **CPU and Memory:** The average CPU and memory utilizations by Hosts in the zone is displayed in these charts.

Note:

You can set the thresholds for these metrics on the All Metrics page. To navigate to this page, from the **PaaS Infrastructure Zone** menu, select **Monitoring**, then select **All Metrics**. Select the metric for which the threshold is to be set, click **Modify** and change the settings.

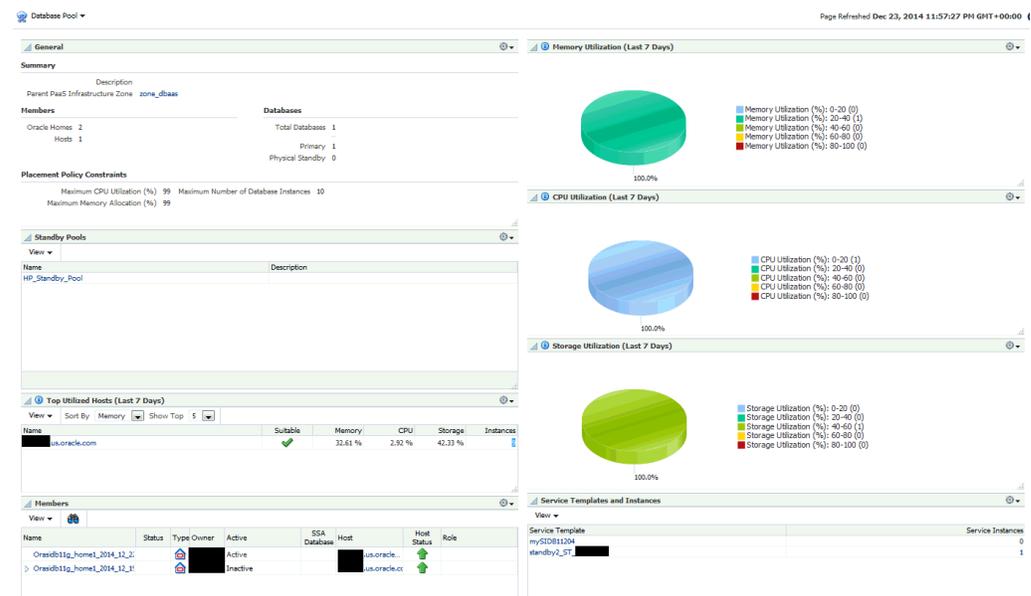
- **Issues:** Shows the outstanding incidents and problems for the target.

- **Members:** Shows the members of the zones and the member type (Oracle VM Zone or Host).
- **Hosts:** Lists the hosts in the PaaS Infrastructure Zone. Click on the Utilization link to view details on the CPU and memory has been utilized for all the hosts, and the number of service instances created on the host. Click on the Name link to drill down to the Host Home page.
- **Service Template Summary:** Shows the service templates associated with the zone. The software pool associated with each service template and number of service instances in each resource pool is also displayed.

40.8 Viewing the Database Pool Home Page

A database pool contains a set of resources that can be used to provision a database instance within a PaaS Infrastructure Zone.

Figure 40-9 Database Pool Home



This page contains the following regions:

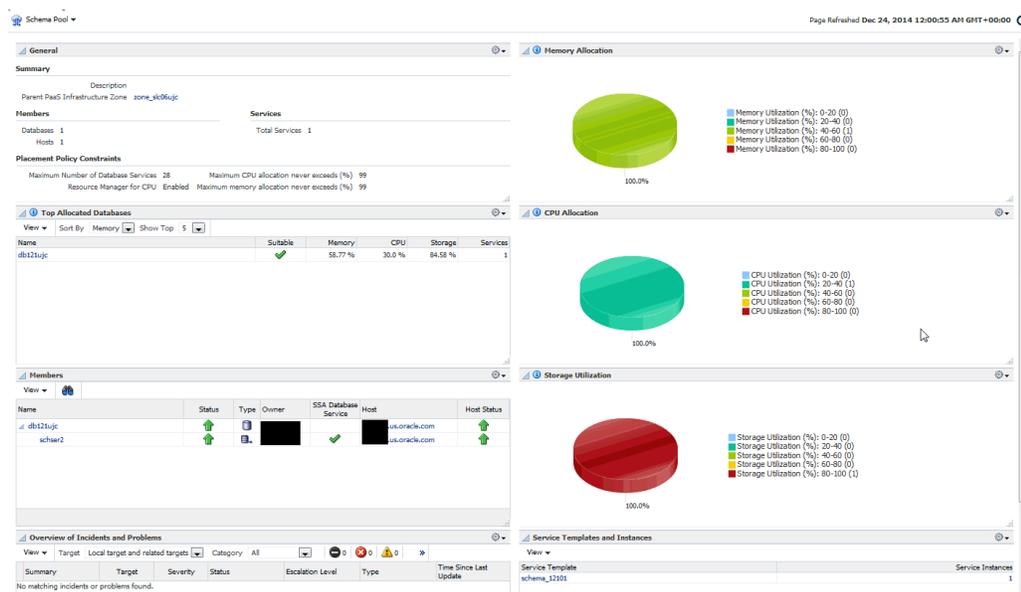
- **General:** This region displays the following:
 - **Summary:** Displays a description of the database pool and PaaS Infrastructure Zone to which it belongs.
 - **Members and Databases:** Shows the list of Members (Oracle Homes and Hosts) and Databases in the pool. The Databases region lists the total number of databases and the number of single instance or RAC databases in the pool.
 - **Placement Policy Constraints:** The placement policy constraints that specify maximum ceilings for each host member of the pool are displayed.
- **Standby Pools:** If one or more standby pools are present, they are listed here.
- **Top Utilized Hosts:** This region shows the list of top utilized hosts over the last 7 days. Click on the link to drill down to the Host Home page. You can sort by:

- Memory: The average memory utilized over the last 7 days as a percentage of the total memory on the host.
- CPU: The average CPU utilized over the last 7 days as a percentage of the CPU available on the host.
- Storage: The average storage utilized over the last 7 days as a percentage of the total storage available on the host.
- Instances: The number of database instances on the host.
- **Members:** Lists all the members in the database pool. Click on the links in the Members table to drill down to the Database or Host Home page.
- **Overview of Incidents and Problems:** This region lists any incidents or problems that have occurred.
- **Memory Utilization:** The chart shows the memory utilization by different hosts present in the database pool. The color coded chart shows the different memory utilization range across the different hosts.
- **CPU Utilization:** The chart shows the CPU utilization by different hosts present in the database pool. The color coded chart shows the different CPU utilization range across the different hosts.
- **Storage Utilization:** The chart shows the storage utilization by different hosts present in the database pool. The color coded chart shows the different storage utilization range across the different hosts.
- **Service Template and Instances:** Shows the service templates and service instances associated with the database pool.

40.9 Viewing the Schema Pool Home Page

You can define one or more schemas that can be deployed on a database.

Figure 40-10 Schema Pool Home



- **General:** This region displays the following:
 - Summary: Displays a description of the schema pool and PaaS Infrastructure Zone to which it belongs. |
 - Members and Services: Shows the list of Members (Databases and Hosts) and Services in the pool.
 - Placement Policy Constraints: The placement policy constraints that specify maximum ceilings for each database member in the pool are displayed.
- **Top Allocated Databases:** This region shows the list of top utilized databases in the schema pool. Click on the link to drill down to the Database Instance page.
 - Memory: The total memory allocated for each service based on the workload as a percentage of the total SGA size of the database.
 - CPU: The total CPU allocated for each service based on the workload as a percentage of the CPU count.
 - Storage: The total storage utilized on all the tablespaces of the database as a percentage of the total size of the database.

 **Note:**

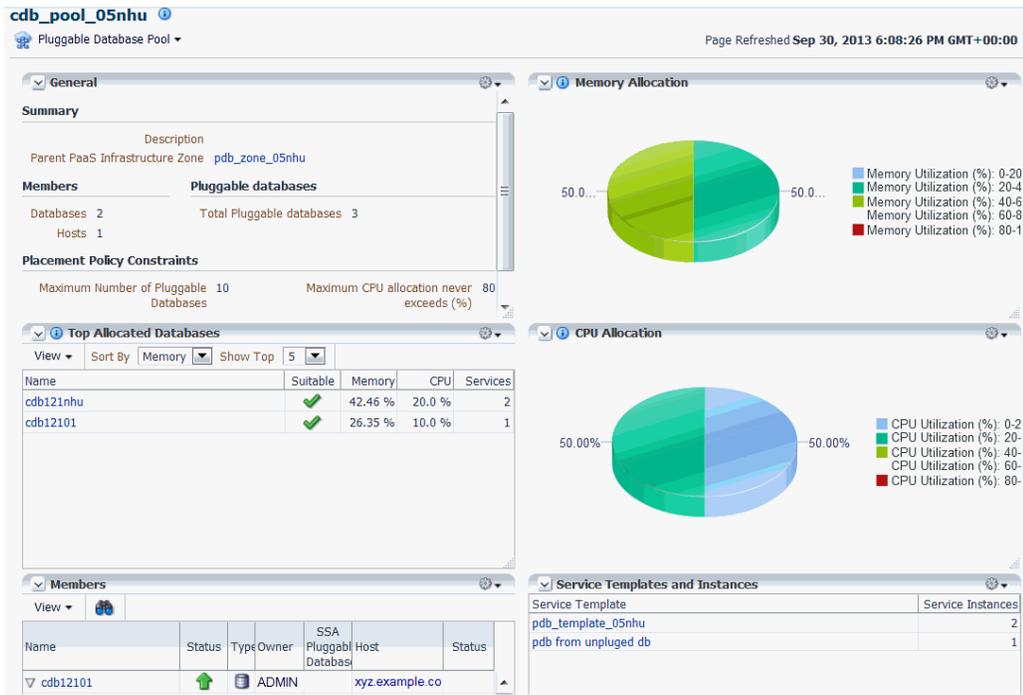
Total here includes requests budgeted for services that have been requested and are active.

- Services: The number of database services.
- **Members:** Lists all the members in the schema pool. Click on the links in the Members table to drill down to the Database Instance Home page.
- **Overview of Incidents and Problems:** This region lists any incidents or problems that have occurred.
- **Memory Allocation:** The chart shows the memory allocation across different databases present in the schema pool. The color coded chart shows the memory allocation range across all the databases.
- **CPU Allocation:** The chart shows the CPU allocation across different databases present in the schema pool. The color coded chart shows the CPU allocation range across all the databases.
- **Storage Allocation:** The chart shows the storage allocation across different databases present in the schema pool. The color coded chart shows the storage allocation range across all the databases.
- **Service Template and Instances:** Shows the service templates and service instances associated with the schema pool.

40.10 Viewing the Pluggable Database Pool Home Page

A PDB pool contains one or more container databases that can be used to create PDBs within a PaaS Infrastructure Zone.

Figure 40-11 PDB Pool Home Page



This page contains the following regions:

- **General:** This region contains the following:
 - **Summary:** This region displays a description of the database pool and PaaS Infrastructure Zone to which it belongs. Click on the Parent PaaS Infrastructure Zone link to drill to the Home page.
 - **Members and Databases:** This region displays a list of Members (Oracle Homes and Hosts) and Databases in the pool. The Databases region lists the total number of databases and the number of single instance or RAC databases in the pool.
 - **Placement Policy Constraints:** The placement policy constraints that specify maximum ceilings for the pool are displayed.
- **Top Allocated Databases:** This region shows 5 to 15 pluggable databases (depending on your selection), sorted by Memory, CPU, Storage, or Services.
 - **Memory:** The total memory allocated for each service based on the workload as a percentage of the total SGA size of the Container database.
 - **CPU:** The total CPU allocated for each service based on the workload as a percentage of the total CPU count.
 - **Services:** The number of database services.
- **Members:** This region shows the list of members in the PDB pool. Click on the links in the Members table to drill down to the database or host home page.
- **Overview of Incidents and Problems:** This region shows a list of any incidents and problems that have occurred for any of the targets in the PDB pool.

- **Memory Allocation:** This chart shows the memory allocation by different container databases in the database pool. The color coded chart shows the memory allocation range across all the container databases.

 **Note:**

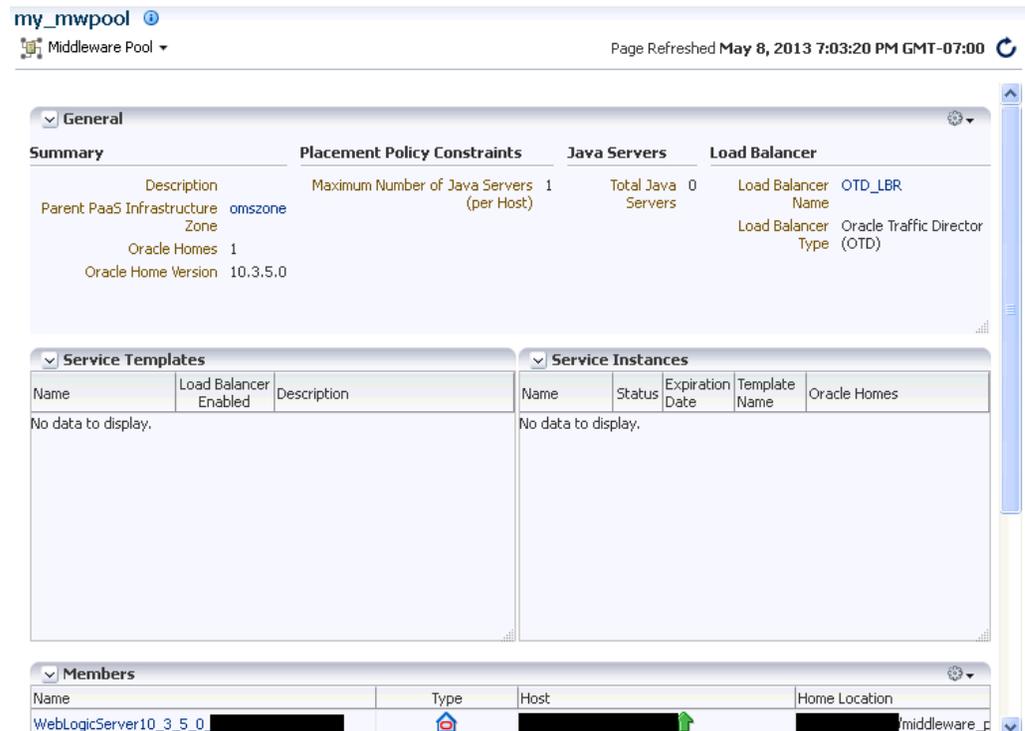
Total here includes requests budgeted for services that have been requested and are active.

- **CPU Allocation:** This chart shows the CPU allocation by different container databases in the pool. The color coded chart shows the CPU allocation range across all the container databases.
- **Service Templates and Instances:** This region shows the list of service templates associated with the PDB pool. Click on the Service Template link to drill down to the Service Template Details page.

40.11 Viewing the Middleware Pool Home Page

The Middleware Pool Home page provides detailed information of the Middleware Pool. To view this page, from the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. Click on the **Resource Providers** link on the Cloud Home page to navigate to the Resource Providers page. Click on a Middleware Pool name to drill down to the Middleware Pool Home page. The Middleware Pool Home page contains the following regions:

Figure 40-12 Middleware Pool Home



my_mwpool ⓘ
Middleware Pool ▾ Page Refreshed May 8, 2013 7:03:20 PM GMT-07:00 ↻

General

Summary	Placement Policy Constraints	Java Servers	Load Balancer
Description Parent PaaS Infrastructure Zone Oracle Homes: 1 Oracle Home Version: 10.3.5.0	Maximum Number of Java Servers (per Host): 1	Total Java Servers: 0	Load Balancer Name: OTD_LBR Load Balancer Type: Oracle Traffic Director (OTD)

Service Templates

Name	Load Balancer Enabled	Description
No data to display.		

Service Instances

Name	Status	Expiration Date	Template Name	Oracle Homes
No data to display.				

Members

Name	Type	Host	Home Location
WebLogicServer10_3_5_0_...	middleware_...

- **General:** This region shows the following information:
 - **Parent PaaS Infrastructure Zone:** The zone with which the Middleware Pool is associated. Click on the link to drill down to the PaaS Infrastructure Zone Home page.
 - **Oracle Homes:** The total number of Oracle Homes in the Middleware Pool.
 - **Oracle Home Version:** The version of the Oracle homes.
- **Placement Policy Constraints:**
 - **Total Java Servers (per host):** The maximum number of WebLogic servers that can be running on each host.
 - **Java Servers:** The total number of WebLogic servers in the Middleware Pool.
- **Load Balancer:** This region shows the following details:
 - **Load Balancer Configuration:** The name of the load balancer configuration associated with the Middleware Pool. Click on the link to view the load balancer details.
 - **Load Balancer Type:** The type of load balancer. This can be Oracle HTTP Server, Oracle Traffic Director, or Third Party Load Balancer.
- **Service Templates:** The number of service templates with which the Middleware Pool is associated. For each service template, the name, a column indicating if the load balancer configuration has been enabled, and the description of the template is displayed. You can drill down to detailed page to see which MWaaS instances are associated with each service template.
- **Service Instances:** The service instances running on the Middleware Pool are displayed. For each service instance, the name, the status, date on which it is scheduled to expire, the service template with which is associated, and the location of the Oracle Home is displayed.
- **Members:** This region shows a list of members in the Middleware Pool. The name of the target, the target type, the host on which it is running, and the location of the Oracle Home is displayed.

40.12 Viewing the Cloud Services Reports

Oracle BI Publisher is an Oracle's enterprise reporting solution and provides a single reporting environment to author, manage, and deliver all of your reports and business documents. Utilizing a set of familiar desktop tools, such as Microsoft Word, Microsoft Excel, or Adobe Acrobat, you can create and maintain report layouts based on data from diverse sources. The Cloud Services BI reports consist of the following:

- Most Requested Service Types
- Service Request Status
- Service Request Types
- Cloud Requested Duration Thread

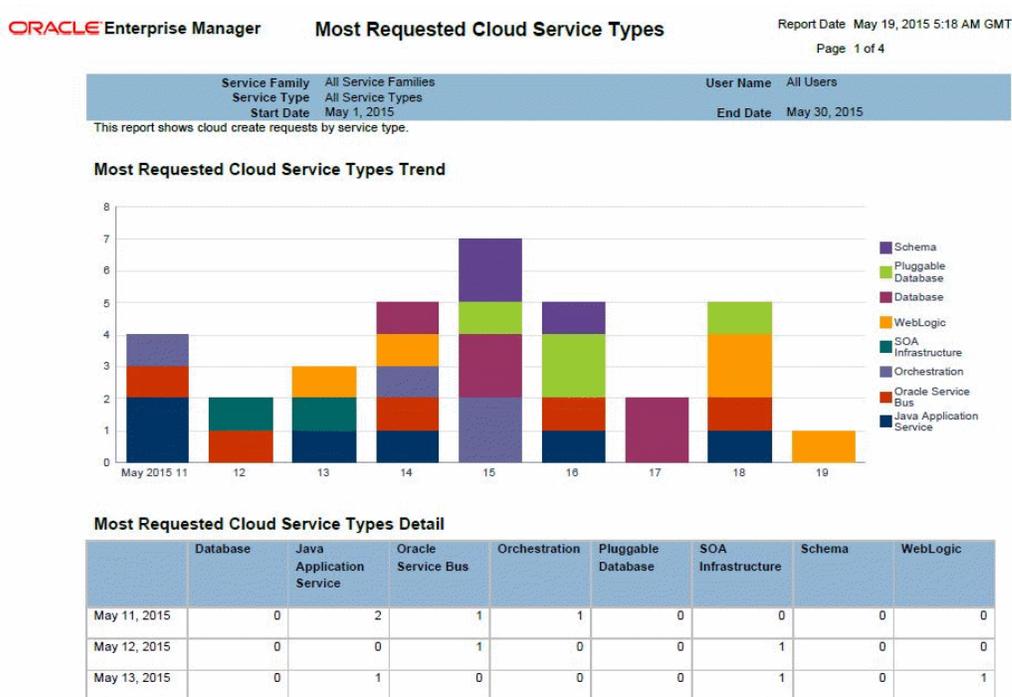
You can view these reports online and export them PDF, RTF, PowerPoint, and Excel formats. To view the reports, log into Enterprise Manager as a user with the `EM_CLOUD_ADMINISTRATOR` role and from the **Enterprise** menu, select **Reports**, then select **BI Publisher Reports**. Click on a report under the **Cloud Services** menu to launch the BI Publisher application and directly view the report.

40.12.1 Most Requested Service Types

This report shows the most requested reports sorted by service type. You can filter the data displayed by selecting any of the following parameters:

- Service Family
- Service Type
- User Name
- Start Date
- End Date

Figure 40-13 Most Requested Cloud Service Type



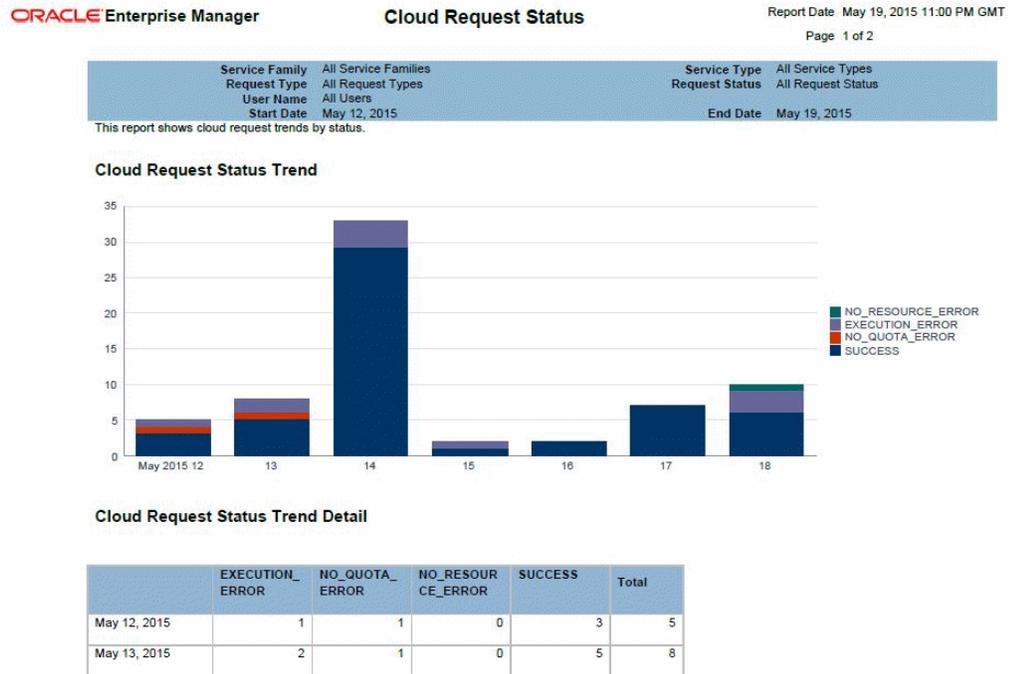
40.12.2 Service Request Status

This report shows the service request trends sorted by status. You can filter the data displayed by selecting any of the following parameters:

- Service Family
- Service Type
- Request Type
- Request Status
- User Name
- Start Date

- End Date

Figure 40-14 Cloud Request Status

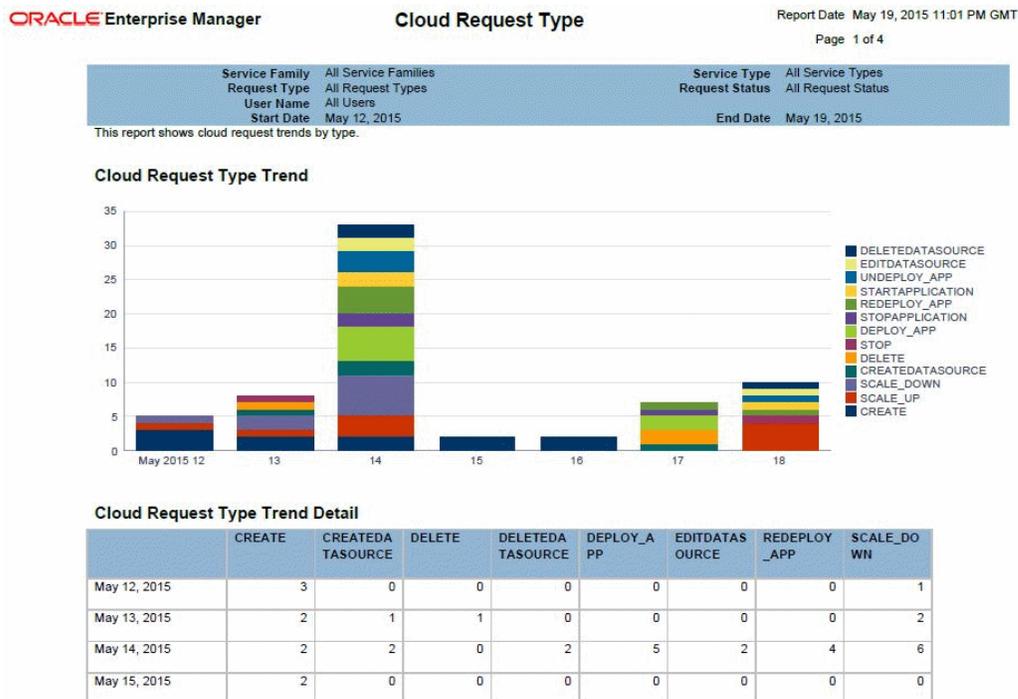


40.12.3 Service Request Type

This report shows the cloud request trends sorted by request type. You can filter the data displayed by selecting any of the following parameters:

- Service Family
- Service Type
- Request Type
- Request Status
- User Name
- Start Date
- End Date

Figure 40-15 Cloud Request Type

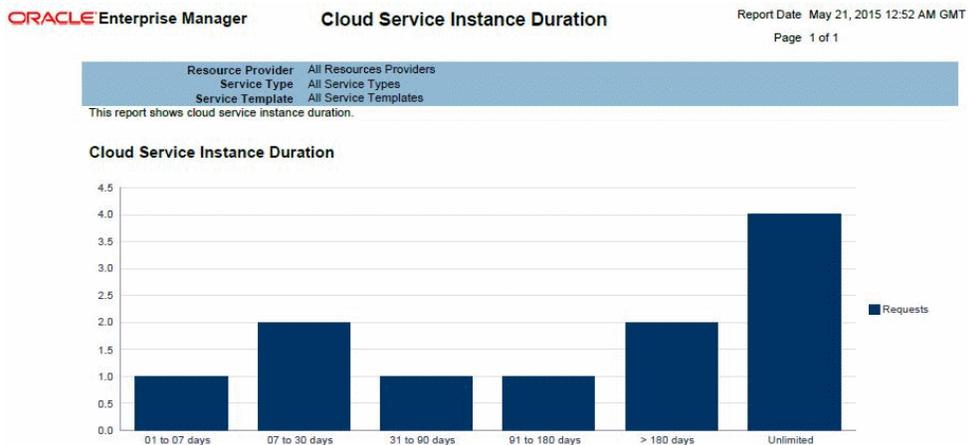


40.12.4 Cloud Service Instance Duration Trend

This report shows the cloud service instance duration. You can filter the data displayed by selecting any of the following parameters:

- Submission Time
- Resource Provider
- Service Type
- Service Template

Figure 40-16 Cloud Service Instance Duration



Part XII

Dynamic Resource Provisioning

This section covers the dynamic resource provisioning feature.

It contains the following chapters:

- [Dynamic Resource Provisioning with Oracle VM Server for SPARC](#)
- [Getting Started with Dynamic Resource Provisioning](#)
- [Dynamically Provisioning Resources in a DBaaS Cloud](#)
- [Dynamically Provisioning Resources in an MWaaS Cloud](#)

41

Dynamic Resource Provisioning with Oracle VM Server for SPARC

Oracle Enterprise Manager Cloud Control integrates with Enterprise Manager Ops Center to create and manage virtual datacenters (vDC). Within the vDC, a vServer appears to users as a complete system, which they can optimize on demand as a DBaaS or MWaaS private cloud.

41.1 Integration for a PaaS Solution

In Oracle Enterprise Manager Ops Center, the IaaS cloud platform service is a virtual datacenter (vDC), a virtual environment supported by pooled servers, storage, and network resources. A cloud administrator sets up the vDC to run Oracle VM Servers for SPARC (logical domains). Enterprise Manager Cloud Control users are creating vServers in the logical domains automatically, as needed. Each vServer draws its requirements from the resources of the vDC.

This section explains how to create the vDC and to connect it to Enterprise Manager Cloud Control.

41.1.1 Prerequisites

- Enterprise Manager 12c Cloud Control Release 5 with Virtual Service Adaptor configured to connect to Ops Center's Enterprise Controller. See [Getting Started with Dynamic Resource Provisioning](#).
- Enterprise Manager Ops Center Release 3 with managed storage and network assets. See Oracle Enterprise Manager Ops Center *Installation for Oracle Solaris Operating System* and *Configure Reference* guides for information about installing the product and discovering assets.
- Oracle Enterprise Manager Ops Center Client Kit, which includes modifications to enable communication between the two software products. This kit is available from My Oracle Support to <https://support.oracle.com/>.

The minimum requirement for Ops Center is the co-located configuration: one system hosts the Enterprise Controller, one Proxy Controller, and an embedded Oracle database.

- Requirements for Enterprise Controller:
 - A minimum of T4-1 Sun Server
 - Same or higher version of Oracle Solaris 11 as the version to be provisioned on vServers running Oracle VM Server for SPARC. Supported versions are Oracle Solaris 11, 11.1, and 11.2 but, for optimal performance use the latest SRU of Oracle Solaris 11.2.
- Requirements for Proxy Controller:

- Co-located with Enterprise Controller or running in a system with the same minimum requirements for server, network, and operating system as for the Enterprise Controller.
- Requirements for Oracle VM Server for SPARC control domain:
 - Oracle VM Server for SPARC 3.1 or later
 - Oracle Solaris 11, 11.1, and 11.2. The version must be the same or later than the version to run in the vServer. To provide different versions of Oracle Solaris 11, create a control domain for each operating system.
 - For optimal performance between storage elements and control domains, equip each server that hosts a control domain with a Fibre Channel HBA of at least 4 Gb and a 10 Gb Ethernet card. A 1 Gb Ethernet card is the minimum.
 - The right size of networks and virtual assets is not uniform. This document makes recommendations but your purposes and site requirements affect them. For a discussion of sizing, see the Oracle blog for some good practices in tuning resources for virtual assets at https://blogs.oracle.com/jsavit/entry/best_practices_top_ten_tuning
- Requirements for Oracle VMS Server for SPARC logical domain:
 - Oracle VM Server for SPARC 3.1 or later
 - The version of Oracle Solaris that is available in the Ops Center OS image repository.
- Requirements for storage resources:
 - Dedicated LUNs exposed only to appropriate WWNs. The LUNs must be fully-provisioned, not thin-provisioned. You can use Fibre Channel LUNs or iSCSI LUNs or both.
 - For Fibre Channel LUNs, create at least one SAN static storage library
 - For iSCSI LUNs, a SAN dynamic storage library is created when you discover the storage server; however, you cannot use this library for the vDC. Create at least one static SAN storage library. Use a 10 Gb Ethernet network connection and tune the number of iSCSI connections. For 8 threads/connection: `iscsiadm modify initiator-node -c 8`
 - For optimal performance between storage elements and control domains, equip each server that hosts a control domain with a Fibre Channel HBA of at least 4 Gb and a 10 Gb Ethernet card. A 1 Gb Ethernet card is the minimum.
- Requirements for networks:
 - A fabric backed by an isolated switch to provide separate interfaces to each control domain. an isolated switch is an isolated Ethernet switch or a set of non-routable VLANs spanning multiple network switches. The switch provides the VLAN IDs that provision virtual networks.
 - * For host-managed or fully-managed fabric, you must reserve a range of VLAN IDs to be mapped to the control domains. When a private network is needed, one is created on demand, using one of the VLAN IDs, and deleted when no longer needed.
 - * For an unmanaged fabric, you must create the private networks manually, using the **Create Private Networks** action and add them to the network domain. When a private network is needed, an available network is assigned.

- A dedicated network domain. Do not use the Default network domain.
 - * At least one public network to provision OS and to access vServers. Public networks supply a block of IP addresses for provisioning the vServers. The number of IP addresses equals the number of vServers that can be supported. Consider the size of the network that can accommodate all your current and future requirements. Class C (for example, 10.0.0.1/24) networks enable you to create 256 vServers, Class 16C networks (for example, 10.0.0.2/20) enable you to create 4096 vServers.
 - * Private networks for Clusterware and internal host connectivity.
- A set of dedicated VLANs IDs, configured on one or more network interfaces.
- Requirement for software libraries:
 - Place the libraries on a storage server with high transfer rates.
 - To provision an OS version, the Oracle Solaris 11 Software Update Library must contain the packages for that version. This repository is created during the product installation. In addition, you must download the Oracle Solaris 11 SRU library.
 - Limit the Oracle Solaris 11 Software Library to versions of releases and SRUs that are in active use.
 - Add packages from client kit to the Oracle Solaris 11 Software Library.

41.1.2 Overview of the Configuration of PaaS Solution

To set up the PaaS solution, you perform tasks on each component of the solution:

- [Configure Enterprise Manager Cloud Control](#)
- [Obtain the Client Kit](#)
- [Configure Enterprise Manager Ops Center](#)

41.1.2.1 Configure Enterprise Manager Cloud Control

The Enterprise Manager's Virtual Service Adapter is the interface between Enterprise Manager and Enterprise Manager Ops Center. To configure the integration, the main component of Ops Center, the Enterprise Controller, is added as a staging server, as described in [Adding the Stage Server](#).

When the configuration of Oracle Enterprise Manager Ops Center is complete, use the following information to configure Enterprise Manager Cloud Control:

- IP address of the Enterprise Controller
- username and password of the cloud user account

41.1.2.2 Obtain the Client Kit

Go to <https://support.oracle.com/> to obtain the Ops Center Client Kit, p21190506_121050_Generic.zip. The kit is also available in the OC DVD bundle.

The kit contains packages that provision logical domains, modified to enable PaaS operations, and a script:

- ORCLsysman-iaas-cli.pkg

- ORCLsysman-paas-cli.pkg
- post-script-paas-12.3.0.<buildnumber>.p5p

Extract the files in the compressed file to a location of your choice. These packages and script will be uploaded to Ops Center's repository for Oracle Solaris 11 and used in an OS Update Profile.

41.1.2.3 Configure Enterprise Manager Ops Center

The tasks in this section take 2-3 hours to complete. Some of them can be done simultaneously, that is, you do not have to wait for one job to complete before starting another one.

1. [Add Client Kit Contents to Software Library for Oracle Solaris 11](#)
2. [Preparing Network Resources for the vDC](#): fabric, network domain, and public network
3. [Preparing Storage Resources](#): a NAS storage library and a SAN storage library
4. [Create an OS Update Profile](#)
5. [Deploy Control Domains](#)
6. [Create the Server Pool](#)
7. [Create the vDC](#)
8. [Create the vDC account for PaaS](#)
9. [Create a new vServer Type](#)
10. [Create a vServer Template](#)
11. [Create a Private vNet](#)
12. [Validate the Integration and PaaS](#)

41.2 Configure Resources for vDC

A vDC relies on pools of networks, storage, and control domains. It provisions its servers from images in a current OS repository according to profiles in the repository.

41.2.1 Add Client Kit Contents to Software Library for Oracle Solaris 11

The package that enables the PaaS solution is `post-script-paas-12.3.0.1407.p5p`. This file is in the compressed file you downloaded from My Oracle Support and resides in the directory where you extracted the contents of the compressed file. This procedure imports the file into Op Center's Oracle Solaris 11 repository so that it can enable communication between the Enterprise Manager Cloud Control staging server and the Ops Center resources.

Use the **Add Content** action to add ISO image files to the Oracle Solaris 11 Software Update Library manually.

1. Locate the image in the new repository.
2. Expand **Libraries** in the Navigation pane.

3. Click **Software Libraries**.
4. Click **Oracle Solaris 11 Software Update Library**.
5. Click **Add Content** in the Action pane.

Figure 41-1 Add Content

Specify Repository to add content from

Enter the URL of the parent repository URL and credentials.

Repository URL	Credential
enter url	None

None
Define New
SystemDefinedS...

6. In the **Repository to add content from** field, enter the location of the file using the syntax: `file:///<fullpath>/post-script-paas-12.3.0.<buildnumber>.p5p`
If credentials are required, specify the system's credentials, **SystemDefinedSupportCredential**.

When the job is completed, the file is listed in the Contents tab of the library.

41.2.2 Preparing Network Resources for the vDC

Fabrics are the physical infrastructure, consisting of network interface cards and network switches. Network domains are the logical infrastructure, combining network resources from at least one fabric. The networks used by virtual assets are created from the VLAN IDs managed by a network domain. The physical fabrics support these virtual networks, through the network domain, in a manner that depends on their type. To supply network resources to a vDC, you create a network domain from an appropriate fabric.

You must have the role of Network Admin to create network domains.

41.2.2.1 Identify a Fabric

To see the available fabrics, expand **Networks** in the Assets pane. Select **Fabrics**. For each fabric, the Dashboard in the center pane includes a Management Capability

field. You have these options for providing physical network resources to a new network domain:

- Use an existing host-managed fabric.
- Convert an unmanaged fabric to host-managed and then use it.
- Create a new host-managed fabric.
- Use an unmanaged fabric.

To convert an unmanaged fabric to a host-managed fabric, use the **Assign VLAN ID Range** action. Specify a range that matches VLANs on the isolated switch that supports the fabric. If the fabric is not supported by an isolated switch, you can use an arbitrary VLAN ID range representing configured, non-routed VLANs, for example, 1001-1200.

To create a new host-managed fabric:

1. In the Navigation pane, navigate to **Networks**, then select **Fabrics** from the drop-down list.
2. In the Actions pane, click **Define Ethernet Fabric**.
3. In the wizard, enter a name in the **Fabric Name** field. Enter a description. Click **Next**.
4. Enter the range of VLAN IDs. If the fabric is supported by an isolated switch, specify a range that matches the switch's VLANs. If the fabric is not supported by an isolated switch, use an arbitrary VLAN ID range, for example, 1001-1200.
5. Select the networks to be associated with the fabric, then click **Next**.
6. Review the Summary, then click **Finish**. The new fabric is host-managed.

To use an unmanaged fabric, assign a set of its public networks as private networks or convert the fabric to an host-managed fabric.

41.2.2.2 Create a Network Domain

After Ops Center manages the physical fabric, its network resources are in the system-defined Default Network Domain, but you cannot use the Default network domain for a virtual datacenter. Instead, create a network domain specifically to support a server pool that contains a vDC.

A network domain is a container for networks and handles the relationship between the physical fabrics and the server pool. The fabrics provide network resources such as links and IP subnets. Within the network domain, networks that have been discovered or specified are available for assignment. These are called public networks. Their network resources have been defined. Another type of network is dynamic, that is, the network is created when it is needed, using an IP address space available to the network domain. Because they exist only for a specific purpose and only within a specific network domain, they are called private networks.

To use virtual datacenters, the network domain must provide private networks. To use existing public networks for a virtual datacenter, add each network to the network domain, making it a static private network, because existing public networks already have an IP subnet addresses and VLAN IDs.

 **Note:**

Do not attempt to use the Default Network Domain to support a virtual datacenter. Although you are not prevented from specifying the Default Network Domain, its networks will not be available for selection.

Although the network domain is providing the networks to the server pools, this is only a logical association using VLAN IDs. To use the network resources, each physical server that supports the control domains in the server pool must have a physical connection to a fabric in the network domain.

1. Expand Networks in the Navigation pane.
2. The Standard views shows Networks. The Default Network Domain is selected.



3. Click **Create Network Domain** in the Actions pane.
4. In the Identify Network Domain pane, enter the name and description of the network domain. You can also add tags.

Identify Network Domain * Indicates Required Field

Specify the name, description, tags, physical fabric, and maximum number of networks for the network domain. Ops Center will automatically assign P-keys/VLAN IDs for the selected physical fabric.

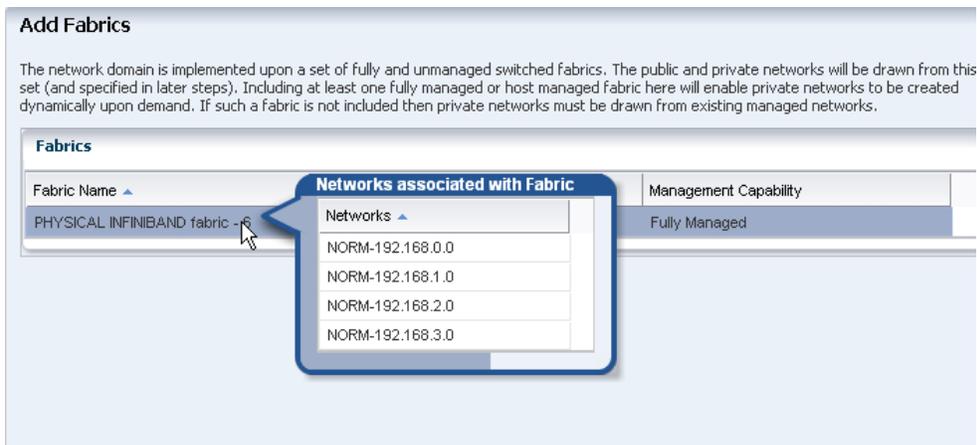
* Domain Name:

Description:

Tags: + - Search

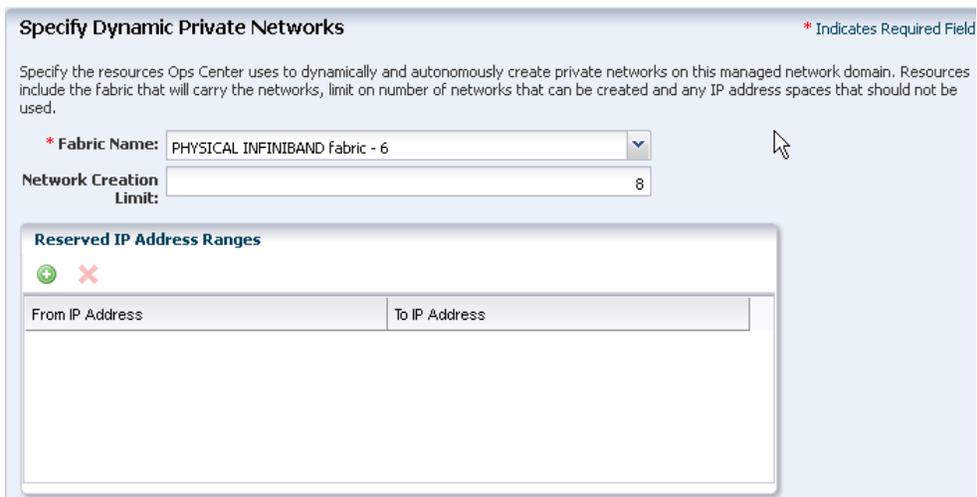
Tag Name	Value

5. In the Add Fabrics step, choose at least one fabric.



6. Accept the default value for the Network Creation Limit. This value is the maximum number of dynamic private networks that can be in use simultaneously and is set by the number of VLAN IDs in the range of VLAN IDs you set.

A private network uses an IP address from the pool of available IP addresses in the network domain. To exclude IP addresses that your organization is using for other purposes, specify them in the Reserved IP Address Ranges table. These addresses will not be available to dynamic private networks.



7. In the Associate Networks step, you add existing networks to the new network domain. Add the network you want to use as the public network. This network will be used to provision vServers.

Associate Networks

A network domain consists of fabrics that carry networks and which can be used to create new networks as well as existing networks that are already known to the system. The associate networks step allows the selection of just those existing networks which are required to be part of the domain. The table lists all the existing networks on the fabrics selected in step 2. Use the associate tick box to choose which of these are included in the domain.

Network Name	Network Address	Associate
Fabric Name: PHYSICAL INFINIBAND fabric - 6 (4 Items)		
NORM-192.168.0.0		<input checked="" type="checkbox"/>
NORM-192.168.1.0		<input type="checkbox"/>
NORM-192.168.2.0		<input type="checkbox"/>
NORM-192.168.3.0		<input checked="" type="checkbox"/>

8. Review and click **Finish**.

When the job is completed, the new network domain is listed in the Navigation pane.

41.2.2.3 Configure Public Network

Select the public network and then select **Edit Managed IP Ranges**. Specify a range or a series of IP addresses, as provided by your network administrator. These addresses will be used later to support logical domains.

41.2.3 Preparing Storage Resources

When Ops Center discovers a storage device, it creates a dynamic storage library, but these libraries cannot be used to support a vDC. Instead, create static storage libraries:

- Create a NAS storage library to store the metadata of the control domains. This storage is exclusive for the vDC. Do not use this library for any other purpose.
- Create at least one SAN library to store the operational data.

The storage libraries are block storage, which use Logical Unit Numbers (LUNs). The LUNs are backed by Fibre Channel disks or iSCSI disks in the form of LUNs.

SAN LUNs are associated with Fibre Channel or iSCSI target groups. Fibre Channel targets use a dedicated optical network and iSCSI targets use the IP network, but in both protocols, the targets in a target group expose one or more LUNs as a storage resource for the target's initiators.

For both protocols, acts as the initiator. To allow the target group and to identify each other as eligible initiators and targets, each one's Fibre Channel World Wide Number (WWN) or iSCSI IQN must be registered with the other one. recognizes the targets because the WWNs or IQNs of the storage server are recorded when the storage server is discovered. Any LUNs that have been assigned to that WWN or IQN are eligible to be used in a storage library.

41.2.4 Create a NAS Storage Library

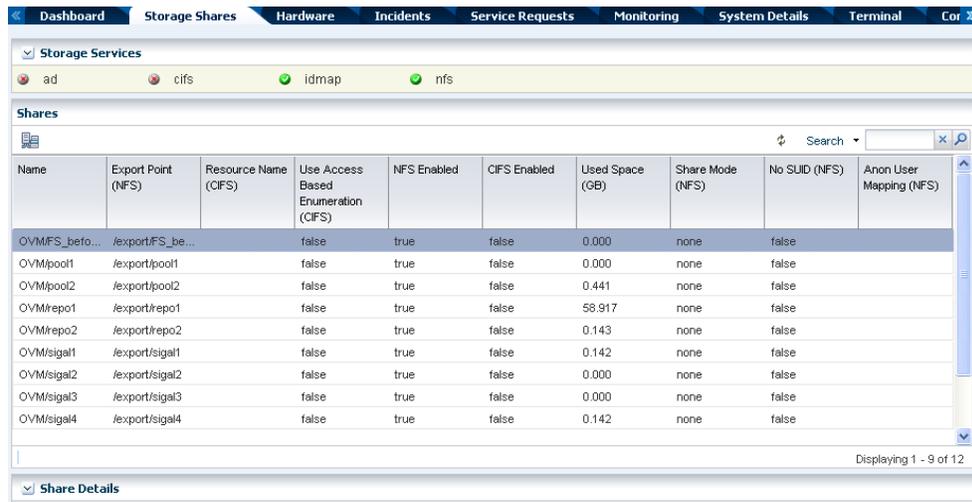
These are the tasks for setting up a NAS storage library:

1. [Identify the NAS Share](#)
2. [Create a NAS Storage Library](#)

41.2.4.1 Identify the NAS Share

The NFS share is a file system on a NAS storage device. You can view the shares on managed storage servers from the user interface.

1. Expand **Assets** in the Navigation pane and click
2. Click **All Assets** to expand the section.
3. Click on the NAS storage server in the Storage section.
4. In the center pane, click the **Storage Shares** tab.



The screenshot shows the vSphere Storage Shares interface. At the top, there are tabs for Dashboard, Storage Shares (selected), Hardware, Incidents, Service Requests, Monitoring, System Details, Terminal, and Cor. Below the tabs, there are status indicators for ad, cifs, idmap, and nfs. The main area displays a table of shares with the following columns: Name, Export Point (NFS), Resource Name (CIFS), Use Access Based Enumeration (CIFS), NFS Enabled, CIFS Enabled, Used Space (GB), Share Mode (NFS), No SUID (NFS), and Anon User Mapping (NFS). The table contains 12 rows of data, with the first row partially visible as 'OVMFS_befo...'. The last row is 'OVM/sigal4' with a used space of 0.142 GB. At the bottom right of the table, it says 'Displaying 1 - 9 of 12'. Below the table is a 'Share Details' section.

Name	Export Point (NFS)	Resource Name (CIFS)	Use Access Based Enumeration (CIFS)	NFS Enabled	CIFS Enabled	Used Space (GB)	Share Mode (NFS)	No SUID (NFS)	Anon User Mapping (NFS)
OVMFS_befo...	/export/FS_be...		false	true	false	0.000	none	false	
OVM/pool1	/export/pool1		false	true	false	0.000	none	false	
OVM/pool2	/export/pool2		false	true	false	0.441	none	false	
OVM/repo1	/export/repo1		false	true	false	58.917	none	false	
OVM/repo2	/export/repo2		false	true	false	0.143	none	false	
OVM/sigal1	/export/sigal1		false	true	false	0.142	none	false	
OVM/sigal2	/export/sigal2		false	true	false	0.000	none	false	
OVM/sigal3	/export/sigal3		false	true	false	0.000	none	false	
OVM/sigal4	/export/sigal4		false	true	false	0.142	none	false	

5. View the shares and choose one with capacity to support a server pool. You will use this share in the following procedure.

41.2.4.2 Create a NAS Storage Library

1. Expand **Libraries** in the Navigation pane. The new library will be created in the Filesystem Storage section.
2. Click **New NAS Software Library** in the Actions pane.
3. Enter a name for the library and a description. For example, identify how the new library will be used.
4. Do not associate a server pool with the new storage library. The server pool will be created later. Click **Next**.
5. By default, the wizard displays the option for using an exported share of a storage device. Because this procedure has set up an NFS share, click the **Other** option.

Identify Storage * Indicates Required Field

Specify details about the storage share on which this library is to be created.

Source: Share exported from a managed storage asset
 Other

* **URL:**

Replace hostname, port, and path with the values for the storage resource.

6. Enter the URL or IP address for the NFS server.

Identify Storage * Indicates Required Field

Specify details about the storage share on which this library is to be created.

Source: Share exported from a managed storage asset
 Other

* **URL:**

Replace hostname, port, and path with the values for the storage resource.

Override NFS Version

NFS Version:

7. (Optional) You can specify the version of NFS that this storage uses. By default, uses the operating system's default NFS version. To specify a different version, allow the version to be changed.
 - a. Click the **Override NFS Version** option.
 - b. Click the drop-down list of NFS versions. Select a version.

Override NFS Version

NFS Version:

2
3
4

< Previous Next >

8. Click the **Next** button to review a summary of the storage library.

9. Click the **Finish** button to submit the job.

When the job is completed, you can see the new storage library in the Libraries section of the Navigation pane.

41.2.5 Create SAN Storage Libraries using Fibre Channel LUNs

. This section describes how to set up a static block storage library, backed by Fibre Channel LUNs. The number of LUNs in the storage library determines the number of virtual hosts that the library can support.

41.2.5.1 What You Will Need

You will need the following to set up and use a block storage library:

- LUNs backed by a managed SAN server using the Fibre Channel protocol
- The role of Storage Admin

To create LUNs on the storage server, you must have the user account and password to log into the storage server and create the LUNs as targets.

41.2.5.2 Configure the Storage Server

If you need to create LUNs and make them available to , see the storage server's documentation for instructions in how to perform the following:

- **Configure the initiator and the targets.** The initiator () must be able to recognize the targets (LUNs) and the targets must be able to recognize the initiator. recognizes the targets because the WWNs of the storage server are recorded when the storage server is discovered. Any LUNs that have been assigned to that WWN are eligible to be used in a storage library. On the storage server, you must specify 's WWN as an initiator and assign LUNs to that initiator.
- **Enable multipathing on the Fibre Channel ports.** Multipathing is enabled by default on Oracle Solaris x86-based systems, but is disabled by default on Oracle Solaris SPARC-based systems. Use the `stmsboot -e` command to enable multipathing.
- **Create new LUNs.** It can take several hours for a new LUN to be displayed in 's user interface.

To verify iSCSI LUNs are available to the virtualization host, use the following command:

```
# iscsiadm list target -S
```

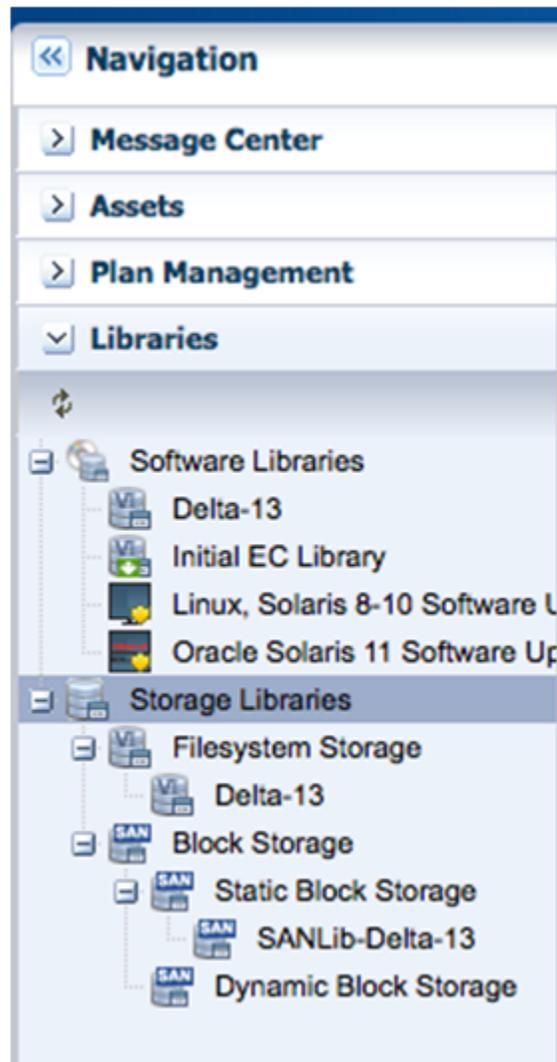
To verify Fibre Channel LUNs are available to the virtualization host, use the following command for Oracle Solaris 11:

```
# fcadm lu
```

41.2.5.3 Create a Static Block Storage SAN Library

To specify the LUNs in a storage library, you specify the server pool that will use the storage library and then select LUNs from among the LUNs available to the server pool.

1. Expand **Libraries** in the Navigation pane.



2. Click **New SAN Storage Library** in the Actions pane.
3. Enter the name and description of the library. Click **Next**.

The screenshot shows the 'Identify Library' form. At the top left is the title 'Identify Library' and at the top right is a legend '* Indicates Required Field'. Below the title is the instruction 'Enter the name and description of the SAN storage library.' There are two input fields: 'Name' and 'Description'. The 'Name' field is a text box containing 'SANLib-Delta-12'. The 'Description' field is a larger text area containing 'LUNs for the Delta 12 LDOM server pool'. Both fields have a red asterisk next to their labels, indicating they are required.

4. You have the option to enable multipathed storage for guests of Oracle VM Servers. When you click the **LUNs sharing to LDOMs** option, each logical domain can get access to its storage through any of the domains in the server pool. If you

do not enable multi path storage, the logical domain gets access to storage through its primary domain. Click **Next**.

- In the Identify LUNs step, select at least one LUN from the list of available LUNs. Because this is a static block storage library, the number of LUNs you select determines the number of virtual hosts that the library can support. For example, if you select eight LUNs, eight virtual hosts can use the storage library. You can select one LUN and then add more LUNs later. Click **Next**.

Identify LUNs

Add one or more LUNs to the library. Use Ctrl+Click and Shift+Click to select multiple LUNs

Available LUNs

Search

LUN GUID	Hostname-Controller Number-LUN Number	Size (GB)
600144f0fa0d3a97000052840af10024	oc-test-lz-3-0-0, oc-test-lz-14-0-0	10
600144f0eeb26fc90000523179090003	oc-test-lz-3-0-0, oc-test-lz-14-0-0	4.999...
600144f0fa0d3a9700005283a1bf001d	oc-test-lz-3-0-0, oc-test-lz-14-0-0	10
600144f0fa0d3a9700005283ef910022	oc-test-lz-3-0-0, oc-test-lz-14-0-0	10
600144f0fa0d3a97000052836f320016	oc-test-lz-3-0-0, oc-test-lz-14-0-0	25

- Review the details of the storage library in the Summary pane.

Summary

Click Finish to create the new SAN storage library.

Name: SANLib-Delta-12

Description: LUNs for the Delta 12 LDOM server pool

Name	Description
delta-1-primary	Oracle VM Server for SPARC

LUN GUID	Hostname-Controller Number-LUN Number	Size (GB)
600144f0ddf790cd000052551ce30003	delta-1-primary-0-0	20
600144f0ddf790cd000052551cd00002	delta-1-primary-0-0	20

- Click **Finish** to submit the job.

When the job is completed, the new storage library is displayed in the Libraries section of the Navigation pane in the Static Block Storage section. The center pane shows the library's Summary tab.

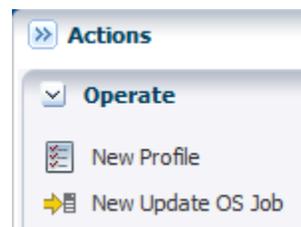
41.2.6 Create an OS Update Profile

The Oracle Solaris 11 OS Update profile installs packages as part of an OS Provisioning profile. This example shows how to create an OS Update profile that installs the integration package. You then add this profile to an OS Provisioning profile.

1. Expand **Plan Management** in the Navigation pane, then select **Update Profiles** under **Profiles and Policies**.



2. Click **New Profile** in the actions pane.



3. Enter a name and description for the profile. In this case, the profile is PaaS base update. Then select **Solaris 11**.

Create OS Update Profile

Name:	<input type="text" value="PaaS base update"/>	Description:	<input type="text"/>
Type:	<input type="text" value="Solaris11"/>		

4. Keep the default filters and then search for each one of the following packages and files and click the **Install** icon.

SUNWhea

SUNWsprt

developer/ assembler

developer/ java/ jdk-6

developer/ java/ jdk-7

post-script-paas

5. Click **Create OS Update Profile**. The profile appears in the list of Update profiles.

41.2.7 Deploy Control Domains

- [Create an Provisioning Profile for Oracle VM Server for SPARC](#)
- [Create an OS Configuration Profile for Oracle VM Server for SPARC](#)
- [Apply the Deployment Plan](#)

41.2.7.1 Create an Provisioning Profile for Oracle VM Server for SPARC

This profile provisions the Oracle Solaris 11 OS and includes the OS Update profile you created in [Create an OS Update Profile](#).

1. Select **Plan Management** section and expand **Profiles and Policies** in the Navigation pane.
2. Select **OS Provisioning** profile and click **Create Profile** in the Actions pane.
3. Enter the following details in the **Create OS Profile - OS Provisioning** wizard:
 - Name and description of the profile. In this case, the name of the profile is `control_domain_osp`.
 - Select `Oracle VM Server for SPARC` as the Subtype and `v class` as the target type

Identify Profile * Indicates Required Field

* Name:

Description:

* Subtype: Subtype

- Oracle VM Server for SPARC
- Logical Domain
- Oracle Linux
- Oracle VM Server for x86
- Red Hat Linux
- SUSE Linux
- JET Template
- Solaris SPARC
- Solaris x86

Target Type: Target Type

- V class (sun4v)

Click **Next**.

4. Select the following parameters:
 - For the Oracle VM Server for SPARC version, select Solaris 11.2 SRU 11.5.0 (LDom 3.2.0.1)
 - For the Systems Software roup, select solaris-small-server.
 - For the Solaris 11 Update profile, select the OS Update Profile that you created: PaaS base update

Specify OSP Parameters * Indicates Required Field

Select an OS image from the list of images available.
Select one system software group and any optional feature software groups that this OS profile installs. Use Ctrl+Click and Shift+Click to select multiple software groups.

* Oracle VM Server Version:

Use Custom Manifest

* Software Group:

- System Software Groups
 - pkg://solaris/group/system/solaris-small-server
 - pkg://solaris/group/system/solaris-minimal-server
 - pkg://solaris/group/system/solaris-large-server
 - pkg://solaris/group/system/solaris-core-platform
 - pkg://solaris/group/system/management/rad/rad-server-int...
 - pkg://solaris/group/system/management/rad/rad-client-inte...
- Feature Software Groups
 - pkg://solaris/group/feature/trusted_desktop

Solaris 11 Update Profile:

Click **Next**.

5. Keep the default values for the OS setup parameters or edit the language, time zone, and NFS4 Domain values for your environment.
6. Enter the root password and confirm the password.
7. Clear the **Manual Net Boot** option and the **Save NVRAMRC** option.

Click **Next**.

8. Specify the user account for Oracle Solaris 11 OS. Root login is not enabled in Oracle Solaris 11 OS. Create a user account to SSH to the OS after provisioning. Provide a user name and password for the account.



Specify User Account

Specify user account to be used for the OS.

* Username:

Full Name:

* Password:

* Confirm Password:

Click **Next**.

9. Do not use iSCSI disks for provisioning Oracle VM Server for SPARC. Clear this option and click **Next**.



Specify iSCSI Disk Usage

Specify if iSCSI disk is used for OS provisioning.

Use iSCSI Disk

10. The root (/) and a swap file system are defined by default but you must change the swap size, according to recommendations for sizing and performance. In general, each logical domain that this control domain supports will need 1 GB.

Use a minimum of 8192 MB for the swap size.

Specify File System Layout

Specify the file systems that need to be created.

File Systems (2)

+ ×

File System Type	Mount Point	Device	Size (MB)
swap	swap	rpool	4096
zfs	/	rootdisk.s0	Remaining unused space

NOTE: To allocate the remaining unused disk space to a specific file system, do not enter any value for its size (leave the size field blank).

Click **Next**.

11. Select DNS as the naming service in place, and provide the details, including the server names.

Click **Next**.

12. Review the parameters selected for the profile and click **Finish** to create the OS provisioning profile.

The profile appears in the center pane and in the Profiles and Policies section of **Plan Management**.

41.2.7.2 Create an OS Configuration Profile for Oracle VM Server for SPARC

The OS Configuration profile lets you define the network interface that you want to use on the operating system. The first interface you define is the boot interface and also the primary interface. You can add more than one network interface. When you apply the plan to a target, you can select which network interface is the primary interface and define the IP address.

- Control domain configuration such as CPU Threads or Whole-cores, memory, Crypto Units, Virtual Console Port Range and Virtual Disk Server name.
- Options such as enabling MPxIO and SR-IOV, detaching the unused buses, and saving NVRAMRC values.
- OS management option to install the Agent Controller.
- Networking options to use IPMP or Link Aggregation.

The recommended minimum configurations for the control domain are described in the following sections.

41.2.7.2.1 CPU Resource Allocation

The number of system CPUs determines the number of control domain CPU threads:

- For less than 16 system CPUs, set the control domain CPU Threads to 2.
- For between 16 and 64 system CPUs, set the control domain CPU Threads to 4.

- For more than 64 system CPUs, set the control domain CPU Threads to 8.

You can select to allocate CPU resources either as CPU Threads or Whole-core. Whole-core is the default value in Oracle Enterprise Manager Ops Center. When you allocate as Whole-core, all the CPU Threads in the core are allocated to the control domain. For example, when you allocate two cores in UltraSPARC T2 servers, the control domain is allocated with all the 16 CPU Threads in the core. You can also set the maximum cores constraint when you select Whole-core allocation type. The maximum number of cores constraint specifies the number of cores that must be assigned to the domain.

41.2.7.2.2 Crypto Units

Crypto units are the resources on the supported platforms that provide high-performance, dedicated cryptographic engines. These can be used for tasks such as encrypting and decrypting network traffic between a Secure Socket Layer (SSL) web server and an application server.

Each CPU core has one Crypto unit and four or eight CPU threads. Because the Crypto unit is part of a core, the Crypto unit is bound only to domains that contain at least one thread from the parent core. Crypto units cannot be split as CPU threads are split. For example, you have assigned the Crypto unit for the first CPU core to the control domain. When a new logical domain is assigned a thread from the first CPU core and the Crypto unit for that core is already assigned, the control domain cannot assign that Crypto unit to the new logical domain. Allocation of Crypto units might not succeed, especially when a core is split between domains. An Oracle VM Server might allocate fewer Crypto units or none at all.

You must assign at least one Crypto unit to the control domain because the Crypto unit enables domain migration.

The use of Crypto Units is not mandatory although it might speed the logical domain migration. Allocation of Crypto Units might not be available in all the hardware.

41.2.7.2.3 RAM

The amount of RAM for the control domain depends on the size of the system RAM and the load of the system.

- For system RAM less than 8 GB, set the control domain's RAM to 1 GB.
- For system RAM between 8 GB to 16 GB, set the control domain's RAM to 2 GB.
- For system RAM greater than 16 GB, set the control domain's RAM to 8 GB.

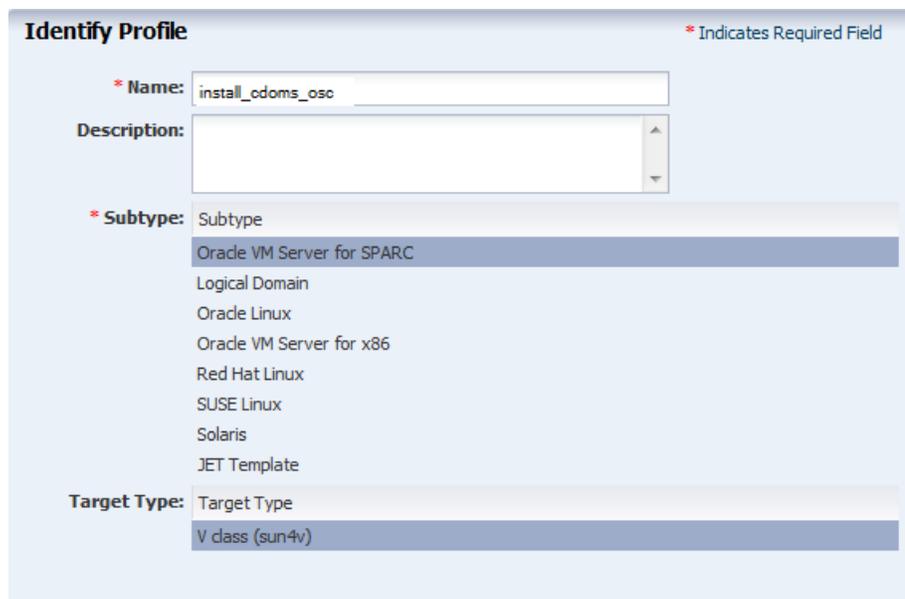
In Oracle Enterprise Manager Ops Center the default value is 4 GB as a recommended starting point for logical domains, and the minimum value is 1GB.

41.2.7.2.4 NVRAMRC Value

Automatic booting on a SPARC system uses the default boot device that is defined in the non-volatile RAM (NVRAM). User-defined commands that are executed during start-up are stored in the NVRAMRC file in the NVRAM. When you run an OS provisioning job on a SPARC machine, Oracle Enterprise Manager Ops Center resets the configuration to the factory default configuration and removes the information that is stored in the NVRAMRC file. The control domain OS configuration profile gives you the option to preserve the information in the NVRAMRC file before resetting the server to the factory defaults, and then restore the information after the reset.

To create an OS Configuration profile:

1. Select the **Plan Management** section and expand **Profiles and Policies**.
2. Select OS Configuration and click **Create Profile** in the Actions pane.
3. Enter a name and description in the **Create Profile - OS Configuration** wizard. In this case, the new profile has the name `install_cdoms_osc`
4. Select Oracle VM Server for SPARC as the Subtype.
5. Click **Next**.



Identify Profile * Indicates Required Field

* **Name:**

Description:

* **Subtype:** Subtype
Oracle VM Server for SPARC
Logical Domain
Oracle Linux
Oracle VM Server for x86
Red Hat Linux
SUSE Linux
Solaris
JET Template

Target Type: Target Type
V class (sun4v)

6. Select the Oracle VM Server for SPARC version to be installed. The version must match the version selected in the OS Provisioning profile.
7. Specify the resources that you want to assign to the control domain, according to the recommended minimum configuration. The remaining resources are then available for the logical domains.
 - **CPU Model:** Select Whole-core to allocate the CPU resource in cores.
 - **CPU Cores:** Enter the number of CPU core to be allocated to the control domain.
 - **Max CPU Cores:** Enter the number of CPU cores that must be assigned to control domain.
 - **Memory:** Enter the amount of memory required for control domain.
 - Do not provide any values for **Requested Crypto Units**.
 - **Virtual Console Port Range:** Enter the range between 5000 to 6000.
 - Keep the default name of the virtual disk server.

Clear the following options:

- **Enable Single Root I/O Virtualization (SR-IOV)**
- **Detach Unused Buses**

Specify Oracle VM Server Control Domain Parameters * Indicates Required Field

Specify the setup configuration for the Oracle VM Server Control Domain.

* Oracle VM Server Version: Solaris 11.2 SRU 11.5.0 (LDom 3.2.0.1) ▼

CPU Model: Virtual CPU Whole-Core

* CPU Cores:

Max CPU Cores:

Memory: GB ▼

Requested Crypto Units:

Virtual Console Port Range: -

Virtual Disk Server:

Options: Enable Single Root I/O Virtualization (SR-IOV)
 Detach Unused Buses

Click **Next**.

8. Select the option **Enable Multiplexed I/O** so that you can associate block storage libraries such as SAN and iSCSI for storage with the control domain.

OS Management

Automatically Manage with Oracle Enterprise Manager Ops Center

Enable Multiplexed I/O (MPxIO)

Click **Next**.

9. Select **None** as the networking option for Oracle VM Server for SPARC.

Specify Networking

Specify if the OS would need to use IPMP groups or IEEE 802.3ad Link Aggregations.

Use Link Aggregation

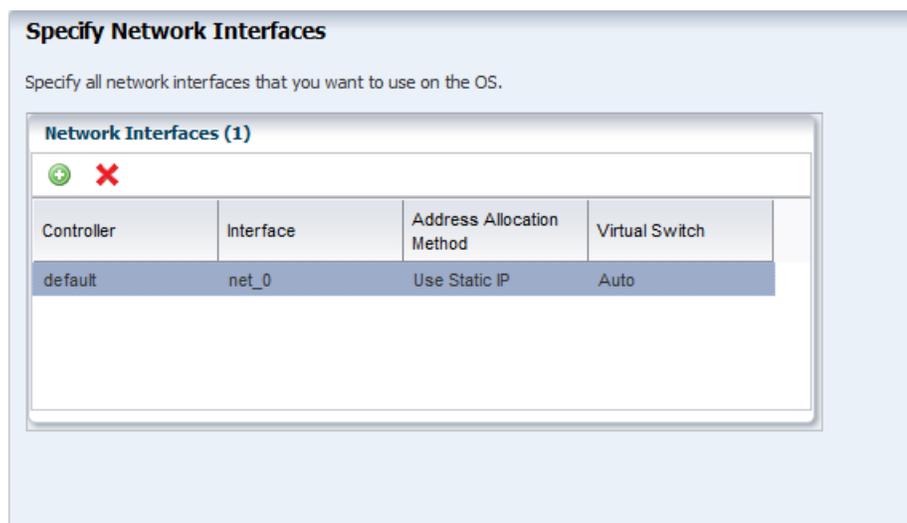
Use IPMP

None

Click **Next**.

10. Select the network interface to use for OS provisioning. Select the **Controller** that hosts the network interfaces and the corresponding network interface. The **Address Allocation** is Use Static IP by default and cannot be modified.

Select **Auto** to create a virtual switch automatically for the network connection to the control domain. The virtual switch is created in the default format. For example, the network `192.0.2.0/24`, the virtual switch is created as `192.0.2.0_24`.



Click **Next**.

11. Review the parameters and click **Finish** to create the OS configuration profile.

The job is initiated and the new OS configuration profile appears under Profiles and Policies in the Plan Management section. You can select the OS Configuration profile to view its details in the center pane.

41.2.7.3 Apply the Deployment Plan

Apply a deployment plan to provision Oracle VM Server for SPARC.

When you apply a deployment plan to provision Oracle VM Server for SPARC, you must have the following information to complete the installation:

- In the server hardware, obtain the network interface that is physically connected to the network that is managed by Oracle Enterprise Manager Ops Center.
- Both tagged and untagged networks are listed for network configuration. When OpenBoot PROM (OBP) is used, only untagged networks can be used for OS provisioning as you cannot boot from a tagged network.
- The IP address for the boot interface.
- If you want to identify the network interface using the MAC address, you can select to enter the MAC address instead of the boot interface.
- The details of network connection that you want to use to configure the OS after booting. For multiple network configuration, the first interface is always overwritten by the boot interface that is defined during the OS provisioning step. For single network configuration, it is same as the boot interface network.

- Do not select the option to place the Oracle VM Server for SPARC in a server pool.
- 1. Select the **Provision OS** plan in the **Deployment Plans** list.
- 2. Select **Apply Deployment Plan** in the Actions pane.
- 3. Select one or more assets and add to the target list.
- 4. Select the plan to be applied with minimal interaction. If required to change the profile parameters, then select **Allow me to override any profile values**.
- 5. Select not to review the steps that are not included in the plan and click **Next**.
- 6. The wizard collects information for provisioning Oracle VM Server for SPARC. Click **Next**.
- 7. In the Boot Interface Resource Assignments step, provide the following information:
 - **Network**: The network for the boot interface.
 - **Controller**: Select the controller that provides the network interface for OS provisioning. It is always default for the Oracle VM Server for SPARC provisioning.
 - **Interface**: Select the net0 interface from the list. This network interface is physically connected to the selected network.
 - **IP Address**: Enter the IP address for the boot interface.
 - (Optional) **Primary Hostname**: Enter the host name for Oracle VM Server for SPARC.

If you want to identify the network interface by its MAC address, then select the option **Identify Network Interface by MAC Address** and enter the MAC address instead of selecting the Controller and the Interface.

Click **Next** to view the OS provisioning summary.

- 8. Review the parameter of OS provisioning and click **Next**.
- 9. The following steps in the wizard collects information about OS configuration. Click **Next**.
- 10. Specify the network resources that were defined in the profile. Select the network and for each network, select the network interface and enter the IP address.

The first network interface listed is the boot interface. For multiple network configuration, the first network interface is always overwritten by the boot interface network. You can select which is the primary network interface after the provisioning of the OS.

For single network, the boot interface network will be the defined as the primary network during OS configuration.

Click **Next**.
- 11. Do not select the option to add the Oracle VM Server for SPARC to a server pool. Click **Next**.
- 12. Review the summary of the OS configuration parameters and click **Next** to schedule the job.
- 13. Schedule the provisioning job to run immediately.

Click **Apply** to apply the deployment plan on the selected targets.

41.2.8 Create the Server Pool

A server pool is a group of control domains that has access to the same virtual and physical networks and storage resources. Server pools provide load balancing, high availability capabilities, and sharing of the resources for all the members of the pool.

This procedure creates a server pool containing the control domains you created, both storage libraries you created, and the network domain you created.

Before you begin, you must know the network interface that is the physical connection to the system that supports the control domain.

1. Select **Server Pools** in the Resource Management View of the Navigation pane.
2. Click **Create Server Pool** in the Actions pane.
3. Enter a name and description for the server pool.
4. Select Oracle VM Server - SPARC from the Virtualization Technology list.
5. Click **Next**.
6. Select the Oracle VM Servers to be added to the server pool.

Select Members

Select one or more assets to add to the server pool.

Member Name	CPU Architecture	CPU Type	CPU Frequency
prggb04		SPARC-T5	3600
prggb05		SPARC-T5	3600

Click **Next**.

7. Select the new network domain to be associated with the server pool. When you select a the network domain, the Specify Physical Interface table is populated with the fabrics in the network domain.

Associate Network Domain

Select the network domain to associate with the server pool. Select the physical interfaces for each asset used to connect to each fabric in the network domain.

Network Domain: PaaS ND

Specify Physical Interfaces

Server	ServiceDomain	Physical Interface	Bond ID	Bond Member
Fabric: Eth Fab at net5 at 10.1...7				
prggb05	primary	net0		
Fabric: PaaS Eth Fabric				
prggb05	primary	net3		

Networks on PaaS Eth Fabric:

Networks on Eth Fab at net5 at 10.163.96.217: 10...1

- Specify how each fabric connects to each Oracle VM Server.

 **Note:**

In the Physical Interface column, for each Oracle VM Server, select the name of the NIC that the system that hosts the Oracle VM Server uses to connect to the fabric. The NIC that is displayed initially is not a default; you must specify the NIC to use.

Click **Next**.

- Click the **Add Network** icon to associate the networks in the network domain with the servers in the server pool. Enter the number of connections to the network as 1.

Associate Networks

Select the networks to associate with all of the servers in the server pool.

Network Domain: PaaS ND

Network Name	P-Key / VLAN ID	Mode	Total Connections	Use for Migration?
10.10.10.2.1	-	-	1	<input type="checkbox"/>

Click **Next**.

- Specify the network configuration settings for each Oracle VM Server. Both Oracle VM Servers are already connected to the selected network. The UI displays the existing connection details to the network.

Select interfaces for each fabric you selected in network domain:

- For the fabric that supports the public network (the routable network), select any existing interfaces to the control domain. If no interface has been connected to the control domain, select the interface that is connected to the Ethernet switch.
- For the host-managed fabric, select the interface that is connected to Ethernet switch. Do not use bonded interfaces.

 **Note:**

In the NIC column, for each Oracle VM Server, select the name of the NIC that the system that hosts the Oracle VM Server uses to connect to the fabric. Specify the same NIC that you chose in Step 8.

Configure Interfaces

Specify the configuration settings for each network connection.

Server Pool Name: my_server_pool

Specify Configuration Settings for each Network Connection

Hostname	Service Domain	SR-IOV	Network	P-Key/VLAN ID	Mode	Connected	NIC	Switch Name	Address Allocation Method
smt5v2-1	primary	<input type="checkbox"/>	192.0.2.0/24.1	-	Untagged	<input checked="" type="checkbox"/>	net0	192.0.2.0_24	Do not All
smt4v2-3	primary	<input type="checkbox"/>	192.0.2.0/24.1	-	Untagged	<input checked="" type="checkbox"/>	net0	192.0.2.0_24	Do not All

Click **Next**.

- Storage libraries that are reachable from the selected members of the pool are displayed. Select the NAS and the SAN storage library to be associated with the server pool. Do not select a dynamic storage library.

Associate Libraries

The storage libraries that are reachable from all of the selected virtualization hosts are listed. Select the storage libraries to associate with the server pool.

Search

Library Type	Library Name	Description
Dynamic Storage	Dynamic Library (10.163.98.106)	Dynamic Storage Library of 10.163.98.106 Storag...
SAN	PaaS data lib	fc://b65f59dd-819c-4d40-8244-d54d1f38eed6
NAS	metadata_paaS	paas metadata lib

Click **Next**.

- Select the placement and auto balancing policy:
 - Place the guest on Oracle VM Server with lowest relative load.
 - Do not auto balance the server pool.
 - Clear the option for Automatic Recovery.

Specify Policies

Placement Policy: Place guest on Oracle VM Server with lowest relative load
 Place guest on Oracle VM Server with lowest allocated CPU and memory
 Place guest on Oracle VM Server minimizing overall power consumption

A Server is over-utilized when the following values are exceeded:
 CPU Utilization exceeds: % for: minutes

Auto-Balancing Policy: Do not auto-balance the server pool
 Automatic balancing of the server pool

Note: The date and time are in the Enterprise Controller's time zone.
 Every: Weeks on a at

Approval Policy
 Approval not required, automatically move the guests
 Approval required, send notification

Automatic Recovery: Power off a failed server when the capabilities are available before the automatic recovery of its logical domains

Check servers reachability every : seconds

Click **Next**.

13. Review the server pool information, then click **Finish** to create the server pool. The server pool is created and listed in the Server Pools view of the Assets section.

41.3 Set Up and Configure a Virtual Data Center

- [Create the vDC](#)
- [Create the vDC account for PaaS](#)
- [Preparing the vServers](#)

41.3.1 Create the vDC

The vDC inherits network resources and storage resources from the server pool. The vDC enables cloud users to create virtual machines and run applications. The cloud user provides networking to its virtual machines from the public networks that are allocated to each account or by creating private networks. The cloud user can use the public networks, or create a private vNet for use in the account. When the cloud users create a private vNet, either a dynamic private network is created or the static private network is available for use in that account.

1. Select **vDC Management** in the Navigation pane.
2. Click **Create Virtual Datacenter** in the Actions pane.
3. The first step Create Virtual Datacenter Wizard is an introduction to the vDC and the prerequisites for creating a vDC. Click **Next**.
4. In Specify Virtual Datacenter Details:
 - Provide a name and description for the vDC.

- Enter tags to distinguish this vDC from other vDCs.
- Select **Password Required** to enforce using credentials when creating vServers in the vDC. When this option is enabled, cloud users must specify a root password, with or without an SSH key. In addition, cloud users must specify either an SSH key or remote user credentials when creating vServers that use Oracle Solaris 11 OS.

Click **Next**.

5. Select the new server pool from the list.
6. Select one or more boot networks from the public network. You must select at least one network.

 **Note:**

Boot networks are required for vServer OS deployment. You must also add at least one boot network to each account in the vDC for creating vServers in the account. You can also assign a boot network to an account and use it as a public network for that account.

Click **Next**.

7. The vCPU sizing displays this information:
 - **Total number of vCPUs:** The total number of vCPU in the vDC for the updated vCPU to physical CPU Threads ratio.
 - **Avg memory per vCPU:** The average memory per vCPU in GB. The total memory available for the vDC by the total number of vCPUs. When you want to use the CPU and memory resources to the full extent, the vServers must use this amount of resources.

Accept the default values and click **Next**.

8. Select **Static Block Storage Libraries** as the storage type for the root disk.
9. Select the SAN storage library you created.
10. Select **Static Block Storage Libraries** as the storage type for the volume and template.
11. Select the SAN storage library you created.

Click **Next**.

12. Confirm the vDC configuration and click **Finish** to create the vDC. The vServers will run in this vDC, according to the vServer type.

41.3.2 Create the vDC account for PaaS

In creating the account, you allocate resources from the vDC to the account. The resource allocation for all the accounts in a vDC can be more than the actual resources in a vDC. This oversubscription of the resources must be planned. You must update the resources when the requirement increases.

1. Expand vDC Management on the Navigation pane.
2. Expand vDCs, select the new vDC, then click **Accounts**.



3. On the Actions pane, click **Create Account**.
4. Enter the name for the account: `ocadmin`.
Click **Next**.
5. Specify the quotas of vCPU, Memory, and Storage for the account.
For this PaaS account, specify the maximum capacity of each resource.

Specify Account Resource Limits

Resource Quota Information

- vCPU is Infinity% oversubscribed, 5 vCPUs subscribed from vDC capacity of 0
- Memory is Infinity% oversubscribed, 10 GB subscribed from a vDC capacity of 0 GB
- Storage is 1% oversubscribed, 1635 GB subscribed from a vDC capacity of 1630 GB

vCPU:

Memory: GB

Storage: GB

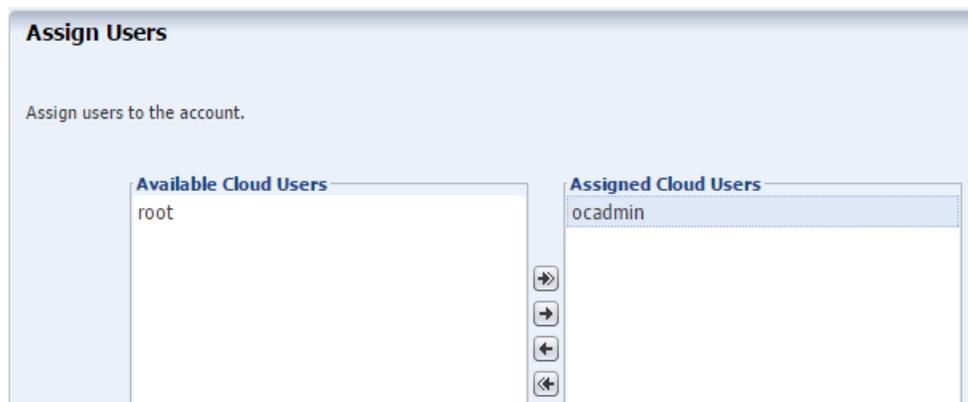
Number of private vNets: 0

Use the table below to edit the public network resource limits.

Public Networks Resource Limits			
	Name	Subnet	Limit
<input checked="" type="checkbox"/>	10.10.10.1/24	10.10.10.2	101
			<input type="text" value="8"/>

6. In the Number of private vNets field, enter the number of private vNets for this account, which is the same as the number of VLAN IDs assigned. Click **Next**.

7. Select the cloud user that you want to assign to the account. Use the right arrow key to add this cloud user to the list of Assigned Cloud Users. You can use the other arrow buttons to adjust the list. Do not assign the `root` user.



Click **Next**.

8. View the Summary and click **Finish** to create the account. When the job is completed, a new account is created.

41.3.3 Preparing the vServers

A vServer is an entity that provides the outward interface of a stand-alone operating system that consumes CPU, storage, and memory resources. A vServer has its own identity, local storage, interfaces, and configuration that exist for the full lifetime of the vServer. You determine the creation of new vServers according to the account quota limits and applications requirements.

When creating a vServer, the following account resources are required:

- **A vServer type:** vServer Types are profiles that define the computing resources such as virtual CPU, memory, and storage size. You select the best suitable vServer type from those available for the account. vServer types are visible to cloud users during the vServer creation process.
- **A server template:** Server templates designate the OS provisioning and OS configuration for the vServer. You can either select a server template from those that exist for the account or create a new server template.
- **One or more virtual networks:** For the vServer network connectivity you must choose one or more vNets from the available vNets or create new ones before creating a vServer. vServers are only assigned to virtual networks at vServer creation time.

41.3.3.1 Create a new vServer Type

When you create a vServer type, the VM hosting details display the following information in the wizard based on the resources defined:

- The number of virtualization servers in the vDC that have sufficient physical resources to host a vServer with the selected resources.

- An estimation of number of vServers that can be hosted with the total number of physical resources of the vDC.
 - A warning when the current value of the memory size exceeds the selected storage size.
1. Select the vDC and click **Create vServer Type** in the Actions pane.
 2. Provide a name and description to identify the type. For example:
 - single instance DBAAS
 - RAC instance DBAAS
 - RAC big instance DBAAS
 3. Add tags for identification and classification of the vServer type. Click **Next**.
 4. Specify values for vCPU, memory and storage resources. Click **Next**. The minimum amount of RAM for Oracle Solaris 11.2 is 2 GB. For example, [Table 41-1](#) shows the recommended values for the DBaaS instances deploying Oracle 12c Database.

Table 41-1

Type	RAM	root	vCPU
single instance DBAAS	4 GB	45 GB	16
RAC instance DBAAS	5 GB	45 GB	16
RAC big instance DBAAS	12 GB	45 GB	16

5. Review the information provided and click **Finish** to create the vServer type.

41.3.3.2 Create a vServer Template

Create a vServer template from the new OS profiles you created: provisioning, which includes the update profile, and configuration.

1. Select the account in the vDC Management section.
2. Click **Create Server Template** in the Actions pane.
3. In the wizard, skip the introduction and click **Next**.
4. Enter the name and description for the server template.
Click **Next**.
5. Select the new OS provisioning profile, then click **Next**.
6. Select the new OS configuration profile from the list, then click **Next**.
7. Review the information and click **Finish** to create the server template.

The new template is created and available to create vServers.

41.3.3.3 Create a Private vNet

Private vNet is a private virtual network set up exclusively for an account. The vServers associated with this vNet have private virtual IP address for internal communication. In this PaaS solution, only RAC instances use private networks.

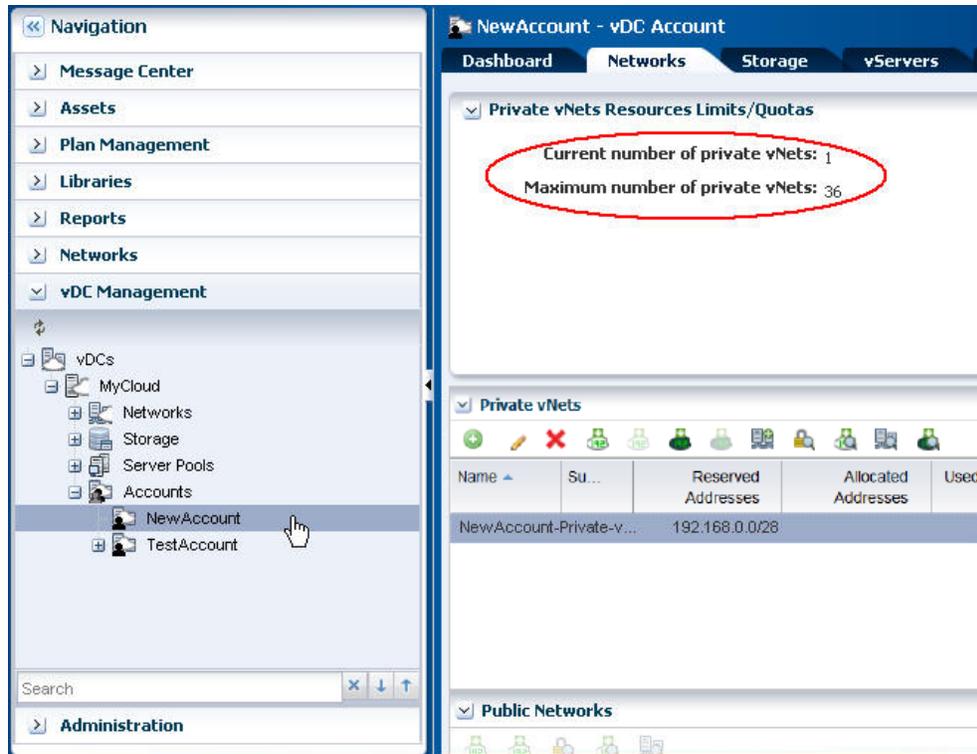
1. Expand vDC Management on the Navigation pane.

2. Expand vDCs, select the new vDC, then click **Accounts**.
3. Select the account you created.
4. On the Actions pane, click **Create Private vNet**.
5. Enter the name and description for the private virtual network. Click **Next**.
6. Use the slide bar to set the value of the number of elements. The values entered are rounded up to the next value of 13, 29, 61, 125, 253, 509, 1021, 2045, 4093, and 8189. Do not use the values of 1 or 5. You cannot change the size of a network after it is created so specify the size needed to accommodate your current and future requirements:
 - The number of elements is also the maximum number of vServers that can be part of this vNet. Class C networks (for example, 10.0.0.1/24) enable you to create 256 vServers and Class 16C networks (for example, 10.0.0.2/20) enable you to create 4096 vServers.
 - Whether the vNets will be shared or dedicated. If multiple RAC instances will share one or more networks, set the network size to 509 and more. If each RAC instance will have a dedicated network, limit the network size to 29 or 13.



7. Click **Next**.
8. Review the Summary, then click **Finish** to create the private virtual network.

The new private virtual network is listed in the Networks and vDC sections of the Navigation pane.



9. Connect the IP address from this new private virtual network to the vServer, using **Connect Private vNet** icon in the Private vNets table.

 **Note:**

If you have multiple vNets, connect each vNet one at a time. Wait for each job to complete before making the next connection.

41.4 Validate the Integration and PaaS

Test the connections from Enterprise Manager Cloud Control and Enterprise Manager Ops Center to the cloud user. In this test, create two vServers with the same storage and network resources. If successful, one vServer can send information to and receive information from the other vServer.

41.4.1 Create Volumes for vServer

Use the following procedure to create volumes from shared disks. In normal operations, Enterprise Manager creates the volumes.

1. Expand **vDC Management** in the Navigation pane.
2. Select the account from the vDC Accounts list.
3. Click **Create Volume** in the Actions pane.
4. Enter a name for the volume.

Click **Next**.

5. Check the **Shared** option.
6. Enter the size of the volume.
Click **Next**.
7. Review the volume information and click **Finish** to create the volume.
8. Delete the volume when the job has completed.

41.4.2 Create Test vServers

Create two vServers with the same private network.

1. Expand vDC Management in the Navigation pane.
2. Select the account from the vDC Accounts list.
3. Click **Create vServer** in the Actions pane.
The Create vServer Wizard is displayed.
4. Enter the following information in the **vServer Details** step:
 - Name and description for the vServer.
 - Tags for better identification and classification of the vServer.
 - Number of vServers to create.
 - The High Availability Support option has no effect in the PaaS integration.

Click **Next**.

5. Select a server template from the list. Click **Next**.
6. Select a vServer type from the list. Click **Next**.
7. Select one or more volumes from the Available Volumes list. Use the arrow keys to move the selected volumes to the Attached Volumes list.

For this test, attach the same volume to both vServers.

Click **Next**.

8. Select one or more vNets from the list. Click **Next**.
9. Select the Static method for assigning the IP address.
10. Assign the IP address from the new private virtual network to the vServer. Click **Next**.

You can also perform this step after you create the vServer by clicking the **Connect vNet** icon on the account's **Networks** tab in the Private vNet table.

Do not select a distribution group. Click **Next**.

11. Specify a root password. Click **Next**.
12. Confirm the vServer information provided in the Summary and click **Finish** to launch the job to create the vServer.

After the job completes, the vServer is created and listed in the Navigation pane. By default, the DNS and other naming information is taken from the selected vNet or server template and added in the `/etc/resolv.conf` file of the vServer.

41.4.3 Verify Shared Storage and Connectivity

To verify connectivity, create two vServers. From the console, log into one vServer and use the `ping` command with the IP address of the other vServer. This succeeds on public network or private network.

To verify shared storage:

- For a Fibre Channel SAN storage: `fcadm lu`
- For iSCSI SAN storage: `iscsiadm list target -S`

The Client Kit also contains the `new_vDC.ksh` script that can be useful for diagnosing problems. Enterprise Manager uses the file when it starts the integration, using the file path `/tmp/INPUT/bootstrap.xml` but you can also perform this manually.



Note:

After you finish testing, delete the `bootstrap.xml` file and the `oc-pass.txt` files because they contain security information such as passwords and URLs.

1. Create a file named `bootstrap.xml` in the following form and using your site's information.

```
<bootStrap version="1.0" name="boot_strap"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="bootstrap.xsd">
<!-- Ops-center details required to establish connection before running the ops center commands -->
<opsCenterDetails>
  <opsCenterURL>https://<yourhostname>.com</opsCenterURL>
  <!-- OpsCenter credentials -->
  <opsCenterUser>ocadmin</opsCenterUser>
  <opsCenterHome>/opt/oracle/iaas/cli/</opsCenterHome>
  <!-- Stage location on Ops Center Host -->
  <opsCenterStageLoc>/tmp/</opsCenterStageLoc>
</opsCenterDetails>
</bootStrap>
```

2. Issue the following commands:

```
-bash-4.1$ echo password > /tmp/INPUT/oc-pass.txt
-bash-4.1$ /opt/oracle/paas/tools/new_vDC.ksh
```

3. Review the output:

```
Certificate added to truststore /export/home/ocadmin/.oracle_iaas/truststore
Vserver types
4159 EXTRA_LARGE Logical Domain extra-large instance type for vDC PaaS_vDC 17179869184
28 4
4158 LARGE Logical Domain large instance type for vDC PaaS_vDC 8589934592
24 2
4157 SMALL Logical Domain small instance type for vDC PaaS_vDC 4294967296
20 1
4161 paas_RAC 12884901888
45 16
```

```
4160 paas_SI 4294967296
45 16
Vnets
VNET-321a93e4-2d11-4642-b3ec-3ebde6e86b04 big_private_net big_private_net OK 172.16.0.0/20
private
VNET-badc34e5-021a-44c7-a7ad-d11915e04ec3 small_rac_net1 small_rac_net1 OK 192.168.0.0/28
private
VNET-47f06e55-7c72-4116-919f-bb940c978b8a 10.163.96.0/22.1 OK 1x.16x.x6.0/22
public_external
Vserver templates
TMPL-116826d2-6a96-4217-ab16-0d4a71157028 paas_default OK 12884901888
false false
```

41.4.4 Diagnosing Problems

If a virtual datacenter is unable to create vnets, edit the network domain to increase the limit of private networks it can provide simultaneously.

If control domains are already running and you change the fabric that supports the server pool, you will need to configure the Fibre Channel controller:

1. `fcadm hba-port`
2. Identify active ports.
3. `fcadm remote-port -p <each_portID_from_output>`
4. `# cfigadm -c configure <controller_to_be_configured>`

Getting Started with Dynamic Resource Provisioning

This chapter provides an introduction to the Dynamic Resource Provisioning and describes how to set up the virtual service adapter so that it can communicate with virtual data center. It contains the following sections:

- [About Dynamic Resource Provisioning](#)
- [Configuring the Solaris SPARC Adapter](#)

42.1 About Dynamic Resource Provisioning

Oracle Enterprise Manager Ops Center provides a centralized management and optimization system by which administrators can create virtual operating systems, virtual systems, or a virtual data center in a cloud. The Enterprise Manager Platform as a Service allows administrators to create platforms onto which users can deploy database and middleware applications. By using the Dynamic Resource Provisioning feature, Enterprise Manager can now interface with the Enterprise Manager Ops Center to add or remove resources on demand to a PaaS Cloud.

This reduces the administrator overhead required while planning and setting up large infrastructure services. With this feature, administrators can:

- Dynamically add or remove virtual hardware
- Extend or downsize DBaaS or MWaaS in an automated manner.

To expand the capacity of a private cloud, the cloud administrator must request hardware and software from the Enterprise Manager Ops Center infrastructure administrator. The infrastructure administrator provides the host, network, and storage details to the cloud administrator who then uses these details to setup the PaaS infrastructure in the cloud.

In earlier releases, these tasks had to be performed manually. In this release, several of the steps have been automated and the cloud administrator can increase or decrease capacity by just a few clicks. To set up DBaaS / MWaaS on Solaris SPARC, the following steps are required:

- The virtual data center must be configured. This involves setting up the networks, storage volumes, creating server templates, and defining sizes. See [Set Up and Configure a Virtual Data Center](#).
- The virtual machine adapter must be configured. See [Creating the Virtual Machine Adapter Instance](#).
- The administrator can launch the Provision or De-Provision wizard to increase or decrease the capacity of the pool. For:
 - DBaaS: See [Dynamically Provisioning Resources in a DBaaS Cloud](#) .
 - MWaaS: See [Dynamically Provisioning Resources in an MWaaS Cloud](#) .

42.2 Configuring the Solaris SPARC Adapter

The Solaris SPARC Adapter acts as an interface between Enterprise Manager and Enterprise Manager Ops Center and allows cloud and self service administrators to dynamically provision or de-provision resources in their private cloud setup. Resources can be added when additional service instances need to be provisioned or decreased if existing resources are not being utilized. Resources can either be infrastructure resources like hosts (based on virtual machines) or platform resources like database and middleware Oracle Homes.

To configure the virtual service adapter, follow these steps:

Step	Task	Link
1	Adding the Stage Server	See Adding the Stage Server .
2	Creating the Virtual Machine Adapter Instance	See Creating the Virtual Machine Adapter Instance .
3	Creating the Virtual Machine Template	See Creating the Virtual Machine Service Template .

42.2.1 Adding the Stage Server

A staging server is a managed host that communicates with the Enterprise Manager Ops Center to perform one or more of the following tasks:

- **Query:** Query and retrieve configuration information for Solaris SPARC systems from the Enterprise Manager Ops Center Virtual Data Center.
- **Provision the Virtual Machines:** Access the Enterprise Manager Ops Center to perform provisioning operations such as creating virtual machines, reserving networks and allocating storage on virtual machines.
- **De-provision the Virtual Machines:** Access the Enterprise Manager Ops Center to perform de-provisioning operations such as releasing networks, IP addresses, and storage on virtual machines.

Any managed host can be used as the staging server if the Enterprise Manager Ops Center Client kit has been installed and available for the platform. The following platforms are supported:

- Linux_x86
- Solaris_x64
- Solaris SPARC 64

Before the staging server can communicate with Enterprise Manager Ops Center, the Ops Center Client must be installed. To communicate with Enterprise Manager Ops Center, specify the IP address of the Ops Center's Enterprise Controller and the credentials for the cloud user account after configuring of the Ops Center Client, as described in [Dynamic Resource Provisioning with Oracle VM Server for SPARC](#).

To add a stage server, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.

2. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. Click the Setup link next to the Virtual Adapters service family and click on the **Stage Servers** link.
3. Click **Add** on the Stage Servers page. The Add Stage Server window appears.
4. In the Host field, select a managed host that is to be used as the staging server.
5. Specify the directory in which the staging files are to be stored. This directory is used to stage and execute the scripts, store temporary data and results.
6. Specify the credential type which can be:
 - **Named**: Select a named profile for which the credentials have been defined.
 - **New**: Select this option to specify new credentials. Enter the user name, password, specify the **Run** privilege and click **OK**.
7. Click **OK** to add the stage server.

You can add one or more stage servers that can be used to communicate with Enterprise Manager Ops Center when the Solaris adapter instance is being created. When one of the stage servers goes down, the next available one will be used to communicate with Enterprise Manager Ops Center.

42.2.2 Creating the Virtual Machine Adapter Instance

A virtual machine adapter instance is a managed target which can be used as an interface with the Infrastructure provider system (Enterprise Manager Ops Center) to manage the client machines.

To create an virtual machine adapter instance, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
2. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. Click the **Setup** link next to the **Virtual Adapters** service family and click on the **Instances** link.
3. Click **Create**. The Create Infrastructure Adapter: General page appears. Enter the name and description for the adapter.
4. Select the PaaS Infrastructure Zone with which the adapter is to be associated. Any virtual machine provisioned using this adapter will be added as a host member to the PaaS Infrastructure Zone selected here. A PaaS Infrastructure Zone can be associated with only one adapter instance.
5. Click **Next**. In the Create Infrastructure Adapter: Connection Details page, specify the following:
 - **Ops Center Web Service URL**: Enter the URL that is to be used to connect to the Enterprise Manager Ops Center server.
 - **Ops Center Admin User**: Enter the name of the administrator who will be accessing the Enterprise Manager Ops Center server. This user is created when the virtual data center is set up.
 - **Password**: Enter the password for the administrator.
 - **Stage Servers**: Click **Add** to select the stage servers that are to be used to execute scripts to perform various operations such as provisioning, querying, and so on. You must select the correct stage server for this adapter instance. For example, there may be two administrators managing two different virtual

data centers with different accounts and using separate stage servers for each of their accounts. In this case, it is important that the correct stage server is selected here.

6. Click **Next**. In the Placement Constraints page, specify the maximum number of virtual machines that can be provisioned.
7. Click **Next**. In the Characteristics page, specify the characteristics that will be applied to the virtual machine adapter target as target properties. When a new virtual machine is created, these properties will be applied.
8. Click **Submit**. A Solaris SPARC adapter instance that can be used to communicate with the virtualized resource provider system (Enterprise Manager Ops Center) is created. Along with the Solaris SPARC adapter instance, a default virtual machine service template is also created. This template can be modified and copied to create more service templates. These templates provide the structural definition for the virtual machines that will be created.

42.2.3 Editing the Virtual Machine Adapter Instance

To edit a virtual machine adapter instance, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
2. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. Click the **Setup** link next to the **Virtual Adapters** service family and click on the **Instances** link.
3. Select a virtual machine adapter instance from the list and click **Edit**.
4. You can edit the following:
 - Name and description of the adapter.
 - PaaS Infrastructure Zone: You can select a new PaaS Infrastructure Zone with which the adapter instance is to be associated.
 - Fetch Configuration: Select this check box to retrieve the latest configuration information such subnet, storage, and so on available with the adapter. If the configuration has changed, the existing service templates may become invalid and scheduled provisioning operations may need to be manually purged.
5. Click **Next**. In the Connection Details page, you can modify the connection details, add a new stage server or remove an existing stage server. Click **Next**.
6. Modify the Placement Constraints if required. Click **Next** and modify the characteristics you have defined for the adapter instance if necessary.
7. Click **Next** and review the information entered so far. Click **Submit** to submit the changes made to the adapter instance.

42.2.4 Deleting the Virtual Machine Adapter Instance

To delete a virtual machine adapter instance, select an instance from the list and click **Delete**. A confirmation message is displayed. Click **Yes** to confirm and delete the adapter instance.

 **Note:**

You cannot delete an instance if any virtual machines have been provisioned using the adapter instance.

42.2.5 Creating the Virtual Machine Service Template

The virtual machine template describes the virtual machine configuration that can be used to provision a virtual machine on the infrastructure adapter instance.

This template can be used in the following cases:

- When the administrator chooses to provision the virtual infrastructure.
- When auto provisioning is not part of the service request. (This feature is available only for Middleware as a Service).

To create the virtual machine template, follow these steps:

1. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**.
2. From the **Oracle Cloud** menu, select **Setup**, then select **Getting Started**. Click the **Setup** link next to the **Virtual Adapters** service family and click on the **Service Templates** link.
3. Click **Create**. The General page appears. Enter the name and description for the template and click **Next**.
4. In the Characteristics page, specify the characteristics that will be applied to the virtual machines that will be provisioned using the Solaris SPARC adapter.
5. Click **Next**. In the Solaris Adapter page, click **Add** to select the Solaris SPARC Adapter with which the service template is to be associated.
6. Click **Next**. The Virtual Machine Configuration page appears. Depending on your use case (single instance, RAC, or middleware), the configuration details you specify will be different.

Enter the virtual machine configuration details:

- **Host Name Prefix:** Enter a prefix for the host name. This is a logical name used to group hosts of a certain request type.
- **Instance Size:** The list of available virtual machine hardware configurations (memory, CPU, and storage) are listed. The configurations are retrieved from the Enterprise Manager Ops Center when the Solaris adapter is registered. Select the configuration that best suits your requirements based on how much CPU, storage, and memory is required to run the operating system, the software that is to be deployed, and extra space for maintenance.

If all configurations are selected, they will be displayed when the request is submitted.

For example, if the operating system requires 2GB, the Database Home to be deployed requires 2GB, and the maintenance space (3.5 times the Database Home) + expected data to be stored (1GB), you must select at least 10 GB size.

- **Server Template:** The server template defines the operating system image being used. When you select a server template, configuration details such as

virtual machine templates, virtual machine sizes, networks, and storage volumes that are accessible and available to the administrator are retrieved from the Enterprise Manager Ops Center. To maintain consistency across the software pool, all the Oracle homes in the pool must be of the same type and are expected to use the same operating system image.

Sample XML: Server Template

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<result xmlns="http://www.oracle.com/xml/ns/iaas"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:type="DescribeServerTemplatesResult" requestId="8886">
  <items>
    <id>TMPL-1005a3b8-cc8b-4f3e-83c2-ee65b849c871</id>
    <name>paas-templ</name>
    <status>OK</status>
    <size>12884901888</size>
    <public>>false</public>
    <readOnly>>false</readOnly>
  </items>
  <items>
    <id>TMPL-55e78615-e896-4521-a9bd-d037dc5c981b</id>
    <name>paas-tmpl-simple-post-script</name>
    <status>OK</status>
    <size>12884901888</size>
    <public>>false</public>
    <readOnly>>false</readOnly>
  </items>
</result>
```

Sample XML: Server Template: RAC

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<result xmlns="http://www.oracle.com/xml/ns/iaas" xmlns:xsi="http://
www.w3.org/2001/XMLSchema-instance" xsi:type="DescribeVserverTypesResult"
requestId="8889">
  <items>
    <id>16019</id>
    <name>PaaS_RAC_big</name>
    <description>Custom vserver type: PaaS_RAC_big, CPU: 8 Memory: 12GB</
description>
    <tags>
      <name>oracle.cloud.uuid.cloud</name>
      <value>VDC-db24f716-fed4-4bd2-8127-d88848d04687</value>
    </tags>
    <tags>
      <name>oracle.vm.profile.type</name>
      <value>CLOUD_CUSTOM</value>
    </tags>
    <tags>
      <name>oc.internal.ui.hide</name>
      <value>TRUE</value>
    </tags>
    <memorySize>12884901888</memorySize>
    <storageSize>20</storageSize>
    <vcpu>8</vcpu>
  </items>
  <items>
    <id>16017</id>
    <name>PaaS_SI</name>
    <description>Custom vserver type: PaaS_SI, CPU: 4 Memory: 6GB</
```

```

description>
  <tags>
    <name>oracle.cloud.uuid.cloud</name>
    <value>VDC-db24f716-fed4bd2-8127-d88848d04687</value>
  </tags>
  <tags>
    <name>oracle.vm.profile.type</name>
    <value>CLOUD_CUSTOM</value>
  </tags>
  <tags>
    <name>oc.internal.ui.hide</name>
    <value>TRUE</value>
  </tags>
  <memorySize>6442450944</memorySize>
  <storageSize>20</storageSize>
  <vcpu>4</vcpu>
</items>
</result>

```

- **Networks:** The list of available networks or VNET Ids are displayed. Select the public and private network interface for the virtual machine that is to be created. Multiple private and public networks can be available and you must decide which network is to be used for virtual machines created using this service template. For example, choose a network that has sufficient IP addresses available.
 - **Single Instance Database:** If you are defining a service template that will be used create virtual machines for single instance databases, specify Public Network Details.
 - **RAC Database:** If you are defining a service template that will be used to create virtual machines for cluster databases, specify Public Network Details and select public networks for virtual machines, Host IP, Scan IP, and Virtual IPs. For private interconnect, select Private Network Details and specify a private network with sufficient IP addresses available.
 - **Middleware:** If you are defining a service template that will be used to create virtual machines for middleware as a service specify the Public Network Details.

Sample XML: Networks

```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<result xmlns="http://www.oracle.com/xml/ns/iaas"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:type="DescribeVnetsResult" requestId="8887">
  <items>
    <id>VNET-90db3003-3518-4988-8920-4f66fd85aefc</id>
    <name>bigpriv</name>
    <description>bigpriv</description>
    <status>OK</status>
    <tags>
      <name>network.normalized.name</name>
      <value>com.sun.hss.domain:name=NORM-192.168.0.0_24,type=Network</
value>
    </tags>
    <ipAddress>192.168.0.0/24</ipAddress>
    <vnetType>private</vnetType>
  </items>
  <items>
    <id>VNET-d7ae94f1-ff1c-4eb9-8b69-3d087a9344be</id>

```

```

    <name>10.163.96.0/22.1</name>
    <status>OK</status>
    <ipAddress>10.163.96.0/22</ipAddress>
    <vnetType>public_external</vnetType>
  </items>
</result>

```

- **Storage:** Select shared and local storage for the virtual machine that is to be created. By default, all the available resources are selected. You must select the storage that best meets your requirement or can specify the storage details while submitting the request.

Note: Shared Storage (RAW) is applicable for RAC databases.

For example, if you are creating this service template to provision a RAC database, you must select an instance size with sufficient storage.

Sample XML: Storage

```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<result xmlns="http://www.oracle.com/xml/ns/iaas"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:type="DescribeVolumesResult" requestId="8888">
  <items>
    <id>VOL-08391b8d-8f9f-4894-adc4-8214346d64a4</id>
    <name>soanew-14d95dbf7f6-2-1-20</name>
    <description>no_description_provided</description>
    <status>OK</status>
    <tags>
      <name>keepDisk</name>
      <value>True</value>
    </tags>
    <size>30.0</size>
    <shared>>false</shared>
    <vservers>VSRV-d984031b-8385-4473-a0ce-07d71e33756e</vservers>
    <paths>/dev/dsk/cld1</paths>
  </items>
  <items>
    <id>VOL-c0249120-d9be-42df-bb7d-f9f811a1fb8a</id>
    <name>racsk2-s-1-10</name>
    <description>no_description_provided</description>
    <status>OK</status>
    <tags>
      <name>keepDisk</name>
      <value>True</value>
    </tags>
    <size>10.0</size>
    <shared>>true</shared>
    <vservers>VSRV-291b879b-5dbd-45ae-b5e3-c4f1239f0804</vservers>
    <paths>/dev/dsk/cld1</paths>
  </items>
</result>

```

7. In the Host Configuration region, specify the Owner for the Host and Agent targets.
8. In the Agent Configuration region, select the **Push EM Agent** check box to deploy the Management Agent on the virtual machine and specify the following agent configuration details:
 - **Platform:** Select Oracle Solaris on SPARC (64-bit) platform.

- **Port:** Enter the port used for the Management Agent process. If no value is specified, then either 3872 or any free port between 1830 and 1849 will be used.
 - **Base Location:** Specify the full path to the directory in which the Management Agent is to be installed. Ensure that the Base Location you specify in the response file is empty and has write permissions. This is a mandatory field.
 - **Privilege Delegation Settings:** Specify the privilege delegation settings. See the *Enterprise Manager Cloud Control Basic Installation Guide* for more details.
 - **Pre and Post Installation Scripts:** These shell scripts can be used if any custom operations need to be performed on the virtual machines. These scripts must be present on the host on which the Oracle Management Service is running or on the virtual machine.
Note: The script will be present on the virtual machine only if it was bundled with the OS image.
 - **Credentials:** Specify Named or New credentials.
9. Click **Next**. The Review page appears. Review the details entered so far and click **Submit** to create the virtual machine template.

After the virtual service adapter has been created and configured, you can associate it with software pools to provision virtual machines.

Dynamically Provisioning Resources in a DBaaS Cloud

This chapter describes the process of adding or removing resources based on demand to a DBaaS Cloud. It contains the following sections:

- [Provisioning Resources](#)
- [De-Provisioning Resources](#)

43.1 Provisioning Resources

After you have set up and configured the virtual service adapter, you can dynamically add or remove virtual resources to your DBaaS cloud whenever required.

Prerequisites

- The stage server must be identified. See [Adding the Stage Server](#)
- The Enterprise Manager Ops Center Client Kit must be deployed on the host that is being managed by Enterprise Manager.
- The Solaris Sparc Adapter instance must have been created and configured. See [Creating the Virtual Machine Adapter Instance](#).

To provision new virtual resources in a DBaaS cloud, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Resource Providers**. The list of existing resource providers is displayed. You can select one of the following:
 - **Database Pool**: If you select a database pool, when the provisioning procedure has been completed, a virtual machine is created, the Management Agent, and Database Software is deployed on the virtual machine (either by using an image if the pool is subscribed to it or by using a reference home in the pool), and the Oracle Home is added to the pool. The capacity of the pool is now increased.
 - **PaaS Infrastructure Zone**: If you select a PaaS Infrastructure Zone, when the provisioning procedure is completed, a virtual machine is created, the Management Agent is deployed, and a host is added to the pool.
4. Select one of the above resource providers from the list. From the **Resources** menu, select **Provision**.
5. In the General page, in the Execution Name field, enter a name for the provisioning procedure.

The virtual machine adapter with which this pool is associated is displayed.

6. In the Resources to be Provisioned field, enter the number of virtual machines that are to be provisioned.
7. Click **Next**. The Virtual Machine Configuration page appears.

In the Service Template drop down field, select the Solaris Adapter service template from the list. The configuration details defined in the service template are displayed and can be modified.

For example, the service template used for a RAC database requires a private network along with a public network for scan and virtual IPs. You can select the correct template, VM size, network, and storage to create a stand alone virtual machine or a multi node network set up for clustered data using this example. For a detailed description of the fields, see [Creating the Virtual Machine Service Template](#)

For a single instance database, you must consider the database size while selecting the virtual server type. The size guidelines you need to follow for single instance database are as follows:

$$\text{SIDB VM size} > \text{OS size} + (3.5 * \text{Oracle home size}) + \text{expected data size}$$

For RAC databases, you must use the following sizing guidelines:

$$\text{RAC VM size} > \text{OS size} + (3.5 * \text{Oracle home size})$$

In the case of RAC databases, data is stored on shared disk using ASM.

8. Click **Next**. If you are provisioning a RAC machine, specify the cluster name and the network from which the Scan IP is to be allocated. The Scan IP is allocated dynamically from the pool of IPs in this network.
9. Click **Next**. Specify the schedule for the provisioning procedure and click **Next**.
10. Review the information and click **Submit** to submit the provisioning job.

43.2 De-Provisioning Resources

You can remove or de-provision resources from your DBaaS cloud by following these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Resource Providers**. The list of existing resource providers is displayed.
4. Select a Database Pool or a PaaS Infrastructure Zone from the list. From the **Resources** menu, select **De-Provision**.
5. Enter a name and description for the procedure.
6. In the Resources to De-Provision region, click **Add** and select one or more Oracle homes to be de-provisioned.
 - Single Instance Database: You must select the Oracle homes that are to be deleted. All virtual machines hosting these Oracle homes will be deleted.
 - RAC Database: You must select all the Oracle homes that are part of the cluster. This will delete all virtual machines that are part of the cluster.
7. Click **De-Provision** to submit the job. The selected Oracle homes will be deleted and the virtual machines will be de-provisioned.

Dynamically Provisioning Resources in an MWaaS Cloud

This chapter describes the process of adding or removing resources based on demand to an MWaaS cloud. It contains the following sections:

- [Provisioning Resources](#)
- [De-Provisioning Resources](#)
- [Enabling Dynamic Resource Provisioning](#)

44.1 Provisioning Resources

After you have set up and configured the virtual machine adapter, you can dynamically add or remove virtual resources to your MWaaS cloud whenever required.

Prerequisites

- The stage server must be identified. See [Adding the Stage Server](#).
- The Enterprise Manager Ops Center Client Kit must be deployed on the stage server.
- The Solaris Sparc Adapter instance must have been created and configured. See [Creating the Virtual Machine Adapter Instance](#).

To provision new virtual resources in a MWaaS cloud, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Resource Providers**. The list of existing resource providers is displayed.
4. Select a middleware pool from the list. From the **Resources** menu, select **Provision**.
5. In the General page, the virtual adapter instance with which the middleware pool is associated is displayed.
6. In the Execution Name field, enter a name for the provisioning procedure.
7. In the Resources to be Provisioned field, enter the number of virtual machines that are to be provisioned.
8. If dynamic provisioning has been enabled for this middleware pool, the Turn on Dynamic Provisioning flag is selected. If it has not been enabled, you can select the flag and enable it here. See [Enabling Dynamic Resource Provisioning](#).
9. Click **Next**. The Virtual Machine Configuration page appears.

Enter the following details:

- **Virtual Machine Template:** Select the virtual machine template. This is the virtual adapter service template that was created while setting up the virtual service adapter. See [Creating the Virtual Machine Service Template](#). Based on the template selected, the default virtual machine configuration is displayed. The configuration details can be modified.
10. Click **Next**. Specify the schedule for the provisioning procedure and click **Next**.
 11. Review the information and click **Submit** to submit the provisioning job.

44.2 De-Provisioning Resources

You can remove or de-provision resources from your MWaaS cloud by following these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Cloud** menu, select **Cloud Home**. The Cloud Home page appears.
3. From the Oracle Cloud menu, select **Resource Providers**. The list of existing resource providers is displayed.
4. Select a middleware pool from the list. From the **Resources** menu, select **De-Provision**.
5. Enter a name and description for the procedure.
6. In the Resources to De-Provision region, click **Add** and select one or more hosts to be de-provisioned.
7. Click **De-Provision** to submit the job and remove the selected hosts.

44.3 Enabling Dynamic Resource Provisioning

You can enable dynamic provisioning for a middleware pool. If dynamic provisioning is enabled, when a self service user requests for a middleware service (WLaaS, JVMaaS, SBaaS, SOaaS), virtual machines are automatically provisioned. Similarly, when the self service user no longer requires the virtual machine, it is automatically de-provisioned.

To enable dynamic provisioning, follow these steps:

1. Log into Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise Manager** menu, select **Cloud**, then select **Cloud Home**. The Cloud Home page appears.
3. From the **Oracle Cloud** menu, select **Resource Providers**.
4. Select a middleware pool and from the **Resources** drop down menu, select **Dynamic Provisioning** and then select **Turn On**.
5. In the General page, the virtual machine adapter with which the resource provider is associated is displayed. See [Creating the Virtual Machine Adapter Instance](#).
6. In the Resources to be Provisioned field, enter the number of resources that are to be provisioned with the specified configuration. The number of servers specified in the middleware profile used in the service template will override the value specified here. Click **Next**. The Virtual Machine Configuration page appears.

7. In the Service Template field, select the virtual machine template from the drop down list. The configuration details as defined in the template are displayed. You can use the selected service template configuration or modify it if required. See [Creating the Virtual Machine Service Template](#) for details.
8. Click **Next**. Review the information entered so far and click **Save** to save the configuration. The saved configuration will be applied on all virtual machines provisioned by the self service user.

44.3.1 Disabling Dynamic Provisioning

You can disable dynamic provisioning for a specific resource provider. Select a middleware pool for which dynamic provisioning has been enabled and from the **Resources** drop down, select **Dynamic Provisioning**, and then select **Turn Off**. A confirmation message is displayed. If you select **Yes**, dynamic provisioning will no longer be enabled for the selected resource provider.

Part XIII

JVM Diagnostics as a Service

This section describes the process to enable and use JVM Diagnostics as a Service. It contains the following sections:

- [Setting Up JVM Diagnostics as a Service](#)
- [Using the JVM Diagnostics Self Service Portal](#)

Setting Up JVM Diagnostics as a Service

This chapter describes the procedure to set up and enable JVM Diagnostics as a Service. It covers the following:

- [About JVM Diagnostics as a Service](#)
- [Users and Roles](#)
- [Setting Up JVMDaaS](#)
- [Defining and Allocating Quotas](#)
- [Monitoring the JVMDaaS Environment](#)

45.1 About JVM Diagnostics as a Service

JVM Diagnostics as a Service (JVMDaaS) enables IT organizations to provide JVM Diagnostics functionality in a self service manner and monitor JVMs within a Web based portal. The JVMs being monitored can either be monitored targets in Enterprise Manager or remote targets.

For example, a development organization may want to provide JVM Diagnostics functionality to its developers and QA personnel. The system administrator can provide this service through JVMDaaS. This helps reduce the organization cost by enabling developers and QA personnel to complete development tasks faster as JVM Diagnostics is easily accessible on any instance they are working on. Since the self service approach is used, there is no increase in the workload of the system administrator.

45.2 Users and Roles

Oracle Enterprise Manager supports different classes of Oracle users, depending upon the environment you are managing and the context in which you are using Oracle Enterprise Manager. User privileges provide a basic level of security in Enterprise Manager. They are designed to control user access to data and to limit the kinds of SQL statements that users can execute. When creating a user, you grant privileges to enable the user to log in to Enterprise Manager, to view and monitor targets, view various reports, monitor JVMs, and so on.

A role is a collection of Enterprise Manager resource privileges, or target privileges, or both, which you can grant to administrators or to other users. Based on the role to a user or administrator, the user will be granted the appropriate privilege in the Enterprise Manager environment. These roles can be based upon geographic location (for example, a role for Canadian administrators to manage Canadian systems), line of business (for example, a role for administrators of the human resource systems or the sales systems), or any other model. By creating roles, an administrator needs only to assign the role that includes all the appropriate privileges to his team members instead of having to grant many individual privileges.

Before using JVMDaaS, the Super Administrator must create users for the following roles:

- **EM_SSA_ADMINISTRATOR**
Users with this role can define quotas and constraints for the self service users and grant them access privileges. Users with this role also have provisioning and patching designer privileges that allow them to create and save deployment procedures, create and view patch plans, and support the plug-in lifecycle on the Management Agent. These privileges are required for initial setup and ongoing maintenance of the infrastructure.
- **EM_SSA_ADMINISTRATOR_BASE**
Users with this role can set up the Self Service Portal. Users with this role can define quotas and constraints for self service users and grant them access privileges.
- **EM_SSA_USER**
Users with this role can access the Cloud JVM Diagnostics Service and all service families and types available.
- **EM_SSA_USER_BASE**
Users with this role can access the Self Service Portal without access to any service family and type available. This needs explicit grant of service family and type. This role is frequently used in production environments.

45.3 Setting Up JVMDaaS

This section explains how to set up JVM Diagnostics as a Service. However, before you perform the setup tasks, you must ensure you have the necessary prerequisites. Users with the `EM_SSA_ADMINISTRATOR` and `JVMDAAS` role must have been created. See [Creating Users and Roles](#).

To set up JVMDaaS, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_SSA_ADMINISTRATOR` role.
2. From the **Enterprise** menu, select **Cloud**, then select **JVM Diagnostics Home**.
3. Click the **Quotas** tab to allocate quota to one or more users with `JDAAS` role. See [Defining and Allocating Quotas](#).
4. Click the Home tab to manage and monitor the JVM Diagnostics Agents. See [Monitoring JVM Diagnostics Agents and Engines](#).

45.4 Defining and Allocating Quotas

In JVMDaaS, quotas represent the maximum number of JVMs you can monitor using JVMDaaS. Users with the `EM_SSA_ADMINISTRATOR` role can define quotas for self service users.

The following prerequisites are required:

- You must have created a user with the `EM_SSA_ADMINISTRATOR` role. This user must have the `EM_SSA_ADMIN` and `JVM Diagnostics Administrator` privileges.
- You must have created one or more users with the `JVMDAAS` role.

To set up quotas, follow these steps:

1. Click the **Quotas** tab. This page shows the list of roles and the maximum number of JVMs allocated to each role.
2. Click **Create**. In the Create Quota window that appears, specify the following:
 - **Role Name:** Specify the `EM_SSA_USER` role to which the quota is to be allocated.
 - **JVMs:** Specify the maximum number of JVMs or the quota that will be available to the selected role.
 - **JVMD Engine:** Specify the URL of the engine where you want the JVMD agent to connect to.
3. Click **OK** to create the quota and return to the JVM Diagnostics Cloud Self Service Portal Setup page. The quota (JVM pool) with the specified number of JVMs is listed in the Quotas page.

You can edit or delete a quota by selecting the name of the role to which the quota has been assigned and clicking the **Edit** or **Delete** option as required.

 **Note:**

If you modify a quota that contains active JVMs, the new quota will be applicable only to the new JVM connections. The existing JVMs will continue to use the old quota.

45.5 Monitoring the JVMDaaS Environment

As the JVMDaaS administrator, use the JVM Diagnostics page to check the status of the entire JVMDaaS environment. You can also use this page to perform administrative operations like adding, editing, and deleting quota.

Click on the **Home** tab to view the JVM Diagnostics Home page. It contains the following regions:

- **Overview:** This region shows the total number of JVM Pools and JVMs for which quota has been allocated. It shows the number of active and deactivated JVMs.
- **JVM States:** This region shows a chart with the various states of the JVM.
- **Activated JVMs:** The region shows the number of the current active JVMs.
- **JVMs by Users:** This region is a tree based structure where JVMs are grouped based on their owners. This section lists the JVM User statistics including: member status summary (up, down, unknown), JVMs, whether the JVM is activated, owner of the JVM, and creation date of the JVM.
- **JVMD Engines:** This region lists the JVMD engines. Data includes the host on which the engine resides, port, SSL port, status, number of JVMs, and version of the engine.

Quota

Quota refers to the maximum number of JVMs a user (with a given Role) can monitor through JVMDaaS. If the user has been assigned more than one role, his quota will be the maximum quota from the roles assigned to him.

From this tab you can create quota by providing the number of JVMs and the JVMD engine. You can also edit and delete quota for a role.

Engine Usage

On this tab, you can view:

- **Engine Usage Graph:** Graphical view of the various JVMD engines deployed along with the number of JVMs allocated to the engine through Quota.
- **JVMD Engines Usage:** This region lists for each JVMD Engine and role, the quota, user count, and JVMs allocated to the engine.

Using the JVM Diagnostics Self Service Portal

This chapter explains how to access the JVM Diagnostics self service portal. It covers the following:

- [Using the JVM Diagnostics Cloud Self Service Portal](#)
- [JVM Home Page](#)

46.1 Using the JVM Diagnostics Cloud Self Service Portal

The JVM Diagnostics Cloud Self Service Portal allows self service users to view and monitor the JVMs allocated to them. To view this page, follow these steps:

1. Log in to Enterprise Manager as a user with the `EM_SSA_USER` role. The All Cloud Services page appears.
2. Click the JVM Diagnostics Cloud Services link. The page contains the following regions:
 - **Usage:** This region shows the total number of JVMs allocated to the self service user. It also shows the number of available JVMs, and active and deactivated JVMs.
 - **Getting Started:** This region contains links to conceptual topics.
 - **My JVM Diagnostics:** This region lists the JVMs which are being monitored through JVMDaaS. The list includes both activated and deactivated JVMs.

Activated JVMs are ones which are being monitored. Deactivated JVMs are ones on which you have deployed the JVMD agent but preferred not to monitor the JVMD agent at this time.

The following actions can be performed:

- **Download Agent:** Before you can monitor the JVM, click **Download Agent** to download the JVM Diagnostics Agent .war file and deploy it on the Application Server that is to be monitored.

 **Note:**

The quota assigned to the self service user must be greater than 0.

- **Remove:** Select a JVM and click **Remove**.

 **Note:**

Before you remove the JVM, you must undeploy the JVM Diagnostics Agent from your application server. If it is not undeployed, the JVM Diagnostics Agent will reconnect and start monitoring the JVM again.

- **Activate:** After the .war file has been deployed, select a JVM and click **Activate** to start monitoring it.
- **Deactivate:** Select a JVM and click **Deactivate** to stop monitoring the JVM.
- Click the **Name** link to drill down to the Java Virtual Machine Home page. The Java Virtual Machine Home page provides a summary view of the JVM and displays the real time thread states. Click the **My JVM Diagnostics** link to return to the JVM Diagnostics Cloud Service page.

46.2 JVM Home Page

The JVM Home page displays the following details:

- **Summary:** Shows details of the JVM such as the JVM Pool to which it belongs, the host, JVM version, vendor, heap size, agent optimization level, and agent log level details.
- **Realtime Thread States:** Shows the state of the various threads in the JVM in the color coded columns. The current activity of the JVM including CPU usage, memory, number of threads waiting for a database response, network response, or number of threads waiting for synchronization lock, and number of idle threads are displayed. Click on a JVM to view the list of threads in the JVM and the details of each thread.
- **Active Threads:** The number of active threads in the JVM in the last 24 hours.
- **Top Requests:** Shows the top requests over the last 24 hours.

From this page, you can navigate to the following pages:

- **JVM Performance Diagnostics:** Shows the performance diagnostics data for the JVM.
- **Live Thread Analysis:** Shows the real time JVM data for the selected JVM.
- **Cloud Self Service Portal:** Takes you back the JVM Diagnostics Cloud Self Service Portal.
- **Thread Snapshots:** Provides details of the selected thread. Details can include: resource usage, thread states, call stack information, and so on.
- **Heap Snapshots:** Provides a snapshot of JVM memory which includes a view of all objects in the JVM along with the references between those objects.
- **Class Histogram:** Displays a list of saved histograms with details such as date on which the snapshot was taken, Snap ID, Timestamp, JVM Name and Version, and Description.
- **JFR Snapshot:** Provides information on the inner workings of the JVM as well as on the Java program running in the JVM.

- Memory Diagnostics: Provides the details regarding current memory pool usages and the garbage collections statistics.
- Java Workload Explorer: Provides a detailed view of all performance statistics associated with the JVM target.

Part XIV

Enabling Testing as a Service (TaaS)

This section provides an overview of Testing as a Service (TaaS), describes the configuration steps, and the testing self service portal.

This part contains the following chapters:

- [About Testing as a Service](#)
- [Setting Up Testing as a Service](#)
- [Using the Testing as a Service Portal](#)

About Testing as a Service

Testing as a Service (TaaS) is a cloud-based platform for delivering automated application testing services.

It is a self-service solution designed for private clouds that:

- Orchestrates the testing process end-to-end by automating the provisioning of test labs including applications under test and test tools.
- Executes load and/or functional test scripts against the application.
- Provides rich application monitoring and diagnostics data for analysis.
- Has sophisticated chargeback facility for metering and charging the usage of the testing cloud by end-users.

Delivered through Enterprise Manager Cloud Control, TaaS makes it possible to significantly reduce testing time and costs without compromising quality and enables organizations to be more agile in delivering critical business applications to their users.

Key TaaS features include:

- Self-service portal for executing application load and functional tests.
- Test library with full access and security controls which stores all the test assets (scripts, databank files, scenario description and user configurable parameters) available to end users.
- On-demand automated provisioning of complete test labs that includes ability to deploy complex multi-tier applications, test tools, and test scripts. Pre-built assembly for Oracle Load Testing, Oracle Functional Testing, as well as custom test driver.
- Sharing of cloud hardware resource pools to help maximize hardware utilization while abiding by security policies.
- Integrated and rich application monitoring and diagnostics for middle tier and data tier, to ensure detection of bottlenecks and problems for the application under test.
- Resource metering and chargeback for tests that require to be charged to cost centers. These metering capabilities allow for tracking and charging for compute resources used.

47.1 TaaS Roles

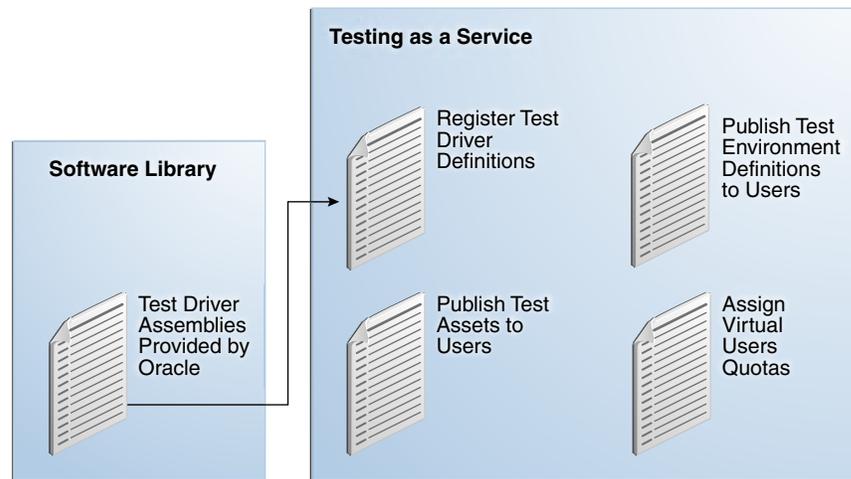
There are three roles used in TaaS: Test Administrators, Test Designers, and Testers. The following sections describe these roles in more detail.

- [Test Administrators](#)
- [Test Designers](#)
- [Testers](#)

47.1.1 Test Administrators

TaaS enables Test Administrators to manage the application infrastructure for testing activities, define user activities for self-service testing, and manage test environments and test assets. See [Figure 47-1](#).

Figure 47-1 Testing Cloud Administration Activities



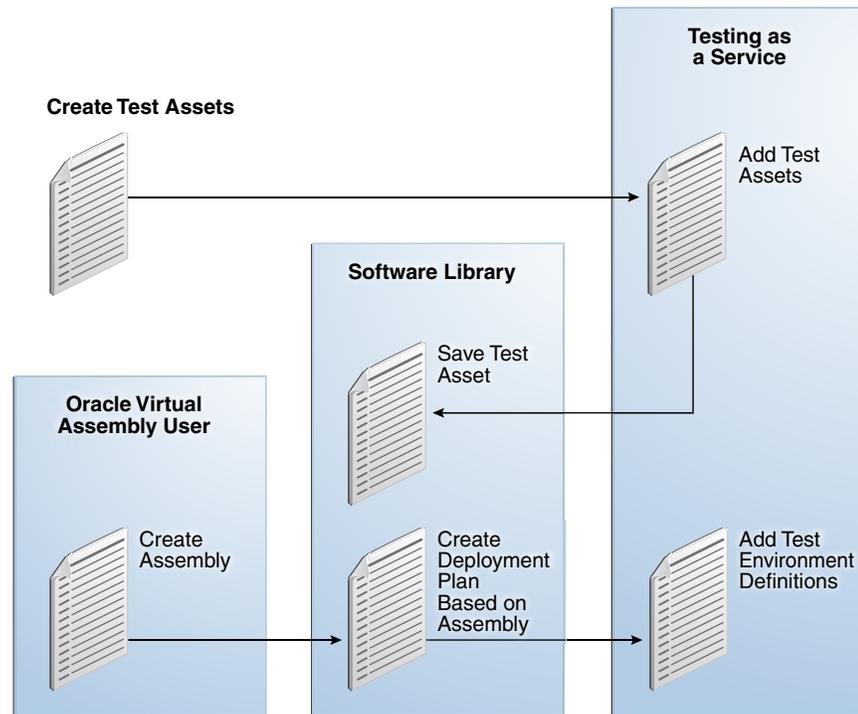
From TaaS, the Test Administrator can:

- [Set Up Applications](#)
- [Set Up Test Drivers](#)
- [Set Up Quotas](#)
- [Publish to User Roles](#)
- [Set Up Chargeback Service](#)

47.1.2 Test Designers

TaaS enables Test Designers to create test assets and test environments that can be made available to users to perform testing activities. Test Designers create test scripts and testing scenarios by using the test drivers native capabilities. These scenarios include which parameters are configurable at run-time. See [Figure 47-2](#).

Figure 47-2 Testing Cloud Designer Activities



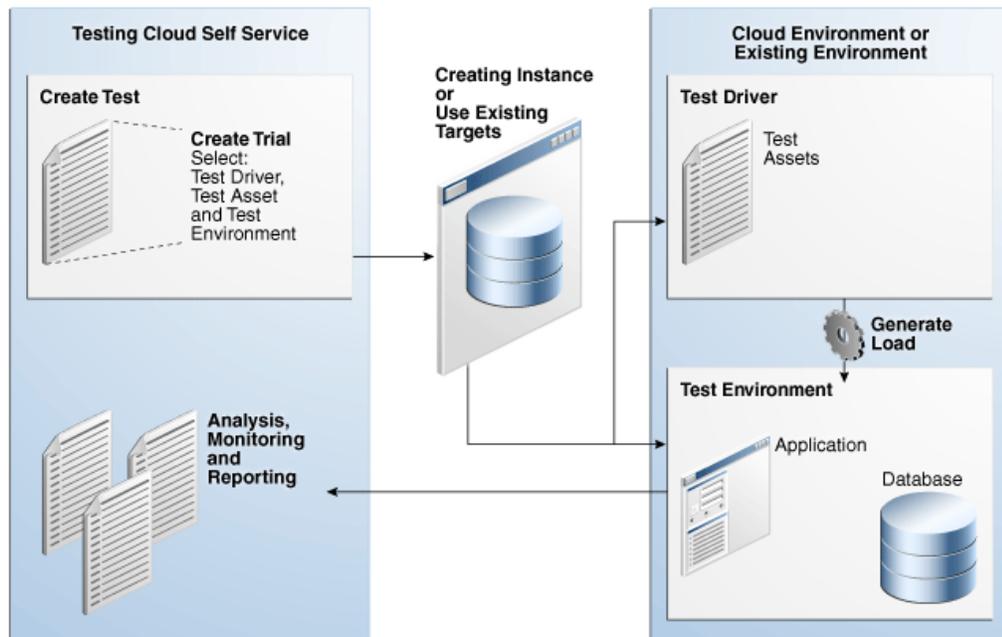
From TaaS, the Test Designer can:

- [Create Test Assets](#)
- [Create Test Environments](#)

47.1.3 Testers

TaaS allows Testers to create tests from test assets and test environments that have been published to them by the Test Administrator. The Tester runs trials based on the test asset and environment, monitors ongoing trials, and analyzes the results of completed trials. The Tester can apply patches to an environment and rerun the trials to compare the results and determine how changes to the environment affect key metrics and overall performance. See [Figure 47-3](#).

Figure 47-3 Testing Cloud End User Activities



From TaaS, the Tester can:

- [Verify Available Test Assets and Environments](#)
- [Create Tests](#)
- [Create and Run Trials](#)
- [Share Tests](#)
- [Monitor On-Going Trials](#)
- [Report and Compare Trial Data](#) from Previous Trials
- [View Activity and Usage Information](#)
- [View Deployment Information](#)

Setting Up Testing as a Service

This chapter provides an overview of the steps involved in setting up testing as a service (TaaS).

Many of these setup tasks are also required to use Infrastructure as a Service; if you have already set up IaaS, you will have already completed many of these tasks. This chapter contains the following sections:

- [Getting Started](#)
- [Creating Test Administrators](#)
- [Creating an Assembly Component](#)
- [Creating a Deployment Plan](#)

48.1 Getting Started

The table below provides an overview of TaaS setup tasks.

Table 48-1 Getting Started with TaaS

Step	Task	Role
1	Install the TaaS Plug-In See Deploying the Required Plug-ins	Super Administrator
2	Create Testers See Creating Test Administrators	CLOUD_ADMIN
3	Create a Virtualization (VT) Assembly with the Required Assembly Zip files See Creating an Assembly Component	CLOUD_ADMIN
4	Install Oracle VM Manager (OVM) This is part of Setting the Cloud Infrastructure. See Setting Up the Cloud Management Infrastructure .	CLOUD_ADMIN
5	Install VT Plug-in from Enterprise Manager See Deploying the Required Plug-ins	CLOUD_ADMIN
6	Register OVM See Registering the Oracle VM Manager	CLOUD_ADMIN
7	Register Oracle VM Server (OVS) Reimage steps See Discovering a Virtual Server	CLOUD_ADMIN
8	Add Storage See Creating a Storage Repository	CLOUD_ADMIN
9	Refresh Mount Locations	CLOUD_ADMIN

Table 48-1 (Cont.) Getting Started with TaaS

Step	Task	Role
10	Add Storage Repository See Performing Administrative Operations on a Storage Repository	CLOUD_ADMIN
11	Present Server See Presenting the Storage Repository	CLOUD_ADMIN
12	Create Server Pool See Creating a Virtual Server Pool	CLOUD_ADMIN
13	Create Zone See Creating a Zone	CLOUD_ADMIN
14	Import Assembly into Storage Repository See Importing Assemblies, Templates, and Virtual Disks into the Storage Repository	CLOUD_ADMIN
15	Set Up Network See Setting Up Networks	CLOUD_ADMIN
16	Generate MAC Addresses See Generating MAC Addresses	CLOUD_ADMIN
17	Create a Deployment Plan See Creating a Deployment Plan	CLOUD_ADMIN

48.2 Creating Test Administrators

Follow these steps to create Test Administrators:

1. Log in to Enterprise Manager as a Super Administrator or a user who has privileges to create a new administrator.
2. From **Setup**, select **Security**, then select **Administrator**.
3. Create the `TAASADMIN` administrator with the `EM_SSA_ADMINISTRATOR` role.
4. Create the `TAASDESIGNER` administrator with the `EM_TAAS_DESIGNER` role.
5. Create the `TAASUSER` administrator with the `EM_SSA_ROLE`.

48.3 Creating an Assembly Component

To create a VT assembly, perform the following steps:

1. From the Enterprise menu, select **Provisioning and Patching**, then select **Software Library**.
2. Select the Root directory. Select **Actions** then select **Create Folder**.
3. Select the directory which has write access. From the **Actions** menu, select **Create Entity**, then select **Virtualization**.
4. Select Assembly as the type and click **OK**.
5. Provide the required value and click **Next**.

6. Select the upload mechanism. Click **OK**.
7. Click **Add** button to enter file name and click **OK**.
8. Continue to click **Next** until you are on the Review page and click **Save and Upload**.

If you are uploading a file from the OMS or Agent, then you need to Upload Files to a destination where you want the files to be uploaded.

48.4 Creating a Deployment Plan

Perform the following steps to create a Deployment Plan:

1. From Enterprise menu, select **Cloud**, then select **Infrastructure Home**.
2. In the right panel, select a zone and right click.
Note: A Deployment Plan created from Zone is the only supported option. (If the deployment plan is created from Server Pool or Oracle VM Server, that deployment plan is not visible in TaaS.)
3. Select **Deploy Assembly**. Select the Assembly created in the Software Library or assembly directly imported in the storage repository. Click **Next**.
4. On the Assembly Deployment: Network and Agent page, select **Enable Agent Push Configuration**. The push means that the Enterprise Manager Agent will be pushed from Enterprise Manager after OVM creation.
5. Provide the Installation Base Directory, Platform, User Name, and Password.
6. Click **Save as Plan**. Provide the name of the plan and select the software library folder. Any other information to provide depends on the assembly you want to install.

Using the Testing as a Service Portal

After the TaaS environment has been setup, Test Administrators and Test Designers must perform their up front tasks before the Tester can start testing. In general, the tasks are:

- **Test Administrator** gives access and quotas for environments on the cloud, test assets, and virtual user test limits for the Oracle Load Testing test driver.
- **Test Designer** creates test assets (pre-packaged test scripts and scenarios) and test environments (templates for application-under-test, based on Oracle Assemblies) for users to consume.
- **Tester** is the consumer of the test assets and test environments for testing created by the Test Designer. The Tester also plans, executes, and analyzes the test results.

Table 49-1 Tasks in TaaS

Task	How To	Role
Ensure Prerequisites Are Met	Prerequisites	Test Administrator, Test Designer, Tester
Add application	Setting Up Application Types	Test Administrator
Define Test Drivers	Setting Up Oracle Load Testing Test Drivers Setting Up Oracle Functional Testing Test Drivers Setting Up Custom Test Driver Types	Test Administrator
Set Up Quotas	Setting Up Quotas	Test Administrator
Publish Test Environments and Test Assets	Publishing Test Environments, Test Assets, and Test Drivers	Test Administrator
Set Up Chargeback Service	Setting Up Chargeback Service	Test Administrator
Create Test Asset	Creating Test Assets - General Information Creating Test Asset - Oracle Load Testing Creating Test Asset - Oracle Functional Testing Creating Test Asset - Custom Test	Test Designer
Create Test Environments	Creating Test Environments	Test Designer
Verify Available Test Assets and Environments	Verifying Available Test Assets and Environments	Tester

Table 49-1 (Cont.) Tasks in TaaS

Task	How To	Role
Create Tests	Creating Tests Creating Tests - Oracle Load Testing Tests Creating Tests - Oracle Functional Testing Tests Creating Tests - Custom Tests	Tester
Create and Run Trials	Creating and Running Trials Creating and Running Oracle Load Testing Trial Creating and Running Oracle Functional Testing Trial	Tester
Monitor On-Going Trials	Monitoring On-Going Trials	Tester
Compare Trial Results	Comparing Trial Results	Tester
View Activity and Usage Information	Viewing Activity and Usage Information	Tester
View Deployment Information	Viewing Deployment Information	Tester

49.1 Prerequisites

Ensure the following prerequisites are met when using the Testing Cloud Self Service Portal.

Before You Do Anything

- Ensure Enterprise Manager Cloud Control is set up to manage the cloud environment.
- Ensure Self Service Application Plug-in is installed because Testing as a Service is part of the SSA plug-in.

Prerequisites Specific to Test Designer

- Has the privileges to access the Testing as a Service (TaaS) Test Designer options. This user must have the `EM_TAAS_DESIGNER` role.
- Must have knowledge about what applications are to be tested using Enterprise Manager and their structure (such as database servers, application servers, and configurations for the servers.)
- Has created test scripts using the Oracle Application Testing Suite scripting tool OpenScript, the Oracle Load Testing scenario, and the self-contained .scnzip file, and the Oracle Functional Testing scenario with its self-contained .zip file. For information on how to create and record scripts, refer to the Oracle Application Testing Suite documentation available by downloading the documentation set from:
<http://www.oracle.com/technetwork/oem/downloads/index-084446.html>
- Must be familiar with Enterprise Manager Cloud Control features.

- Has created Test Assets based on scripts and scenarios for Oracle Load Testing, Oracle Functional Testing, or other test drivers and Test Environments based on Oracle assemblies.
- Has deploy privileges over the Cloud Zones, otherwise he cannot create deployment plans.
- Has access to the Cloud Infrastructure.

Prerequisites Specific to Test Administrator

- Has the privileges to access the Testing Cloud Self Service Portal Test Administrator options. This user must have the `EM_SSA_ADMINISTRATOR` role.
- Must have knowledge about what applications are being deployed, managed, and tested using Enterprise Manager and their structure (such as database servers, application servers, and configurations for the servers.)
- Must have basic DB administration knowledge and have a good understanding of virtualization technologies.
- Must be familiar with Enterprise Manager Cloud Control features.
- Ensures that the Test Designer has created Test Assets and Test Environments.
- Ensures that the Testers have the privileges to access the Testing Cloud Self Service Portal user options.
- Publishes the test assets, test environments, and test drivers to the Tester role and the `EM_SSA_USER` role.
- Has deploy privileges over the Cloud Zones, otherwise he cannot create deployment plans.
- Has access to the Cloud Infrastructure.

Prerequisites Specific to Tester and SSA Users

- Must have the `EM_SSA_USER` role.
- Ensures that the Test Designer has created Test Assets and Test Environments.
- Ensures that the Test Administrator has assigned Test Assets, Test Environments, and Test Drivers to the Tester role (`EM_SSA_USER`).
- Has the privileges to access the TaaS Tester options.
- Has the privileges to access the Testing Cloud Self Service Portal user options.
- Must be familiar with Enterprise Manager Cloud Control features.

49.2 Test Administrator Tasks

Enterprise Manager allows TaaS Test Administrators to manage the application infrastructure for testing activities, define user activities for self-service testing, and manage test environments and test assets.

Specific responsibilities include:

- Manage the test drivers.
- Manage user roles and access to test drivers (specify which users have access to which plug-in.)
- Manage access to test environments and test assets based on users and roles.

- Assign the OVM and Zone privileges to the following roles and users:
 - OVM - View privilege to Test Designer and Test Administrator
 - Zone - Operator privilege to Test Designer and Test Administrator

Since TaaS cannot know before hand the zones and Oracle Virtual Machines present in user deployments, the Super Administrator, Cloud Administrator, or respective target owner will decide which zones and Oracle Virtual Machines are to be used.

The following tasks are performed by the Test Administrator.

- [Setting Up Application Types](#)
- [Setting Up Oracle Load Testing Test Drivers](#)
- [Setting Up Oracle Functional Testing Test Drivers](#)
- [Setting Up Custom Test Driver Types](#)
- [Setting Up Quotas](#)
- [Publishing Test Environments, Test Assets, and Test Drivers](#)
- [Setting Up Chargeback Service](#)

49.2.1 Setting Up Application Types

The Testing Cloud Self Service Portal allows Test Administrators to manage the application infrastructure for testing activities, define user activities for self-service testing, and manage test environments and test assets. Specific responsibilities include:

- Manage the test drivers.
- Manage user roles and access to test drivers (specify which users have access to which plug-in.)
- Manage access to test environments and test assets based on users and roles.
- Assign the OVM and Zone privileges to the following roles and users:
 - OVM - View privilege to Test Designer and Test Administrator
 - Zone - Operator privilege to Test Designer and Test Administrator

Since TaaS cannot know before hand the zones and Oracle Virtual Machines present in user deployments, the Super Administrator, Cloud Administrator, or respective target owner will decide which zones and Oracle Virtual Machines are to be used.

Note: Ensure the prerequisites are met before using the Testing Cloud Self Service Portal (see [Prerequisites](#)).

Follow this process to set up application types to be tested.

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Test Administrator credentials.
2. From the **Setup** menu, select **Cloud**, then select **Testing**. The Test Administrator page appears.
3. Click **Application Types** located in the left panel to define application types.

4. Click **Add** to define the name and description of the application type to make available for testing.
5. Define the name and description and click **Save**.

49.2.2 Setting Up Test Drivers

A Test Driver is the package of software that Enterprise Manager uses to generate tests or workload against test systems based on a deployment plan.

Oracle provides two types of drivers: Oracle Load Testing and Oracle Functional Testing. The Oracle Load Testing test driver is used for load, scalability, and stress testing. This allows you to simulate hundreds or thousands of users using the software at the same time. Oracle Functional Testing test driver is used for functional and regression testing.

Since Oracle Load Testing and Oracle Functional Testing are created by Oracle, Oracle knows the specifics of the test drivers and provides seamless integration to these drivers.

You can register your own type of test drivers as long as you can build a deployment plan around your assembly which contains the testing product and software. However, when you create a custom test driver, you need to direct your scripts on how to launch and monitor your tests.

The Custom Test Driver allows Testers to use test tools from third party vendors together with TaaS. Use Custom Test Driver Types to define and register test-driver types which meet your specific testing needs.

The following sections explain how to register specific test drivers.

- [Setting Up Oracle Load Testing Test Drivers](#)
- [Setting Up Oracle Functional Testing Test Drivers](#)
- [Setting Up Custom Test Driver Types](#)

49.2.3 Setting Up Oracle Load Testing Test Drivers

The Oracle Load Testing test driver is used for load, scalability, and stress testing. This allows you to simulate hundreds or thousands of users using the software at the same time.

Note: Ensure the prerequisites are met before setting up Oracle Load Testing Test Drivers (see [Prerequisites](#)).

To register an Oracle Load Testing test driver, follow these steps:

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Administrator credentials.
2. From the **Setup** menu, select **Cloud**, then select **Testing**. The Test Administrator page appears.
3. Click **Test Drivers** located in the left panel. The Test Driver page appears.
4. From the **Register** menu, select **Oracle Load Testing**.
5. Provide the following information:
 - **Name:** Enter a meaningful name for this Test Driver.

- **Deployment Plan:** Click the magnifying glass for selecting a deployment plan on which the test driver is based. In the resulting dialog box, select the Deployment Plan to be used for the test driver and click **Select**.

Ensure that Test Designers and Test Administrators create the deployment plan "on a zone". Also, ensure they have correct privileges to this zone. For information regarding deployment plans, see *Oracle Enterprise Manager Lifecycle Management Administrator's Guide*.

- **Version:** Version field is automatically filled in. The information is derived from the deployment plan.
- **Agent Deployment Plan:** Click the magnifying glass for selecting an Agent Deployment Plan.

The Agent deployment plan is a configuration file that defines an independent Agent machine on the cloud. Since TaaS registers the Agent deployment plan with a test driver, the Agent machine instance is used together with the test driver deployment plan to create the load test.

This allows TaaS to create independent agent machines on the cloud, allowing load generation capacity of a test driver to be scaled up depending upon the trial configuration and demand.

Ensure that the Agent Deployment Plan is scallable.

Note: Both the Deployment Plan's version of the Application Testing Suite and the Agent Deployment Plan's version of the Application Testing Suite must be same.

- **Description:** Enter a description for the Test Driver.

6. Click **Register**.

To view the details of a test driver that has already been registered, highlight the test driver in the table. The deployment plan, agent deployment plan, and assembly structure information are provided.

49.2.4 Setting Up Oracle Functional Testing Test Drivers

The Oracle Functional Testing Test Driver is used for functional and regression testing and validating application functionality.

Note: Ensure the prerequisites are met before setting up Oracle Load Testing Test Drivers and Oracle Functional Testing Test Drivers (see [Prerequisites](#)).

To register an Oracle Functional Testing test driver, follow these steps:

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Test Administrator credentials.
2. From the **Setup** menu, select **Cloud**, then select **Testing**. The Testing Cloud Self Service Setup page appears.
3. Click **Test Drivers** located in the left pane. The Test Drivers pane appears.
4. From the **Register** menu, select **Oracle Functional Testing**.
5. Provide the following information:
 - **Name:** Enter a meaningful name for this Test Driver.

- **Deployment Plan:** Click the magnifying glass for selecting a deployment plan on which the test driver is based. In the resulting dialog box, select the Deployment Plan to be used for the test driver and click **Select**.

Ensure that Test Designers and Test Administrators create the deployment plan "on a zone". Also, ensure they have correct privileges to this zone. For information regarding deployment plans, see *Oracle Enterprise Manager Lifecycle Management Administrator's Guide*.

- **Version:** Version field is automatically filled in. The information is derived from the deployment plan.
- **Description:** Enter a description for the Test Driver.
- **Results Storage:** Use either the Result File System or the repository. The Result File System enables you to store, manage, and access the Functional Testing results for a longer duration and without any size limitations. These results can also be accessed from your external web clients and servers using the http and nfs protocols.

If you choose to use the repository, you are limited to 10 MB of storage. Results stored locally will be purged after two days.

6. Click **Register**.

To view the details of a test driver that has already been registered, highlight the test driver in the table. The deployment plan and assembly structure information are provided.

49.2.5 Setting Up Custom Test Driver Types

The Custom Test Driver allows testers to use test tools from third party vendors together with TaaS. Use Custom Test Driver Types to define and register test-driver types which meet your specific testing needs.

Oracle Load Testing and Oracle Functional Testing are *types* of drivers, and since they are created by Oracle, we (Oracle) know the specifics of the drivers. However, when you create a test driver, you need to direct your scripts on how to launch and monitor your tests. You can register your own type of test drivers as long as you can build a deployment plan around your assembly which contains the testing product and software.

Note:

If you are using third party test automation tools, these tools need to be registered as Custom Test Drivers.

Ensure the prerequisites are met before setting up Oracle Load Testing Test Drivers and Oracle Functional Testing Test Drivers (see [Prerequisites](#)).

To register a custom test driver, follow these steps:

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Administrator credentials.
2. From the **Setup** menu, select **Cloud**, then select **Testing**. The Testing Cloud Self Service Setup page appears.

3. Click **Custom Types** located in the left panel. The Custom Test Driver Types page appears
4. Click **Create**.
5. On the Add Custom Test Driver Type dialog, provide the following information:
 - a. Enter a meaningful name and description.
 - b. The Working Directory is a folder created on your Test Driver Virtual Machine (VM) where the operations will occur.
 - c. The Results Directory is a folder created on your Test Driver Virtual Machine (VM) and where the results of your tests will appear, TaaS will zip up the entire folder, send it to Enterprise Manager.
 - d. Pre-Execution Script is a file which performs pre-execution steps for your test. Click **Browse** to locate the file.
 - e. Execution Script is a file which launches the test. Click **Browse** to locate the file.
 - f. Progress Monitoring Script is a script which TaaS will run on the test driver, to determine if the test is running or complete (and its outcome). Click **Browse** to locate the file.

When the test is complete, TaaS reports the outcome of the test. TaaS looks at the value returned by this script to determine the test outcome (passed, failed, warning).

Note: For TaaS to know the outcome of the trial, ensure that your script prints one of the following outcomes: passed, failed or warning, as the last line to the standard output.
 - g. Post-Execution Script is a file which performs the clean up steps after your test runs. Click **Browse** to locate the file.
 - h. Stop Execution Script is a script which TaaS will run on the test driver to stop the test execution.
 - i. Custom Parameters is a property file which contains the run-time parameters that will be passed to the test execution. You can configure these parameters during trial submission.
 - j. Click OK.

Once you provide these inputs, your type is defined and you can now register a new driver of this type.

6. To register a driver, on the Test Drivers page, select **Custom** from the Register menu.
7. Provide a meaningful name for this Test Driver.
8. Click the magnifying glass for selecting a deployment plan on which the test driver is based. In the resulting dialog box, select the Deployment Plan that should be used for the Custom test driver and click **Select**.
9. Enter a description for the Test Driver and click **Register**.
10. Select a Test Driver in the list then click on the component to drill down to the Deployment Plan details.

49.2.6 Setting Up Quotas

The Testing as a Service Portal allows you (Test Administrator) to Setup usage quotas for Testers by specific roles. To set up quotas, follow these steps:

Note: Ensure the prerequisites are met before setting up quotas (see [Prerequisites](#)).

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Administrator credentials.
2. From the **Setup** menu, select **Cloud**, then select **Testing**. The Test Administrator page appears.
3. Click **Quotas** located in the left panel. The Quotas page appears.
4. Click **Create**.
5. For the Role Name, click the magnifying glass for selecting roles. In the resulting dialog box, select the role to set quotas for and click **Select**.
6. Enter the Number of Guest VMs (Virtual Machines), Number of CPUs, Memory (GB), Storage Size (GB), and Number of VUs (Virtual Users) to allocate to the selected role and click **Create**.

49.2.7 Setting Up Result File Systems

The Testing as a Service (TaaS) Portal allows you (Test Administrator) to setup result file systems for Testers.

Use Result File Systems to store, manage, and access the Functional Testing results for a longer duration and without any size limitations. These results can also be accessed from your external web clients and servers using the http and nfs protocols.

Note: Ensure the prerequisites are met before publishing test environments and test assets (see [Prerequisites](#)).

To set up result file systems, follow these steps:

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Test Administrator credentials.
2. From the **Setup** menu, select **Cloud**, then select **Testing**. The Test Administrator page appears.
3. Click **Result File Systems** located in the left panel. The Result File System region appears.
4. Click **Add**.
5. On the Add Result File System dialog box, provide the following:
 - Name
 - Export Path - Full path to file that stores results, for example, nfs-server.mydomain.com:/export/OFTResults
 - HTTP Access URL - HTTP URL corresponding to the NFS path provided.
 - Description
6. Click **Add**.

49.2.8 Publishing Test Environments, Test Assets, and Test Drivers

The Testing as a Service (TaaS) Portal allows you (Test Administrator) to publish test asset assets, test environments, and test drivers to selected roles so they can be used when creating tests.

Note: Ensure the prerequisites are met before publishing test environments and test assets (see [Prerequisites](#)).

To publish test environments, test assets, and test drivers, follow these steps:

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Administrator credentials.
2. From the **Setup** menu, select **Cloud**, then select **Testing**. The Test Administrator page appears.
3. Click **Publish** located in the left panel. The Publish page appears.
4. Click **Add**.
5. From the **Add** menu in the Select Test Assets, Test Environments, Test Drivers region, select either **Test Asset**, **Test Environment**, or **Test Driver**. In the resulting dialog box, select the appropriate item to be published and click **Select**.

The Detail region displays the specific information for each test asset, test environment, and test driver.

6. Click **Add** in the Select Roles region. In the resulting dialog box, select the role to be published and click **Select**.
7. After all the test assets, test environments, test drivers, and roles have been selected, click **Publish**.

49.2.9 Setting Up Chargeback Service

Note: Ensure the prerequisites are met before setting up the chargeback service (see [Prerequisites](#)).

For information about Chargeback Service, refer to the Chargeback Administration chapter.

Follow this process to set up applications to be tested.

1. Log in to Enterprise Manager Cloud Control using Test Administrator credentials.
2. From the **Setup** menu, select **Cloud**, then select **Testing**. The Test Administrator page appears.
3. Click **Chargeback** located in the left panel to define the chargeback service.
4. Click **Configure Charge Plan** to define Extended Charge Plans. Plans may be defined by configuration or usage. If defining plans by usage, charges may be based on universal metrics (CPU, memory, storage) or by metrics specific to the targets. Use extended charge plans to set individual prices.
5. Click **Configure Targets** to assign Charge Plans. Charge plans must be assigned to targets. If targets are grouped into a zone, then a charge plan can be assigned to the zone, and will apply to all targets within that zone. If there are multiple zones, then different charge plans may be assigned to each one. The Self-Service

Application (SSA) administrator can determine chargeback pricing by assigning existing charge plans to the different zones.

6. Click **Configure Cost Center** to set up Cost Centers (Optional). Cost Centers may be set up to aggregate costs among groups of users, but are not required. If Cost Centers are set up, the chargeback reports by Cost Center are only available to SSA administrators.

49.3 Test Designer Tasks - Creating Test Assets and Test Environments

The following tasks are performed by the Test Designer:

- [Creating Test Assets - General Information](#)
- [Creating Test Asset - Oracle Load Testing](#)
- [Creating Test Asset - Oracle Functional Testing](#)
- [Creating Test Asset - Custom Test](#)
- [Creating Test Environments](#)

49.3.1 Creating Test Assets - General Information

A Test Asset is a collection of test artifacts (scenarios, scripts, tests) that can be executed on a test environment. A test asset defines the actions that need to be executed to reproduce the workload against the test environment. The Testing Cloud Self Service Portal allows the Test Designer to create Test Assets based upon the available Test Drivers defined by the Test Administrator.

The Test Designer should know the application under test and its relevant Key Performance Indicators (KPIs). The Test Designer should also know the business use-cases for the test scenarios being run. Specific responsibilities include:

- The Test Designer should be skilled in Oracle OpenScript. If the Oracle Load Testing Test Driver is used, the Test Designer should be skilled in Oracle Load Testing. If a Custom Test Driver is used, the Test Designer should be skilled using the corresponding test scripting tool.
- The Test Designer should be skilled as DBA.
- Create Test Assets using the Testing as a Service portal.
- Create Test Environments using the Testing as a Service portal.
- If the Test Designer is required to create environments, the Test Designer must know how to create assemblies.

Note: Ensure the prerequisites are met before creating test assets (see [Prerequisites](#)).

49.3.2 Creating Test Asset - Oracle Load Testing

Follow this process to create Oracle Load Testing test assets.

1. Log in to Enterprise Manager Cloud Control using Test Designer credentials.
2. From the **Enterprise** menu, select **Cloud**, then select **Self Service Portal**. The Infrastructure Cloud Self Service Portal page appears.

3. Click **My Tests**. The My Library tab appears.
4. Click **Test Assets** to define the test asset to be added to the library.
5. From the **Create** menu, select Oracle Load Testing. The Oracle Load Testing Asset Properties page appears.
6. Provide the following information:
 - **Name**: Enter a meaningful name for this Test Asset.
 - **Description**: Enter a meaningful description for this Test Asset.
 - **Application Type**: Click the **Application** drop-down list and select the application to be tested from the list.
 - **Tags**: Enter any tags to use as keywords to further identify this test asset. These tags make test assets easier to identify and to understand the purpose of the asset.
 - **Scenario**: Click **Browse** and select the asset file you want to upload. The file type for Oracle Load Testing is SCNZIP. If the Test Asset was going to be used to do large scalable testing using a number of agent machines, the scenario configuration file will have the Hardware Estimation Available feature enabled, as well as values for End Condition, Ramp-up Rate, and Number of Virtual Users.
 - **Configurable Parameters**: Choose none, any, or all of the parameters. The selected parameters will be exposed within TaaS and the parameters can be changed for the TaaS test runs.
7. Once all the information is provided, click **Submit**. The Test Asset is added to the library. Click on a test asset name to drill down to the Test Asset Details page.

49.3.3 Creating Test Asset - Oracle Functional Testing

Follow this process to create Oracle Functional Testing test assets.

1. Log in to Enterprise Manager Cloud Control using Test Designer credentials.
2. From the **Enterprise** menu, select **Cloud**, then select **Self Service Portal**. The Infrastructure Cloud Self Service Portal page appears.
3. Click **My Tests**. The My Library tab appears.
4. Click **Test Assets** to define the test asset to be added to the library.
5. From the **Create** menu, select Oracle Functional Testing. The Oracle Functional Testing Asset Properties page appears.
6. Provide the following information:
 - **Name**: Enter a meaningful name for this Test Asset.
 - **Description**: Enter a meaningful description for this Test Asset.
 - **Application Type**: Click the **Application** drop-down list and select the application to be tested from the list.
 - **Tags**: Enter any tags to use as keywords to further identify this test asset. These tags make test assets easier to identify and to understand the purpose of the asset.

- **Script:** Click **Browse** and select the script file (or files) you want to upload. The file type for Oracle Functional Testing is ZIP. (Test Script Zip exported from Open Script Tool.)

Note: When you select multiple scripts, the order is important. The scripts are executed in the order in which they appear in the list.

7. Once all the information is provided, click **Submit**.

The Test Asset is added to the library. If Oracle Load Testing Scenario file contains the Hardware Estimation result, the 'Hardware Estimation Available ' label is set to true.

Click on a test asset name to drill down to the Test Asset Details page.

49.3.4 Creating Test Asset - Custom Test

Follow this process to create Custom test assets.

1. Log in to Enterprise Manager Cloud Control using Test Designer credentials.
2. From the **Enterprise** menu, select **Cloud**, then select **Self Service Portal**. The Infrastructure Cloud Self Service Portal page appears.
3. Click **My Tests**. The My Library tab appears.
4. Click **Test Assets** to define the test assets to be added to the library.
5. From the **Create** menu, select Custom. The Custom Test Asset Properties page appears.
6. Select the type of Custom test driver.
Enter a name and description for the test asset. In addition, for Custom asset type, you determine which parameters will be exposed to the user.
7. Click the **Application** drop-down list and select the application to be tested from the list.
8. Enter any tags to use as keywords to further identify this test asset. These tags make test assets easier to identify and to understand the purpose of the asset.
9. Click **Browse** and select the asset file you want to upload. The file type for Custom can be whatever file type understood by the test driver involved.
10. Click **OK**. The Test Asset is added to the library. Click on a test asset name to drill down to the Test Asset Details page.

49.3.5 Creating Test Environments

A Test Environment is a collection of entities that represents the entire application stack, thus an environment consists of the following elements:

- **Application under test (AuT):** Contains the software bits and application data. For example, for a deployed Siebel application, end users can modify settings, configurations, and parameters of the application.
- **Infrastructure under test (IaT):** These are entities the Application under test depends upon, for example, the cloud setup/infrastructure in a cloud deployment. Typically an infrastructure is something created for consumption of end users by administrators.

Note: Ensure the prerequisites are met before creating test environments (see [Prerequisites](#)).

Follow this process to create test environments.

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Test Designer credentials.
2. From the **Enterprise** menu, select **Cloud**, then select **Self Service Portal**. The Self Service page appears.
3. Click **My Tests**. The My Library tab appears.
4. Click **Test Environments** to define the test environments to be added to the library.
5. Click **Create**. The Test Environment Properties page appears.
6. Enter a name and description for the test environment.
7. Click the **Application** drop-down list and select the application to be tested from the list.
8. Enter any tags to use as keywords to further identify this test environment. These tags make test environments easier to identify and to understand the purpose of the environment.
9. Click the magnifying glass icon and select the **Deployment Plan** to use for this test environment.

The Deployment Plans must already be created on a Zone where the Test Designer/Administrator has Operator privileges and which (the zone) is part of an Oracle VM Manager with view privileges to the same user.
10. If the Test Environment contains a Web Application, click **Yes**.
11. Click the **Select web-application** drop-down and select the appliance that will act as the application or web server when the environment is deployed in the cloud.
12. Click **OK**. The test environment is added to the library. Click on a test environment name to drill down to the Test Environment Details page. Click on a deployment plan name to drill down to the Deployment Plan Details page.

49.4 Tester Tasks - Using the Testing Environment

Once the Test Administrator and Test Designer have performed their respective tasks, the Tester can now start testing.

The Testing Cloud Self Service Portal allows Testers to create tests from test assets and test environments to perform testing activities. Testers create tests using test assets and environments that have been assigned to them by the Test Administrator.

The Tester should know the application under test and its relevant Key Performance Indicators (KPIs). The Tester should also know the business use-cases for the test scenarios being run. Specific responsibilities include:

- Running the tests by using the test assets and environments created by the Test Designer and assigned to them by the Test Administrator.
- Reserving resources from the cloud, cancel upcoming reservations, update configurations of resources that have been reserved (CPU, memory, and so on).

- Editing test scenarios set up by the Test Designer to specify run time test parameters and schedule the tests for execution.
- Performing the test run analysis to compare various metrics that are relevant to the application and business use-case.

The following tasks are performed by the Tester.

- [Creating Tests](#)
- [Creating Tests - Oracle Load Testing Tests](#)
- [Creating Tests - Oracle Functional Testing Tests](#)
- [Creating Tests - Custom Tests](#)
- [Creating and Running Trials](#)
- [Creating and Running Oracle Load Testing Trial](#)
- [Creating and Running Oracle Functional Testing Trial](#)
- [Monitoring On-Going Trials](#)
- [Comparing Trial Results](#)
- [Sharing Tests](#)
- [Viewing Activity and Usage Information](#)
- [Viewing Deployment Information](#) (Browse My Deployments)
- [Browsing the Testing Home Page](#)

49.4.1 Verifying Available Test Assets and Environments

The Testing Cloud Self Service Portal allows Testers to verify which test assets and test environments have been assigned to them by the Test Administrator.

Note: Ensure the prerequisites are met before verifying available test assets and environments (see [Prerequisites](#)).

Follow this process to verify test assets and test environments assigned to your role.

1. Log in to Enterprise Manager Cloud Control using Tester credentials. You are logged into Self Service Portal.
2. Click **My Tests**. The Testing Cloud Self Service Portal Home tab appears.
3. Click the **My Library** tab. The My Library tab shows the test environments and test assets published to you by the Test Administrator.
4. Click **Test Environments**.
5. Click on an environment to view the details about the environment. Click on the component to drill down to the Assembly Structure details.
6. Click **Test Assets**.
7. Click on a test asset to view the details about the asset.

49.4.2 Creating Tests

The Testing Cloud Self Service Portal allows Testers to create tests from test assets and environments to perform testing activities. Testers create tests using test assets and test environments that have been assigned to them by the Test Administrator.

Note: Ensure the prerequisites are met before creating tests (see [Prerequisites](#)).

See the following section for the types of tests you can create:

- [Creating Tests - Oracle Load Testing Tests](#)
- [Creating Tests - Oracle Functional Testing Tests](#)
- [Creating Tests - Custom Tests](#)

49.4.3 Creating Tests - Oracle Load Testing Tests

Note: Ensure the prerequisites are met before creating Tests (see [Prerequisites](#)).

Follow this process to create Oracle Load Testing tests.

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into the Infrastructure Cloud Self Service Portal.
2. Click **My Tests**.
3. Click the **My Tests** tab in the Testing Cloud Self Service Portal.
4. From the **Create** menu, select **Oracle Load Testing**. The Create Test page appears.
5. Provide the name and description. In addition, click the magnifying glass icon, select the test asset to be used in this test, and click **Continue**.
6. Select the Source, click the magnifying glass icon, and select the test environment to be used in this test. Change the Mapping URLs settings if needed.
7. Click the **Test Driver** drop-down and select the test driver to use to run the test in the cloud.
8. The Hardware Estimate region displays the recommended number of agent machines to use for this test based on the Test Asset and Test Driver if the Test driver is configured with Agent Deployment plan.
9. Click **OK**. The test is added to the library that specifies an asset, an environment, and a test-driver. Click on a test name to drill down to the details page.

49.4.4 Creating Tests - Oracle Functional Testing Tests

Note: Ensure the prerequisites are met before creating Tests (see [Prerequisites](#)).

Follow this process to create Oracle Functional Testing tests.

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into the Infrastructure Cloud Self Service Portal.
2. Click **My Tests**.

3. Click the **My Tests** tab in the Testing Cloud Self Service Portal.
4. From the **Create** menu, select **Oracle Functional Testing**. The Create Test page appears.
5. Provide the name and description.
6. Click **Add** to select one or more Functional Test Assets for the test. The order in which the assets are listed will be the order of their execution in the trial.
Rearrange the order of the assets as needed by using the Move Up and Move Down arrows. You can also remove assets as needed.
7. Click **Continue**.
8. Select the Source, click the magnifying glass icon, and select the test environment to be used in this test. Change the Mapping URLs as needed.
9. Click the **Test Driver** drop-down and select the test driver to use to run the test in the cloud.
10. Click **OK**. The test is added to the library that specifies an asset, an environment, and a test-driver. Click on a test name to drill down to the details page.

49.4.5 Creating Tests - Custom Tests

Note: Ensure the prerequisites are met before creating Tests (see [Prerequisites](#)).

Follow this process to create Custom tests.

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into the Infrastructure Cloud Self Service Portal.
2. Click **My Tests**.
3. Click the **My Tests** tab in the Testing Cloud Self Service Portal.
4. From the **Create** menu, select **Custom**. The Create Test page appears.
5. Enter a name and description for the test.
6. Click the magnifying glass icon, select the test asset to be used in this test, and click **Select**.
7. Select the test asset, review the details, and click **Continue**.
8. Select the Source and click the magnifying glass icon and select the test environment to be used in this test.
9. Select the test environment and click **Select**.
10. Click the **Test Driver** drop-down and select the test driver to use to run the test in the cloud.
11. Click **OK**. The test is added to the library that specifies an asset, an environment, and a test-driver. Click on a test name to drill down to the details page.

49.4.6 Creating and Running Trials

The Testing Cloud Self Service Portal allows Testers to create and run trials from the test instances that have been created in the portal. The Tester runs trials on the test asset and environment, monitors ongoing trials, and analyzes the results of completed trials.

Note: Ensure the prerequisites are met before creating and running trials (see [Prerequisites](#)).

See the following section for the types of trials you can create and run:

- [Creating and Running Oracle Load Testing Trial](#)
- [Creating and Running Oracle Functional Testing Trial](#)

49.4.7 Creating and Running Oracle Load Testing Trial

Follow this process to create and run Oracle Load Testing trials:

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into Infrastructure Cloud Self Service Portal.
2. Click **My Tests** in the Self Service Portal.
3. Click the **My Tests** tab in the Testing Cloud Self Service Portal.
4. Select a test to run for this trial.
5. Click **Create...** in the **Trials** section. The Create Trial page appears.
6. Enter a name and description for the trial.
7. In the Application Under Test Region, specify the Application Under Test instance details.
 - **Create new instance:** You can create new virtual machines on the cloud for the application under test.
 - **Use existing instance:** If you have created instances for this test or this application before, you can choose to re-use the same set of virtual machines instead of creating new ones.

Re-using an existing instance is faster because there will be no need to deploy the instance.
 - If you are creating a new instance, enter a password of your choice for the Root Password and reenter to confirm it.

 **Note:**

This value is not retrievable. DO NOT FORGET THIS PASSWORD.

- (Optional) Specify the **Stop Instance** and **Delete Instance** settings and click **Continue**.
8. In the Test Asset Parameters region, you can:
 - Change the number of virtual users to run for this trial in the **Trial Virtual Users** column of each script.

You can set these values ONLY if the Test Designer (who created the asset) has chosen to allow users to override the values. Otherwise, the application uses the information available in the asset and these controls are grayed out.
 - Specify the **Ramp Up Rate** settings for this trial.

You can change these values ONLY if the Test Designer (who created the asset) has chosen to allow users to override the values. Otherwise, the application uses the information available in the asset and these controls are grayed out.

- Set the **End Condition** settings for the Trial and click **Continue**.

You can set these values ONLY if the Test Designer (who created the asset) has chosen to allow users to override the values. Otherwise, the application uses the information available in the asset and these controls are grayed out.

If you do not set the test end conditions, the test runs until it is stopped manually.

After you have reviewed the Test Asset Parameters, click **Continue**.

9. In the Test Driver region, you can either create a new instance or use an existing instance. If the existing instance is being used by another trial, it will not be available.

Enter a password of your choice for the Master Password and reenter to confirm it. This is the password the Testing Cloud Self Service Portal will set for the Oracle Load Testing Virtual Machine and all accounts for Oracle Load Testing.

Specify the **Stop Instance** and **Delete Instance** settings and click **Continue**.

10. In Hardware Estimate region, you can estimate and add agent machines (hardware estimate feature).

If this is a Trial, use a Test Driver that has an Agent Deployment plan. The number is calculated based on parameters set in the previous step and the Agent Deployment plan. You can also specify a new number. The Hardware Estimate setting is enabled only when the Test driver has an Agent Deployment plan.

11. In the Schedule region, specify whether to start the trial immediately or schedule at a later time. A new trial will be created and submitted for execution.

Click **OK**. The initial execution of a trial will take some time to deploy the Virtual Machines, copy necessary software, and start the test.

49.4.8 Creating and Running Oracle Functional Testing Trial

Follow this process to create and run Oracle Functional Testing trials:

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into Infrastructure Cloud Self Service Portal.
2. Click **My Tests** in the Self Service Portal.
3. Click the **My Tests** tab in the Testing Cloud Self Service Portal.
4. Select a test to run for this trial.
5. Click **Create...** in the **Trials** section. The Create Trial page appears.
6. Enter a name and description for the trial.
7. In the Application Under Test region, specify the Application Under Test instance details.
 - Creating new instance: Users can create new virtual machines on the cloud for the application under test.

- Re-using an existing instance: If users have created instances for this test or this application before, they can choose to re-use the same set of virtual machines instead of creating new ones.

Re-using an existing instance is faster because there will be no need to deploy the instance.

- If creating a new instance, enter a password of your choice for the Master Password and reenter to confirm it.

 **Note:**

This value is not retrievable. DO NOT FORGET THIS PASSWORD.

- Specify the **Stop Instance** and **Delete Instance** settings.
8. In the Asset Execution Settings region, select the assets that are to be executed. Click **Continue**.
 9. In the Playback Settings region, change the settings as needed for this trial. To save time, you can copy the settings from another asset.
Click Reset to go back to the original settings for this trial.
 10. In the Data Banks region, review and modify the data banks used with this asset. Click **Continue**.
 11. In the Test Driver region, either create a new instance of the test driver or use an existing instance.
If the existing instance is being used by another trial, it will not be available.
 - Enter a password of your choice for the Master Password and reenter to confirm it.
 - Specify the **Stop Instance** and **Delete Instance** settings.
 12. In the Schedule region, specify the schedule for starting the trial run and click **OK**. A new trial will be created and submitted for execution. The initial execution of a trial will take some time to deploy the Virtual Machines, copy necessary software, and start the test.

49.4.9 Monitoring On-Going Trials

The Testing Cloud Self Service Portal allows Testers to monitor running trials and create charts of the key performance indicators for the application-under-test.

Note: Ensure the prerequisites are met before monitoring on-going trials (see [Prerequisites](#)).

Follow this process to monitor on-going tests.

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into Infrastructure Cloud Self Service Portal.
2. Click **My Tests**.
3. Click the **My Tests** tab in the Testing Cloud Self Service Portal.

4. Select the test to view the trial details. The trial status information appears in the Trials pane.
5. Click on the trial name link in the Trials pane to navigate to the trial-home page.
You can monitor the progress of the trial by clicking **Status**. If the status of the trial is In Progress, click the trial name which will take you to the trial home and the remaining trial information.
6. Expand the metric nodes and select metrics or counters to plot them in the chart. For Oracle Functional Testing, you can select items for Trial Result to display the result in detail.
7. View the Agent count associated to the current trial in the Test Driver Instance session.

49.4.10 Comparing Trial Results

The Testing Cloud Self Service Portal allows Testers to compare trial results and create charts of the key performance indicators for the application-under-test.

Note: This feature is only available for Oracle Load Testing Test Driver based trials.

Note: Ensure the prerequisites are met before comparing trial results (see [Prerequisites](#)).

Follow this process to compare trial results.

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into Infrastructure Cloud Self Service Portal.
2. Click **My Tests**.
3. Click the **My Tests** tab in the Testing Cloud Self Service Portal.
4. Select the test to view the trial details. The trial status information appears in the Trials pane.
5. Select two trials of the same test that have been previously run.
To select 2 trials of the same test, select one trial, then click Shift/Control to select the other trial. The trials must belong to the same test.
6. Click **Compare Results**. You can compare the metrics of the two trials to view the differences.

When in this mode, selecting any metric will chart two lines - one for each of the selected trials. You can also compare the Oracle Load Testing session summary report side-by-side.

49.4.11 Sharing Tests

To avoid duplication of effort, you can share tests with other users. Note that the person who created and shared the tests will be charged for any resource usage associated with the shared tests.

To share tests, perform the following steps:

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into Self Service Portal.

2. Click **My Tests**.
3. Click the **My Tests** tab in the Testing Cloud Self Service Portal.
4. Select a test from the list of Tests on the My Tests page.
5. Click **Share**.
6. Select a user to share the Test with.
7. Click **Share**.
8. Click **Log Out**.

To verify that the test is shared:

1. Log in as the user whom you shared the test with.
2. Verify that you have access to the shared test.

49.4.12 Viewing Activity and Usage Information

The Testing Cloud Self Service Portal allows Testers to view summary information for test assets and test environments available to you, your quota as defined by the Test Administrator for your role, your current utilization of hardware resources, and submitted and scheduled trials.

Note: Ensure the prerequisites are met before viewing activity and usage information (see [Prerequisites](#)).

Follow this process to view activity and usage information.

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into Self Service Portal.
2. Click **My Tests**.
3. Click the **Home** tab in the Testing Cloud Self Service Portal. This tab shows summary information for test assets and test environments available to you, your quota as defined by the Test Administrator for your role, your current utilization of hardware resources, and submitted and scheduled trials.

49.4.13 Viewing Deployment Information

The Testing Cloud Self Service Portal allows Testers to create tests from test assets and test environments to perform testing activities using the Testing Cloud Self Service Portal. Testers create tests using test asset and environment that have been assigned to them by the Test Administrator. The Tester runs trials on the test asset and environment, monitors ongoing trials, and analyzes the results of completed trials.

Note: Ensure the prerequisites are met before viewing deployment information (see [Prerequisites](#)).

Follow this process to view activity and usage information.

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into Self Service Portal.
2. Click **My Tests**.
3. Click the **My Deployments** tab in the Testing Cloud Self Service Portal. This tab shows a table of all environments and test-drivers deployed for you.

4. Select a test environment or test driver instance. The details pane shows the appliances within the selected test environment or test driver instance.
5. Click on an appliance within the selected test environment or test driver instance to navigate to the details view of the appliance.

49.4.14 Browsing the Testing Home Page

The users HOME tab displays a summary of what the user has done, including resources consumed for testing and tests created by the user. From the HOME tab, users can quickly access previously executed test trials in order to compare results or to do more in depth post-run analysis.

The Testing home page provides information regarding the statistics of ongoing testing. General statistics are provided, as well as test assets and environments, ongoing test and trials, Oracle Load Testing, and the Infrastructure. It also provides an overview of the servers and infrastructure resources consumed by the user, like the number of servers provisioned, number of CPUs, as well as RAM and Storage.

When you log in as Test Designer, you only see the My Library tab. When you log in as Test Administrator, you see the Home tab. When you log in as a Super Administrator, you see both the Home and My Library tabs.

The sections on the Home tab are:

- General - Total counts of various artifacts available in the system, for example, its "total tests present in system", "total trials ran across all trials", and so on.
- Test Assets/Environments - Accumulation graph of test assets, environments, and machines in use in the Testing Cloud. Count and trend data are included. This is the Test Administrator's overview of the entire TaaS portal, regardless of Testers.
- Tests and Trials - Daily totals of the number of tests created or daily totals of the number of trial runs.
- Infrastructure - Daily consumption of infrastructure resources: CPU, Memory, and Disk space storage.
- Oracle Load Testing (OLT) - Daily total of the number of OLT Virtual Users (VU) that were run. Oracle Load Testing uses OpenScript scripts to simulate users accessing an application under test.

The vertical axis shows daily usage totals based upon the View selection in each of the regions.

The My Library tab provides details on both Test Assets and Test Environments.

1. Log in to Enterprise manager using Tester credentials.
2. Click **My Tests** radio button.
3. Click the **Home** tab.

You will see a summary of test assets and test environments available to you, your quota as defined by the Test Administrator for your role, your current utilization of hardware resources, and the submitted and scheduled trials.

49.4.15 Trial Page

The Trial Page provides the Results, Test Environment, Configuration, and Performance information of the trial.

The top of the page provides the general information of the trial including: status of the trial, results of the trial, start time of the trial with the option to stop the trial, the test being run, and the test environment being used.

Results

Note: The Results tab is only for Oracle Functional Testing.

From the Results tab, you can:

- Download the results to be viewed at another time.
- Browse the results location
- Generate a Report to be published in BI Publisher.

Test Environment

From the Test Environment tab, you can:

- Start, stop, and restart the Guest Virtual Machines used for the test.
- Start, stop, and restart the Test Driver Instance used for the test.

Configuration

From the Configuration tab, you can:

- View the details of the application that was tested.
- Test Driver used for the test.
- List of the Test Asset Parameters used.
- Schedule of the trial.

Performance

Note: The Performance tab is only available for Oracle Load Testing trials.

From the Performance tab, you can:

- View all the collected Oracle Load Testing counters and Enterprise Manager target metrics.
- Select interested counter(s)/metric(s) and show them in charts.

Summary

Note: The Summary tab is only available for Oracle Load Testing trials.

From the Summary tab, you can:

- See the summary report of this trial and AWR report if it is available.
- Generate Oracle Load Testing trial report and AWR report if it is available.

49.4.16 Viewing TaaS Reports

To facilitate the sharing of information about trials, TaaS provides reports using Business Intelligence Publisher (BI Publisher). These reports include the TaaS Oracle Functional Testing Trial Report and the TaaS Oracle Load Testing Trial Report.

To view these reports:

1. Log in to Enterprise Manager Cloud Control using Testing Cloud Self Service Portal Tester credentials. You are logged into Infrastructure Cloud Self Service Portal.
2. Click **My Tests**.
3. Click the **Home** tab in the Testing Cloud Self Service Portal. This tab shows summary information for test assets and test environments available to you, your quota as defined by the Test Administrator for your role, your current utilization of hardware resources, and submitted, scheduled, and completed trials.
4. Highlight a trial.
5. On the Results tab, click **Generate Report**.

49.4.17 Estimating Hardware Needed for Testing

The Test Driver hardware resource requirement depends on factors such as: number of virtual users for your Trial, ramp-up rate, number of script steps, number of variables in the script and script type.

To ensure that TaaS provides the appropriate amount of resources for your test trial, TaaS provides a hardware estimation feature. TaaS calculates and creates agent machines based on estimation results of CPU and memory resources consumed by the test asset in your test trial.

Note:

To use the Hardware Estimation Available feature, you must have selected the Hardware Estimation Data option on the Export File screen when creating the scenario.zip file in the Oracle Load Testing application.

To take advantage of this feature, the Test Administrator and Tester need to perform the following steps:

1. Define an Agent deployment plan for an Oracle Load Testing Test Driver.
 - a. From Setup menu, select **Cloud**, then select **Testing**.
 - b. On the Testing Cloud Self Service Setup page, select **Test Drivers** in the navigation tree.
 - c. From the **Register** menu, select Oracle Load Testing.
 - d. Provide the information for Name, Deployment Plan, Version, and so on. Ensure that the deployment plans you use are scalable.
2. View hardware estimation result in Test Oracle Load Testing Asset.
 - a. From Enterprise menu, select **Cloud**, then select **Self Service Portal**.
 - b. Select **My Tests**.
 - c. On the Testing Cloud Self Service Portal page, click the **My Library** tab.
 - d. Select **Test Assets**. Highlight the asset in which you are interested. The Scenario Configuration section states whether Hardware Estimation is available for this asset. An X denotes that the estimate is not available whereas a check mark denotes that it is.

3. To create a Test Asset, click **Create** and choose **Oracle Load Testing**. Provide the requisite information.
 - The scenario zip file is exported from the Oracle Load Testing application.

Note that it is through the scenario zip file that the Hardware Estimation Data feature is enabled. To learn how to create a scenario, refer to the *Oracle Load Testing Load Testing User's Guide* available from the 'Oracle Application Testing Suite Downloads' page: (<http://www.oracle.com/technetwork/oem/downloads/index-084446.html>).
 - By choosing the configurable parameters, you can change these settings when you create a trial using this asset.
4. Evaluate Test Driver with estimation resource result.
 - a. From the My Tests tab, select **Create**, then select **Oracle Load Testing**.
 - b. Provide the requisite information and ensure that the source (Test Asset) is one that has the Hardware Estimation Data feature.

Note: It is through the scenario zip file that the Hardware Estimation Data feature is enabled on the Export File page.

Also note that the Hardware Estimate region contains the recommended number of agent machines to use for testing the selected Test Asset.
5. Start an Oracle Load Testing Trial Using Estimation Resource Result
 - a. Click the **My Tests** tab. Highlight the test you want to use for the trial.
 - b. In the Trials section, select **Create**.
 - c. On the Create Trial screen:
 - Provide the requisite information in the Overview and Application Under Test regions. Click **Continue**.
 - For the Test Asset Parameters, if needed change the values for the Trial Virtual Users, Ramp-up Rate, and End Condition. Click **Continue**.
 - Provide the parameters for the Test Driver, Hardware Estimate, and Schedule. Click **OK**.

Note that in the Hardware Estimate region, the number of agents is calculated by TaaS to meet the required resource needed for the trial. However, you can change the number of agents if you want.
6. View Agent Status in Trial Home

On the My Tests tab, highlight the trial of interest.
7. View Agent Status in My Deployment Tab.

On the My Deployments tab, highlight the deployment of interest. The Agent Status will be shown in the Agent tab.
8. Share/unshare the Agent between different test driver instances.

Part XV

Using Chargeback and Consolidation

This section describes the Chargeback and Consolidation features in Enterprise Manager.

It contains the following chapters:

- [Chargeback Administration](#)
- [Enterprise Manager Consolidation](#)

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Chargeback Administration

This chapter describes the Chargeback application and details the administrative tasks necessary to set up and run the application. It then presents various ways to access and use the information Chargeback collects and aggregates.

The chapter contains the following sections:

- [Overview of Chargeback](#)
- [Setting Up Chargeback](#)
- [Self Service Applications and Zones within Chargeback](#)
- [Accessing Chargeback Information](#)

50.1 Overview of Chargeback

This section gives a brief overview of the most important aspects of Chargeback. It covers the following topics:

- [Why Implement Chargeback](#)
- [Enterprise Manager Chargeback](#)

50.1.1 Why Implement Chargeback

The purpose of Chargeback is to gather data on resource use, allocate charges for the use of these resources, and present the results in a comprehensible format.

Chargeback is used to allocate the costs of IT resources to the people or organizations who consume them. While it can be applied in situations where IT resources are dedicated, it is particularly relevant in situations where resources are shared, as without some way to meter and charge for consumption there will be a tendency for users to allocate or use more resources than they need. This problem is exacerbated in cloud environments where users are able to provision their own resources using self-service.

Consider the following primary use cases:

- Increasingly, organizations are adopting consolidation platforms such as Oracle Exadata and Oracle Exalogic, where there are multiple applications running on a shared hardware platform. There needs to be a way to meter the resources consumed by each application so charges can be applied accordingly. This, in turn, helps to measure the business value of IT investments so that priority can be given to the applications with the greatest return on investment (ROI).
- With the popularity of cloud computing on the rise, where users have the ability to self-service provision resources such as databases and virtual machines, it is highly desirable to be able to meter the resources each cloud consumer uses so that they can be charged based on their consumption. Cloud consumers likewise benefit by rationing their consumption to that which provides optimal business value, thus contributing to the overall ROI of the organization's IT investment.

To sum up, adopting a Chargeback (or Showback) model can deliver significant benefits to both IT and Line of Business users:

- Chargeback benefits consumers by placing them in control of their IT costs.
- Chargeback benefits IT by helping to drive up utilization rates, thus reducing the number of physical resources they need to manage.

50.1.2 Enterprise Manager Chargeback

Chargeback, as the name implies, is a tool of accountability. The application's primary uses can generally be described as follows:

- Provide resource usage metering by aggregating and normalizing the enormous amount of metric data Enterprise Manager collects.
- Provide IT with a means to "charge" a currency amount to the consumers of resources.
- Provide consumers with reports detailing their consumption and associated charges.

50.1.2.1 Chargeback Entities

Chargeback calculates charges based on resource use. A resource is typically associated with an Enterprise Manager target. Chargeback collects metrics and configuration information for a subset of Enterprise Manager targets to calculate charges. A resource can also be something that an integrator customizes to be monitored and charged for in Enterprise Manager. Chargeback recognizes these Enterprise Manager targets and custom resources collectively as entities. For information on creating a custom entity, see the *Oracle Enterprise Manager Cloud Control Extensibility Programmer's Guide*.



Note:

You can also add Chargeback support for Enterprise Manager target types for which there is no current out-of-box Chargeback support. See [Chargeback and Metering EMCLI Verbs](#), for more information.

Within Chargeback there is the concept of usage mode; that is, how an entity is metered. All entity types have a default usage mode. Administrators, when adding entities to Chargeback, decide which usage mode is applicable in a given context, if the entity in question has more than its default usage mode. Common usage modes include the following:

- Metered by instance—where charges accrue against a single cost center
- Metered by service—a database instance with multiple services bills by the service; charges by service can be to different cost centers, or charges for all services can be to the same cost center
- Metered by J2EE application—a WebLogic Server bills by the J2EE application; charges by application are to different cost centers

See [Adding Entities to Chargeback](#) for detailed information on adding entities to Chargeback.

50.1.2.2 Charge Plans

A charge plan defines the resources to charge for and their associated rates. Chargeback offers two types of charge plan—the universal charge plan and extended charge plans.

Universal Charge Plan

The universal charge plan contains the rates for three common resources:

- CPU
- Memory
- Storage

Note that the universal plan does not apply to all entity types. Universal rates are not applicable to J2EE applications, for example.

Extended Charge Plans

While CPU, memory and storage can be used for Chargeback across a variety of entity types, there may be situations where entity-specific charges are required. For example, you may want to base charges on the type of host OS (Windows or Linux), or on a database option such as Partitioning. In this instance, an extended charge plan can be used. The extended charge plan provides greater flexibility to Chargeback administrators, enabling you to:

- Define entity type-specific charges
- Define configuration and usage-based rates
- Define a flat charge independent of configuration or usage
- Override or adjust universal plan rates
- Establish peak hours at which to charge a premium rate
- Institute a tiered pricing structure based on levels of use

Chargeback ships a sample extended charge plan that you can use as-is or as a template for creating your own extended plans tailored to your environment. The shipped plan defines charges for the Oracle VM Guest entity type where charge items and applicable rates vary depending on machine size.

See [Working with Charge Plans](#) for detailed information on working with charge plans.

50.1.2.3 Cost Centers

When charges for the consumption of resources are calculated, these charges must be assigned somewhere. In Chargeback, the assignment of these costs is to a cost center. Cost centers are typically organized in a business hierarchy and may correspond to business units—sales, engineering, human resources, and so forth. The cost center hierarchy is defined within the Chargeback application and is used for rollup and drill-down purposes when reporting on usage and charges. There are also default mechanisms in place based on cost center properties set outside of Chargeback. See [Creating Cost Centers](#) for detailed information on creating cost centers.

50.1.2.4 Reports

The payoff for setting up Chargeback is the wealth of information it puts at your fingertips. The information is available in a variety of formats, including pie charts and bar graphs. You can drill down to details by cost center, entity type, and resource. Trending reports show charges and resource utilization over time, up to a year in fact, which can help in IT resource planning. In addition to the reporting function available to administrators within the application, self service users can view Chargeback information related to their entities within the self service portal, and Line of Business users can view Chargeback information in BI Publisher reports.

Report Cycle

Chargeback calculates charges for the current calendar month. This constitutes the report cycle. Any adjustments to configured charge plans and rates are retroactively applied to usage from the first day of the report cycle (that is, the first day of the current month). Charges accrued in previous calendar months are considered closed. Thus, modifications to charge plans do not affect the calculated charges for previous months.

See [Accessing Chargeback Information](#) for detailed information on accessing Chargeback information.

50.1.2.5 Chargeback and Metrics

Chargeback uses information that Enterprise Manager collects as a basis for metering. Chargeback metrics can be configuration-based, usage-based, or availability-based.

- Configuration-based metrics refer to things such as number of CPUs or database version; these metrics are considered static and thus have a daily aggregation.
- Usage-based metrics refer to things such as CPU utilization or memory consumption; these metrics have an hourly aggregation.
- Availability-based metrics measure the time an entity is available, otherwise known as an entity's uptime. It is the number of minutes in a given hour an entity is considered available. The charge is prorated for downtime.

Charges can also be applied at a fixed rate.

Entity types for which charge rates can be defined for specific metrics include host, virtual machine, WebLogic Server, database instance, schema service, and pluggable database (PDB). Composite entity types can also be added to Chargeback. These include Cluster Database, Oracle WebLogic Cluster, Oracle WebLogic Domain, Oracle VM Zone, PaaS Infrastructure Zone, Oracle VM Server Pool, and so forth. Adding groups and systems automatically includes all members that are valid Chargeback entities. After an entity has been added to Chargeback, a collection job will run once a day against entity tables in Enterprise Manager to extract information for use by Chargeback.

50.2 Setting Up Chargeback

This section describes the following tasks, which must be completed to implement and support Chargeback services:

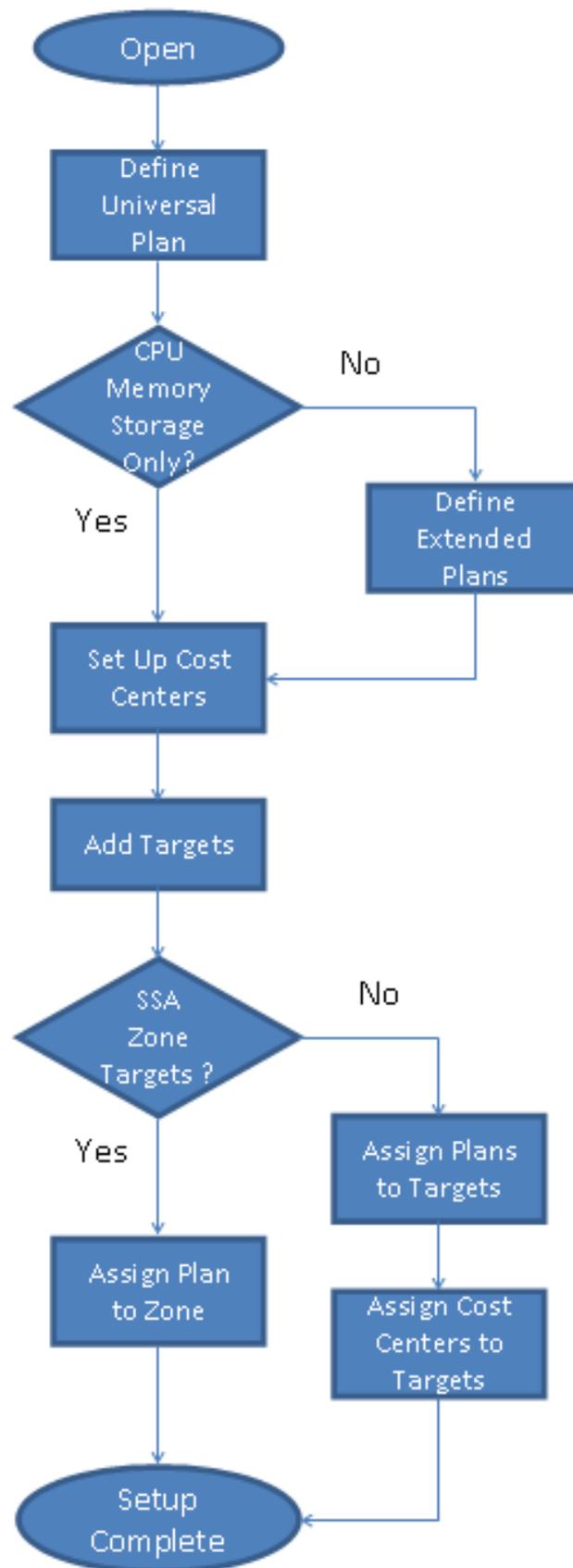
- [Configuring Global Settings for Chargeback](#)

- [Working with Charge Plans](#)
- [Using the Plan Advisor](#)
- [Creating Cost Centers](#)
- [Adding Entities to Chargeback](#)
- [Assigning Cost Centers to Entities](#)
- [Assigning Charge Plans to Entities](#)
- [Running the Daily Data Collection Job](#)

The person performing these tasks must have the necessary privileges. These privileges can be granted using the EM_CBA_ADMIN role.

[Figure 50-1](#) shows a simple workflow of steps required to set up Chargeback.

Figure 50-1 Chargeback Setup Workflow



Following initial setup, you perform tasks on a regular basis, such as:

- Adding new entities not discovered by the Chargeback daily job
- Updating charge plans
- Assigning charge plans and cost centers

Other events happen automatically. For example, new entities that are members of a composite entity (a VM Guest in a VM zone, for example) are discovered and added to Chargeback. The daily data collection job is responsible for capturing these changes, in addition to collecting metric and configuration data.

See [Running the Daily Data Collection Job](#) for detailed information on the daily collection job.

50.2.1 Configuring Global Settings for Chargeback

Click the **Settings** subtab on the **Home** tab to configure global settings.

- [Peak Times](#)
- [Currency Symbol](#)
- [Uptime Calculations](#)

50.2.1.1 Peak Times

Peak times establish days and hours of operation when premium rates apply to charges as defined in the associated charge plan. Chargeback ships with a default peak time window named Global, which defines peak hours as Monday through Friday, midnight to midnight. This in turn defines Saturday through Sunday, midnight to midnight as off-peak hours. The Global peak window is always associated with the universal charge plan, and with an extended charge plan by default. You can change an extended charge plan's association to a custom peak time window that you create.

1. Click **Edit** to open the set peak times dialog.
2. Click **Create** to open the peak time window dialog.
3. Specify a name for the peak time window.
4. Select the days of the week and hours of the day considered to be peak times of operation.

By definition, days and hours not included are considered off-peak.

5. Click **OK** to complete time window creation.

You also can perform these other actions with peak time windows:

- Rename the time window.
- Remove the time window.
- Edit the day and time settings or add new days and times to the time window. Edits to peak windows are considered plan revisions. When you change a peak window currently associated with a charge plan, charges are recalculated for the current report cycle.
- Remove row settings from a time window.

50.2.1.2 Currency Symbol

You can change the default currency (USD) by clicking in the currency symbol text box and entering the desired currency symbol. The new selection becomes the default currency across all charge plans; that is, the universal plan and all extended charge plans. All reports, including historical reports, reflect the new currency. Note that no rate conversion occurs when you change the currency; that is, the numbers stay the same. Change from dollars to euros and a one dollar charge becomes a one euro charge.

50.2.1.3 Uptime Calculations

Select the appropriate radio button to ignore or include uptime in charge calculations. The default is to include uptime as a consideration. Note that to include uptime has an impact on all fixed and configuration-based charge calculations for all entities.

Chargeback prorates charges and discounts accordingly. So, for example, if an entity was available 22.5 hours in a 24-hour period, the daily charge would be adjusted 1.5 hours. A change in the uptime setting is effective from the beginning of the current report cycle, but does not impact previous report cycles; that is, charges in historical reports are not prorated based on a change made to the setting in the current cycle.

Click **Save** to update the settings.

Example

To demonstrate the difference in factoring in uptime, consider the following charge plan configurations:

- A universal charge plan that charges two dollars a day per gigabyte of memory allocation, a dollar a day per gigabyte of storage, and no charge for CPU usage
- An extended charge plan for a Guest VM (medium), with a base charge of a dollar an hour and a memory allocation adjustment of x5

Given these charge plans, a user requisitions a Guest VM with 4 GB of memory and 100 GB of disk space for two consecutive days. The first day the uptime metric records 20 hours and the second day, 24 hours.

When uptime is *not* a factor in the calculations, the charge per day is 164 dollars, computed as follows:

- Forty dollars a day for memory ($4 \text{ GB} * \$2 * 5$)
- A hundred dollars a day for storage ($100 \text{ GB} * \$1$)
- A base charge of 24 dollars a day ($24 \text{ hours} * \$1$)

When uptime is a factor, charges for the first day are 137 dollars (rounded up), computed by subtracting the four hours of downtime from the per day charge ($20/24 * 164$).

50.2.2 Working with Charge Plans

As described in the Overview, there are two types of charge plan, the universal charge plan and extended charge plans.

The universal charge plan establishes rates for three basic metrics (CPU, memory, and storage). For example, charge a dollar a day for a CPU (generic), two dollars a week per GB of memory, and a dollar a week per GB of storage. Optionally, different rates can be applied per CPU architecture. For example, charge different rates for a PA-RISC, a SPARC, and an x86. You can create multiple revisions of the universal charge plan for use in the future.

An extended charge plan enhances the universal plan to include entity-specific metrics. You may want to implement charges that relate to specific characteristics of an entity. An extended charge plan affords that flexibility. The entity type determines the items for which rates can be charged.

In defining an appropriate charge plan for use with a given entity type, you have to decide on a case-by-case basis whether the three basic metrics of CPU, memory, and storage are sufficient to charge for resource use. If the answer is no, then you have to define an extended plan for the entity type.

In any case, you want to define the universal charge plan for general use. You can then indicate in an extended charge plan how the universal plan rates apply.

An extended charge plan consists of groups of entity-type specific charge items. Entity-specific charge templates are available for the following entity types:

- Host
- Oracle WebLogic Server (includes J2EE applications)
- Oracle VM Guest
- Database Instance (includes database services)
- Pluggable Database (PDB)
- Schema Service

Chargeable items and applicable rate adjustments vary, depending on the entity type.

With an extended plan you can base charges on entity-specific charge items. For example, you may want an additional charge for a host running Windows OS, or a database with the Partitioning option installed. In addition to configuration- and usage-based charge items, you can include a fixed charge. For example, charge \$100 a month for each host, regardless of consumption.

You may find that even with an extended plan, the charge items available for a given entity type are insufficient for your particular needs. In this case, you can introduce custom charge items through use of CLI verbs. For additional information, see [Chargeback and Metering EMCLI Verbs](#).

This section covers the following topics:

- [Charge Plans and Effective Dates](#)
- [Charge Plans and Peak Windows](#)
- [Charge Plans and Tiered Pricing](#)
- [Creating and Revising the Universal Charge Plan](#)
- [Creating an Extended Charge Plan](#)
- [Viewing Charge Item Metadata](#)
- [Using Conditions in Charge Plans](#)
- [Using the Estimate Charges Feature](#)

- [Revising Extended Charge Plans](#)

50.2.2.1 Charge Plans and Effective Dates

When you create a charge plan (universal or extended), you establish the plan's effective date, which is always the first of a month. The plan revision remains in effect until you create a new plan revision whose effective date determines the previous plan revision's termination.

Say, for example, you want to set up a charge plan for a calendar year, in which a new plan revision goes into effect each quarter. You create an initial plan revision that goes into effect January 1. The plan shows an effective date of Jan. 1, yyyy - Onward. You create a plan revision that goes into effect April 1. The initial plan revision now shows an effective date of Jan. 1, yyyy - Mar. 31, yyyy, and the new plan revision, Apr. 1, yyyy - Onward. You create two more plan revisions, one with an effective date of July 1 and the other with an effective date of October 1. You now have four plan revisions with effective dates as follows:

- Jan. 1, yyyy - Mar. 31, yyyy
- Apr. 1, yyyy - Jun. 30, yyyy
- Jul. 1, yyyy - Sep. 30, yyyy
- Oct. 1, yyyy - Onward

Only current and future plan revisions appear in the Charge Plans navigation pane. You can retrieve expired plan revisions by selecting **Historical Revisions** from the **View** menu.

50.2.2.2 Charge Plans and Peak Windows

You can define hours of operation for days of the week that you consider to be high volume and thus times for which you want to charge a premium rate. This is a so-called peak window, which you associate with a particular charge plan that has a certain rate structure. Say, for example, Monday through Friday, 8:00 a.m. to 6:00 a.m., is your peak window, which you have named Prime. You associate the Prime window with a charge plan where peak hours have one rate structure and the rest of the week, or non-peak hours have a different structure. You can define multiple peak windows which you associate with different charge plans. For more information, see [Configuring Global Settings for Chargeback](#).

50.2.2.3 Charge Plans and Tiered Pricing

You can tie a tiered-pricing structure to charge items within a charge plan that establishes boundaries that determine how much to charge. Say, for example, you want to charge a certain rate for the first 10 GB of storage used, a different rate for the next 10 GB, and a different rate for anything over 20 GB. Chargeback provides this capability within the charge plan frame work. Implement tiered pricing as part of charge plan creation. See [Creating an Extended Charge Plan](#).

50.2.2.4 Creating and Revising the Universal Charge Plan

Set up the universal charge plan as follows:

1. How to proceed depends on the revision date:

- If the effective date under Universal Charge Plan starts in the past, select the revision in the navigation pane, then select **Revision** from the **Create** menu.
 - If the effective date under Universal Charge Plan is current or in the future, select the revision in the navigation pane and click **Set Rates**.
2. In the dialog that opens, select the effective date of the revision. Note that a change to rates currently in effect is retroactive to the beginning of the cycle. Click **OK**.
 3. In the Charge Plan editor, set the rates and charge frequency for the three basic metrics.

Select a row, enter the rate and select the frequency from the drop-down menu.

The rates set here are effective from the beginning of the current month, and have no impact on any previous month.
 4. Make additional entries for different CPU architectures, as required.
 - a. Click the **Add** button.
 - b. Select a CPU from the drop-down menu and click **OK**.
 - c. In the new row added to the table, enter the rate and select the charge frequency from the drop-down menu.
 5. When done, click the **Save** button in the upper right hand corner to complete the universal charge plan revision.

50.2.2.5 Creating an Extended Charge Plan

Set up an extended charge plan as follows:

1. From the **Create** menu, select **Plan**. The Charge Plan editor opens.
2. Enter a name for the plan. The name must be unique but the plan can have multiple, date-based revisions.
3. Choose a peak time window for which to set premium charge rates. For more information, see [Charge Plans and Peak Windows](#).
4. Click **Add**. The Add Entity Types dialog opens.
5. Select from the list of supported entity types. As a plan can serve more than one entity type, you can multiselect in the dialog. Click **OK**.

Selected entity types appear in a table with one configuration (default) indicated.
6. Click **Set Up Configurations** to open the Set Up Configurations dialog, then click **Add** to open the Add Configuration dialog.

Add a condition to set up a configuration for the entity type selected. The list of conditions available derives from the entity type. Select from the list, choose an operator, and set the condition value. You can specify a value or click the search icon to select the condition value from a list, or to search for some other value.

You might, for example, set a condition of machine architecture for a host entity type, where there are two options: sparc sun4u and AMD64. You can then use the **Move Up** and **Move Down** buttons to establish the order of precedence in matching conditions, if applicable.

Click **OK** when done with configuration setup.

As [Figure 50-2](#) shows, the charge plan table now displays separate columns for conditional configurations and the default configuration.

Figure 50-2 Setting Up an Entity Configuration

Host			
+ Add Item... ✎ Edit Item... ✕ Remove Item 🔗 Set Up Configurations...			
Item	Charge by Configuration: Machine Architecture		
	AMD64	sparc sun4u	Default
<ul style="list-style-type: none"> ▾ Universal Rate Adjustments ▶ CPU Rate Factor ? ▶ Memory Rate Factor ? ▶ Storage Rate Factor ? ▶ Recovery Cost 			
	1x ●	1x ●	1x
	1x ●	1x ●	1x
	1x ●	1x ●	1x

Note that you can set only a single condition for a configuration. Suppose you want to change the condition from machine size to high availability for VM Guest. To do so, open the Set Up Configurations dialog and remove the machine size condition items. When you click **Add**, the high availability condition item is now available.

- Click **Add Item** to open the Add Item dialog. Use this dialog to add charge items based on entity type for billing purposes.

Select a charge item from the drop-down list. The list of items derives from the entity type. For certain items, you can select the charge type from a drop-down list—flat rate, per unit, and so forth.

For some items, you can select the rate formula type: standard or tiered, where tiered represents a range up to a declared boundary. Set the upper bound of tier 1. The number then becomes the lower bound of tier 2. Click **Add** to add a third tier and specify the upper bound of tier 2, which then becomes the lower bound of tier 3. For more information, see [Charge Plans and Tiered Pricing](#).

You can also set conditions, the same as for configurations in [Step 6](#). For a database metered by service, charges are per service. For a WebLogic Server metered by J2EE application, charges are per application. Make your selection and click **OK**.

The charge plan table now displays a row for the charge item just added. A column appears for each configuration. Click the help icon to see a pop-up description of the charge item.

- In the charge item row, specify the rate and select the frequency for each configuration. Say, for example, you added a CPU count charge item for entity type host, for which you want to charge a \$1 a week per unit for the SPARC architecture, \$.50 a week per unit for the AMD architecture, and \$.75 per unit a week for all other architectures. Make the appropriate entries in the respective columns as displayed in [Figure 50-3](#).

Figure 50-3 Setting a Condition on a Charge Item

Host			
+ Add Item... ✎ Edit Item... ✖ Remove Item ⚙ Set Up Configurations...			
Item	Charge by Configuration: Machine Architecture		
	AMD64	sparc sun4u	Default
CPU Count ?	\$ 0.50 / Week <input type="text"/>	\$ 1.00 / Week <input type="text"/>	\$ 0.75 / Week <input type="text"/>
<ul style="list-style-type: none"> <ul style="list-style-type: none"> CPU Rate Factor ? Memory Rate Factor ? Storage Rate Factor ? Recovery Cost 			

9. Repeat Steps 7 and 8 to include additional charge items for the entity type.
10. Optional. Make rate adjustments to the universal charge plan basic metrics for this extended charge plan. Make adjustments by specifying a factor of the base rate, where 1, the default, represents the prevailing base rate. So, for example, enter 1.5 to increase the rate by 50 percent; enter .5 to decrease the rate by 50 percent. If you want to ignore a universal plan rate altogether, enter 0.

Expand the rate factor for a metric to see what the actual charge is. For example, if the rate adjustment for memory allocation is 1.5 and the rate is \$2 a month, the adjusted rate will be \$3 a month.

The metrics available for an entity type determine which rate adjustments are possible. For example, you cannot make rate adjustments for a WebLogic Server metered by a J2EE application.

Suppose, given the example, you want to adjust the CPU rate to 75 percent for the AMD architecture and to 125 percent for the SPARC, leaving the rate as is for the rest. Make appropriate entries as shown in Figure 50-4.

Figure 50-4 Extended Plan Showing Customized Charge Items

Host			
+ Add Item... ✎ Edit Item... ✖ Remove Item ⚙ Set Up Configurations...			
Item	Charge by Configuration: Machine Architecture		
	AMD64	sparc sun4u	Default
CPU Count ?	\$0.50 / CPU / Week <input type="text"/>	\$1.00 / CPU / Week <input type="text"/>	\$0.75 / CPU / Week
<ul style="list-style-type: none"> <ul style="list-style-type: none"> CPU Rate Factor ? CPU Usage Rate Factor x CPU Usage Memory Rate Factor ? Storage Rate Factor ? Recovery Cost 			
CPU Rate Factor ?	0.75 <input type="text"/>	1.25 <input type="text"/>	1 <input type="text"/>
CPU Usage	\$3.00 / CPU / Hour	\$3.00 / CPU / Hour	\$3.00 / CPU / Hour
Rate Factor x CPU Usage	\$2.25 / CPU / Hour	\$3.75 / CPU / Hour	\$3.00 / CPU / Hour
Memory Rate Factor ?	1x	1x	1x
Storage Rate Factor ?	1x	1x	1x
Recovery Cost			

11. If you used the [Plan Advisor](#) to create the plan, recovery costs associated with recouping your investment appear as part of the plan details. You can edit these values as necessary. For more information, see [Using the Plan Advisor](#).
12. When done, click the **Save** button in the upper right hand corner to complete the extended charge plan revision for the entity type.

You can now assign the extended charge plan to an entity instance of the appropriate entity type. Remember that extended charge plans are automatically effective from the beginning of the month.

50.2.2.6 Viewing Charge Item Metadata

The charge item library enables you to see at-a-glance detailed information about the charge items known within your Chargeback installation. This includes all charge items for well-known Enterprise Manager target types as well as for custom entity types introduced by integrators.

In many cases, charge items can be taken at face value: amount of memory used. In other cases, however, it is not so clear cut. Is the charge for database memory use computed based on allocated SGA memory or on the amount of memory used? What is the underlying metric or configuration used to determine CPU time or DB time usage? In cases such as these the usage value is only a part of some formula or customized query used to compute charges. In any event, you can take advantage of the detailed information available as you create extended charge plans.

1. From the **Enterprise** menu, select **Chargeback** and click the **Charge Plans** tab
2. Click the **Charge Item Library** icon.

The charge items metadata browser opens, displaying a table of all known charge items.

3. Optional. Select **Columns** from the **View** menu to alter the display and to show hidden columns, which might be of interest to you.
4. Optional. Click **Export** to save the charge items metadata content in a spreadsheet.

Consider the following as you view charge item metadata:

- The information is organized by entity type.
- Resource category is an internal bucket that Chargeback uses to organize charge items.
- Source type denotes a charge item as usage-based, configuration-based, or fixed.
- Chargeable means a rate can be defined for the item. An item without the check in the Chargeable column does not itself have a rate defined. Machine Architecture, for example, is a condition rather than a chargeable item.
- An Invalid indicator means the selected usage mode is not appropriate for the entity type.
- User-defined distinguishes custom charge items from out-of-box charge items.
- Charge items that are inactive cannot be added to new plans but can still be used in existing plans. They may also have meaning to historical plans.
- Metric Group and Metric Column link a charge item to its Enterprise Manager collection data. See the "Using Metric Extensions" chapter in the *Enterprise Manager Cloud Control Administrator's Guide* for more information.

50.2.2.7 Using Conditions in Charge Plans

Conditions introduce considerable flexibility when creating extended charge plans. You can create variations known as configurations that allow you to determine a set of rates to charge based on entity configuration. You base configurations on a property or attribute of an entity, such as the size of a virtual machine. The sample extended plan (identified as Sample Charge Plan), for example, sets conditions on a VM Guest entity type, based on the machine size of the virtual machine, allowing for different sets of charges to apply depending on machine size. There is also an implied default configuration, which is the charge plan itself if no configurations are set up, or the charge plan of record if there is no match for a configuration condition. The sample extended plan thus has four configurations, one each for machine sizes small, medium, and large, plus the default "Other."

Similarly, you can place a condition on an individual charge item that determines if a charge will be applied. For example a condition set on Partitioning means charge only if partitioning is used.

Use the Like condition operator with string-based entity type and charge items to match a range of string values. For example, set a Like condition on a database instance to match on all 11g releases (Like 11%). Or use it as a wildcard (Like %) to match on any string of characters (or none). Use an underscore (Like _) to match any single character. Use backslash to escape a wildcard character (Like \%). Use a double backslash to escape the escape character (Like\\%).

When you have multiple configurations, you have to set the order of precedence to determine how conditions are applied. Suppose you have the following sequence of configurations based on the host operating system:

- OS Like %Linux%
- OS Like %Linux 6%
- Default

The second condition (Linux 6) will never be tested because the first will always take precedence when the OS is any version of Linux. Thus, you have to make the test for Linux 6 first to base charges specifically on the Linux 6 OS.

Contrast the Like operator with the Equals operator, where the match must be exact, and there is no wildcard recognition. So, for example, Equals 11.2% does not match 11.2.0 or 11.2.1. You must specify Equals 11.2.0 or Equals 11.2.1. Note also that all string matching is case-sensitive. Equals UPPER is not the same as Equals upper. There is also a Not Equals operator with which you can exclude specific string values.

Consider these other condition examples:

- For a shared database, set a condition to base the charge on the nodes of a RAC.
- For a dedicated database instance, use the SQL Executions charge item to set a charge rate on SQL statement executions per second.

Conditions give you flexibility. For example, you may want to create many charge plans with no conditions and assign individually to entities. Or, you can create a single charge plan with many conditions, and assign to many entities.

50.2.2.8 Using the Estimate Charges Feature

The estimate charges feature supports the following use cases:

- Project the likely effects of rate changes in a charge plan on an entity or a cost center based on prior average usage where available.
- Compare the effects of different charge plans on entities or cost centers based on prior usage.

To see the effects of rate changes in a charge plan:

1. On the **Charge Plans** tab, click the **Estimate** button.
2. On the Estimate Charges page, select a charge plan in which rates have been changed and the effective date of the plan.
3. Choose the basis on which to estimate charges; that is, based on entities or cost centers, then click **Add**.
4. Select entities assigned to a specific charge plan, or entities not yet added to Chargeback. Select cost centers from the list of available cost centers, including the default cost center.
5. After you make your selections, review the results. Click the respective radio button to view estimated charges in a tabular or graphical format.

Select a table row to see the details for an entity or cost center in the region below the table.

To compare different charge plans:

1. On the Estimate Charges page, select the plans to compare and the respective effective dates.
2. Choose the basis on which to compare the plans; that is, based on entities or cost centers, then click **Add**. select the entities or cost centers to consider.
3. Select entities or cost centers as appropriate. Entities can be associated with either plan being compared or unassociated.
4. After you make your selections, review the results. The comparison appears in the table denoting the difference between the plans both as a monetary value and a percentage. A graphic summary appears to the right. You can change the summary view by selecting from the drop-down menu to the right of the summary.

Details of the comparison appear in the region below the table, where the system breaks out differences by charge items in the respective charge plan.

Chargeback bases estimations on usage for the selected date range. The system first identifies all chargeable entities. The system then applies plan rates to the daily average to determine daily estimated charges. Next it multiplies the daily estimated charges by the number of days in the report cycle to determine total estimated charges. Even if an entity is added mid-month, the system shows the estimation as if available for the whole month.

If the entity selected is not already in Chargeback, the system runs the Enterprise Manager ETL job on the entity to collect configuration and metering data; the job takes into account any child entities. If Chargeback metrics are not available, the system runs the daily collection job. The system then builds the daily average in order to display the estimated charges.

50.2.2.9 Revising Extended Charge Plans

You can update an extended charge plan in the following ways:

- Make changes to the charge rates in effect for the current or a future cycle.
- Create a plan revision for the next or a later report cycle, based on an existing plan.

To make changes to the charge rates in effect for the current or a future cycle:

1. Select the plan revision in the navigation pane and click **Set Rates**.
2. Make adjustments to the charge items and rates in effect.
3. Click **Save** to update the plan revision.

Note the warning when changing charge rates for the current cycle that the changes are retroactive to the beginning of the cycle.

To create a plan revision for the next or a later report cycle, based on an existing plan revision:

1. Select a plan in the navigation pane, then select **Revision** from the **Create** menu.
2. In the dialog that opens, select the effective date of the revision. The default date is the first month after the most recently added revision. For example, if the current cycle is for May and a June revision already exists, July 01 is the default effective date. Click **OK**.
3. In the familiar create-like model, the configurations, charge items, and rate adjustments for the plan you selected in the navigation pane appear in the plan details table on the right.

Edit the plan details as desired:

- Add and remove entity types.
 - Add and remove configurations.
 - Add, change, and delete charge items.
 - Make adjustments to metric rates.
4. When done, click **Save** to complete the plan revision.

50.2.3 Using the Plan Advisor

The Plan Advisor is a Chargeback feature that aids in deducing charge rates that make sense in terms of the entities and configurations for which the charge plan will be created. A wizard guides you through the process as follows:

- [Selecting the Entity or Entity Type](#)
- [Setting Up Configurations](#)
- [Projecting Recovery Costs](#)
- [Setting Rates for Charge Items](#)

50.2.3.1 Selecting the Entity or Entity Type

The selection of entity or entity type has consequences as described in Step 2 of the process.

1. On the **Charge Plans** tab, click the **Plan Advisor** button, then select **New Plan**. You can create a plan for an entity or an entity type.
2. Enter a name for the plan and select the effective date. Choose whether to create a plan for an entity or an entity type.

If you are creating a plan for an entity instance, select the usage mode. If the entity is not yet in Chargeback, it will be added to Chargeback and assigned to the charge plan upon plan creation.

If you are creating a plan for an entity type, select chargeable entities to be used for calculating usages upon which to base suggested rates. These entities will not be assigned the plan upon plan creation.

3. Click the **Add** button and select an entity type. Select any chargeable entities you might want to include as part of the plan.
4. Click [Next](#) to set up plan configurations.

50.2.3.2 Setting Up Configurations

The configurations you set up here are the same as when you create a charge plan; that is, you set conditions upon which to base charges, OS is like Linux 6, for example.

1. Select the entity type table row and click the **Setup Configurations** button to open the Set Up Configurations dialog.
2. Click **Add** to open the Add Configuration dialog.
3. Set a condition for the entity type selected. The list of conditions available derives from the entity type. Select from the list, choose an operator, and set the condition value. You can specify a value or click the search icon to select the condition value from a list, or to search for some other value.

If you have selected chargeable entities, the same condition applies to each.

4. Click [Next](#) to enter recovery parameters.

50.2.3.3 Projecting Recovery Costs

Recovery refers to amortizing your investment in resources over a fixed period of time to determine how much in monthly charges you have to generate to recover your investment.

1. Enter a monetary amount for the total recovery cost and period of time in months over which to offset the amount.
2. Enter the number of entity instances to share the recovery cost. If you selected chargeable entities, that number appears by default. You can edit the number.
3. Enter a percentage of the recovery cost that the instances need to generate monthly. Include a percentage for the default configuration. The total has to be 100.

4. Click in the Amount column to calculate the percentage amount and monthly recovery rate per instance.
5. Click [Next](#) to review suggested rates to charge to recover your investment.

50.2.3.4 Setting Rates for Charge Items

Complete the plan by providing a weighting factor for charge items; that is, the percentage of monthly income each item should generate. The charge items that appear derive from the plan's entity type. You can include configurations as additional charge items.

1. Select a configuration in the left pane.
2. For each charge item, click in the Weighting column and assign a percentage. All charge items including any added configurations must total 100 percent.
3. Click in the Cost/Month column to calculate a monetary value for the assigned percentage.

For usage charge items, the system computes average daily usage on the usage patterns of the chargeable entities to calculate a suggested rate. A suggested rate of zero means the usage value is too high or the recovery cost entered is too low.

4. Optional. Click **Add** to include a configuration as an additional charge item. Use this option as a way to augment the configurations set up in Step 2.
5. Click **Save** to complete plan creation and add the entity to Chargeback, if applicable.

50.2.4 Creating Cost Centers

Cost centers are vehicles for aggregating charges. A cost center can be an individual, a department within an organization, or a multitiered business hierarchy that spreads charges across the enterprise. You can create a business hierarchy by setting up cost centers and assigning users to the business units.

As part of Enterprise Manager user setup, an administrator can be assigned to a cost center. This cost center property then becomes the parent within Chargeback in place of the default cost center. For example:

- The daily data collection job creates a cost center for each Enterprise Manager user. If a cost center was assigned as part of user setup, it becomes the parent of the user's daily collection cost center; otherwise, the Chargeback default cost center becomes the parent of the user's daily collection cost center.
- A cost center is automatically assigned to an SSA entity during setup. If a cost center was assigned to the SSA requestor as part of Enterprise Manager user setup prior to the SSA entity being added to Chargeback, it becomes the parent of the SSA cost center; otherwise, the Chargeback default cost center becomes the parent of the SSA cost center.

Oracle recommends use of the Enterprise Manager user cost center property as a way to better manage cost center hierarchies within Chargeback.

A cost center can originate in the following ways:

- [Setting the Cost Center Property for an Enterprise Manager User](#)
- [Setting the Cost Center Property on the Target Home Page](#)

- [Creating High-Level Cost Centers in Chargeback](#)

50.2.4.1 Setting the Cost Center Property for an Enterprise Manager User

Enterprise Manager users who administrate Chargeback should be assigned to a cost center in their account profile.

1. From the **Setup** menu, select **Security**, then select **Administrators**.
2. Search for and select the administrator in question, then click **Edit**.
3. On the Properties page, enter an appropriate value for the **Cost Center** property as it relates to charges accruing to this user.
4. Advance to the Review page and click **Finish**.

You can of course also set the cost center property as part of the overall user account creation process.

This cost center will take precedence over the default cost center in Chargeback.

50.2.4.2 Setting the Cost Center Property on the Target Home Page

When you make a server request in the process of setting up a self service application, the Cost Center target property of the target, VM Guest for example, is automatically set to the user login of the person making the request. When the entity is configured for Chargeback, the user login is imported and appears in the Cost Center column for that entity on the **Entities** tab. Its parent is the Enterprise Manager user cost center if assigned; otherwise, it is consigned to the Chargeback default cost center.

You cannot change the cost center assignment for an SSA entity, but you can reassign the SSA user out of the default cost center to a more appropriate cost center, if desired, as described in [Creating High-Level Cost Centers in Chargeback](#).

Similarly, you can manually set an entity's Cost Center target property to an appropriate value (user ID), which will subsequently be imported and appear in the Cost Center column on the **Entities** tab when the entity is configured for Chargeback. Its parent is the Enterprise Manager user cost center if assigned; otherwise, the user ID is consigned to the Chargeback default cost center from which it can subsequently be reassigned to another cost center. This method is relevant only for non-self service entities; it provides a way to automatically set the cost center when the entity is added to Chargeback.

To create a cost center in this fashion:

1. On the All Targets page, select the target in question and go to the target home page.
2. From the target type menu, select **Target Setup**, then select **Properties**.
3. Click **Edit** and enter a value for the **Cost Center** property, then click **OK**.

The value will appear as described when the target is configured for Chargeback.

Note that if you change the Cost Center property for an entity that has already been added to Chargeback, the system does not recognize the new value.

50.2.4.3 Creating High-Level Cost Centers in Chargeback

A user who provisions an entity using the self service portal appears under the associated Enterprise Manager user cost center as a consequence of adding the SSA entity to Chargeback. If there was no Enterprise Manager user cost center assigned, the SSA user appears under the Chargeback default cost center, from which the user can subsequently be reassigned to an appropriate cost center as described in Step 4 of the process below.

To create a cost center manually:

1. From the **Enterprise** menu, select **Chargeback**.
2. Select the **Cost Centers** tab and then click the **Add** button.
3. Enter the appropriate information in the **New Cost Center** dialog:
 - The cost center takes a unique name by which it is known internally in the system.
 - The cost center also takes a meaningful name that appears in the user interface and generated reports.
 - Indicate the cost center's position in the tree hierarchy; that is, whether it should be root or nested. You can subsequently change its position in the hierarchy.

When you click **OK**, the new cost center appears in the table.

4. Cost centers typically equate to business organizations. When you select a cost center row, users who are part of the organization appear in the region below. Users can also be unassigned.

In addition to the cost centers you create, there also is a system default cost center that serves as a clearinghouse for unassigned users. These include:

- Self service users; that is, the user login of the person setting up the SSA who do not otherwise have an Enterprise Manager user cost center assigned
- Users designated as the Cost Center target property on the target home page who do not otherwise have an Enterprise Manager user cost center assigned

You can reassign these users to roll up charges to a higher-level cost center.

- a. First, select the default cost center row in the Cost Center table. This exposes the users consigned to the default cost center.
- b. Next, select a user row in the Users table.
- c. Click the **Assign to Cost Center** button that is now active.
- d. In the dialog that opens, designate the cost center to which to assign the user, then click **OK**.

The user now appears in the designated cost center.

5. As the cost centers list grows, you may find that you want to combine cost centers, sales under marketing, for example. To do so, select the cost center row, then select **Move** from the **Action** menu. The change is effective from the beginning of the current reporting cycle.

In the dialog that opens, indicate whether to include nested cost centers and choose where in the tree to move the cost center, then click **OK**.

6. At some point, you may decide to deactivate the cost center. To do so, select the cost center row and click the **Remove** button. Indicate whether to deactivate nested cost centers as well. The change is effective from the beginning of the current reporting cycle. Deactivation means the cost center can no longer be assigned to an entity, but its association with entities remains in previous report cycles; that is, if you run a report for a previous cycle, the entity assignment reflects the deactivated cost center.

Note the following about cost center moves, for example when a cost center (and its users) move to a different parent:

- The user assignment of an entity resource remains the same: the PC assigned to JDoe remains assigned to JDoe.
- Likewise, the resource usage assignment remains the same, but the report rollup reflects the new cost center parent child relationship, unless the administrator changes the assignment. The cost center move effects a change in the usage assignment, which is associated with the cost center and user ID.

50.2.5 Adding Entities to Chargeback

Decide on the entities whose resources you want to manage within Chargeback. You have to add entities to start collecting metrics against which to calculate charges. Note that if you want to add a Real Application Cluster (RAC) that has member instances already monitored in Chargeback, you must first remove those instances from Chargeback.

For certain database entity types, you have to enable metric collection before you can add entities of these types to Chargeback:

- Database instance where metering is by service
- Cluster database where metering is by service
- CDB (both single instance and RAC)
- Pool databases used for provisioning schema services and pluggable database services provided as part of a PaaS Infrastructure zone

For information on enabling metric collection, see [Configuring Metric Collection for Enterprise Manager Database Services](#).

A CDB is a composite entity. When you add a CDB instance, all of its pluggable databases (PDBs) are automatically discovered and reported as children of the CDB instance. Usage and charges are calculated at the PDB level.

When you add a PaaS Infrastructure Zone entity, all of its databases (single instance and RAC), database services, and PDBs are automatically discovered and reported as children of the zone. Usage and charges are calculated at the entity level.

 **Note:**

Pool entities that provision services for a PaaS Infrastructure Zone tracked in Chargeback, cannot also be tracked independently as entities in Chargeback. This may lead to nondeterministic behavior in charge plan assignments. So, for example, a CDB that serves as a pool entity for a PDB service entity that is part of a PaaS Infrastructure Zone, cannot also be added to Chargeback as a composite entity.

You must have the `ADD_CHARGEBACK_TARGET` role assigned to add any entity monitored in the Enterprise Manager instance that qualifies for Chargeback support. Without it, the **Add** button is disabled. As in the process of adding entities you can also assign charge plans and cost centers, these privileges must be included: `MANAGE_CBA_ENTITY_OBJ_PRIV`, `ASSIGN_CHAREG_PLAN_PRIV`, and `ASSIGN_CBA_COST_CENTER_PRIV`.

The `VIEW_CAT_TARGET` role allows you to see Chargeback data related to a specific entity. The `VIEW_ANY_CAT_TARGET` role allows you to see Chargeback data related to any entity.

1. From the **Enterprise** menu, select **Chargeback**.
2. Select the **Entities** tab and click the **Add** button.

The Add Entities wizard opens, where you perform the following steps:

- a. [Selecting Entities for Chargeback](#)
- b. [Making Assignments](#)
- c. [Reviewing Entity Setup](#)

It may take up to 24 hours after an entity is added to Chargeback for its metering data to appear. To stop collecting data on entities, select the entities involved and click the **Remove** button.

 **Note:**

When you remove an entity from Chargeback scope, its usage and charge data are dropped from the current report cycle. A warning to this effect appears as part of the removal process.

As new services for cluster members are discovered as part of the daily collection, they appear automatically in the tree hierarchy under the RAC node. The charge plan in effect is automatically assigned. Make cost center assignments accordingly.

50.2.5.1 Configuring Metric Collection for Enterprise Manager Database Services

Metric collection for Enterprise Manager database services is disabled by default for the following entity types:

- Database instance metered by database service

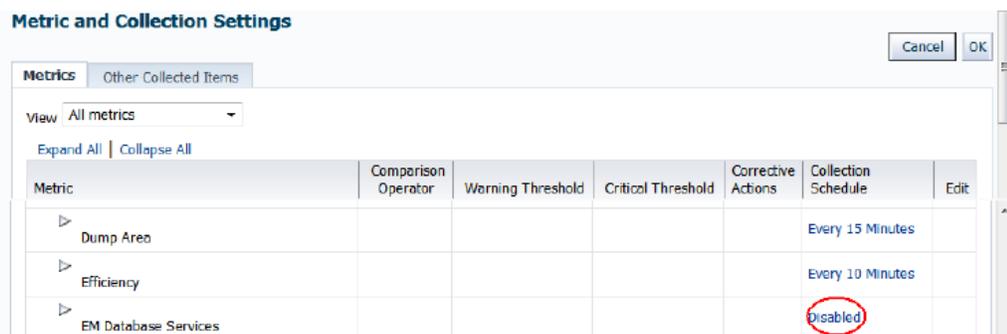
- RAC metered by database service or PDB
- CDB (both single instance and RAC)
- Pool databases used for provisioning schema services and pluggable database services provided as part of a PaaS Infrastructure zone

You have to enable metric collection before Chargeback can manage resources on these entities.

To effect change to metric data collections, you must be assigned the `MANAGE_TARGET_METRICS` role on the specific target.

1. From the **Targets** menu, select **Databases**.
2. Locate the target in the table and open its home page (provide credentials if requested).
3. From the **Oracle Database** menu, select **Monitoring**, then select **Metric and Collection Settings**.
4. On the Metric and Collection Settings page, change the view to **All Metrics**.
5. As shown in [Figure 50-5](#), scroll down to **EM Database Services** (not simply Database Services), click **Disabled**, and complete the enabling process.

Figure 50-5 Enabling Metric Collection for Database Services



Do this for each cluster member in a RAC and for each CDB instance.

Alternatively, you can use the following EMCLI command to enable the metric collection on the corresponding database entity instance:

```
emcli modify_collection_schedule -targetType='oracle_database' -
targetNames=target_name1;target_name2 -collectionStatus='ENABLED' -
collectionName='DBService' -preview='N';
```

Where *target_namen* is an appropriate database target instance.

50.2.5.2 Selecting Entities for Chargeback

Step 1 in the Add Entities wizard is to select the entities you want to add to Chargeback and establish a usage mode where applicable.

For certain database entity types, you have to enable Enterprise Manager metric collection before you can add entities of these types to Chargeback:

- Database instance where metering is by service
- Cluster database where metering is by service
- CDB (both single instance and RAC)
- Pool databases used for provisioning Oracle Database Services and pluggable database services provided as part of a PaaS Infrastructure zone

For information on enabling metric collection, see [Configuring Metric Collection for Enterprise Manager Database Services](#).

1. Click the **Add** button.
2. In the dialog that opens search for the entity types you want to add. Use criteria to filter your search.

To add a database as a service entity type (DBaaS or SaaS), select the PaaS Infrastructure Zone entity type. Database services and PDBs appear as children of the zone parent.

 **Note:**

Database (single instance and RAC) and CDB entities that provision service entities for a PaaS Infrastructure Zone cannot themselves be added as entities to Chargeback. To do so may lead to nondeterministic behavior in charge plan assignments. Thus, in cases of conflict no plan assignment is allowed.

3. In the search results list, select the specific entities you want to add. Note that you can multiselect entities. Click **Select**.

The dialog closes and a progress indicator notes the search for associated entities. The selected entities then appear in the table. For a composite entity, its members are accounted for in the Members column, provided they are new members that can be added to Chargeback. A check mark in the **Valid** column indicates that metrics and configuration data will be collected for the entity and used in charge calculations. So, for example, the metered check mark is not set for a WebLogic domain because data collection occurs at the WebLogic Server level.

4. Optional. Set the usage mode to other than the default where applicable to declare how to perform metering.

Select the usage mode from the drop-down list. Choices depend on the entity type; in some cases, there is only one choice, Metered. A database, for example, offers three choices: Metered by Database Instance, Metered by Service, or Metered by PDB.

5. Click **Next** to make charge plan and cost center assignments.

50.2.5.3 Making Assignments

Step 2 in the Add Entities wizard is to make charge plan and cost center assignments.

Charge plans provide a basis for calculating the cost of resource consumption.

1. Select the entity in the table and click the **Assign Plan** button.

2. In the dialog that opens:
 - a. Specify plan inheritance. **Propagate** assigns the plan to children of the entity if they have no plan assigned. **Override** assigns the plan regardless, removing the current plan assignment, if any.
 - b. Select the extended charge plan appropriate to entity selection.
 - c. Click **OK**.

The dialog closes, and the plan assignment appears in the entity table row.

You can opt not to assign charge plans now and assign them after adding the entities for Chargeback. See [Assigning Charge Plans to Entities](#) for more information.

Cost centers provide a way to aggregate the charges accrued for resource consumption.

1. Select the entity in the table and click the **Assign Cost Center** button.
2. In the dialog that opens:
 - a. Specify cost center inheritance. **Propagate** assigns the cost center to children of the entity if they have no cost center assigned. **Override** assigns the cost center regardless, removing the current cost center assignment, if any.
 - b. Select the cost center appropriate to entity selection.
 - c. Click **OK**.

The dialog closes, and the cost center assignment appears in the entity table row.

You can opt not to assign cost centers now and assign them after adding the entities for Chargeback. See [Assigning Cost Centers to Entities](#) for details.

When done, click **Next** to review entity setup and complete the task of adding entities to Chargeback.

50.2.5.4 Reviewing Entity Setup

Step 3 in the Add Entities wizard provides an opportunity to review your selections and assignments, before completing the task. If satisfied, click **Submit**.

You return to the **Entities** tab where a message confirms that n number of entities were successfully added. For more information on what happens after entities are added, see [After Adding Entities to Chargeback](#).

50.2.5.5 After Adding Entities to Chargeback

After adding entities to Chargeback, you can use various filtering criteria in the search pane on the left to alter the display in the table on the right. When you select a check box, the display changes to reflect your selections.

- Use the filtering capabilities to search by entity type or entities within type.
- Search to differentiate between entities that are assigned a cost center or charge plan and those that are unassigned.
- Use filtering criteria to check on collection status.
- Follow charge trends for those entities with a history of data collection and charge activity.

Use the save search capability as follows:

1. Click the save icon to preserve your search criteria.
2. Select **Manage Saved Search** from the drop-down menu to set or clear the default search or to remove a saved search.
3. Select a saved search from the drop-down menu to execute the search.

Note that the entities table has a flat structure. When you add entities that include members, they appear as singular entries in the table, without regard to hierarchy. To see the hierarchical relationship, select an entity row and click the **Hierarchy** subtab in the **Details** region. For more information, see [Viewing an Entity's Collected Metric Data and Other Entity Details](#).

50.2.5.6 Defining Plan Assignment Rules

You can define rules to assign a charge plan to an entity based on criteria you select. Rules fire prior to the daily data collection job. Entities without assigned charge plans are assigned a plan based on rule order.

When you make a plan assignment, you have the option of selecting a plan from a list of available plans or of letting rules criteria determine the plan.

 **Note:**

There is a system rule that establishes plan inheritance from the closest parent. This rule is uneditable.

1. From the **Enterprise** menu, select **Chargeback** and click the **Entities** tab.
2. From the **Action** menu, select **Set Plan Assignment Rules**.
3. Click the **Add** button.
4. Select a charge plan to assign from the drop-down list and provide a description for the rule.
5. Click **Add Group** to define criteria.
 - a. Select the left operand from the drop-down list (Entity Type, Parent Entity, Tenant).
 - b. Select an operator (Equals, Not Equals).
 - c. Click the search icon to select the right operand. The left operand determines the list of available choices. For example, if the left operand is Tenants, the list of available tenants known to Chargeback appears in the right operand drop-down list.
6. To add additional criteria, click the **Add Item** button. A new set of selection drop-down boxes appear that includes a Boolean operator. Set the Boolean to AND or OR to indicate whether all sets of criteria must match or any one constitutes a match.

Select the operands and operator as above.
7. When done with criteria, click **Add** to complete rule creation.
8. Rules fire in the order of appearance. Use the **Move Up** and **Move Down** buttons to reorder rule precedence as necessary.

50.2.6 Assigning Cost Centers to Entities

Cost centers are a way of distributing charges for resource usage. A cost center is automatically assigned to an SSA entity as part of SSA setup (Cost Center target property). Use this manual process only for assigning cost centers to non-SSA entities.

 **Note:**

You also can perform cost center assignment when adding an entity for Chargeback. See Step 2 of the Add Entities wizard described in [Making Assignments](#).

1. From the **Enterprise** menu, select **Chargeback**.
2. Select the **Entities** tab.
3. Select the entity to which you want to assign a cost center and click the **Assign Cost Center** button.
4. In the dialog that opens:
 - a. Specify cost center inheritance. **Propagate** assigns the cost center to children of the entity if they have no cost center assigned. **Override** assigns the cost center regardless, removing the current cost center assignment, if any.
 - b. Select the cost center appropriate to entity selection.
 - c. Click **OK**.

The dialog closes, and the table of entity assignments refreshes to reflect the assignment.

When charges are calculated, unassigned entities are assigned to the default cost center. Note that assigning a cost center to a composite entity maps directly to the composite entity, and to any children that otherwise have no direct cost center assignment.

A group member with one cost center assignment who is a member of another group with a different cost center assignment is in conflict as noted on the **Entities** tab for the affected group member. It is also possible that a group member is part of a regular target hierarchy as well as a group. For example, a database (DB1) appears under a zone (PaaS zone 1) and under a group (Group 1). In these cases, charges continue to be calculated, but are charged to the default cost center until an administrator resolves the conflict, at which time charges will accrue against the appropriate cost center.

Shared services under a RAC node can be assigned to different cost centers.

 **Note:**

For entities requested and provisioned through SSA, the Cost Center target property is set to the user login. The SSA user appears under the associated Enterprise Manager user cost center as a consequence of adding the SSA entity to Chargeback. If there was no Enterprise Manager user cost center assigned, the SSA user appears under the Chargeback default cost center. You cannot change the cost center assignment of an SSA entity, but you can reassign the SSA user out of the default cost center to a more appropriate cost center, if desired, as described in [Creating High-Level Cost Centers in Chargeback](#).

To unassign a cost center, select the entities involved and select **Unassign Cost Center** from the **Action** menu.

50.2.7 Assigning Charge Plans to Entities

When assigning charge plans to entities, you have the option of assigning plans individually to child members or assigning at an ancestor level and having the child members inherit the assigned plan.

An extended charge plan includes parameters for how to apply universal charge rates to an assigned entity. You also can replace an extended plan by reassigning the universal plan to an entity.

For SSA entities (zones), the person performing SSA setup assigns the charge plan to the zone as part of setup so that all entities within the zone inherit the plan.

 **Note:**

You also can perform charge plan assignment when adding an entity for Chargeback. See Step 2 of the Add Entities wizard described in [Making Assignments](#).

1. From the **Enterprise** menu, select **Chargeback**.
2. Select the **Entities** tab. A list of entities appears showing assigned cost centers and charge plans.
3. Select the entity to which you want to assign a charge plan click the **Assign Plan** button, then choose the appropriate action.
4. **Rule Based Assignment** asks to confirm that you want to run rules to assign a plan. Click **OK**. Rules fire to determine plan assignment based on rules criteria. For more information, see [Defining Plan Assignment Rules](#).
5. **Direct Assignment** opens a dialog that displays a list of plans that apply only to the entity type. Proceed as follows:
 - a. Specify plan inheritance. **Propagate** assigns the plan to children of the entity if they have no plan assigned. **Override** assigns the plan regardless, removing the current plan assignment, if any.

- b. Select the extended charge plan appropriate to entity selection.
- c. Click **OK**.

The dialog closes, and the table of entity assignments refreshes to reflect the assignment.

A group member with one plan assignment who is a member of another group with a different plan assignment is in conflict as noted on the **Entities** tab for the affected group member. It is also possible that a group member is part of a regular target hierarchy as well as a group. For example, a database (DB1) appears under a zone (PaaS zone 1) and under a group (Group 1). In these cases, no charges are calculated for the entity until an administrator resolves the conflict, at which time calculations resume. If there is no resolution before the close of the reporting cycle, charges can no longer be calculated.

A RAC can be metered by database instance, database service, or PDB. Each RAC member appears under the RAC node in the tree hierarchy and can be assigned to different charge plans and different cost centers.

To unassign a charge plan, select the entities involved and select **Unassign Plan** from the **Action** menu.

50.2.8 Running the Daily Data Collection Job

The daily data collection in Chargeback is an ETL— extract, transform, load—process where information is extracted from one source, transformed into an appropriate format, and loaded into a repository.

Enterprise Manager collects metric and configuration information on entities and stores it in the Management Repository. These collections occur with varying frequencies. When an entity is added to Chargeback, the application extracts the data from the repository and transforms it for use in Chargeback-dedicated tables. This process of extracting and transforming data is the Chargeback data collection process, which is scheduled to run every 24 hours. Chargeback maintains its own data collection tables because it needs to perform various transformations on the data, and to provide a historical data reference.

Given the 24-hour cycle, any Chargeback activity is not immediately apparent. For example, if you change a cost center assignment, it may take up to 24 hours (until the next data collection job runs) for reports to show the change. To circumvent the cycle, you can run the collection job on-demand to update the tables immediately.

1. From the **Enterprise** menu, select **Chargeback**.
2. Select the **Entities** tab.
3. From the **Action** menu, select **On-demand data collection**.

Chargeback data collection tables are updated to reflect the most recent activity.

To check on the job schedule:

1. From the **Enterprise** menu, select **Job**, then select **Activity**.
2. On the Job Activity page, click **Advanced Search**.
3. In the Advanced Search region, select **Chargeback Data Loader** from the Job Type drop-down list, then click **Go**.
4. Check the **Scheduled** column for the next scheduled job execution.

Do not change the job schedule.

Chargeback Data Retention Period

Chargeback retains the data it collects as follows:

- Hourly data remains available for three months by default. To see what your current retention period is for hourly data, execute the following query:

```
select * from EM_INT_PARTITIONED_TABLES where table_name like@
'EMCT_CBA_CHARGE_1HOURL'
```

To adjust the hourly retention period, execute the following command sequence:

```
begin
gc_interval_partition_mgr.SET_RETENTION('SYSMAN', 'EMCT_CBA_CHARGE_1HOURL',
4);
end;
```

This example extends the hourly retention period to four months.

- Daily data remains available for 24 months by default. To see what your current retention period is for daily data, execute the following query:

```
select * from EM_INT_PARTITIONED_TABLES where table_name like
@ 'EMCT_CBA_CHARGE_1DAY'
```

To adjust the daily retention period, execute the following command sequence:

```
begin
gc_interval_partition_mgr.SET_RETENTION('SYSMAN', 'EMCT_CBA_CHARGE_1DAY',
36);
end;
```

This example extends the daily retention period to 36 months.

50.3 Self Service Applications and Zones within Chargeback

A key component of cloud computing is availability of self service applications. Enterprise Manager includes SSAs for Oracle VM, database, and middleware.

- To access the respective portal, from the **Enterprise** menu, select **Cloud**, then select **Self Service Portal**.
- On the Self Service Portal page, select a service type from the **Manage** drop-down menu.
- Click the **Chargeback** icon in the left pane to view charge trends and details for the selected service type, provided it was configured for Chargeback.

While performing cloud setup, you can link directly into Chargeback to configure the respective zone. Note that zone setup is a prerequisite.

- From the **Setup** menu, select **Cloud**, then select as follows:
 - Infrastructure**—to set up VM types.
 - PaaS Infrastructure Zones**—to manage PaaS Infrastructure zones.
 - Database**—to set up database resource pools.
 - Middleware**—to set up middleware resource pools.

- **Testing**—to add application types for use by test designers to organize test-related activities.
2. Each respective home page has a **Chargeback** selection on the left. Click it to display an informational page on Chargeback setup that includes links into Chargeback to perform setup.

Chargeback supports several zones including Oracle VM and PaaS Infrastructure, which includes DBaaS, MWaaS, Schema as a Service (SchaaS), and Pluggable Database as a Service (PdbaaS).

Within Chargeback, the respective zone hierarchies appear as follows on the **Show Hierarchy** subtab of the **Entities** tab, PaaS Infrastructure under the Cloud category and Oracle VM under the Servers, Storage and Network category:



Note:

A PaaS Infrastructure zone can contain a database instance, a RAC instance, a database service, a composite application, or any combination of these, as represented below.

Zones	Zone Hierarchy
PaaS Infrastructure	PaaS Infrastructure Zone Single Instance Database Cluster Database Database Instance1 Database Instance2 Schema Service Pluggable Database Oracle Composite Application WebLogic Domain WebLogic Cluster Oracle WebLogic Server1 Oracle WebLogic Server2 Oracle WebLogic Server
Oracle VM	Oracle VM Zone Oracle VM Server Pool Oracle VM Guest1 Oracle VM Guest2

The following characteristics apply to all entity type zones:

- Adding a zone to Chargeback automatically includes all child instances.
- Removing a zone from Chargeback automatically removes all child instances.
- A child instance with no explicitly assigned charge plan inherits the plan of its nearest ancestor above it in the hierarchy.
- A child instance with no explicitly assigned cost center inherits the cost center of its nearest ancestor above it in the hierarchy.

- Querying on charges at a given level within the hierarchy will include all charges for the levels below (either directly or indirectly).
- New members discovered or added to a zone are automatically recognized by Chargeback at the next data collection cycle.

As the Chargeback Administrator with respect to self service, you should perform all configuration-related tasks on the self service zone rather than on child entities.

The SSA user is automatically associated with the SSA entity as the cost center, when the SSA entity is added to Chargeback. See [Assigning Cost Centers to Entities](#) to learn about assigning cost centers. When assigning charge plans, a plan assigned to a zone applies to all members within the zone that do not otherwise have a plan assigned. See [Assigning Charge Plans to Entities](#) to learn about assigning charge plans.

50.4 Accessing Chargeback Information

Once a Chargeback data collection cycle completes, you can begin to parse the information in a variety of ways. This section covers the following topics

- [Following Usage and Charge Trends](#)
- [Viewing an Entity's Collected Metric Data and Other Entity Details](#)
- [Generating and Distributing Chargeback Reports](#)
- [Viewing Chargeback Information in the Self Service Portal](#)
- [Sharing Chargeback Data with Other Applications](#)

50.4.1 Following Usage and Charge Trends

Once you define charge plans, set up cost centers, and begin to monitor entities, trends in usage and charges emerge. Trending reports show metric or charge trends over a defined period of time and are useful for end users who want to see how their charges change over time. They are also useful to the IT department for capacity planning purposes.

The **Home** tab displays bar graphs that denote usage and charge trends over time. Each trend region has an **Option** link in the upper-right corner that opens a dialog where you can customize the display.

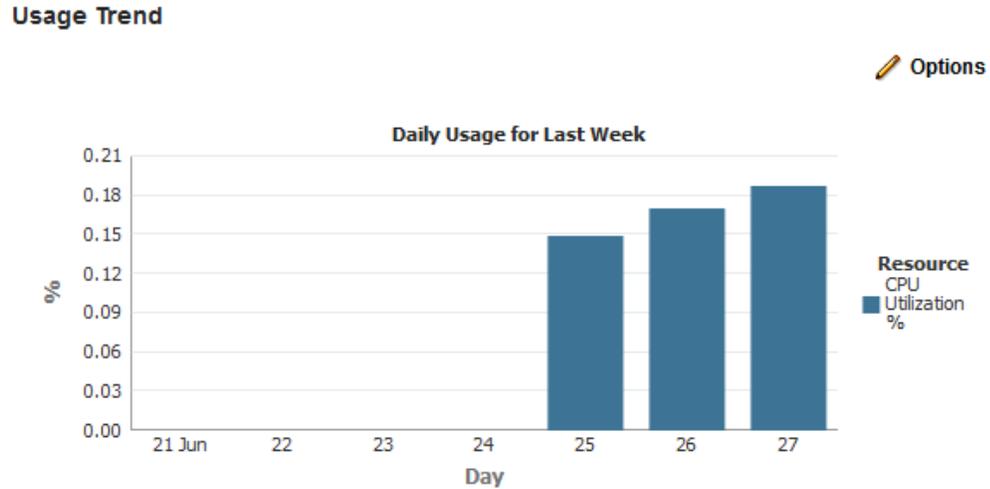
Usage Trend Options

Customize the usage trend display as follows:

- **Time Period**—Select the desired time period to chart usage trends; default is the current year
- **Aggregation**—Select how to group usage across the selected time period; default is monthly
- **Usage Value Type**—Show usage as a percent (utilization) or as a consumptive value; default is utilization
- **Resource**—Show usage in terms of a particular metric (CPU, memory, or storage); default is the three metrics

[Figure 50-6](#) displays a usage trend showing CPU, disk, and memory utilization over the past week, aggregated daily.

Figure 50-6 Sample Usage Trend Graph



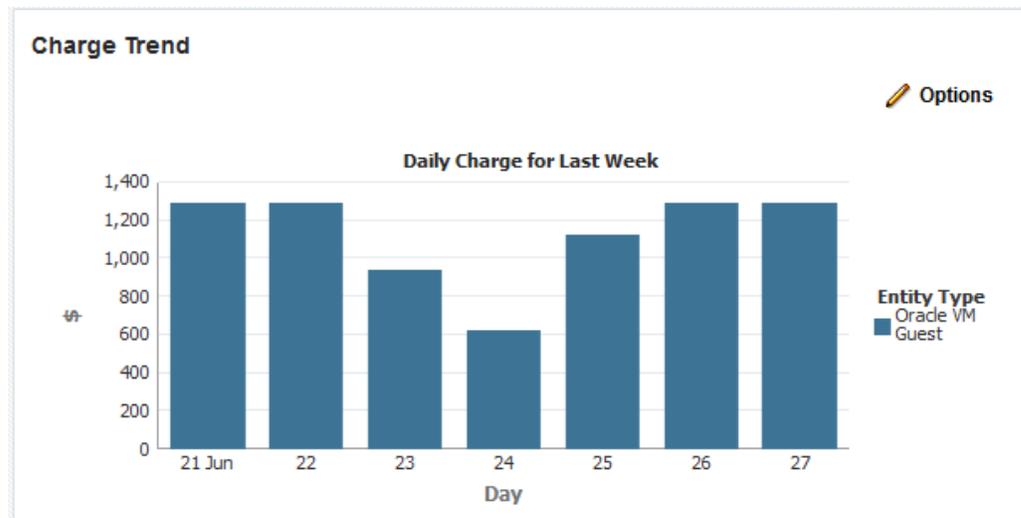
Charge Trend Options

Customize the charge trend display as follows:

- **Time Period**—Select the desired time period to chart charge trends; default is current year
- **Aggregation**—Select how to group charges across the selected time period; default is monthly
- **Group By**—Group charges by either cost center or entity type; default is cost center
- **Cost Center**—Display charge trends for all cost centers, a particular cost center, or for unassigned users; default is all

Figure 50-7 displays a charge trend showing last week's charges for the VM Guest entity type, aggregated daily.

Figure 50-7 Sample Charge Trend Graph



50.4.2 Viewing an Entity's Collected Metric Data and Other Entity Details

View a selected entity's metric data and other relevant information such as collection status, any associated problems, current rate of recovery, an audit trail of activities affecting the entity, and more.

You can view an entity's metrics in graph form or as a time-stamped report of raw metric data. You can export the latter view to an external application such as a spreadsheet.

Note that you might have to expand the metric data region at the bottom of the **Entities** tab to expose the subtabs referenced in the instructions below.

1. From the **Enterprise** menu, select **Chargeback**.
2. Select the **Entities** tab and then select an entity to view.
 - Select the **Metered Data (Chart)** subtab below the entities list, to view a wave graph of data metrics for the entity. Select the metric to display from the drop-down list on the right. The metric selection is entity-type dependent. For a WebLogic Server metered by J2EE application, the metrics are per application. For a database metered by service, the metrics are service-related. For a RAC, metrics are represented as a multiline graph grouped by cluster member, where each line maps to usage by a particular member for the selected service.
 - Select the **Metered Data (Table)** subtab to view the raw numbers. In this view, you can filter the data and export it as a csv-formatted file. You also can change the focus to another entity. For a RAC, the view shows the same service data for all cluster members within the RAC.
 - Select the **Show Hierarchy** subtab to view the hierarchical relationships of a container entity and its chargeable entities

- Select the **Collection Status** subtab to glean statistical data such as error count and when metric data was last collected. For a RAC, collection status is for all cluster members within the RAC regardless of service selected.
- Select the **Problems** subtab to view any problems related to the selected entity such as with the data collection process. The summary entry links directly to Incident Manager where you can learn more about the problem and potential solutions. A service request (SR) number appears if assigned. There is also a **Problems** subtab on the **Home** tab that notes issues related to the whole of Chargeback. There are here likewise direct links to Incident Manager.

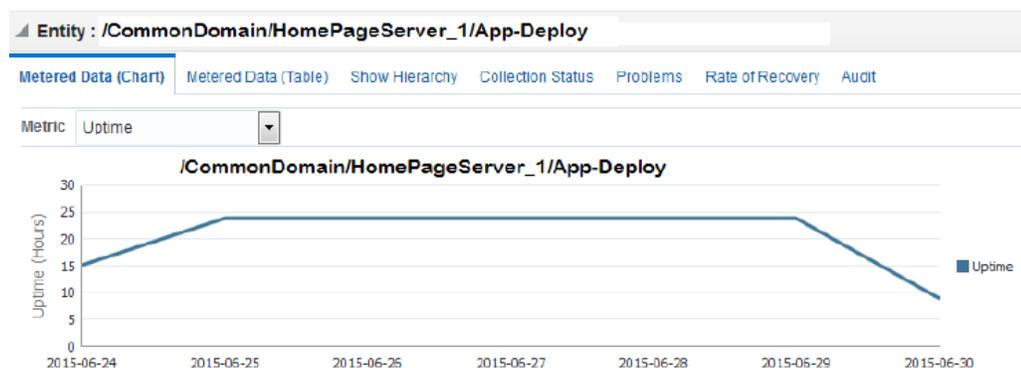
 **Note:**

Within Incident Manager, you can view, track, and manage the life cycle of a problem and its associated incidents. Support Workbench allows you to further investigate and report a problem. As the Chargeback Administrator, you require full privileges on all hosts and Management Agents associated with the Oracle Management Service to view problem details in the Support Workbench.

- Select the **Rate of Recovery** subtab to see if an entity is on-track to meet the projected monthly figure the Plan Advisor calculated.
- Select the **Audit** subtab to see who performed certain tasks such as assigning a cost center to the entity and when.
- Click the help icon that appears in a charge details row to see a pop-up description of the applicable charge item.

Figure 50-8 shows a chart tracking instance uptime for the selected entity over a span of seven days.

Figure 50-8 Sample Entity Metric Data



Note that you can see additional details on the Job Activity page.

1. From the **Enterprise** menu, select **Job**, then select **Activity**.
2. Click Advanced Search and specify the following filtering criteria:
 - Select **Chargeback Data Loader** as Job Type.

- Select **Targetless** as Target Type.
 - Select appropriate values for Status and Scheduled Start.
3. Click **Go**.

The log output for each job step captures any warnings or errors encountered.

50.4.3 Generating and Distributing Chargeback Reports

Chargeback reports are a powerful analytical tool for tracking resource usage and charge distributions. These summary reports show information related to charge or resource utilization broken down by cost center, entity type and resource. They enable you to quickly assess the entities or cost centers with the greatest charges or resource utilization. Summary reports are primarily useful for drill-down purposes.

Data collection occurs once a day. The daily data collection job for the current cycle is based on charge plan and cost center assignments. The reporting cycle defines the time period for which to calculate charges. The cycle is for the current month starting on the first day of the month.

Note:

Changes in Chargeback setup are not immediately reflected in reports. For example, if you change a cost center assignment, it may take up to 24 hours (until the next data collection job runs) for reports to show the change. If you have SYSMAN Super Administrator privileges, however, you can initiate data collection on-demand from the **Entities** tab. To do this, select **On-demand data collection** from the **Action** menu.

To generate ad hoc reports:

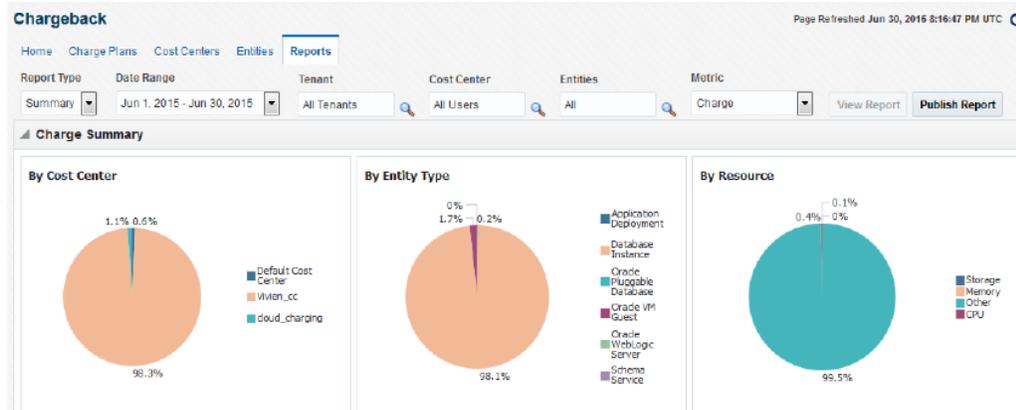
1. From the **Enterprise** menu, select **Chargeback**.
2. Select the **Reports** tab.
3. Design your report from the following options:
 - Use the current report cycle or customize a date range to report on.
 - Choose between summary and trending report types. A summary report presents a pie-chart breakdown, while a trending report uses a y-axis multiple bar chart to denote usage trends.
 - Select specific or all tenants.
 - Select specific cost centers or report on all users.
 - Select specific entities or entity types or report on all entities within all entity types.
 - Choose the metric to report on.

Click **View Report** to see the results.

The report displays color-coded graphs summarizing charges by cost center, entity type, and resource, with details displayed in the table at the bottom. Hover over a color box link in the respective graph to highlight the report contents for the color-coded selection, for example memory in the resource graph.

Figure 50-9 displays a summary report showing charges for the current reporting cycle for all tenants, cost centers, and entity types, with a breakdown by resource.

Figure 50-9 Summary Report for a Cost Center and Entity Type



4. Filter the details by choosing from the drop-down list; the default is All. Use the query-by-example feature (icon to the right of the action buttons) to search report details. The icon acts as a toggle; clicking it alternately shows or hides text and selection boxes above the table columns. The feature is also available in the **View** menu. Enter search criteria in various combinations by selecting a date and by typing values in the respective columns. Press **Enter** to activate the search.
5. Click the **Export** button in the details region to export report contents to file.
6. Click **Publish Report** to make report contents public. This action integrates with BI Publisher, where you can:
 - Save reports in a variety of formats (Excel, PowerPoint, HTML, PDF)
 - Distribute generated reports to e-mail lists (users who do not have access to Enterprise Manager, for example) on a defined schedule

For information on BI Publisher setup, see the "Installing BI Publisher on Enterprise Manager" chapter in the *Enterprise Manager Cloud Control Advanced Installation and Configuration Guide*.

Reporting on Uptime

When you choose to report on the uptime metric, the details display the fractions of hours in a day an entity was available over the course of the reporting cycle. You can see the adjustment for down time when you report on the charge metric. The report shows the charge, the adjustment, and the adjusted charge.

Making Manual Adjustments

If necessary, you can make manual adjustments to charges for an entity after reporting on the charge metric. These manual adjustments can be positive or negative. Perhaps the customer is entitled to a discount, or maybe an incorrect charge rate was applied.

1. Run a report based on the charge metric.
2. Select the entity in the details portion of the report, then click the **Adjust Charges** button.
3. Enter a notation justifying the adjustment in the space provided.

4. Specify the amount of the adjustment in the space provided. Place a minus sign (-) before the number to reduce the charge.
5. Click **Update** to review the result of the adjustment. If satisfied, click **Save**.

The system updates the report with the adjusted charge.

The adjustment will be reflected on the charge date or at the start of the report cycle, as applicable.

50.4.4 Viewing Chargeback Information in the Self Service Portal

You can access Chargeback information as it relates to self service applications from the self service portal.

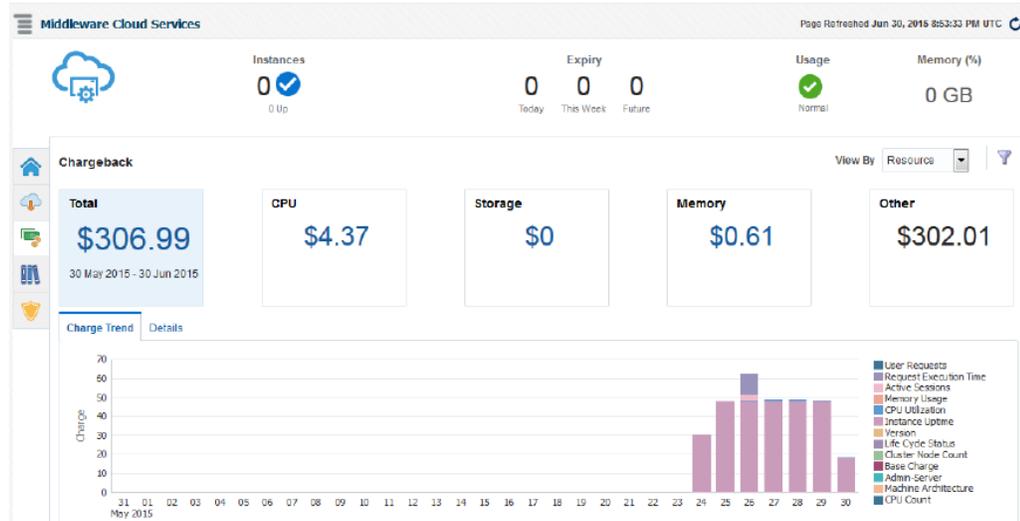
1. From the **Enterprise** menu, select **Cloud**, then select **Self Service Portal**.
2. On the Self Service Portal page, select a service type from the various categories of services.
3. On the selected services page, click the **Chargeback** icon in the left pane to view charge trends and details for the selected service type, provided it was configured for Chargeback. The informational breakdown is as follows:
 - The top portion of the page breaks down total charges by resource or service type selected from the **View By** drop-down menu on the right. Click a charge number to isolate the details.
 - The bottom portion of the page offers display alternatives:
 - **Charge Trend** calculates charges across a date range for various metrics. If you hover over a metric, memory for example, the bar graph changes to reflect only that metric.
 - **Details** breaks down the summary charges displayed in the top portion across the complete spectrum of Chargeback attributes. You can reorder the data by selecting from the **Detail Level** drop-down menu. You can also display additional information by exposing more columns.

When the detail level is by date, an **Hourly Details** button appears. Click the button to display a pop-up showing a break down by the hour.

You can make manual adjustments to charges by selecting a table row and clicking the **Adjust Charges** button.

[Figure 50-10](#) shows a sample Chargeback informational breakdown in the self service portal for Middleware Cloud Services.

Figure 50-10 Chargeback Breakdown for a Self Service Application



50.4.5 Sharing Chargeback Data with Other Applications

Amassed Chargeback data is a valuable commodity that can be made available to other applications. There are several ways to do this:

- Export administrative reports (**Export** button on the **Reports** tab in Chargeback)
- Publish administrative reports via BI Publisher (**Publish** button on the **Reports** tab in Chargeback)
- Export details of charge trends for self service applications (**Export** button on the **Chargeback** tab in the self service portal)
- Execute the EM CLI verb `get_metering_data` to generate comma-separated output on usage and, optionally, charge data (see [Chargeback and Metering EMCLI Verbs](#), for more information)

In addition, Enterprise Manager supports repository views to access information in the Management Repository for further processing and presentation. There are two views available (`MGMT$EMCT_CBA_CHARGE_HOURLY` and `MGMT$EMCT_CBA_CHARGE_DAILY`) to access Chargeback information in the Management Repository. See the *Enterprise Manager Cloud Control Extensibility Programmer's Reference* for more information.

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Enterprise Manager Consolidation

Enterprise Manager Consolidation offers two consolidation solutions:

- Host Consolidation Planner, for consolidating physical or virtual source servers to physical or virtual destination servers.
- Database Consolidation Workbench, for consolidating or migrating databases to new or existing servers. Database Consolidation Workbench is part of the Real Application Testing option. For further details, please refer to Oracle Database Licensing Information User Manual.

This chapter contains the following sections:

- [Overview of Consolidation](#)
- [Host Consolidation Planner](#)
- [Database Consolidation Workbench](#)
- [Topics Common to Host and Database Consolidations](#)

51.1 Overview of Consolidation

Key Concepts

The central theme of consolidation is to combine existing server or database sources to existing or yet-to-be-purchased destination servers or databases.

Consolidation starts with a **project**, which defines the scope of a potential effort, including:

- The type of consolidation. The following types of consolidation schemes are supported:
 - P2V: From physical source servers to Oracle Virtual Machine (VM) destination servers
 - P2P: From physical source servers to physical destination servers
 - D2D: From database sources to new database on new server destinations or to existing database destinations
 - D2S: From database sources to new or existing servers
- The preliminary set of candidate source servers to consider consolidating *from*
- The preliminary set of candidate destination servers to consider consolidating *to*
- The duration over which data used to generate consolidation scenarios will be collected for the source servers
- The benchmark used to measure CPU capacities when determining how many source servers can be consolidated to a destination server

Each consolidation project contains one or more **consolidation scenarios** that are generated based on the inputs provided, which include:

- The source server resource requirements that a destination server must meet, including one or more of the following: CPU, memory, disk I/O, network I/O, and disk storage
- Any business, compliance or technical constraints that must be considered
- The destinations to consider in the scenario

A set of pre-configured consolidation scenarios are provided, representing aggressive, medium, and conservative consolidation schemes. Each scenario is generated based on inputs you provide. Alternatively, you can create your own custom scenarios that best suit your situation. Once created, you can compare the various scenarios to determine which consolidation strategy best meets your requirements.

Each scenario also includes initial mappings between each source and the destination it may be consolidated to. You can choose to create mappings manually, or allow Enterprise Manager Consolidation to create them automatically. Once all inputs are specified, you can run the scenario and evaluate the results. Subsequently, you can rerun the scenario to re-evaluate the scenario based on the previously specified conditions with the latest available data. The results of the previous analysis will be over-written. You can also create a new scenario based on an existing scenario, where you tweak certain values to customize the new scenario.

The Process

- Create a consolidation project.
- Define one or more consolidation scenarios within the project. You have two options:
 - Use a pre-configured consolidation scenario.
 - Create a custom consolidation scenario.
- Evaluate your consolidation scenarios in the Consolidation console.
- Modify the settings of your scenarios to generate different results. Continue this process until you have the most optimal scenario(s) for your situation.

When consolidating multiple sources to more than one destination, the resource requirements of sources are checked against the resource capacity of the destinations. To consolidate all identified sources to the least number of destinations, Enterprise Manager Consolidation tries to identify a set of sources that have known resource requirements that will fit into a destination's corresponding available resources as tightly as possible.

Host consolidation uses per-hour requirements, allowing it to maximize use of destination resources by matching peak usage periods of one source to low-usage periods of another. Database consolidation does the same except when using the ultra conservative resource allocation method (the default), in which case, it uses the highest usage observed across a specified date range in seeking the best destination fit.

51.2 Host Consolidation Planner

Host Consolidation Planner enables you to match managed sources you want to consolidate with new or existing destinations. Host Consolidation Planner supports the following combinations:

- Consolidate source servers to generic physical machines, Oracle engineered systems (Exadata Database Machines or Exalogic Elastic Cloud systems), or Oracle Virtual Machine (VM) servers.
- Consolidate source servers to physical machines configured in the Oracle Cloud. In a consolidation of this type, an Oracle Compute Cloud configuration mimics a host, except that only memory and CPU capacity are of consequence as resources to be considered.

Host Consolidation Planner leverages data collected from managed targets by Cloud Control and factors in business and technical requirements to help you determine the optimum scenarios.

The following sections describe Host Consolidation Planner:

- [Overview of Host Consolidation Planner](#)
- [Creating a Host Consolidation Planner Project](#)
- [Creating a Host Consolidation Planner Scenario](#)
- [Other Host Consolidation Scenario Creation Options](#)
- [Evaluating Host Consolidation Scenarios](#)

51.2.1 Overview of Host Consolidation Planner

Over the years, the typical enterprise data center will grow steadily due to the addition of servers required to satisfy the needs of the business. This growth typically results in excess servers that occupy rack space, consume a lot of power for cooling, and require system maintenance such as security and patching.

Depending on the procurement cycle or the specific hardware vendor agreement in effect, enterprises may acquire different types of server hardware and operating systems, inadvertently creating a confusing array of systems that administrators need to manage, administer, patch and upgrade. This in turn increases labor and ongoing maintenance and support costs against IT budgets. Enterprises look at consolidation as a way to migrate their disparate systems onto standardized operating systems and hardware, with the ultimate goal of reducing costs.

Enterprises also are increasingly investigating virtualization technologies such as Oracle Virtual Machine by moving from physical to virtual servers. This makes it possible to use the shared hardware infrastructure while getting the benefits of isolation that virtualization provides.

The goal of consolidation is to identify such under-utilized servers and find a way to consolidate them, enabling the enterprise to free up as many servers as possible while continuing to maintain service levels. Since servers have different levels of CPU capacity, Host Consolidation Planner uses computer benchmark data to normalize the CPU usage for a given hardware in the consolidation process. Specifically, Host Consolidation Planner uses the following CPU benchmarks for different classes of hardware:

- SPECint_{base}2006 for database hosts, application hosts, or mixed-workload hosts
- SPECjbb2005 for middleware platforms

Host Consolidation Planner enables you to match managed target sources you want to consolidate with new or existing target destinations. Consolidate source servers to

generic physical machines, Oracle engineered systems (Exadata Database Machines or Exalogic Elastic Cloud systems), or Oracle Virtual Machine (VM) servers.

You can also consolidate source servers to physical machines configured in the Oracle Cloud. In a consolidation of this type, an Oracle Cloud Compute configuration mimics a host, except that only memory and CPU capacity are of consequence as resources to be considered.

By leveraging metric and configuration data collected from managed target servers by Enterprise Manager Cloud Control, Host Consolidation Planner helps you determine the optimum consolidation scenarios that also reflect business and technical constraints in the consolidation process.

51.2.2 Creating a Host Consolidation Planner Project

You create a host consolidation project for each consolidation effort, then add individual consolidation scenarios within it. You can then compare consolidation scenarios to determine which consolidation strategy makes the most sense.

After the project is defined, a Cloud Control job is submitted to collect available data for the specified targets from the Management Repository. Once the job finishes, the project becomes an active project. As long as the project is in an active state, data collection will continue.

Creating a project involves the following steps:

- [Selecting the Host Consolidation Project Type](#)
- [Specifying Host Source Candidates](#)
- [Specifying Host Destination Candidates](#)
- [Setting Data Collection Parameters](#)
- [Choosing a Pre-configured Scenario](#)
- [Reviewing and Saving the Host Consolidation Project](#)
-

51.2.2.1 Selecting the Host Consolidation Project Type

Complete Step 1 of the host consolidation project creation process as follows:

1. From the **Enterprise** menu, select **Consolidation**, then select **Host Consolidation Planner**.
2. Click the **Create Project** button.
3. Enter the consolidation project name and, optionally, a description.
4. Select the host consolidation type:
 - From physical source servers to Oracle VM servers (P2V)
 - from physical source servers to physical servers (P2P)
5. Click **Next** to specify source candidates.

51.2.2.2 Specifying Host Source Candidates

Complete Step 2 of the host consolidation project creation process as follows:

1. Select an appropriate benchmark from the drop-down menu.
 - Specify SPECint®_base_rate2006 for database hosts, application hosts, or mixed-workload hosts
 - Specify SPECjbb®2005 for middleware platforms
2. Click **Add Source Servers** to select the source servers to be consolidated from a list of managed server candidates. Use the filtering criteria to refine your target search. Choose from the filtered results, then click **Select**.

The sources you select appear in the table. Note that you can subsequently cull the list by removing selected source servers.
3. Optionally set server I/O capacities for disk I/O request and network I/O volume capacities. Click **Specify Server I/O Capacity** to estimate these I/O capacities for all source involved in the consolidation project. Note that you can subsequently fine-tune these estimates by clicking a row and editing the values for the various capacities.
4. Click **Next** to specify destination candidates.

51.2.2.3 Specifying Host Destination Candidates

Complete Step 3 of the host consolidation project creation process as follows:

1. Optionally select one or more existing servers to consolidate the source servers to.
 - If you are consolidating from physical servers to Oracle Virtual Servers (P2V), click **Add Existing Virtual Servers as Destinations** to view a list of existing VM-based Exalogic Elastic Cloud systems and Oracle Virtual Machine destination servers to consolidate the source servers to. Use the target type filter to differentiate the two. Select the servers you want to add, then click **Select**.

The destinations you select appear in the table. Note that you can subsequently cull the list by removing selected destination servers.
 - If you are consolidating from physical servers to physical servers (P2P), click **Add Existing Oracle Engineered System as Destinations** to search for the Exadata Database Machine servers or Exalogic Elastic Cloud servers to consolidate the source servers to. Use the target type filter to differentiate the two. Select the servers you want to add, then click **Select**.

The destinations you select appear in the table. Note that you can subsequently cull the list by removing selected destination servers.

Note:

If you do not select existing destinations, the consolidation will be to new (phantom) destinations. For P2P projects, if you do not select existing destinations, the source servers you select are also considered destination servers. This enables you to select a subset of source servers to consolidate to.

2. Optionally edit estimated CPU capacity, I/O request, and network I/O volume by clicking in a row and changing the value. You can also edit the I/O value by

clicking **Specify Server I/O Capacity** to estimate these I/O capacities for all destination servers involved in the consolidation project.

3. Click **Next** to set up data collection.

51.2.2.4 Setting Data Collection Parameters

Specify the duration over which data used to generate host consolidation scenarios will be collected for the source servers specified in the project. This data will be used to determine the resource requirements that a destination server must meet.

1. Specify the minimum number of days to collect data. The default minimum value is 21 days. To use existing historical data to run and view consolidation scenarios immediately, set the minimum number of days to 0.
2. Specify the maximum number of days to collect data. The default maximum value is 90 days.
3. Specify when to begin the data collection process.

Note that once data collection begins, you can elect to suspend and resume collecting at any time from the **Actions** menu in the Consolidation console.

4. Optionally select **Continue Data Collection Over the Maximum Days** to purge the oldest day's data when data for a new day is added.
5. Click **Next** to choose a pre-configured scenario.

51.2.2.5 Choosing a Pre-configured Scenario

When creating a host consolidation project, you can optionally choose to generate pre-configured consolidation scenarios to add to the project.

These scenarios are generated using data collected for the sources defined in the consolidation project at the time the project is created. If insufficient data is available when the project is created, the pre-configured scenarios will be automatically generated once the minimum amount of data has been collected.

Host Consolidation Planner ships with three out-of-the-box scenarios that represent aggressive, medium, and conservative consolidation schemes.

1. Choose whether to use a pre-configured scenario by clicking the appropriate radio button. Choosing the option displays a list of the out-of-the-box consolidation scenarios available. By default, the scenarios are designated by the method used to aggregate source target resource usage:
 - **Aggressive:** Aggregate data based on *average* daily usage per hour.
This typically results in a high consolidation (source:destination) ratio, because more sources will "fit" into each destination. But because more sources are involved, the odds that one or more will not meet the resource requirements are higher.
 - **Medium:** Aggregate data based on the 80 percentile usage.
This typically results in a source:destination ratio somewhere between Aggressive and Conservative aggregations.
 - **Conservative:** Aggregate data based on *maximum* daily usage per hour.
This typically results in a lower source:destination ratio, because fewer sources will "fit" into each destination.

Usage statistics are calculated based on the following criteria:

- Resource Requirements: Source requirements, such as CPU, memory (GB) and disk capacity, that must be met by destinations.
 - Applicable Dates: The days of the week on which resource usage metrics are collected.
 - Target Server Utilization Limit: The maximum resource utilization (percentage) that can be used on destinations. The scenario method in effect determines utilization percentage.
2. Select the pre-configured scenario you want to use. You can select any or all scenarios.
 3. Select whether to factor new (phantom) or existing destinations in the scenario.
 4. Proceed as follows, based on project type and selections:
 - For P2V projects using new servers, specify resource requirements for CPU capacity, memory, and disk storage. Optionally, you can enter quantities of resources to hold in reserve for virtualization software. These reserves are deducted from system capacity before calculating utilization percentages.
 - For P2V projects using existing servers, there is nothing to specify. The scenario method determines resource requirements. Note that this option is available only if existing virtual servers were added as destination candidates in step three of the wizard.
 - For P2P projects using new servers and engineered systems, there is nothing to specify. The system selects an appropriate Exadata configuration based on requirements.
 - For P2P projects using new servers and generic servers, specify resource requirements for CPU capacity, memory, and disk storage. You do not, however, have the option to enter resources to hold in reserve.
 - For P2P projects using existing servers, there is nothing to specify. The scenario method determines resource requirements. Note that this option is available only if existing virtual servers were added as destination candidates in step three of the wizard.
 5. Click **Next** to review the consolidation project.

The pre-configured scenarios will be generated when the project is created using data collected for the source servers defined in the consolidation project.

You can also opt to create your own custom scenario once the consolidation project has been completed.

51.2.2.6 Reviewing and Saving the Host Consolidation Project

Review the specifics of the host consolidation project. Use the **Back** button to return to a given step to make changes. If satisfied, click **Submit**. A message confirms that the project has been created and the job has been submitted.

Once the project is created, it will show up in the Consolidation console. Consolidation scenarios can then be defined for this project.

51.2.3 Creating a Host Consolidation Planner Scenario

You can create custom host consolidation scenarios instead of or in addition to using the pre-configured scenarios. Multiple scenarios can be created within a project, enabling you to compare different scenarios before deciding on a solution. New consolidation scenarios are created within an existing consolidation project. You can create host consolidation scenarios for planning purposes only.

Creating a scenario involves the following steps:

- [Setting Up the Scenario](#)
- [Defining Constraints for Host Consolidation](#)
- [Planning the Destination for a Physical Server to Virtual Server Project](#)
- [Planning the Destination for a Physical Server to Physical Server Project](#)
- [Mapping Host Sources to Destinations](#)
- [Reviewing and Saving the Host Consolidation Scenario](#)
-

51.2.3.1 Setting Up the Scenario

Complete Step 1 of the host consolidation scenario creation process as follows:

1. From the **Enterprise** menu, select **Consolidation**, then select **Host Consolidation Planner**.
2. Click the consolidation project for which the scenario is intended.
3. Click the **Create Scenario** button.
4. Specify the scenario details, such as scenario name.
5. Specify the source resources to consider. Host Consolidation Planner will aggregate the specified resources to determine the total requirements.
 - **Resource Type:** The server requirements, such as CPU, memory (GB), and I/O capacity that must be considered.
 - **Scale Factor:** Provide room for growth on the destination for each source. The resource requirement estimate uses the scale factor to pad the estimate for consolidation. So, for example, if the estimated requirement for a given source, based on usage data, is 2 GB of memory, which equates to a scale factor of 1, and you specify a scale factor of 1.1, 2.2 GB will be required to consolidate that source.
 - **Applicable Days:** The days of the week on which resource usage metrics are collected.
 - **Resource Allocation:** The method used to aggregate daily server source resource usage. Values are:
 - **Aggressive:** Aggregate data based on *average* daily usage per hour.

This typically results in a high consolidation (source:destination) ratio, because more sources will “fit” into each destination. But because more sources are involved, the odds that one or more will not meet the resource requirements are higher.

- Medium: Aggregate data based on the 80 percentile usage. This typically results in a source:destination ratio somewhere between Aggressive and Conservative aggregations.
 - Conservative: Aggregate data based on *maximum* daily usage per hour. This typically results in a lower source:destination ratio, because fewer sources will “fit” into each destination.
 - The date ranges should define a period of time that is typical of standard resource requirements.
6. Click **Estimated Requirements** to view the estimated total resource requirements. For server consolidations, resource requirements are shown based on the averaged hourly requirement. The displayed requirements reflect the scale factor (if any) specified for the resource. The 24-hour requirement pattern will be used as the minimum requirements that must be met by consolidation destinations.
 7. Optionally exclude or include sources, as appropriate.
 8. Click **Next** to define consolidation constraints.

51.2.3.2 Defining Constraints for Host Consolidation

Specify business, corporate, or technical constraints that must be enforced. Constraints can guide the allocation process during automatic source-to-destination mapping. For manual mappings between sources and destinations, constraints can calculate violations.

Complete Step 2 of a host consolidation scenario as follows:

1. Select compatible server criteria. Servers are considered compatible if they have the same specified target properties and configurations. If you are consolidating multiple source servers to a single destination server, only compatible servers can be consolidated together on the same destination server.
2. Specify mutually exclusive server criteria. Certain types of source servers are mutually exclusive and should not be consolidated together on the same destination server due to various reasons. For example, nodes of an Oracle cluster should not be placed in the same failure group.
3. Click **Preview Effect of Constraints** to view a list of source servers that are not compatible based on the defined constraints.
4. Click **Next** to specify destination server candidates.

51.2.3.3 Planning the Destination for a Physical Server to Virtual Server Project

For a P2V project:

1. Choose destination server candidates using either of the following options:
 - Click **Use New (Phantom) Servers** if you plan to use destination servers that have yet to be provisioned or purchased, then select either of the following options:
 - **Use Oracle Engineered System** and click the search icon to select an appropriate configuration type for an Exalogic Elastic Cloud system.

- **Use Generic Servers** and provide the estimated CPU capacity if available; otherwise, click the search icon next to the CPU capacity input field, then select a server configuration that most closely matches your needs.

Adjust the memory and storage estimates as necessary.

In a virtual environment, you can also specify a quantity of the resource to be set aside (reserved) for use by supervisory software in the database machine. This quantity is subtracted from the total capacity of the destination before consolidating source servers into the remaining resource. For example, if your estimated memory requirement is 12 GB and you specify a reserve of 2 GB, only 10 GB is available for consolidation.

Host Consolidation Planner will determine how many destination servers are required as part of the consolidation results.

- Click **Use Existing Servers** to specify a set of existing managed servers to use as destinations.

These are the servers you specified when defining the scope for the consolidation project. Host Consolidation Planner will determine the available hardware resources based on collected usage data.

By default, the consolidation process will try to use as few destination servers as possible. If you prefer, choose to balance the source load across all destinations.

2. Accept the defaults or edit the percentages for **Maximum Allowed Resource Utilization on Destination Servers**. Contrast these allowances, which provide headroom on destination servers, with the scale factor, which provides headroom for individual source servers.
3. Click **Next** to map the source servers to the destination servers.

51.2.3.4 Planning the Destination for a Physical Server to Physical Server Project

For a P2P project:

1. Choose destination server candidates using either of the following options:
 - Click **Use New (Phantom) Servers** if you plan to use destination servers that have yet to be provisioned or purchased, then select one of the following options:
 - **Use Oracle Engineered System** and select either Exadata Database Machine or Exalogic Elastic Cloud. Click the search icon and select a configuration type appropriate to either choice.
 - **Use Generic Servers** and provide the estimated CPU capacity if available; otherwise, click the search icon next to the CPU capacity input field, then select a server configuration that most closely matches your needs.
 - **Use Oracle Compute Cloud** and select the cloud computing configuration, or shape, to use as the destination. See [About Oracle Compute Cloud Shapes](#), for information on shapes.

- Click **Use Existing Servers** to specify a set of existing managed servers to use as destinations for the project.

These are the servers you specified when defining the scope for the consolidation project. Host Consolidation Planner will determine the available hardware resources based on collected usage data. If you did not explicitly specify destination candidates, all source servers are potential destinations for consolidation.

By default, the consolidation process will try to use as few destination servers as possible. If you prefer, choose to balance the source load across all destinations.

2. Accept the defaults or edit the percentages for **Maximum Allowed Resource Utilization on Destination Servers**. Contrast these allowances, which provide headroom on destination servers, with the scale factor, which provides headroom for individual source servers.
3. Click **Next** to map the source servers to the destination servers.

51.2.3.5 Mapping Host Sources to Destinations

Next, map the host sources to the destinations they will be consolidated to. The objective is to fit source requirements with each destination's available resources as tightly as possible.

Oracle recommends that you allow Host Consolidation Planner to perform this mapping automatically. This will allow the tool to maximize resource utilization of destinations based on resource capabilities and the various consolidation constraints specified. If you use manual mapping, the source will be mapped to the destination even if the destination lacks sufficient capacity. In addition, manual mapping may violate previously declared constraints.

When you have chosen existing destinations, you can optionally map each source and destination manually:

1. Click a source in the list.
2. Click the flashlight icon to select the destination to map to the source. Note that you can map a single source to a destination or multiple sources to a destination, but there can be only one destination

The resulting consolidation report will show any resource and/or constraint violations due to such manual mapping.

3. Click **Next** to review the consolidation scenario.

51.2.3.6 Reviewing and Saving the Host Consolidation Scenario

Finally, review the various parameters set in the new host scenario. Use the **Back** button if you need to make changes; otherwise, proceed as follows:

- Optionally, you can save the scenario as a template, which can then be shared with other users. If you want to do this, click **Save Scenario as a Template**. In the dialog that opens, browse to a location in the local file system and save the template as an XML file.
- Click **Submit**. A message appears confirming that a job has been submitted for further analysis of the scenario. Results appear at the bottom of the Consolidation home page when done.

51.2.4 Other Host Consolidation Scenario Creation Options

You can create a host consolidation scenario based on an existing scenario. Select an applicable scenario under a consolidation project and then select **Create Like Scenario** from the **Actions** menu. Modify the scenario as desired, provide a meaningful name, and submit for analysis as usual.

If you saved a scenario as a template, you can subsequently import the scenario into another environment.

1. On the Host Consolidation Planner home page, select **Create Scenario from Template** from the **Actions** menu.
2. Browse to a saved template XML file in the local file system. Click **Open**.
3. Indicate the extent to which you want to replicate the saved template; that is, in terms of the resources, constraints, and destinations planning represented by the template. Click **Update** if you make any changes.
4. Click **OK** to import the saved template.

The imported scenario opens in the wizard where you can edit and save it in Host Consolidation Planner.

51.2.5 Evaluating Host Consolidation Scenarios

You can view details for your consolidation scenarios using the Consolidation console. After evaluating the consolidation scenario results, you can define different plans as well as rerun existing scenarios to re-evaluate them based on the previously specified conditions with the latest available data. The results of the previous analysis will be over-written. You can also create a new scenario based on an existing scenario, where you tweak certain values to customize the new scenario. This iterative process helps you obtain the optimized consolidation scenario which is generated by compromising various factors and weighing different trade-offs.

Compare the consolidation scenarios you create to determine which consolidation strategy best meets your requirements.

Your objective is to:

- Match source resource requirements with destinations best able to meet those requirements.
 - Fit source requirements with each destination's available resources as tightly as possible, so you can get maximum usage of destination capacity.
 - Provide room for growth on destinations by allowing for headroom as a factor of resource requirements.
 - Optionally balance the source workload across all available destinations.
1. From the **Enterprise** menu, select **Consolidation**, then select **Host Consolidation Planner**.
 2. First, examine the project containing the scenario you want to view.
 - The Status column indicates the status of data collection, based on the minimum and maximum collection days specified for the project.

- The **General** tab summarizes the project in terms of type, collection details, number of sources, and so forth.
 - Click the **Source Candidates** tab to view various usage data collected for the sources defined in the project. Data can include utilization rates for CPU, memory, storage, and disk and network I/O, depending on the project type.
 - Click the **Source Workload** tab to view source resource usage data collected. The default display is a heat map, a grid of 24 hours by 30 days, showing the workload for a given hour as a color indicating the load relative to 100% of capacity, and a number showing the actual percentage. Alternatively, you can view the same data as a line graph. You can filter either view by source, resource type, and month.
 - Click the **Destination Candidates** tab to view a breakdown of hardware details and projected resource utilization by destination candidate, based on the sources to be consolidated.
 - Click the **Report** button above the table when the project is selected to view summarized information and more details.
3. Next, view the data for a specific scenario. The **General** tab summarizes the scenario in terms of resource type and allocation, constraints, destination types, and so forth. For a completed analysis, click any metric in the row to view details on the respective tab, as follows:
- **Sources:** The list of sources to consolidate, including their projected CPU and memory capacities and requirements.
 - **Destinations:** The list of destinations to which the sources will be consolidated. Resource configuration and calculated utilization are shown for each destination.

For consolidations to the cloud, resources of consequence are CPU capacity and memory.
 - **Ratio:** The ratio of sources to destinations. By default, Host Consolidation Planner will try to “fit” sources into as few destinations as possible.
 - **Mapping:** The destinations to which specific sources will be mapped. The analysis includes estimated CPU and memory requirements and utilization, enhanced by suggested CPU and memory allocation figures to consider. These suggestions represent a reasonable compromise between requirements and destination server capacity.
 - **Confidence:** The percentage of the data collected for sources that meet the source usage requirements defined in the scenario. This value is aggregated for all sources defined with the project.
 - **Violations:** The number of violations of technical or business constraints defined in the scenario. This metric is applicable only if the scenario uses auto-mapping of sources to destinations.
 - **Exclusions:** The number of sources that do not have a qualified mapping to a destination. These are sources that exceed the capacity of available destinations.

A different set of constraints may result in a different optimal scenario. Modify the constraints to come up with different scenario results.

51.3 Database Consolidation Workbench

Database Consolidation Workbench provides a comprehensive end-to-end solution for managing database consolidation. It enables you to match managed sources you want to consolidate with new or existing destinations. Database Consolidation Workbench supports the following combinations:

- Consolidate source databases (single instance or RAC) to fewer destination databases, using the database to database (D2D) consolidation type. Destinations can be existing databases (both non-CDB and CDB) or new databases on new servers, which can be Oracle Exadata Database Machines, Oracle Compute Cloud shapes, or generic servers.
- Consolidate source databases (single instance or RAC) to fewer servers where the number of databases stays the same, using the database to server (D2S) consolidation type. Destinations can be existing servers or new servers, which can be Oracle Exadata Database Machines, Oracle Compute Cloud shapes, or generic servers.

Database Consolidation Workbench uses database metrics in assessing resource requirements for database consolidation. You must have Oracle Enterprise Manager 13c Release 1 Database Plug-in or later to collect the database metrics Database Consolidation Workbench uses.

The following sections describe Database Consolidation Workbench:

- [Overview of Database Consolidation Workbench](#)
- [Creating a Database Consolidation Workbench Project](#)
- [Creating a Database Consolidation Workbench Scenario](#)
- [Other Database Consolidation Scenario Creation Options](#)
- [Evaluating Database Consolidation Scenarios](#)
- [About the Advisor Feature of Database Consolidation Workbench](#)
- [About Compression Advisor](#)
- [Estimating Compressed Storage Requirements](#)
- [About Implementing a Database Consolidation Scenario](#)
- [Implementing a Database Consolidation Scenario](#)
- [Assessing the Performance Impact of Database Migration on SQL Workload](#)

51.3.1 Overview of Database Consolidation Workbench

Database Consolidation Workbench offers flexibility for various customer scenarios:

- Consolidate 10.2 and higher database versions.
- Consolidate to Oracle private or public cloud or to Exadata.
- Use high availability options to minimize downtime, subject to source and destination database platform and version.

Database Consolidation Workbench takes the guess work out of consolidation by basing analysis on historical workload (database and host metrics). It eliminates human error by automating all phases of consolidation from planning to deployment.

Consolidation optimization advice enables you to estimate resource allocation under various consolidation scenarios, from ultra conservative, representing a peak maximum load, to aggressive, measured as the average daily usage per hour. Use optimization advice to identify conflicts based on workload characteristics and Exadata suitability. Assess the impact of compression on I/O and storage, including I/O offloading and Flash Cache technology.

As servers have become more and more powerful, with much greater workload capacity, enterprises with many small databases running on different servers find that their servers are greatly underutilized. Their aim is to consolidate these small databases onto fewer servers, thereby reducing their hardware purchasing cost and ongoing maintenance expenditures.

At the same time, database customers, in assessing their performance needs, want to evaluate resource utilization over a total specified time period to ensure meeting peak demand.

When weighing source I/O requirements to determine needed destination capacity, the key is I/O capacity of external storage units of Oracle Engineered Systems such as Exadata and Exalogic typically shared by databases.

Database Consolidation Workbench collects detailed storage information regarding total space allocated and total space used for each source database by segment type (Table, Index, LOB, Other). It then estimates how much space can be saved by compressing the data. Depending on the segment type and database version, estimates are given for several types and levels of compression.

- At the project level, Database Consolidation Workbench displays data storage requirements by database and segment type, with compressed and uncompressed values.
- At the scenario level, Database Consolidation Workbench recommends a specific type and quantity of Exadata external storage system, based on the requirement and customer input with regard to compression and other storage options.

Database Consolidation Workbench collects the following I/O requirements:

- I/O requests per second (IOPS)
- I/O bandwidth (MB/Second)

Database Consolidation Workbench fits the requirements to external storage unit I/O capacity, using the ratio of I/O bandwidth to IOPS to characterize each source database workload as either OLTP or DSS. These findings determine whether Database Consolidation Workbench considers IOPS, I/O bandwidth, or both when consolidating to external storage. Note, however, that users can override these recommendations.

Thus, when consolidating databases, Database Consolidation Workbench attempts to fit CPU and memory capacity to the destination, but not database storage and I/O capacity.

51.3.2 Creating a Database Consolidation Workbench Project

You create a database consolidation project for each consolidation effort, then add individual consolidation scenarios within it. You can then compare consolidation scenarios to determine which consolidation strategy makes the most sense.

After the project is defined, a Cloud Control job is submitted to collect available data for the specified targets from the Management Repository. Once the job finishes, the project becomes an active project. As long as the project is in an active state, data collection will continue.

Creating a project involves the following steps:

- [Selecting the Database Consolidation Project Type](#)
- [Specifying Database Source Candidates](#)
- [Specifying Database Destination Candidates](#)
- [Setting Data Collection Parameters](#)
- [Choosing a Pre-configured Scenario](#)
- [Reviewing and Saving the Database Consolidation Project](#)

51.3.2.1 Selecting the Database Consolidation Project Type

Complete Step 1 of the database consolidation project creation process as follows:

1. From the **Enterprise** menu, select **Consolidation**, then select **Database Consolidation Workbench**. This selection is also available from the **Administration** menu on the Databases target home page.
2. Click the **Create Project** button.
3. Enter the consolidation project name and, optionally, a description.
4. Select the appropriate consolidation type.
 - From databases to server containers (D2S)
 - From databases to database containers (D2D).
5. Click **Next** to specify source candidates.

51.3.2.2 Specifying Database Source Candidates

Complete Step 2 of the database consolidation project creation process as follows:

1. SPECint@_base_rate2006, as the appropriate benchmark for database consolidations, is preselected. Click **Select Source Databases** to select the source databases to be consolidated from a list of Oracle Enterprise Manager-managed database candidates. Use the filtering criteria to refine your target search. Choose from the filtered results, then click **Select**.

The sources you select appear in the table. Note that you can subsequently cull the list by removing selected source databases.

2. Optionally edit estimated CPU capacity rates by clicking in a row and changing the value.
3. Click **Next** to specify destination candidates.

51.3.2.3 Specifying Database Destination Candidates

Complete Step 3 of the database consolidation project creation process as follows:

1. Optionally select one or more existing destinations to consolidate the sources to.

- If you are consolidating from databases to server containers (D2S), click **Add Existing Servers as Destinations** to view a list of existing destination servers to consolidate the source databases to. Use the filtering criteria to refine the search. Select the servers you want to add, then click **Select**.

The destinations you select appear in the table. Note that you can subsequently cull the list by removing selected destination server containers.

- If you are consolidating from databases to database containers (D2D), click **Select Destinations** to search for the database containers to consolidate the source databases to. Use the filtering criteria to refine the search. Select the database containers you want to add, then click **Select**.

The destinations you select appear in the table. Note that you can subsequently cull the list by removing selected destination database containers.

**Note:**

If you do not select existing destinations, the consolidation will be to new (phantom) destinations.

2. Click **Next** to set up data collection.

51.3.2.4 Setting Data Collection Parameters

Specify the duration over which data used to generate database consolidation scenarios will be collected for the source databases specified in the project. This data will be used to determine the resource requirements that a destination server or database must meet.

1. Specify the minimum number of days to collect data. The default minimum value is 21 days. To use existing historical data to run and view consolidation scenarios immediately, set the minimum number of days to 0.
2. Specify the maximum number of days to collect data. The default maximum value is 90 days.
3. Specify when to begin the data collection process.

Note that once data collection begins, you can elect to suspend and resume collecting at any time from the **Actions** menu in the Consolidation console.

4. Optionally select **Continue Data Collection Over the Maximum Days** to purge the oldest day's data when data for a new day is added.
5. Click **Next** to choose a pre-configured scenario.

51.3.2.5 Choosing a Pre-configured Scenario

When creating a database consolidation project, you can optionally choose to generate pre-configured consolidation scenarios to add to the project.

These scenarios are generated using data collected for the sources defined in the consolidation project at the time the project is created. If insufficient data is available when the project is created, the pre-configured scenarios will be automatically generated once the minimum amount of data has been collected.

Enterprise Manager Consolidation ships with three out-of-the-box scenarios that represent aggressive, medium, and conservative consolidation schemes.

1. Choose whether to use a pre-configured scenario by clicking the appropriate radio button. Choosing the option displays a list of the out-of-the-box consolidation scenarios available. By default, the scenarios are designated by the method used to aggregate source target resource usage:
 - **Aggressive:** Aggregate data based on *average* daily usage per hour.
This typically results in a high consolidation (source:destination) ratio, because more sources will “fit” into each destination. But because more sources are involved, the odds that one or more will not meet the resource requirements are higher.
 - **Medium:** Aggregate data based on the 80 percentile usage.
This typically results in a source:destination ratio somewhere between Aggressive and Conservative aggregations.
 - **Conservative:** Aggregate data based on *maximum* daily usage per hour.
This typically results in a lower source:destination ratio, because fewer sources will “fit” into each destination.
- Usage statistics are calculated based on the following criteria:
- **Resource Requirements:** Source requirements, such as CPU, memory (GB) and disk capacity, that must be met by destinations.
 - **Applicable Dates:** The days of the week on which resource usage metrics are collected.
 - **Target Server Utilization Limit:** The maximum resource utilization (percentage) that can be used on destinations. The scenario method in effect determines utilization percentage.
2. Select the pre-configured scenario you want to use.
 3. Select whether to factor new or existing destinations in the scenario. For a D2S project, the choice is either a new (phantom) or existing Exadata Database Machine. For a D2D project, you have to select the appropriate database architecture in addition to choosing a new or existing database on a new or existing Exadata Database Machine.
 4. Click **Next** to review the consolidation project.

The pre-configured scenarios will be generated when the project is created using data collected for the databases defined in the consolidation project.

You can also opt to create your own custom scenario once the consolidation project has been completed.

51.3.2.6 Reviewing and Saving the Database Consolidation Project

Review the specifics of the database consolidation project. Use the **Back** button to return to a given step to make changes. If satisfied, click **Submit**. A message confirms that the project has been created and the job has been submitted.

Once the project is created, it will show up in the Consolidation console. Consolidation scenarios can then be defined for this project.

51.3.3 Creating a Database Consolidation Workbench Scenario

You can create custom database consolidation scenarios instead of or in addition to using the pre-configured scenarios. Multiple scenarios can be created within a project, enabling you to compare different scenarios before deciding on a solution. New consolidation scenarios are created within an existing consolidation project.

You can create consolidation scenarios for planning purposes. You also can implement the scenario, which enables you to perform the database migration on-demand.

Creating a scenario involves the following steps:

- [Setting Up the Scenario](#)
- [Defining Constraints for Database Consolidation](#)
- [Planning the Destination for a Database to Database Project](#)
- [Planning the Destination for a Database to Server Project](#)
- [Mapping Database Sources to Destinations](#)
- [Reviewing and Saving the Database Consolidation Scenario](#)

51.3.3.1 Setting Up the Scenario

Complete Step 1 of the database consolidation scenario creation process as follows:

1. From the **Enterprise** menu, select **Consolidation**, then select **Database Consolidation Workbench**. This selection is also available from the **Administration** menu on the Databases target home page.
2. Click the consolidation project for which the scenario is intended.
3. Click the **Create Scenario** button.
4. Specify the scenario details, such as scenario name.
5. Specify the source resources to consider. Database Consolidation Workbench will aggregate the specified resources to determine the total requirements.
 - **Resource Type:** The server requirements such as CPU and memory (GB) that must be considered.
 - **Scale Factor:** Provide room for growth on the destination for each source. The resource requirement estimate uses the scale factor to pad the estimate for consolidation. So, for example, if the estimated requirement for a given source, based on usage data, is 2 GB of memory, which equates to a scale factor of 1, and you specify a scale factor of 1.1, 2.2 GB will be required to consolidate that source.
 - **Applicable Days:** The days of the week on which resource usage metrics are collected.
 - **Resource Allocation:** The method used to aggregate overall database source resource usage. Values are:
 - **Aggressive:** Aggregate data based on *average* daily usage per hour. This typically results in a high consolidation (source:destination) ratio, because more sources will “fit” into each destination. But because more

- sources are involved, the odds that one or more will not meet the resource requirements are higher.
- Medium: Aggregate data based on the 80 percentile usage. This typically results in a source:destination ratio somewhere between Aggressive and Conservative aggregations.
 - Conservative: Aggregate data based on *maximum* daily usage per hour. This typically results in a lower source:destination ratio, because fewer sources will “fit” into each destination.
 - Ultra Conservative: Do not aggregate data by hourly usage; rather, use the highest usage observed across the specified date range. This is the default for database consolidations.
- The date ranges should define a period of time that is typical of standard resource requirements.
6. Click **Estimated Requirements** to view the estimated total resource requirements. For database consolidations, it is the single value that characterizes requirements over the date range.
 7. Optionally exclude or include sources, as appropriate.
 8. Click **Next** to define consolidation constraints.

51.3.3.2 Defining Constraints for Database Consolidation

Specify business, corporate or technical constraints that must be enforced. Constraints can guide the allocation process during automatic source-to-destination mapping. For manual mappings between sources and destinations, constraints can calculate violations.

Complete Step 2 of a database consolidation scenario as follows:

1. Select compatible database criteria.
Databases are considered compatible if they have the same specified target properties and configurations. Use target properties and configurations to consolidate databases based on functional area or database release and version.
2. Specify mutually exclusive source database criteria.
Use conditions to restrict consolidation of Data Guard/standby databases.
3. Click **Preview Effect of Constraints** to view a list of source databases that are not compatible based on the defined constraints.
4. Click **Next** to specify destination server candidates.

51.3.3.3 Planning the Destination for a Database to Database Project

For a D2D project:

1. Choose destination database candidates using either of the following options:
 - Click **Use New (Phantom) Database on New Phantom Servers** if you plan to use a destination database that does not yet exist. Specify destination database requirements:
 - Is the destination to be a container database (CDB) or a single instance database?

- Is the database to be clustered?
 - If clustered, what is the minimum number of RAC instances (at least 2)?
 - Is the server to be Exadata, Cloud, or generic?
- Adjust the memory and storage estimates as necessary.
- Click **Use Existing Databases** to view a set of existing qualified destination database candidates for the project.
2. Proceed according to your selection in Step 1:
 - For new:
 - If you selected Oracle Exadata for server in Step 1, click the search icon to select an Exadata Database Machine configuration type.
 - If you selected Oracle Compute Cloud for server in Step 1, click the search icon to select the cloud computing configuration, or shape, to use as the destination. See [About Oracle Compute Cloud Shapes](#), for information on shapes.
 - If you selected Generic Server for server in Step 1, provide the estimated CPU capacity if available; otherwise, click the search icon next to the CPU capacity input field, then select a server configuration that most closely matches your needs. Enter a memory capacity in gigabytes.
 - For existing, there is no action to take; you can only view the candidates.
 3. Configure shared storage.
 - **Shared Storage Unit**—Selection can be a generic storage unit (default for generic server) or one of many Exadata storage units.
 - Destination databases running on generic servers share a single storage system for usable storage space, IOPS, and I/O bandwidth. Accept the defaults or specify capacity values for the respective metrics.
 - Destination databases running on Exadata Database Machines share a single storage system at a particular rack level; that is, usable storage space, IOPS, and I/O bandwidth are shared across one rack of the database machine. Capacity values for these metrics are not editable.
 - **ASM Redundancy**—Specify the level of redundancy to use. You may, for example, want to set the level to high for mission critical systems, whereas, normal would be adequate for test and development systems.
 4. Specify the compression to use for various segment types. Use compression type to adjust the storage space requirement.
 - **Table Compression Type**—Choices include BASIC, OLTP, QUERY HIGH or LOW, ARCHIVE HIGH or LOW. For database versions earlier than 11.2, only OLTP is supported.
 - **Index Compression Type**—Choices include HIGH or LOW.
 - **LOB Compression Type**—Choices include HIGH, MEDIUM, or LOW.
 5. Accept the defaults or edit the percentages for **Maximum Allowed Resource Utilization on Destination Servers**. Contrast these allowances, which provide headroom on destination servers, with the scale factor, which provides headroom for individual source servers.
 6. Click **Next** to map the source databases to the destination database.

51.3.3.4 Planning the Destination for a Database to Server Project

For a D2S project:

1. Choose destination server candidates using either of the following options:
 - Click **Use New (Phantom) Servers** if you plan to use destination servers that have yet to be provisioned or purchased, then select one of the following options:
 - **Oracle Exadata** and click the search icon to select a configuration type appropriate Exadata Database Machine.
 - **Generic Server** and provide the estimated CPU capacity if available; otherwise, click the search icon next to the CPU capacity input field, then select a server configuration that most closely matches your needs.

Adjust the memory estimate as necessary.
 - **Oracle Compute Cloud** and click the search icon to select the cloud computing configuration, or shape, to use as the destination. See [About Oracle Compute Cloud Shapes](#), for information on shapes.
 - Click **Use Existing Servers** to specify a set of existing managed servers to use as destinations for the project.

These are the servers you specified when defining the scope for the consolidation project. Database Consolidation Workbench will determine the available hardware resources based on collected usage data.

By default, the consolidation process will try to use as few destination servers as possible. If you prefer, choose to balance the source load across all destinations.
2. Configure shared storage.
 - **Shared Storage Unit**—Selection can be a generic storage unit (default for generic server) or one of many Exadata storage units.
 - Destination databases running on generic servers share a single storage system for usable storage space, IOPS, and I/O bandwidth. Accept the defaults or specify capacity values for the respective metrics.
 - Destination databases running on Exadata Database Machines share a single storage system at a particular rack level; that is, usable storage space, IOPS, and I/O bandwidth are shared across one rack of the database machine. Capacity values for these metrics are not editable.
 - **ASM Redundancy**—Specify the level of redundancy to use. You may, for example, want to set the level to high for mission critical systems, whereas, normal would be adequate for test and development systems.
3. Specify the compression to use for various segment types. Use compression type to adjust the storage space requirement.
 - **Table Compression Type**—Choices include BASIC, OLTP, QUERY HIGH or LOW, ARCHIVE HIGH or LOW. For database versions earlier than 11.2, only OLTP is supported.
 - **Index Compression Type**—Choices include HIGH or LOW.
 - **LOB Compression Type**—Choices include HIGH, MEDIUM, or LOW.

4. Accept the defaults or edit the percentages for **Maximum Allowed Resource Utilization on Destination Servers**. Contrast these allowances, which provide headroom on destination servers, with the scale factor, which provides headroom for individual source servers.
5. Click **Next** to map the source databases to the destination servers.

51.3.3.5 Mapping Database Sources to Destinations

Next, map the database sources to the destinations they will be consolidated to. The objective is to fit source requirements with each destination's available resources as tightly as possible.

Oracle recommends that you allow Database Consolidation Workbench to perform this mapping automatically. This will allow the tool to maximize resource utilization of destinations based on resource capabilities and the various consolidation constraints specified. If you use manual mapping, the source will be mapped to the destination even if the destination lacks sufficient capacity. In addition, manual mapping may violate previously declared constraints.

When you have chosen existing destinations, you can optionally map each source and destination manually:

1. Click a source in the list.
2. Click the flashlight icon to select the destination to map to the source. Note that you can map a single source to a destination or multiple sources to a destination, but there can be only one destination

The resulting consolidation report will show any resource and/or constraint violations due to such manual mapping.

3. Click **Next** to review the consolidation scenario.

51.3.3.6 Reviewing and Saving the Database Consolidation Scenario

Finally, review the various parameters set in the new database scenario. Use the **Back** button if you need to make changes; otherwise, proceed as follows:

- Optionally, you can save the scenario as a template, which can then be shared with other users. If you want to do this, click **Save Scenario as a Template**. In the dialog that opens, browse to a location in the local file system and save the template as an XML file.
- Click **Submit**. A message appears confirming that a job has been submitted for further analysis of the scenario. Results appear at the bottom of the Consolidation home page when done.

51.3.4 Other Database Consolidation Scenario Creation Options

You can create a database consolidation scenario based on an existing scenario. Select an applicable scenario under a consolidation project and then select **Create Like Scenario** from the **Actions** menu. Modify the scenario as desired, provide a meaningful name, and submit for analysis as usual.

If you saved a scenario as a template, you can subsequently import the scenario into another environment.

1. On the Database Consolidation Workbench home page, select **Create Scenario from Template** from the **Actions** menu.
2. Browse to a saved template XML file in the local file system. Click **Open**.
3. Indicate the extent to which you want to replicate the saved template; that is, in terms of the resources, constraints, and destinations planning represented by the template. Click **Update** if you make any changes.
4. Click **OK** to import the saved template.

The imported scenario opens in the wizard where you can edit and save it in Database Consolidation Workbench.

51.3.5 Evaluating Database Consolidation Scenarios

You can view details for your consolidation scenarios using the Consolidation console. After evaluating the consolidation scenario results, you can define different scenarios as well as rerun existing scenarios to re-evaluate them based on the previously specified conditions with the latest available data. The results of the previous analysis will be over-written. You can also create a new scenario based on an existing scenario, where you tweak certain values to customize the new scenario. This iterative process helps you obtain the optimized consolidation scenario which is generated by compromising various factors and weighing different trade-offs.

Compare the consolidation scenarios you create to determine which consolidation strategy best meets your requirements.

Your objective is to:

- Match source resource requirements with destinations best able to meet those requirements.
 - Ensure that the destination's available capacity can accommodate the combined calculated workloads of all source databases.
 - Provide room for growth on destinations by allowing for headroom as a factor of resource requirements.
 - Optionally balance the source workload across all available destinations.
1. From the **Enterprise** menu, select **Consolidation**, then select **Database Consolidation Workbench**. This selection is also available from the **Administration** menu on the Databases target home page.
 2. First, examine the project containing the scenario you want to view.
 - The Status column indicates the status of data collection, based on the minimum and maximum collection days specified for the project.
 - The **General** tab summarizes the project in terms of type, collection details, number of sources, and so forth.
 - Click the **Source Candidates** tab to view various usage data collected for the sources defined in the project. Data can include utilization rates for CPU, memory, storage, and disk and network I/O, depending on the project type.

Data might include the estimated compression ratio. As noted on the page, if listed as not available, you can gather compression estimates prior to creating scenarios. Click the [Deploy Database Consolidation Workbench Packages](#) link in the on-screen text above the details to submit a compression advice job.

- Click the **Source Workload** tab to view source resource usage data collected. The default display is a line graph. Alternatively, you can view the same data as a heat map, a grid of 24 hours by 30 days, showing the workload for a given hour as a color indicating the load relative to 100% of capacity, and a number showing the actual percentage. You can filter either view by source, resource type, and month.
 - Click the **Destination Candidates** tab to view a breakdown of hardware details and projected resource utilization by destination candidate, based on the sources to be consolidated.
 - Click the **Advisor Findings** tab to view the results of checks run on database performance data. Findings reveal potential performance bottlenecks and recommend ways of reducing or eliminating them.

Severity may be informational, a warning, or critical in nature. Mouse over the rule for a description of what the rule checks for and suggestions for a resolution. The finding may be truncated. Mouse over it to see the complete description.
 - Click the **Report** button above the table when the project is selected to view summarized information and more details.
3. Next, view the data for a specific scenario. The **General** tab summarizes the scenario in terms of resource type and allocation, constraints, destination types, and so forth. For a completed analysis, click any metric in the row to view details on the respective tab, as follows:
- **Sources:** The list of sources to consolidate, including their projected CPU and memory capacities and requirements.
 - **Destinations:** The list of destinations to which the sources will be consolidated. Resource configuration and calculated utilization are shown for each destination.

For consolidations to the cloud, resources of consequence are CPU capacity and memory.
 - **Ratio:** The ratio of sources to destinations. By default, Database Consolidation Workbench will try to "fit" sources into as few destinations as possible.
 - **Mapping:** The destinations to which specific sources will be mapped. The analysis includes estimated CPU and memory requirements and utilization, enhanced by suggested CPU and memory allocation figures to consider. These suggestions represent a reasonable compromise between requirements and destination server capacity. See [Figure 51-1](#) for a screen capture of a representative consolidation mapping.
 - **Storage:** Summary of storage requirements and compression estimates for each source database. In calculating storage estimates, Database Consolidation Workbench ignores local storage on Exadata compute nodes (local disks that contain system software), and focuses on data storage contained in Exadata storage units. The system recommends the number of such units needed, based on the source storage requirements and the compression specifications in the scenario.

Drill down for detailed information. For example, numbers in the Space (GB) (Estimated) column are links. Click the link for a source database to open a compression estimates pop-up. The highlighted row represents the table compression type selected when creating the scenario.

Similarly, click the links in the IOPS and IO Bandwidth columns to see a breakdown of IOPS and IO bandwidth into read and write components, and in some cases, into small and large I/O subcomponents. You can also see the impact of Exadata Simulation on a source database, in the event of a SQL Performance Analyzer simulation.

When the destination is an existing server or database that uses Automatic Storage Management (ASM), the system checks and reports the storage space capacity, projected utilization (%), projected space usage (GB), and additional storage capacity (GB) required, if any, on each ASM destination.

- **Confidence:** The percentage of the data collected for sources that meet the source usage requirements defined in the scenario. This value is aggregated for all sources defined with the project.
- **Violations:** The number of violations of technical or business constraints defined in the scenario. This metric is applicable only if the scenario uses auto-mapping of sources to destinations.
- **Exclusions:** The number of sources that do not have a qualified mapping to a destination. These are sources that exceed the capacity of available destinations. An exclusion can occur simply because there is not enough of a resource to accommodate a source.

A different set of constraints may result in a different optimal scenario. Modify the constraints to come up with different scenario results.

- **Schema Conflicts:** Lists schemas that exist in more than one source database or that also exist in the destination database. This is specific to D2D scenarios where you chose a non-CDB (single instance) database architecture in the Destinations Planning step of scenario creation. Schema conflicts do not involve Oracle-supplied system schemas.
- **Advisor Findings:** Potential performance bottlenecks and recommended ways of reducing or eliminating them. Also indicates possible problems that can arise based on the consolidation specification.

Severity may be informational, a warning, or critical in nature. Mouse over the rule for a description of what the rule checks for and suggestions for a resolution. The finding may be truncated. Mouse over it to see the complete description.

Figure 51-1 shows the mapping for a simple database-to-database consolidation using the default phantom destination (clustered CDB/PDB). The figure illustrates the key points of mapping as explained in Table 51-1.

Figure 51-1 Database Consolidation Mapping

Custom_DB_Scenario (Custom_Consolidation)									
General Sources Destinations Ratio Mapping Storage Confidence Violations Exclusions Advisor Findings									
View	Start Date	End Date	Destination Mapping	Automatic Mapping	Configuration	New servers: Oracle Exadata Database Machine X5-2 (Eighth Rack)		Number of Racks Required	
Destination	Source Databases	Source Database	CPU (SPEC metric)	CPU Utilization (%)	CPU Usage (SPEC Metric)	Memory (GB)	Memory Utilization (%)	Memory Usage (GB)	Operating System
DB_MACHINE	1	2	3	4	5	6	7	8	
RACK_0001.NODE_01	2	10	700 (Estimated)	1.4	9.8	258	1.4	3.58	
PDB_001		SX11204HA		0.53	3.7		0.36	0.91	SunOS
PDB_002		SXR1212		1.1	8.0		1.0	2.64	

Table 51-1 explains the key points of mapping as annotated in Figure 51-1.

Table 51-1 Legend for Figure 51-1

Reference Point	Explanation
1	Name of rack, compute node, and consolidated database instance
2	Number of databases consolidated to this instance
3	CPU capacity of compute node
4	Total CPU utilization (%) for this compute node, including CPU utilization for existing destinations when applicable
5	Total CPU usage for this compute node
6	Memory capacity of the compute node
7	Total memory utilization (%) for this compute node, including utilization for existing destinations when applicable
8	Total memory usage for this compute node
9	Name of the pluggable database
10	Name of source database consolidated to this PDB
11	Percentage of compute node's CPU consumed by this source database
12	CPU usage for this source database on the compute node
13	Percentage of compute node's memory consumed by this source database
14	Memory usage for this source database on the compute node

51.3.6 About the Advisor Feature of Database Consolidation Workbench

The Advisor gathers database performance data from the Automatic Workload Repository (AWR) and uses the data as input to rules. The rules are evaluated to determine if performance bottlenecks exist in the source or destination databases, and provide advice on how to relieve the problem. At the scenario level, the rules also look at source databases in combination as well as at destination specifications to determine if the consolidation might experience performance problems.

Advisor findings are viewable for both projects and scenarios, as a column on the Database Consolidation Workbench home page, and as a tab in the respective project and scenario details region.

51.3.7 About Compression Advisor

The Compression Advisor estimates how much space compression savings each source database can potentially benefit from for different types of supported compression types, and calculates how much space the uncompressed data would require. The results appear on the **Storage** tab of a database consolidation scenario. You can also specify how to compress data in the destination, so that reductions can be applied when determining how much storage will be needed. To enable the estimation of compression, you have to deploy a job to each source database and run

compression advice to make the results available to Database Consolidation Workbench.

51.3.8 Estimating Compressed Storage Requirements

If you want to factor in compression ratios on source databases as part of a database consolidation, you have to submit a Deploy Database Consolidation Workbench Packages job to gather compression advice on each source. You can do this beforehand or following project creation.

1. From the **Enterprise** menu, select **Job**, then select **Activity**.
2. On the Jobs page, click the **Create Job** button.
3. Locate **Deploy Database Consolidation Workbench Packages** in the Job Type list and click **Select**.

This takes you to the job creation page, where you also land when you click the Deploy Database Consolidation Workbench Packages link on the **Source Candidates** tab within a database consolidation project that has already been created.

4. Enter a name for the compression advice job.
5. Add database targets that are source candidates to a consolidation. You can multiselect, but the target type (single instance or cluster), must be the same. Select in the table the target instances you want to include in the job.
6. On the **Parameters** tab, set **Run Compression Advice** to **Yes**.
7. Complete the rest of the job creation process and submit the job. Note that the job needs to run with SYSDBA credentials on the target databases.

The result of these actions makes estimated compression ratios available to Database Consolidation Workbench. Note that it may take up to 24 hours after compression advice is run for the metrics to collect the data into Enterprise Manager for scenario analysis.

51.3.9 About Implementing a Database Consolidation Scenario

After creating a database consolidation scenario, you can implement the mapping by migrating source databases to their mapped destinations using any of four supported migration methods:

- Data Guard Physical Standby (minimal downtime)
- RMAN Clone
- Data Pump (full or schema) Export and Import (cross-platform)
- Full Transportable Export and Import (minimal downtime, cross-platform)

Implementing a database consolidation scenario generates an XML file that you edit directly within Database Consolidation Workbench to provide supplementary information such as necessary credentials. You then save the file locally to be input to an EMCLI command that submits deployment procedures to perform the actual migration.

51.3.10 Implementing a Database Consolidation Scenario

Implement a scenario by deploying a procedure to perform a database migration.

1. From the **Enterprise** menu, select **Consolidation**, then select **Database Consolidation Workbench**.
2. Select a completed database consolidation scenario on the Database Consolidation Workbench home page and click **Implement Scenario**.
3. Select a migration method, RMAN Clone for example, from the available options. Mouse over a method to see a description. Note, in particular, minimum version requirements.
4. Click **Generate Migration Command** to create an EMCLI migration command and associated migration XML file.
5. Click **Edit Migration XML** to address any issues listed under Messages and to add supplementary information. The generated file is heavily commented to indicate the information needed, such as database and host credentials, location of working directory, and so forth.
6. Click **Validate** to ensure XML conformance.
7. Click **Save and Return** if you want to preserve the XML file and any edits you may have made, and go back to the Database Consolidation Workbench home page. The file will be available the next time you want to implement the scenario.
8. Click **Download Migration XML** to save the file to the local file system.

When you are ready to migrate the source databases, run the EMCLI command (`emcli migrate_db -file=<migration_xml_file_path>`), passing the XML file saved locally as input. When run, the command submits deployment procedures to perform the migration. You can track the migration on the Procedure Activity page; select **Provisioning and Patching**, then **Procedure Activity** from the **Enterprise** menu.

When the migration method is Data Guard Physical Standby, you can invoke parameters within the `migrate_db` command that control downtime. You can also ignore prerequisite XML validation.

Use the `get_sample_migration_xml` EMCLI command to generate a sample XML migration file that demonstrates source and destination mappings, based on the chosen migration method.

See the *Enterprise Manager Command Line Interface* guide for details on the migration commands.

51.3.11 Database Migration and Encrypted Tablespace

If a source database uses encrypted tablespace, you will not be able to access data in these tables on the destination following the migration until you copy the wallet from the source location to a location on the destination. You can find the wallet location in the `sqlnet.ora` file. The default location of the file is based on the TNS Admin or `ORACLE_HOME/network/admin` location.

After you copy the wallet to the destination, update the `sqlnet.ora` file on the destination with the location where you copied the wallet. For example:

```
ENCRYPTION_WALLET_LOCATION =  
  (SOURCE =  
   (METHOD = FILE)  
   (METHOD_DATA =  
    (DIRECTORY = /scratch/jdoe/app/jdoe/admin/dben/wallet)  
   )  
  )  
)
```

After updating the file, you have to open the wallet before you can access data in the encrypted tablespace.

1. From the **Targets** menu, select **Databases**, then search for the destination database.
2. On the destination database home page, select **Transparent Data Encryption** from the **Security** menu.
3. Open the wallet by providing the requisite password.

You can now access data in the encrypted tablespace.

For detailed information on encryption, wallets, and other security-related issues, see the *Oracle Database Advanced Security Guide*.

51.3.12 Assessing the Performance Impact of Database Migration on SQL Workload

System changes such as migrating a database may cause changes to execution plans of SQL statements, resulting in a significant impact on SQL performance. You can analyze performance impact of database migration on SQL workload using SQL Performance Analyzer to identify the SQL statements that have improved, remained unchanged, or regressed after the system change.

The typical flow to assess the performance impact on SQL workload using SQL Performance Analyzer is as follows:

1. Capture the SQL workload that you intend to analyze and store it in a SQL tuning set.
2. Pre-system change, create a SQL Performance Analyzer task.
3. Build the pre-change SQL trial by test executing or generating execution plans for the SQL statements stored in the SQL tuning set.
4. Perform the system change.
5. Build the post-change SQL trial by re-executing the SQL statements in the SQL tuning set on the post-change system.
6. Generate a report to identify the impact of change on the SQL statements.
7. View the SQL Performance Analyzer report to compare pre- and post-change SQL performance. You can access the report from the destination database home page by selecting SQL then SQL Performance Analyzer Home from the Performance menu.

As noted, this is the *typical* flow to use SQL Performance Analyzer. In the case of a database migration, you only need to perform the first and last steps listed above—create the SQL tuning set and view the report. The migration job does the rest:

- Creates the SQL Performance Analyzer task.

- Builds the pre-change SQL trial.
- Performs the database migration.
- Builds the post-change SQL trial.
- Generates the report.

For detailed information on using the feature, see "Part I SQL Performance Analyzer" in the *Oracle Database Testing Guide*.

51.4 Topics Common to Host and Database Consolidations

The following sections cover topics that are common to host and database consolidations:

- [How Enterprise Manager Consolidation Analyzes a Consolidation Scenario](#)
- [Viewing Consolidation Reports](#)
- [Managing Data Collections](#)
- [About Oracle Compute Cloud Shapes](#)

51.4.1 How Enterprise Manager Consolidation Analyzes a Consolidation Scenario

To analyze a consolidation scenario, Enterprise Manager Consolidation follows a defined process.

For host consolidations, Enterprise Manager Consolidation estimates the hourly and overall resource requirements for each of the consolidation sources. Using metric data collected by Enterprise Manager, it calculates the requirement for each hour and for all hours (in the specified collection days), selecting the average, 80th percentile, or maximum value, depending on the selected resource allocation style (Aggressive, Medium, or Conservative).

For database consolidations, Enterprise Manager Consolidation uses the Ultra Conservative resource allocation style, which selects the maximum value of the resource over the entire time period.

Enterprise Manager Consolidation adjusts the value if a scale factor is specified. It further adjusts memory requirements in D2D scenarios by reducing the portion of memory used for the SGA by 50%, 40% or 30%, again depending on the resource allocation style. The resource requirement displayed for the source is the overall requirement determined by the resource allocation style and adjustments.

If the consolidation scenario includes existing destinations, Enterprise Manager Consolidation performs a similar calculation to determine the hourly and overall usage values for each destination. It does not scale or otherwise adjust these values, but calculates them using average, 80th percentile, or maximum values depending on the resource allocation style.

For host consolidations into new or existing destinations, Enterprise Manager Consolidation matches the hourly requirements for each source against the available hourly capacity of a destination. (Existing destinations start this process populated with their existing hourly workloads; new destinations start in an empty state.) If the destination can accommodate all hourly requirements for all resources, a successful consolidation occurs.

For database consolidations, Enterprise Manager Consolidation adds together the single workload values for each source database to determine which databases map to each destination.

If any requirement cannot be consolidated, Enterprise Manager Consolidation tries the next destination until one is found with sufficient capacity. If the consolidation is to existing destinations and none have sufficient remaining capacity, the source is excluded from the consolidation. For consolidation to new destinations, another destination is created to accommodate the source.

- For D2D scenarios with RAC database destinations, where the workload is shared across multiple instances, the process differs. Each source database's workload is consolidated onto all instances in the RAC database, and the total workload is balanced across all instances. This is also true for D2S scenarios with Exadata or cluster destinations.
- For D2D scenarios with Container database (CDB) destinations, each source database is consolidated to a separate pluggable database (PDB) within the CDB. Source databases that are in conflict due to user-specified constraints are consolidated to separate CDBs.
- By default, Enterprise Manager Consolidation consolidates sources to the fewest possible destinations. However, for scenarios with multiple existing destinations, you can choose to spread the workload across all destinations instead.

The scenario Mapping page displays the results of the consolidation. The contents of this page vary depending on the project type and the resources selected for consolidation, but in general displays the following:

- Projected destinations, and the sources consolidated to each destination.
- For each resource, the capacity of the destination, together with the percentage and amount of that resource that will be consumed by the sources consolidated to it and existing workload, if any. Enterprise Manager Consolidation estimates this amount by finding the largest hourly usage for the resource on the destination. The source line shows the percentage of the destination's resources that will be used by that source.

51.4.2 Viewing Consolidation Reports

You can repurpose consolidation project and scenario details in report form that you can capture in a variety of formats and distribute to a wider audience, as described in the following sections:

- [Viewing Consolidation Project Reports](#)
- [Viewing Consolidation Scenario Reports](#)

51.4.2.1 Viewing Consolidation Project Reports

To view a project report, select the host or database project on the respective Consolidation home page and click the **Report** button above the table. The report page repurposes project details as stacked, scrollable tables representing the tabbed information that appears in the project's details on the home page.

Click **Publish Report** to capture report contents. This action integrates with BI Publisher, where you can:

- Save reports in a variety of formats (Excel, PowerPoint, HTML, PDF).

- Distribute generated reports to e-mail lists (users who do not have access to Enterprise Manager, for example) on a defined schedule.

Click **OK** to return to the Consolidation home page.

51.4.2.2 Viewing Consolidation Scenario Reports

To view a project scenario report, select the host or database scenario within the project on the Consolidation home page and click the **Report** button above the table. The report page repurposes scenario details as stacked, scrollable tables representing the tabbed information that appears in the scenario's details on the home page.

Click **Publish Report** to capture report contents. This action integrates with BI Publisher, where you can:

- Save reports in a variety of formats (Excel, PowerPoint, HTML, PDF).
- Distribute generated reports to e-mail lists (users who do not have access to Enterprise Manager, for example) on a defined schedule.

Click **OK** to return to the Consolidation home page.

51.4.3 Managing Data Collections

Manage data collections by viewing the status of your host or database projects.

1. On the respective Consolidation home page select **View Data Collection** from the **Actions** menu.
2. The view lists sources within a project where you can perform the following tasks:
 - View the latest collection status by project.
 - Select a source to see its collection history and troubleshoot potential problems with the collection.
 - Click the link under Data Collection Jobs to go to the job activity page where you can view and administer the latest data collection job.
 - Update the latest CPU performance metric values by following the instructions to download a CSV file with the latest rates. After downloading the file, click **Browse** to locate the file in the local file system and click **Load** to update the rates in Enterprise Manager Consolidation.

51.4.4 About Oracle Compute Cloud Shapes

A shape defines the number of Oracle Compute Units (OCPU) and the amount of RAM available for an instance. An OCPU provides the equivalent CPU capacity of the current 3.0 GHz 2012 Intel Xeon processor with hyper threading enabled. Each OCPU corresponds to two hardware execution threads, known as vCPUs.

A wide range of shapes is available to help you select a combination of processing power and memory for your instances that best suits your business requirement. While selecting a shape for your instance, consider the nature of applications that you will deploy on the instance, the number of users that you expect to use the application, and also how you expect the load to scale in the future. Remember to also factor in the CPU and memory resources that will be used by the OS.

To determine the shape that meets your resource requirements, you may want to experiment with a shape and test it with a representative workload.

The following table provides the list of shapes currently available in Oracle Compute Cloud Service. The shapes named OC3 through OC7 represent standard combinations of OCPUs and memory, while shapes named OC1M through OC5M represent high memory configurations, where the memory allocation is double that of the standard configurations.

Name	OCPUs	vCPUs	Memory (GB)
OC3	1	2	7.5
OC4	2	4	15
OC5	4	8	30
OC6	8	16	60
OC7	16	32	120
OC1M	1	2	15
OC2M	2	4	30
OC3M	4	8	60
OC4M	8	16	120
OC5M	16	32	240

Visit <http://www.oracle.com/cloud/index.html> for complete information on Oracle Cloud Computing.

Part XVI

Using the Cloud APIs

This section describes the cloud application programming interfaces (APIs) and the RESTful (Representational State Transfer) API.

It contains the following chapters:

- [Introduction to Cloud APIs](#)
- [Cloud Resource Models](#)
- [EM CLI Verbs for Database as a Service Administrator](#) .
- [Database as a Service Administrator REST APIs.](#)
- [Database as a Service SSA User REST APIs.](#)
- [DBaaS REST APIs and EM CLI Verbs Based Use Cases.](#)
- [SSA Administration REST APIs](#) .
- [SSA Portal Management REST APIs.](#)
- [WebLogic as a Service REST APIs](#) .
- [SOAaaS and OSBaaS APIs](#)
- [Rapid Start Cloud Setup](#) .
- [Chargeback and Metering EMCLI Verbs.](#)
- [Introduction to Blueprints.](#)
- [Cloud Blueprints and Blueprint Reference](#) .
- [Infrastructure as a Service REST APIs.](#)
- [Testing as a Service REST APIs](#) .

Introduction to Cloud APIs

Cloud computing is a style of computing in which dynamically scalable and deployed resources are provided as a service over the network.

Users need not have knowledge of, expertise in, or control over the underlying infrastructure in the cloud that supports the services rendered to the users. As enterprises (companies, governments, and other organizations) integrate their existing IT infrastructures and IT resources with the sharable cloud paradigm, it is imperative for cloud enablers to provide a uniform API that these enterprises can use to tailor the cloud to their business processes and economic models.

The Representational State Transfer (REST) API presented here focuses on the resource models and their attributes.

This chapter contains the following sections:

- [Introduction](#)
- [When to Use Cloud REST APIs](#)
- [Change History](#)
- [Common Behaviors](#)

52.1 Introduction

As IT deployments become more complex, an abstraction of the infrastructure resources becomes more relevant to address concerns of compliance and configuration. Furthermore, such abstractions enable consumers to self serve the exact service they need and operationally control these services without any significant administrator involvement.

The REST API enables an infrastructure provider to service their customers by allowing them to perform the following:

- Browse templates that contain definitions and metadata of a logical unit of service.
- Deploy a template into the cloud and form an IT topology on demand.
- Perform operations (such as ONLINE, OFFLINE) on the resources.

The REST API is based on the HTTP protocol and GET, POST, PUT, and DELETE requests are all used. Resource representations documented here are in JavaScript Object Notation (JSON).

The REST API presupposes no particular structure in the Uniform Resource Identifier (URI) space. The starting point is a URI, supplied by the cloud service provider, that identifies the cloud itself. The cloud's representation contains URIs for the other resources in the cloud. Operations on the cloud resources are performed by making an HTTP request against the URI of the resource.

The specification of this Cloud REST API includes the following:

- Common behaviors that apply across all requests and responses, error messages, and common resource attributes.
- Resource models, which describe the JSON data structures used in requests and responses.
- Requests that may be sent to cloud resources and the responses expected.

52.2 When to Use Cloud REST APIs

The Cloud REST APIs can be used to integrate Enterprise Manager with custom-built or 3rd party self service consoles and service desks. A few example scenarios include:

- Deploying databases and Oracle VM assemblies from custom-built self-service consoles.
- Integration into a bigger orchestration flow, such as a provisioning preceded with approval workflows.
- Deploying databases and Oracle VM assemblies from service desks.
- As a part of public clouds where the tenant interface of the cloud is typically different and serves service procurement, tenant registration, and so on.

52.3 Change History

The following table describes the high level changes to Enterprise Manager Cloud Control's Cloud Service Portal Plug-in 12.1.0.4 to 12.1.0.5.

Table 52-1 Changes to the Resource Model (from 12.1.0.4 to 12.1.0.5)

Abstract	Description	Impacts
Availability of QuotaUsage resource.	Service family type may provide resource quota usage information through the API.	Additional attributes are added to the respective resource models to reference the quota usage.
Availability of ServiceTemplateFinds resource.	Service family type may provide supports to query for Service Template resources.	Cloud level interactions return a list of service templates satisfying the listing criteria.

The following table describes the high level changes to Enterprise Manager Cloud Control's Cloud Service Portal Plug-in 12.1.0.2 to 12.1.0.4.

Table 52-2 Changes to the Resource Model (from 12.1.0.2 to 12.1.0.4)

Abstract	Description	Impacts
Introduction of x-specification-version header.	<p>x-specification-version is a new header introduced in this release. The purpose of this header is to inform the backend server to switch between various supported versions of the Cloud Resource Model.</p> <p>By default, if this header is not specified, the server will automatically use the latest version of the resource model.</p> <p>Each server response will also now include x-specification-version.</p>	<p>If a client wishes to interact with the web service using the previous (pre-12.1.0.4 Cloud Service Portal release) resource model in 12.1.0.4 Cloud Service Portal, the following header can be specified.</p> <p>x-specification-version: 10000</p> <p>For example, GET /em/cloud with x-specification-version: 10000 will return the pre 12.1.0.4 release CloudServicePortal Cloud resource.</p>
Cloud media type is updated to be service oriented.	<p>Before this release, top level Cloud media type is IaaS centric. However, with the additions of Middleware as a Service in this release, the Cloud media type is transformed into a generic service model where additional XaaS can be plugged into the system without further remodel of the media type.</p>	<p>The Cloud media type is no longer backward compatible. (However, using the x-specification-version header can still allow a client to switch back to the older media type).</p>
Consolidate the concept of VDC into Zone.	<p>Resource relationships that are supported by the IaaS centric VDC are now consolidated into the generic Zone resource. The VDC resource is currently not visible from the 12.1.0.4 Cloud Service Portal resource model.</p>	<p>Interacting with the 12.1.0.4 Cloud Service Portal resource model would be centric around Zone instead of VDC.</p>
"media_type" attribute for resources.	<p>Each resource will have a "media_type" attribute to support client introspections in the generic service model. In other words, a Collection attribute in a resource may contain list of resources that are of different media type extending the same abstract media type.</p>	<p>The interaction with the web service may be introspective. For example, the Cloud resource contains "service_templates" attribute that describes the list of service templates that are from various XaaS.</p> <p>Each service template item in the "service_templates" may be of different media types, but these media types should contain all the attributes of the generic ServiceTemplate model.</p>
"Accept" header may be optional.	<p>If the intention of the interaction is clear, you do not need to specify the "Accept" header.</p>	<p>The web service will introspect the resource URI automatically to return the resource with the most specific media type.</p>

Table 52-2 (Cont.) Changes to the Resource Model (from 12.1.0.2 to 12.1.0.4)

Abstract	Description	Impacts
Generic and Specific media types.	This version introduces the concept of Generic and Specific media types to support inheritance. For example, application/oracle.com.cloud.common.ServiceTemplate is a Generic media type and application/oracle.com.cloud.common.VMTemplate is a specific type that extends the above generic type. A specific type can extend another specific type (just like object inheritance).	It is now possible to use the Generic type to inquire about the resource. For example, if an URI represents a resource of specific type Y that extends generic type X, then, GET URI shall also accept the "accept" header of value X. Furthermore, attributes in specific type Y are expected to include the attributes in generic type X, and therefore clients shall be able to interact with the resource on the generic type.

52.4 Common Behaviors

The following sections specify constraints that apply to all the requests and responses that occur in the REST APIs supported by the Oracle Cloud Computing Platform.

52.4.1 Transport Protocol

All of the platform APIs are based on the Hypertext Transfer Protocol (HTTP), version 1.1 (RFC 2616). Each request will be authenticated using HTTP Basic Authentication (RFC 2617) unless otherwise noted. Therefore, requests sent from the public Internet (and not on a secure channel such as a VPN) must use the HTTPS protocol.

52.4.2 URI Space

The resources in the system are identified by URIs. To begin operations, the URI for a resource must be known. Dereferencing the URI yields a representation of the resource containing resource attributes and links to associated resources.

Assumptions about the layout of the URIs or the structure of resource URIs should not be made.

52.4.3 Media Types

In this specification, resource representations and request bodies are encoded in JavaScript Object Notation (JSON), as specified in RFC 4627. Each type of resource has its own media-type, which matches the following pattern:

```
application/oracle.com.cloud.common.Xxxxx+json
```

where `Xxxxx` represents the portion of the identifier unique to a particular representation format for each resource. The identifier must be globally unique in the space of `vnd.com.oracle.cloud`, and the media type should be registered in accordance to RFC 4288.

The Platform must provide representations of all resources available in JSON. The Platform must accept requests encoded in JSON.

52.4.4 Request Headers

In requests made to services implementing Oracle Cloud Platform APIs, several specific HTTP headers are used as described in the following table:

Table 52-3 Request Headers

Header	Supported Values	Description	Required
Accept	Comma-delimited list of media types or media type patterns	Indicates to the server what media types are acceptable.	Recommended on requests that will produce a response message body.
Authorization	"Basic" plus user name and password (per RFC 2617).	Identifies the user making this request.	Yes on most of the requests.
Content-Length	Length (in bytes) of the request message body.	Describes the size of the message body.	Yes on requests that contain a message body.
Content-Type	Media type describing the request message body.	Describes the representation and syntax of the request message body.	Yes on requests that contain a message body.
Host	Identifies the host receiving the message.	Required to allow support of multiple origin hosts at a single IP address.	All requests.
X-YYYYYClient-Specification-Version	String containing a specification version number.	Declares the specification version of the YYYYY API that this client was programmed against.	No.

52.4.5 Response Headers

Specific HTTP headers included in the responses returned from the platform are described in the following table:

Table 52-4 Response Headers

Header	Supported Values	Description	Required
Content-Type	Media type describing the response message body.	Describes the representation and syntax of the response message body.	Yes, on responses that contain a message body.
Location	Canonical URI of the resource, either newly created, or the original referenced resource.	Returns a URI that can be used to request a representation of the resource.	Yes, on responses to requests that create a new resource, or change an existing resource.

Table 52-4 (Cont.) Response Headers

Header	Supported Values	Description	Required
Cache-Control	Max-age, public, no-store, mustrevalidate, proxyrevalidate.	How the representation of the resource should be cached, and its freshness.	No. For public resources (such as a list of public assemblies or templates) that do not change frequently, allowing lenient cache-control to optimize the response. This will never be returned on a privileged resource or a resource request that contains an authorization header.

52.4.6 HTTP Status Codes

Oracle Cloud Computing Platform APIs return standard HTTP response codes as described in the following table, under the conditions listed in the description.

Table 52-5 HTTP Response Codes

Header	Description
100 Continue	The client should continue with its request. This interim response is used to inform the client that the initial part of the request has been received and has not yet been rejected by the platform. The client should continue by sending the remainder of the request or, if the request has already been completed, ignore this response.
200 OK	The request was successfully completed. If this request created a new resource that is addressable with a URI, and a response body is returned containing a representation of the new resource, a 200 status will be returned with a location header containing the canonical URI for the newly created resource.
201 Created	A request that created a new resource was completed and no response body containing a representation of the new resource is being returned. A location header containing the canonical URI for the newly created resource will be returned.
202 Accepted	The request has been accepted for processing, but the processing has not been completed. Per the HTTP/1.1 specification, the returned entity (if any) should include an indication of the request's current status. A location header containing the canonical URI for the not-yet completed resource is returned along with the status attribute indicating its progress.
400 Bad Request	The request could not be processed because it contains missing or invalid information (such as validation error on an input field, a missing required value, and so on).
401 Unauthorized	The authentication credentials included with this request are missing or invalid.
403 Forbidden	The server recognized your credentials, but you do not possess authorization to perform this request.
404 Not Found	The request specified a URI of a resource that does not exist.

Table 52-5 (Cont.) HTTP Response Codes

Header	Description
405 Method Not Allowed	The HTTP verb specified in the request (DELETE, GET, HEAD, POST, PUT) is not supported for this request URI.
406 Not Acceptable	The resource identified by this request is not capable of generating a representation corresponding to one of the media types in the Accept header of the request.
409 Conflict	A creation or update request could not be completed because it would cause a conflict in the current state of the resources supported by the platform. For example, an attempt is made to create a new resource with a unique identifier that is already assigned to some existing resource or an attempt is made to modify a resource attribute which is not yet completed.
410 Gone	The requested resource is no longer available at the server and no forwarding address is known. This condition is expected to be considered permanent. Clients with link editing capabilities should delete references to the Request-URI after user approval. If the server does not know, or has no facility to determine, whether or not the condition is permanent, the status code 404 (Not Found) should be used instead. This response is cacheable unless indicated otherwise.
412 Precondition Failed	The precondition given in one or more of the request-header fields evaluated to + when it was tested on the server. This response code allows the client to place preconditions on the current resource meta-information (header field data) and thus prevent the requested method from being applied to a resource other than the one intended.
500 Internal Server Error	The server encountered an unexpected condition which prevented it from fulfilling the request.
501 Not Implemented	The server does not (currently) support the functionality required to fulfill the request.
503 Service Unavailable	The server is currently unable to handle the request due to temporary overloading or maintenance of the server.

52.4.7 Common Resource Attributes

All the resource entities in this specification may contain the following common resource attributes.

52.4.7.1 Resource State

This attribute denotes the state of the resource describing the lifecycle of the resource. This differs from the status of the entity represented by the resource which has entity specific semantics.

The following table shows the Data Model of this attribute.

Table 52-6 ResourceState Data Model

Field	Type	Description	Occurs
state	String	The current state of the resource as last known. This is a label containing lifecycle state (for example, INITIATED, CREATING, CREATED, DESTROYING, DESTROYED, READY). When there are vendor extensions, the vendor shall publish and document their semantics.	1
progress	Integer between 0 and 100	This indicates the progress made as an approximate percentage. Not all state labels assign semantic meaning to this field.	0..1
messages	Message[]	Include the message data model instances to denote noteworthy communications.	0..1

52.4.8 Collection

This attribute is a meta resource that represents a collection field in a resource. For example, a VDC contains a collection of VMs and the field that represents the list of VMs is implemented in this type.

In the resource model, a collection field is denoted as `Collection<type>`, for example, `Collection<VM>`.

Table 52-7 Collection<type> Data Model

Field	Type	Description	Occurs
uri	URI	URI that represents the collection of entities.	1
type	String	Type of the entity that this collection contains.	1
total	Integer	Total number of elements that can be safely assumed to be in the elements list.	0..1
elements	<TYPE>[]	List of entities in this collection. The URI of the entities must be populated by the platform. When dereferencing the URI, the client must use the type field in the Accept header (except in the case where type = URI). If this is not returned, then the collection is an empty list.	0..1

In addition to the resource type, the collection also supports `Collection<URI>` where the type field is "URI". This basic type collection requires additional type casting where the URI can be dereferenced properly.

This basic type collection requires additional type casting where the URI can be dereferenced properly. It is also permissible to have a collection of type collection, for example, `Collection<Collection<Server>>`.

52.4.9 Error Response Message

Successful requests will generally return an HTTP status code of 200 (OK), 201 (Created), 202 (Accepted), or 204 (No Content) to indicate that the requested action has been successfully performed or submitted.

In addition, a response message body (with an appropriate media type) containing a representation of the requested information might also be included. However, it is possible for a number of things to go wrong.

The various underlying causes are described by various HTTP status codes in the range 400-499 (for client side errors) or 500-599 (for server side problems).

If a response is returned with an error status code (400-499 or 500-599), the server will also return a response message body containing a message data model, with zero or more message data models, describing what went wrong. The text values of such messages might be used, for example, to communicate with a human user of the client side application.

The entire list of messages included in a single error response is encapsulated in a messages data model. The media type shall be returned in the Content-Type header. The client shall not include the Messages media type in the Accept header.

Table 52-8 Messages Data Model

Field	Type	Description	Occurs
messages	Message	Zero or more message data for each individual message.	0..n

An individual message contains the following fields:

Table 52-9 Individual Message Data Model

Field	Type	Description	Occurs
code	String	Zero or more message data for each individual message.	0..1
field	String	Name of the field from the request data model that this message is associated with.	0..1
hint	String	Localized text further describing the nature of the problem, possibly including potential workarounds that the client could try.	0..1
text	String	Localized text describing the nature of the problem reported by this message.	1
severity	String	Label indicating the severity of the error condition represented by this message. Vendor shall publish the enumerators that are associated with this field and their semantics.	0..1
stack_trace	String	Vendor specific stack trace associated with this message.	0..1
source	String	Symbolic identifier of the service implementation component that triggered this message.	0..1

Cloud Resource Models

This chapter specifies the representations of the resources that the Enterprise Manager Cloud REST APIs operate on.

This chapter specifies the representations of the resources that the REST APIs operate on. It contains the following sections:

- [Enterprise Manager Cloud Resource Model 10001](#)
- [About Cloud Resources](#)
- [Resource Data Models](#)

53.1 Enterprise Manager Cloud Resource Model 10001

This version of the Cloud resource model is the culmination of the XaaS implementation for Cloud Service Portal Plug-in, where additional service types can be used to support the creation and lifecycle management of service instances.

For this release of Enterprise Manager Cloud Control's Cloud Service Portal Plug-in, 10001 is the default version when `/em/cloud` is accessed by the client. Specifically, the client can specify `x-specification-version: 10001` in the HTTP header to examine whether or not a resource supports version 10001. It is important to note that the resource type from different versions may not be inter-mixed in a request. For example, 10001 may reject a request where the content is shaped like the 10000 version of the resource.

The following table contains the top level description of the resources:

Table 53-1 Top Level Resource Descriptions

Resource	Description
application/ oracle.com.cloud.common	This media type namespace contains "common" resources that are not specific to resource types in XaaS implementation. It is customary that XaaS implementation may extend a common resource type by responding to the request where the <code>accept/content-type</code> is the base type. This is similar to Java's class typing where one can always typecast the base class to an implementation class.
Cloud	This is the top level media type of the entry point <code>/em/cloud</code> where the client can get a high level view of the Cloud as a whole.
ServiceTemplate	This is the common media type that represents a service template each XaaS can extend to create a service instance.
ServiceInstance	This represents the common media type that represents a service instance. Each XaaS can extend this media type to represent the service instances that it supports.
ServiceFamilyType	This represents XaaS or a service family.

Table 53-1 (Cont.) Top Level Resource Descriptions

Resource	Description
InstanceType	This represents a type of service instance. For example, VM is an extending media type of ServiceInstance and there is a corresponding InstanceType? that describes what a VM instance may contain.
Metric	This represents a metric of a resource. For example, performance metrics such as CPU utilization and network utilization are metrics of a VM instance. This does not need to be constrained to performance metrics only. Any measurable or observable time series data can be represented as a metric.
MultipartMetric	This extends the Metric, but represents a multi-dimensional observation.
CloudInteractions	This represents the collection of interactions that are supported by the Cloud. The data of this resource would be protocol dependent. For example, in HTTP protocol, the data would consist of the supported HTTP request triple of (request method, accept type, and content type).
QuotaUsage	This represents the quota information in the context of a service family.

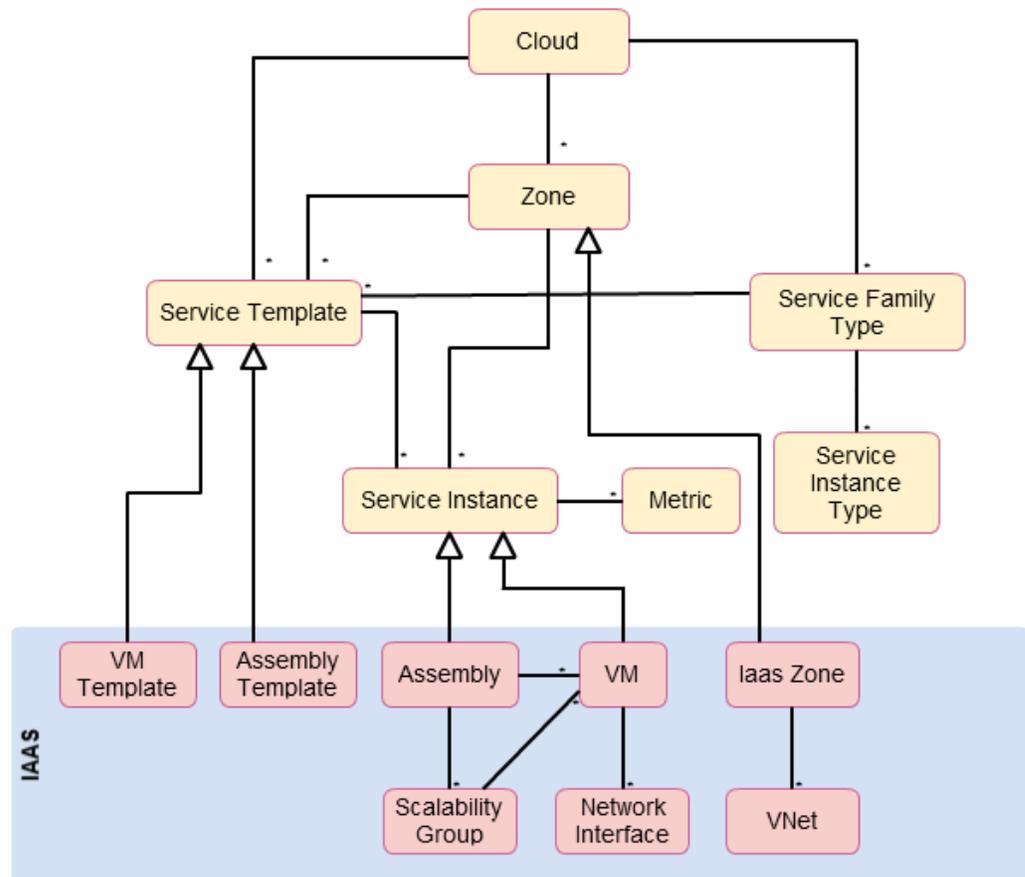
53.2 About Cloud Resources

Cloud resource representations are made up of fields, each with a name and value, encoded using a JavaScript Object Notation (JSON) dictionary. The values may be lists, dictionaries, or numeric or string literals, each of which is represented in JSON in accordance with RFC 4627.

Each type of cloud resource has its own Internet Media Type. The media type SHALL conform to the pattern `application/oracle.com.cloud.common.Xxxxxxxx+json`, and the specific media type for each resource model is included in square brackets in the corresponding section header.

Cloud resources are now organized by common service entities where specific services (for example, Infrastructure as a Service) provide resources extending common service entities where appropriate. The figure below shows the resource model relationships on the common resources and Infrastructure as a service specific resources.

Figure 53-1 Cloud Resource Model



53.3 Resource Data Models

The following sections provide details on the different cloud resource data models.

53.3.1 Cloud [application/oracle.com.cloud.common.Cloud+json]

A Cloud represents the user's starting view of all accessible resources. The following table describes the cloud data model.

Table 53-2 Cloud Data Model

Field	Type	Occurs	Description	Since
uri	URI	1	GET against this URI refreshes the client representation of the resources accessible to this user.	12.1.0.1
name	String	1	Human readable name. It is a UNICODE string to support different languages.	12.1.0.1
description	String	0..1	Brief description. This is a UNICODE string to support different languages.	12.1.0.1

Table 53-2 (Cont.) Cloud Data Model

Field	Type	Occurs	Description	Since
service_templates	Collection<ServiceTemplates>	0..1	List of service templates that are accessible to the user.	12.1.0.4
service_family_types	Collection<ServiceFamilyType>	0..1	The list of service family types that are supported by the Cloud.	12.1.0.4
zones	Collection<Zone>	0..1	List of zones that are supported by the cloud and accessible to the user.	12.1.0.2
resource_state	ResourceState	0..1	Cloud that is online and running would have READY as its state. If this field is not returned, the client can assume the cloud is READY. If the state of the returned field is not READY, the client cannot assume the viability of subsequent interactions into the cloud.	12.1.0.1
media_type	String	1	Value of this media type with the payload format. For example, application/oracle.com.cloud.common.Cloud+json.	12.1.0.4

53.3.2 ServiceTemplate [application/oracle.com.cloud.common.ServiceTemplate+json]

A ServiceTemplate represents the definition of the deployable service. For a user, a ServiceTemplate represents the definition of the deployable service. Users can create cloud resources by interacting with the URI of a ServiceTemplate. The cloud shall instantiate the resources and their configurations as specified in the definition of the ServiceTemplate.

VMTemplate is a subclass to the ServiceTemplate resource and therefore it is possible to get the ServiceTemplate from the URI of a VMTemplate. The following table shows the ServiceTemplate Data Model.

Table 53-3 ServiceTemplate Data Model

Field	Type	Occurs	Description	Since
uri	URI	1	GET against this URI refreshes the client representation of the ServiceTemplate definition to this user.	12.1.0.4
name	String	1	Human readable name given to the ServiceTemplate. It is a UNICODE string to support different languages.	12.1.0.4
description	String	0..1	A brief description given to the ServiceTemplate. It is a UNICODE string to support different languages.	12.1.0.4
type	String	1	The string that describes the type of the service template.	12.1.0.4

Table 53-3 (Cont.) ServiceTemplate Data Model

Field	Type	Occurs	Description	Since
created	Timestamp	1	Date and time, in ISO 8601 format, when the ServiceTemplate was created.	12.1.0.4
service_family_type	String	0..1	The name of the service family type under which this service template is categorized.	12.1.0.4
default_instance_media_type	String	0..1	The default media type of the service instance that can be created using this template. For example, a VMTemplate would have VM for this attribute to indicate that VMTemplate can be deployed into a VM service instance.	12.1.0.4
resource_state	ResourceState	1	Only a service template with a READY state can be deployed.	12.1.0.4
deployment_parameters	List of Deployment Parameters	0..1	Contains the list of data structure of Deployment Parameters to indicate the parameters that may be specified during the service instance deployment using this template	12.1.0.4
zones	List of Zones	0..1	Contains the list of Zone resources that this service template can be used to create service instances with	12.1.0.4
service_instances	Collection<?>	0..1	Contains the list of service instances that are created with this template.	12.1.0.4

The following table describes the structure of the Deployment Parameters.

Table 53-4 Deployment Parameter Structure

Field	Type	Occurs	Description
name	String	1	The name of the parameter that needs to be specified during deployment.
description	String	0..1	A brief description of the deployment parameter.
type	String	1	The type of the deployment parameter. It is an enumeration of the following values, STRING, INTEGER, NUMBER, and LIST.
default_value	String	0..1	The default value for this parameter.
required	Boolean	1	TRUE if this parameter is required, FALSE otherwise.
sensitive	Boolean	1	TRUE if this parameter denotes a password. FALSE otherwise.

53.3.3 Zone [application/oracle.com.cloud.common.Zone+json]

A Zone represents a logical boundary where the resources may reside. A Zone can represent a particular geographically location such as Europe Zone, North America

Zone, East Asia Zone. A zone can also represent characteristics, such as high network bandwidth or DMZ secured. Furthermore, a Zone can be organizational in nature, such as Financial Department Zone, Testing Zone, and Development Zone.

There should not be any assumption of exclusivity of underlying infrastructures in the Zones unless otherwise noted. For example, Zone A and Zone B can be on the same physical network serving two different departments, but their physical infrastructure setup is transparent to cloud users.

Table 53-5 Zone Data Model

Field	Type	Occurs	Description	Since
uri	URI	1	GET against this URI refreshes the client representation of the Zone definition to this user.	12.1.0.1
name	String	1	Name of the Zone.	12.1.0.1
description	String	0..1	Human readable description of the Zone. It is a UNICODE string to support different languages.	12.1.0.1
media_type	String	1	The media type of the resource.	12.1.0.4
resource_state	ResourceState	0..1	The resource state of the resource.	12.1.0.1
service_family_type	String	0..1	The name of the service family type that this zone is associated with. Each Zone is contextualized in the service family type.	12.1.0.4
service_templates	Collection <ServiceTemplate>	0..1	Collection of the service templates that this zone supports and can be deployed into.	12.1.0.4
service_instances	Collection <ServiceInstance>	0..1	Collection of the service instances that are in this zone.	12.1.0.4

53.3.4 Service Family Type [application/oracle.com.cloud.common.ServiceFamilyType+json]

A service family type is a category of services that are offered by the cloud. For example, IaaS is a category that encapsulates infrastructure services. Mwaas is a category that encapsulates middleware services. These categories are predefined.

The following table describes the ServiceFamilyType Data Model

Table 53-6 Service Family Type

Field	Type	Occurs	Description	Since
uri	URI	1	A GET against this URI refreshes the client representation of the ServiceFamilyType definition to this user.	12.1.0.4
name	String	1	Name of the ServiceFamilyType.	12.1.0.4
description	String	0..1	Human readable description of the Service Family Type. Shall be a UNICODE string to support different languages.	12.1.0.4
resource_state	ResourceState	0..1	The resource state of the resource.	12.1.0.4
media_type	String	1	The media type of the resource.	12.1.0.4
service_templates	Collection <ServiceTemplate>	0..1	The collection of service templates that are of this service family type.	12.1.0.4
zones	Collection<Zone>	0..1	The collection of zones that support service instances of this service family type.	12.1.0.4
instance_types	Collection <InstanceType>	0..1	The collection of instance types that are supported by this service family type.	12.1.0.4
quota_usages	Collection <QuotaUsage>	0..1	The collection of quota usages of the perspective family type of the authenticated user.	12.1.0.5
quota_def	Json Object	0..1	The family type specific quota metadata information, this may include some permission information. The structure of this object would be documented in the perspective family type resource model.	12.1.0.5

53.3.5 Service Instance Type [application/oracle.com.cloud.common.InstanceType+json]

A service instance type describes the common metadata about service instances of the type. This can be interpreted analogously as a Class where the service instance of the type is an instantiation of the class.

The following table describes the ServiceFamilyType Data Model.

Table 53-7 Service Instance Type

Field	Type	Occurs	Description	Since
uri	URI	1	A GET against this URI refreshes the client representation of the ServiceInstanceType definition to this user.	12.1.0.4
name	String	1	Name of the ServiceInstanceType.	12.1.0.4
description	String	0..1	Human readable description of the Service Instance Type. Shall be a UNICODE string to support different languages.	12.1.0.4
resource_state	ResourceState	0..1	The resource state of the resource.	12.1.0.4
media_type	String	1	The media type of the resource.	12.1.0.4
instance_media_type	String	0..1	The media type of the instance of this type.	12.1.0.4
metrics	List<List<String>>	0..1	List of metrics that may be supported by the instance type. Each list element represents the triple of "name", "description", and "type" of the metric.	12.1.0.4

53.3.6 Metric [application/oracle.com.cloud.common.Metric+json]

This resource represents a time series data that may be performance or configuration related. For example, CPU utilization could be a metric for a VM resource, Tablespace usages could be a metric for a Database resource.

The following table describes the Metric Data Model.

Table 53-8 Metric Data Model

Field	Type	Occurs	Description	Since
uri	URI	1	A GET against this URI refreshes the client representation of the Metric definition to this user.	12.1.0.4
name	String	1	Name of the Metric.	12.1.0.4
description	String	0..1	Human readable description of the Metric. SHALL be a UNICODE string to support different languages.	12.1.0.4
resource_state	ResourceState	0..1	The resource state of the resource.	12.1.0.4
media_type	String	1	The media type of the resource.	12.1.0.4
type	String	1	The type of the metric value. This is an enumeration of STRING, INTEGER, PERCENTAGE, NUMBER, MIX.	12.1.0.4
current_value	String	0..1	The latest known value of the metric	12.1.0.4

Table 53-8 (Cont.) Metric Data Model

Field	Type	Occurs	Description	Since
current_time	ISO 8601 Date	0..1	The UTC time when the current_value was last observed	12.1.0.4
time_range	List of 2 ISO 8601 Dates	0..1	The first one is begin date, and the second one is end date. This range determines the time series window of "values" attribute	12.1.0.4
rollup_unit	String	0..1	The rollup unit for the time series data. Could be one of DAY, DAILY, DAYLY, HOUR, HOURLY, RAW	12.1.0.4
values	List of objects	0..1	For rollup_unit = RAW, this would be a list of object each containing "time_utc", and "value" attributes to indicate a timed observation. For all other rollup_unit, this would be a list of object each containing "time_utc", "average", "min", "max", "std" attributes to indicate an aggregated observations where supported.	12.1.0.4
time_range_epoch	List of 2 Number	0..1	Same as time_range, but in the form of epoch time.	12.1.0.4

53.3.7 Service Instance [application/ oracle.com.cloud.common.ServiceInstance+json]

A service instance describes the some common metadata about service instances. This is an abstract media type where the actual implementation would be provided by each XaaS service. It is expected that the extending resources respect GET request with this abstract media type.

The following table describes the Service Instance Data Model.

Table 53-9 Service Instance Data Model

Field	Type	Occurs	Description	Since
uri	URI	1	A GET against this URI refreshes the client representation of the ServiceInstance definition to this user.	12.1.0.4
name	String	1	Name of the ServiceInstance.	12.1.0.4
description	String	0..1	Human readable description of the Service Instance. Shall be a UNICODE string to support different languages.	12.1.0.4
resource_state	ResourceState	1	The resource state of the resource.	12.1.0.4
media_type	String	1	The media type of the resource.	12.1.0.4
metrics	Collection <Metric>	0..1	Collection of metrics that are observed on the resource.	12.1.0.4

Table 53-9 (Cont.) Service Instance Data Model

Field	Type	Occurs	Description	Since
service_family_type	String	1	The name of the ServiceFamilyType that this service instance is in context of.	12.1.0.4
status	String	0..1	The status of the entity represented by the service instance. For example, for service instance VM, the value could be STARTED, STOPPED, or any other values that are appropriate for VM. Each extending resource should describe the enumeration of status that are applicable.	12.1.0.4
created	ISO 8601 Date	0..1	The date of which the service instance is created.	12.1.0.4

53.3.8 Quota Usage [application/oracle.com.cloud.common.QuotaUsage+json]

A quota usage describes the amount of some resource used by the authentication used in the context of a service family type. For example, in IaaS, there were quota defined for CPU, Memory, number of servers, where the usages of each is encapsulated into a Quota Usage resource.

The following table describes the Quota Usage Data Model.

Table 53-10 QuotaUsage Data Model

Field	Type	Occurs	Description	Since
uri	URI	1	A GET against this URI refreshes the client representation of the QuotaUsage	12.1.0.5
name	String	1	Name of the QuotaUsage.	12.1.0.5
description	String	0..1	Human readable description of the Service Instance. Shall be a UNICODE string to support different languages.	12.1.0.5
media_type	String	1	The media type of the resource.	12.1.0.5
id	String	1	The identification representation of the resource.	12.1.0.5
type	String	1	The service family type of the resource.	12.1.0.5
used	Number	1	How much of the resource is used. The type is represented by the "unit" attribute.	12.1.0.5
maxAllowed	Number	0..1	What is the maximum amount of resource that may be used by the authenticated user.	12.1.0.5
unit	String	1	The unit of the resource.	12.1.0.5

53.3.9 Service Template Finds [application/oracle.com.cloud.common.ServiceTemplateFinds+json]

Service Template Finds is a resource that would search and filter service templates under the entire cloud given the search criteria. Each service family type shall document the scope of support (for example, list of filter attributes).

The following table describes the Service Template Finds Data Model.

Table 53-11 ServiceTemplateFinds Data Model

Field	Type	Occurs	Description	Since
uri	URI	1	A GET against this URI refreshes the client representation of the Service TemplateFinds. If service templates were added/ removed that matched the criteria, refreshing the link will reflect the changes.	12.1.0.5
name	String	1	Name of the ServiceTemplateFinds.	12.1.0.5
description	String	0..1	Human readable description of the Service Instance. Shall be a UNICODE string to support different languages.	12.1.0.5
filters	Json Object	1	Map of key-value pair to indicate the filter criteria.	12.1.0.5
finds	Collection <*>	1	.Collection of entities (could be any sub type of the service template) that satisfies the filter criteria.	12.1.0.5

The following table describes the attributes supported in the filters:

Table 53-12 Filter Attributes

Attributes	Description	Since
media_type	The specific service template media to search for. This will be an exact match of the media type.	12.1.0.5 Cloud Service Portal Plug-in (IaaS service family type only)
name	A service template will be returned if the name contains the specified string. This is case insensitive, so OEL and oel will return the same result.	12.1.0.5 Cloud Service Portal Plug-in (IaaS service family type only)

53.4 Cloud REST API Examples

The following sections provide examples of different interactions in Enterprise Manager Cloud Control 12.1.0.2 with the 12.1.0.5 Cloud Service Portal Plug-in. These examples illustrate the shape of the various resources. In this version, default x-specification-version is assumed at 10001.

53.4.1 Cloud Resource

Use the top level /em/cloud to introspect the Cloud resource. The following table describes the GET method features:

Table 53-13 Cloud Resource GET Method

Feature	Description
URL	https://example.oracle.com/em/cloud
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI =X-specification-Version: 10001
Method	GET
Since	12.1.0.4 Cloud Service Portal Plug-in

The following returns the Cloud resource:

```
{
  "uri" : "/em/cloud" ,
  "name" : "Oracle Cloud by Enterprise Manager" ,
  "description" : "This represents the Cloud resource of the Oracle Enterprise
Manager Cloud Management solution" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "media_type" : "application/oracle.com.cloud.common.Cloud+json" ,
  "zones" : {
    "media_type" : "application/oracle.com.cloud.common.Zone+json" ,
    "total" : "3" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/jaas/zone/450121204B4703131FC0FDD72E7BF494" ,
        "name" : "PaaS_Zone_Middleware" ,
        "media_type" : "application/oracle.com.cloud.jaas.Zone+json" ,
        "service_family_type" : "jaas"
      } ,
      {
        "uri" : "/em/cloud/opc/opczone" ,
        "name" : "OPC Zone" ,
        "media_type" : "application/oracle.com.cloud.opc.OpcZone+json" ,
        "service_family_type" : "opc" ,
        "type" : "opc"
      } ,
      {
        "uri" : "/em/cloud/iaas/zone/D73AF0D42C8459E11419862797D1F37D" ,
        "name" : "cloud_zone" ,
        "media_type" : "application/oracle.com.cloud.iaas.Zone+json" ,
        "service_family_type" : "iaas" ,
        "type" : "VM_ZONE"
      }
    ]
  } ,
  "service_templates" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate+json" ,
    "total" : "7" ,
    "elements" :
  }
}
```

```

[
  {
    "uri" : "/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Atemplate%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1" ,
    "name" : "template_sanity" ,
    "media_type" : "application/oracle.com.cloud.common.VMTemplate+json" ,
    "service_family_type" : "iaas" ,
    "type" : "Template"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Aassembly%3AC75E88B04D7FEDEDE040578CDA810E49%3A0.1" ,
    "name" : "sidb_assembly" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
    "service_family_type" : "iaas" ,
    "type" : "Assembly"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Aassembly%3AC769B1F361529309E040578CDA813D57%3A0.1" ,
    "name" : "wls_assembly" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
    "service_family_type" : "iaas" ,
    "type" : "Assembly"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Aassembly%3AC76F733BC7A41AF7E040578CDA812CDC%3A0.1" ,
    "name" : "fmw_venkat" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
    "service_family_type" : "iaas" ,
    "type" : "Assembly"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Aassembly%3AC76C144A4A245B62E040578CDA8163B9%3A0.1" ,
    "name" : "fmw_abby" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
    "service_family_type" : "iaas" ,
    "type" : "Assembly"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Aassembly%3AC77122B0A916D95CE040578CDA814854%3A0.1" ,
    "name" : "sidbasmA_abby" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
    "service_family_type" : "iaas" ,
    "type" : "Assembly"
  } ,
  {

```

```

        "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService
%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly
%3AC76C8792DE2A0937E040578CDA81795E%3A0.1" ,
        "name" : "WLS_abby" ,
        "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
        "service_family_type" : "iaas" ,
        "type" : "Assembly"
    }
}
} ,
"service_family_types" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType+json" ,
    "total" : "4" ,
    "elements" :
    [
        {
            "uri" : "/em/cloud/service_family_type/jaas" ,
            "name" : "jaas" ,
            "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType
+json" ,
            "type" : "jaas"
        } ,
        {
            "uri" : "/em/cloud/service_family_type/dbaas" ,
            "name" : "dbaas" ,
            "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType
+json" ,
            "type" : "dbaas"
        } ,
        {
            "uri" : "/em/cloud/service_family_type/opc" ,
            "name" : "opc" ,
            "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType
+json" ,
            "type" : "opc"
        } ,
        {
            "uri" : "/em/cloud/service_family_type/iaas" ,
            "name" : "iaas" ,
            "media_type" : "application/oracle.com.cloud.iaas.IaasServiceFamilyType
+json" ,
            "type" : "iaas"
        }
    ]
}
}
}

```



Note:

even though the Accept type was not specified, the Web service still unambiguously returns the Cloud resource because "/em/cloud" address uniquely identify the Cloud as the default resource to be returned.

The following table shows the Cloud resource picking up specific attributes

Table 53-14 Cloud Resource GET Method

Feature	Description
URL	https://example.oracle.com/em/cloud?service_family_types,name
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Method	GET
Since	12.1.0.4 Cloud Service Portal Plug-in

Here are the selective attributes:

```
{
  "name" : "Oracle Cloud by Enterprise Manager" ,
  "service_family_types" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType+json" ,
    "total" : "4" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/service_family_type/jaas" ,
        "name" : "jaas" ,
        "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType
+json" ,
        "type" : "jaas"
      } ,
      {
        "uri" : "/em/cloud/service_family_type/dbaas" ,
        "name" : "dbaas" ,
        "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType
+json" ,
        "type" : "dbaas"
      } ,
      {
        "uri" : "/em/cloud/service_family_type/opc" ,
        "name" : "opc" ,
        "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType
+json" ,
        "type" : "opc"
      } ,
      {
        "uri" : "/em/cloud/service_family_type/iaas" ,
        "name" : "iaas" ,
        "media_type" : "application/oracle.com.cloud.iaas.IaasServiceFamilyType
+json" ,
        "type" : "iaas"
      }
    ]
  }
}
```

This feature is supported on all the common resources where only selective attributes would be gathered and returned to the client.

53.4.2 Service Family Type Resource

The following table shows the features of the Service Family Type resource:

Table 53-15 Service Family Type Resource

Feature	Description
URL	https://example.oracle.com/em/cloud/service_family_type/iaas
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Method	GET
Since	12.1.0.4 Cloud Service Portal Plug-in

Here is the returned headers and content for this interaction.

```
X-specification-version: 10001
Content-Type: application/oracle.com.cloud.iaas.IaasServiceFamilyType+json;
charset=ISO-8859-1
{
  "uri" : "/em/cloud/service_family_type/iaas" ,
  "name" : "iaas" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "media_type" : "application/oracle.com.cloud.iaas.IaasServiceFamilyType+json" ,
  "type" : "iaas" ,
  "service_templates" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate+json" ,
    "total" : "7" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1" ,
        "name" : "template_sanity" ,
        "media_type" : "application/oracle.com.cloud.common.VMTemplate+json" ,
        "type" : "Template"
      } ,
      {
        "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC75E88B04D7FEDEDE040578CDA810E49%3A0.1" ,
        "name" : "sidb_assembly" ,
        "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate+json" ,
        "type" : "Assembly"
      } ,
      {
        "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC769B1F361529309E040578CDA813D57%3A0.1" ,
        "name" : "wls_assembly" ,
        "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate+json" ,
        "type" : "Assembly"
      } ,
      {
        "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC76F733BC7A41AF7E040578CDA812CDC%3A0.1" ,
        "name" : "fmw_venkat" ,

```

```
        "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
        "type" : "Assembly"
    } ,
    {
        "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService
%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Aassembly
%3AC76C144A4A245B62E040578CDA8163B9%3A0.1" ,
        "name" : "fmw_abby" ,
        "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
        "type" : "Assembly"
    } ,
    {
        "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService
%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Aassembly
%3AC77122B0A916D95CE040578CDA814854%3A0.1" ,
        "name" : "sidbasMA_abby" ,
        "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
        "type" : "Assembly"
    } ,
    {
        "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService
%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Aassembly
%3AC76C8792DE2A0937E040578CDA81795E%3A0.1" ,
        "name" : "WLS_abby" ,
        "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
        "type" : "Assembly"
    }
    ]
} ,
"zones" : {
    "media_type" : "application/oracle.com.cloud.common.Zone+json" ,
    "total" : "1" ,
    "elements" :
    [
        {
            "uri" : "/em/cloud/iaas/zone/D73AF0D42C8459E11419862797D1F37D" ,
            "name" : "cloud_zone" ,
            "media_type" : "application/oracle.com.cloud.iaas.Zone+json" ,
            "service_family_type" : "iaas" ,
            "type" : "VM_ZONE"
        }
    ]
} ,
"instance_types" : {
    "media_type" : "application/oracle.com.cloud.common.InstanceType+json" ,
    "total" : "2" ,
    "elements" :
    [
        {
            "uri" : "/em/cloud/instance_type/vm%40iaas" ,
            "name" : "vm" ,
            "media_type" : "application/oracle.com.cloud.common.InstanceType+json" ,
            "instance_media_type" : "application/oracle.com.cloud.common.VM+json"
        } ,
        {
            "uri" : "/em/cloud/instance_type/assembly%40iaas" ,
            "name" : "assembly" ,
```

```
        "media_type" : "application/oracle.com.cloud.common.InstanceType+json" ,
        "instance_media_type" : "application/
oracle.com.cloud.common.AssemblyInstance+json"
    }
]
} ,
"quota_usages" : {
    "media_type" : "application/oracle.com.cloud.common.QuotaUsage+json" ,
    "total" : "6" ,
    "elements" :
    [
        {
            "uri" : "/em/cloud/quota_usage/iaas_3" ,
            "name" : "Local Storage Quota" ,
            "description" : "Local Storage Quota" ,
            "context_id" : "3" ,
            "media_type" : "application/oracle.com.cloud.common.QuotaUsage+json" ,
            "used" : "10240" ,
            "maxAllowed" : "2000" ,
            "unit" : "GB"
        } ,
        {
            "uri" : "/em/cloud/quota_usage/iaas_2" ,
            "name" : "RAM Quota" ,
            "description" : "RAM Quota" ,
            "context_id" : "2" ,
            "media_type" : "application/oracle.com.cloud.common.QuotaUsage+json" ,
            "used" : "512" ,
            "maxAllowed" : "600000" ,
            "unit" : "MB"
        } ,
        {
            "uri" : "/em/cloud/quota_usage/iaas_1" ,
            "name" : "CPU Quota" ,
            "description" : "CPU Quota" ,
            "context_id" : "1" ,
            "media_type" : "application/oracle.com.cloud.common.QuotaUsage+json" ,
            "used" : "1" ,
            "maxAllowed" : "100" ,
            "unit" : "COUNT"
        } ,
        {
            "uri" : "/em/cloud/quota_usage/iaas_6" ,
            "name" : "Servers Quota" ,
            "description" : "Servers Quota" ,
            "context_id" : "6" ,
            "media_type" : "application/oracle.com.cloud.common.QuotaUsage+json" ,
            "used" : "1" ,
            "maxAllowed" : "20" ,
            "unit" : "COUNT"
        } ,
        {
            "uri" : "/em/cloud/quota_usage/iaas_5" ,
            "name" : "SWLIB Storage Quota" ,
            "description" : "SWLIB Storage Quota" ,
            "context_id" : "5" ,
            "media_type" : "application/oracle.com.cloud.common.QuotaUsage+json" ,
            "used" : "0" ,
            "maxAllowed" : "-1" ,
            "unit" : "GB"
        } ,
    ]
} ,
```

```

    {
      "uri" : "/em/cloud/quota_usage/iaas_4" ,
      "name" : "Extra Storage Quota" ,
      "description" : "Extra Storage Quota" ,
      "context_id" : "4" ,
      "media_type" : "application/oracle.com.cloud.common.QuotaUsage+json" ,
      "used" : "0" ,
      "maxAllowed" : "-1" ,
      "unit" : "GB"
    }
  ]
},
"quota_def" : {
  "uri" : "/em/cloud/iaas/quota" ,
  "name" : "iaas Quota" ,
  "description" : "iaas Quota" ,
  "media_type" : "application/oracle.com.cloud.iaas.Quota+json"
},
"instance_options" :
[
  {
    "name" : "Medium" ,
    "cpu" : "4" ,
    "memory" : "8192" ,
    "local_storage" : "512000" ,
    "id" : "2"
  } ,
  {
    "name" : "Large" ,
    "cpu" : "8" ,
    "memory" : "15360" ,
    "local_storage" : "1024000" ,
    "id" : "3"
  } ,
  {
    "name" : "Small" ,
    "cpu" : "2" ,
    "memory" : "4096" ,
    "local_storage" : "256000" ,
    "id" : "1"
  }
]
}

```

The `application/oracle.com.cloud.iaas.iaasServiceFamilyType+json` media type is returned automatically as the most detailed resource. Similarly, you can interact with the system by accepting the common type:

Table 53-16 Service Family Type Resource

Feature	Description
URL	<code>https://example.oracle.com/em/cloud/service_family_type/iaas</code>
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Accept-Type: application/oracle.com.cloud.common.ServiceFamilyType+json
Method	GET

The Web service will return the content as shown in the previous interaction.

53.4.3 Quota Resource

The following sdescribes the quota resource that is exposed through the IaaS service family type to introspect the quota definition for IaaS services.

Table 53-17 Service Family Type Resource

Feature	Description
URL	https://example.oracle.com/em/cloud/iaas/quota
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Method	GET
Since	12.1.0.5 Cloud Service Portal Plug-in

The following example shows the returned headers and content for this interaction:

```
X-specification-version: 10001
Content-Type: application/oracle.com.cloud.iaas.Quota+json; charset=ISO-8859-1
{
  "uri" : "/em/cloud/iaas/quota" ,
  "name" : "iaas Quota" ,
  "description" : "iaas Quota" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "media_type" : "application/oracle.com.cloud.iaas.Quota+json" ,
  "service_family_type" : "iaas" ,
  "allowedSaveToSwlib" : "1" ,
  "allowedSaveToSwlibOnExpiry" : "0" ,
  "resourceQuotas" : {
    "total" : "6" ,
    "elements" :
    [
      {
        "name" : "Local Storage Quota" ,
        "description" : "Local Storage Quota" ,
        "maxAllowed" : "2000" ,
        "unit" : "GB"
      } ,
      {
        "name" : "RAM Quota" ,
        "description" : "RAM Quota" ,
        "maxAllowed" : "600000" ,
        "unit" : "MB"
      } ,
      {
        "name" : "CPU Quota" ,
        "description" : "CPU Quota" ,
        "maxAllowed" : "100" ,
        "unit" : "COUNT"
      } ,
      {
        "name" : "Servers Quota" ,
        "description" : "Servers Quota" ,
        "maxAllowed" : "20" ,
        "unit" : "COUNT"
      }
    ]
  }
}
```

```

    {
      "name" : "SWLIB Storage Quota" ,
      "description" : "SWLIB Storage Quota" ,
      "maxAllowed" : "-1" ,
      "unit" : "GB"
    } ,
    {
      "name" : "Extra Storage Quota" ,
      "description" : "Extra Storage Quota" ,
      "maxAllowed" : "-1" ,
      "unit" : "GB"
    }
  ]
}

```

53.4.4 Service Instance Type Resource

This is the resource that describes the type of services that are provided by a particular Service Family Type.

Table 53-18 Service Instance Type Resource

Feature	Description
URL	https://example.oracle.com/em/cloud/instance_type/vm%40iaas
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Method	GET
Since	12.1.0.4 Cloud Service Portal Plug-in

The following is the Service Instance Type resource:

```

{
  "uri" : "/em/cloud/instance_type/vm%40iaas" ,
  "name" : "vm" ,
  "description" : "A Virtual Machine represents a computational unit that contains CPU, Memory, Network Instances, and Disks" ,
  "media_type" : "application/oracle.com.cloud.common.InstanceType+json" ,
  "instance_media_type" : "application/oracle.com.cloud.common.VM+json" ,
  "metrics" :
  [
    [
      "CPU_Utilization" ,
      "CPU Utilization of the Server" ,
      "GENERIC"
    ] ,
    [
      "Total_Network_Throughput" ,
      "Total Network Throughput of the Server" ,
      "GENERIC"
    ] ,
    [
      "Total_Disk_Throughput" ,
      "Total Disk Throughput of the Server" ,
      "GENERIC"
    ] ,
    [
      "Filesystem_Total_Used" ,

```

```

        "Summary of the total file system usage" ,
        "GENERIC"
    ]
  ] ,
  "instance_options" :
  [
    {
      "name" : "Medium" ,
      "cpu" : "4" ,
      "memory" : "8192" ,
      "local_storage" : "512000" ,
      "id" : "2"
    } ,
    {
      "name" : "Large" ,
      "cpu" : "8" ,
      "memory" : "15360" ,
      "local_storage" : "1024000" ,
      "id" : "3"
    } ,
    {
      "name" : "Small" ,
      "cpu" : "2" ,
      "memory" : "4096" ,
      "local_storage" : "256000" ,
      "id" : "1"
    }
  ]
}

```

53.4.5 Zone Resource

The following table shows the features of the Zone resource:

Table 53-19 ZoneResource

Feature	Description
URL	https://example.oracle.com/em/cloud/iaas/zone/D73AF0D42C8459E11419862797D1F37D
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Method	GET
Since	12.1.0.4 Cloud Service Portal Plug-in

The following is the Zone resource, automatically cast to the application/oracle.com.cloud.iaas.Zone+json media type

```

{
  "uri" : "/em/cloud/iaas/zone/D73AF0D42C8459E11419862797D1F37D" ,
  "name" : "cloud_zone" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "D73AF0D42C8459E11419862797D1F37D" ,
  "media_type" : "application/oracle.com.cloud.iaas.Zone+json" ,
  "service_family_type" : "iaas" ,
  "type" : "VM_ZONE" ,
  "service_templates" : {

```

```

"media_type" : "application/oracle.com.cloud.common.ServiceTemplate+json" ,
"total" : "7" ,
"elements" :
[
  {
    "uri" : "/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1" ,
    "name" : "template_sanity" ,
    "media_type" : "application/oracle.com.cloud.common.VMTemplate+json" ,
    "type" : "Template"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC75E88B04D7FEDEDE040578CDA810E49%3A0.1" ,
    "name" : "sidb_assembly" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate+json" ,
    "type" : "Assembly"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC77122B0A916D95CE040578CDA814854%3A0.1" ,
    "name" : "sidbasMA_abby" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate+json" ,
    "type" : "Assembly"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC769B1F361529309E040578CDA813D57%3A0.1" ,
    "name" : "wls_assembly" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate+json" ,
    "type" : "Assembly"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC76C144A4A245B62E040578CDA8163B9%3A0.1" ,
    "name" : "fmw_abby" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate+json" ,
    "type" : "Assembly"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC76C8792DE2A0937E040578CDA81795E%3A0.1" ,
    "name" : "WLS_abby" ,
    "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate+json" ,
    "type" : "Assembly"
  } ,
  {
    "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC76F733BC7A41AF7E040578CDA812CDC%3A0.1" ,

```

```

        "name" : "fmw_venkat" ,
        "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
        "type" : "Assembly"
    }
} ,
"service_instances" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceInstance+json" ,
    "total" : "0" ,
    "elements" :
    [
    ]
} ,
"vnets" : {
    "media_type" : "application/oracle.com.cloud.common.VNet+json" ,
    "total" : "3" ,
    "elements" :
    [
        {
            "uri" : "/em/cloud/iaas/oracle%3AdefaultService%3Aem%3Aprovisioning
%3A1%3AnetConfig%3AC76CEADBBBE6B23FE040578CDA817FB1" ,
            "context_id" : "oracle:defaultService:em:provisioning:
1:netConfig:C76CEADBBBE6B23FE040578CDA817FB1" ,
            "media_type" : "application/oracle.com.cloud.common.VNet+json" ,
            "id" : "oracle:defaultService:em:provisioning:
1:netConfig:C76CEADBBBE6B23FE040578CDA817FB1"
        } ,
        {
            "uri" : "/em/cloud/iaas/oracle%3AdefaultService%3Aem%3Aprovisioning
%3A1%3AnetConfig%3AC77076C8FDEC6BD7E040578CDA813B2B" ,
            "context_id" : "oracle:defaultService:em:provisioning:
1:netConfig:C77076C8FDEC6BD7E040578CDA813B2B" ,
            "media_type" : "application/oracle.com.cloud.common.VNet+json" ,
            "id" : "oracle:defaultService:em:provisioning:
1:netConfig:C77076C8FDEC6BD7E040578CDA813B2B"
        } ,
        {
            "uri" : "/em/cloud/iaas/oracle%3AdefaultService%3Aem%3Aprovisioning
%3A1%3AnetConfig%3AC76F741AFD7EB760E040578CDA812CD8" ,
            "context_id" : "oracle:defaultService:em:provisioning:
1:netConfig:C76F741AFD7EB760E040578CDA812CD8" ,
            "media_type" : "application/oracle.com.cloud.common.VNet+json" ,
            "id" : "oracle:defaultService:em:provisioning:
1:netConfig:C76F741AFD7EB760E040578CDA812CD8"
        }
    ]
} ,
"delegated_credentials" : {
    "media_type" : "application/oracle.com.cloud.iaas.ExalogicZoneCredential
+json" ,
    "total" : "0" ,
    "elements" :
    [
    ]
}
}

```

53.4.6 Service Template Resource

As can be seen from the previous examples, the elements in the collection shown all have "media_type" as an attribute to clearly indicate what its resource type is. The following table shows the features of the Service Template resource:

Table 53-20 Service Template Resource

Feature	Description
URL	https://example.oracle.com/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Method	GET
Since	12.1.0.4 Cloud Service Portal Plug-in

This is the resource returned as the complete VMTemplate resource.

```
{
  "uri" : "/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem
%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate
%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1" ,
  "name" : "template_sanity" ,
  "description" : "test template" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Template:C76CEB5563EA5E13E040578CDA817FAF:0.1" ,
  "media_type" : "application/oracle.com.cloud.common.VMTemplate+json" ,
  "type" : "Template" ,
  "created" : "2012-08-17T11:53:26+0000" ,
  "default_instance_media_type" : "application/oracle.com.cloud.common.VM+json" ,
  "zones" : {
    "media_type" : "application/oracle.com.cloud.iaas.Zone+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/iaas/zone/D73AF0D42C8459E11419862797D1F37D" ,
        "name" : "cloud_zone" ,
        "media_type" : "application/oracle.com.cloud.iaas.Zone+json" ,
        "service_family_type" : "iaas" ,
        "type" : "VM_ZONE"
      }
    ]
  } ,
  "service_instances" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceInstance+json" ,
    "total" : "0" ,
    "elements" :
    [
      ]
  } ,
  "deployment_params" :
  [
    {

```

```
        "name" : "zone" ,
        "description" : "'zone' attribute is the URI of the zone that the
'application/oracle.com.cloud.common.VM' resource is to be created in" ,
        "type" : "STRING" ,
        "require" : "false" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "based_on" ,
        "description" : "'based_on' attribute is the URI of the service template or
format String of the originated source which the deployed 'application/
oracle.com.cloud.common.VM' resource is to be followed" ,
        "type" : "STRING" ,
        "require" : "false" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "cpu" ,
        "description" : "The information that determined how much 'CPU' is to be
allocated to the deployed resource" ,
        "type" : "LIST" ,
        "require" : "false" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "memory" ,
        "description" : "The information that determined how much 'MEMORY' is to be
allocated to the deployed resource" ,
        "type" : "NUMBER" ,
        "require" : "false" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "disks" ,
        "description" : "The list of disks to be included in the deployed resource" ,
        "type" : "LIST" ,
        "require" : "false" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "params.domain_type" ,
        "description" : "The domain type of the Virtual Machine" ,
        "type" : "STRING" ,
        "require" : "false" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "params.network_profile" ,
        "description" : "The identifier of the network profile to be used for the
network instances of the Virtual Machine" ,
        "type" : "STRING" ,
        "require" : "false" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "params.server_prefix" ,
        "description" : "The server prefix to be specified for the Virtual Machine" ,
        "type" : "STRING" ,
        "require" : "true" ,
        "sensitive" : "false"
    } ,
    }
```

```

    {
      "name" : "params.server_size" ,
      "description" : "The name of the server instance size" ,
      "type" : "STRING" ,
      "require" : "false" ,
      "sensitive" : "false"
    } ,
    {
      "name" : "params.request_name" ,
      "description" : "The request name to be tracked for the Virtual Machine
creation" ,
      "type" : "STRING" ,
      "require" : "false" ,
      "sensitive" : "false"
    } ,
    {
      "name" : "params.request_description" ,
      "description" : "The request description to be tracked for the Virtual
Machine creation" ,
      "type" : "STRING" ,
      "require" : "false" ,
      "sensitive" : "false"
    } ,
    {
      "name" : "params.vnc_password" ,
      "description" : "The VNC password for the Virtual Machine" ,
      "type" : "STRING" ,
      "require" : "true" ,
      "sensitive" : "true"
    } ,
    {
      "name" : "params.root_password" ,
      "description" : "The Root password for the Virtual Machine" ,
      "type" : "STRING" ,
      "require" : "true" ,
      "sensitive" : "true"
    } ,
    {
      "name" : "params.start_vm" ,
      "description" : "Whether or not the Virtual Machine should be started after
creation" ,
      "type" : "STRING" ,
      "defaultValue" : "YES" ,
      "require" : "false" ,
      "sensitive" : "false"
    } ,
    {
      "name" : "params.ha_enabled" ,
      "description" : "Whether or not the Virtual Machine should be HA enabled" ,
      "type" : "STRING" ,
      "defaultValue" : "NO" ,
      "require" : "false" ,
      "sensitive" : "false"
    } ,
    {
      "name" : "params.disks_overwrite" ,
      "description" : "Whether or not the default Virtual Machine disks should be
overwritten" ,
      "type" : "STRING" ,
      "defaultValue" : "NO" ,
      "require" : "false" ,

```

```

        "sensitive" : "false"
      } ,
      {
        "name" : "params.networks" ,
        "description" : "Whether or not the default Virtual Machine disks should be
overwritten" ,
        "type" : "LIST" ,
        "require" : "false" ,
        "sensitive" : "false"
      }
    ] ,
    "directory" : "COMP_Components" ,
    "updated" : "2012-08-17T11:53:26+0000" ,
    "creator" : "DMBHAT1" ,
    "last_modified_by" : "DMBHAT1" ,
    "componenttype" : "Virtualization" ,
    "oracle_owned" : "false"
  }
}

```

53.4.7 Metric Resource

A metric contains time series information and depending on the type of the metric, rollup information can also be retrieved. For example,

Table 53-21 Service Template Resource

Feature	Description
URL	https://example.oracle.com/em/cloud/metric/iaas%3Avm%3ACPU_Utilization%3A523CAE80A305928C9C5BE8A67A4181FD
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Method	GET
Since	12.1.0.4 Cloud Service Portal Plug-in

Here is the response from the web service:

```

{
  "uri" : "/em/cloud/metric/iaas%3Avm%3ACPU_Utilization%3A523CAE80A305928C9C5BE8A67A4181FD" ,
  "name" : "CPU_Utilization" ,
  "media_type" : "application/oracle.com.cloud.common.Metric+json" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "type" : "NUMBER" ,
  "current_value" : "52.53868103027344" ,
  "current_time" : "2012-08-22T01:28:14+0000" ,
  "time_range" :
  [
    "2012-08-22T01:18:14+0000" ,
    "2012-08-22T01:28:14+0000"
  ] ,
  "time_range_epoch" :
  [
    "1345598294965" ,
    "1345598894965"
  ] ,
  "rollup_unit" : "RAW" ,
}

```

```

"values" :
[
  {
    "time_utc" : "2012-08-22T01:21:44+0000" ,
    "value" : "52.53868103027344"
  }
] ,
"key" : "iaas:vm:CPU_Utilization:523CAE80A305928C9C5BE8A67A4181FD"
}

```

The default time range is 10 minutes. To modify the time range, query parameters can be used to specify the time range. For example, the following would get the metric data for the last 50 minutes:

Table 53-22 Service Template Resource

Feature	Description
URL	https://example.oracle.com/em/cloud/metric/iaas%3Avm%3ACPU_Utilization%3A523CAE80A305928C9C5BE8A67A4181FD?time_range_epoch=1345595894965~1345598894965
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Method	GET
Since	12.1.0.4 Cloud Service Portal Plug-in

The query parameter "time_range_epoch" contains 2 numbers separated by "~" to indicate FROM time and TO time, inclusive. Here is the response:

```

{
  "uri" : "/em/cloud/metric/iaas%3Avm%3ACPU_Utilization%3A523CAE80A305928C9C5BE8A67A4181FD" ,
  "name" : "CPU_Utilization" ,
  "media_type" : "application/oracle.com.cloud.common.Metric+json" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "type" : "NUMBER" ,
  "current_value" : "52.53868103027344" ,
  "current_time" : "2012-08-22T01:29:19+0000" ,
  "time_range" :
  [
    "2012-08-22T00:38:14+0000" ,
    "2012-08-22T01:28:14+0000"
  ] ,
  "time_range_epoch" :
  [
    "1345595894965" ,
    "1345598894965"
  ] ,
  "rollup_unit" : "RAW" ,
  "values" :
  [
    {
      "time_utc" : "2012-08-22T01:21:44+0000" ,
      "value" : "52.53868103027344"
    } ,
    {
      "time_utc" : "2012-08-22T01:16:44+0000" ,

```

```

        "value" : "52.67461395263672"
      } ,
      {
        "time_utc" : "2012-08-22T01:11:44+0000" ,
        "value" : "51.93536376953125"
      } ,
      {
        "time_utc" : "2012-08-22T01:06:44+0000" ,
        "value" : "52.61101531982422"
      } ,
      {
        "time_utc" : "2012-08-22T01:01:44+0000" ,
        "value" : "52.30859375"
      } ,
      {
        "time_utc" : "2012-08-22T00:56:44+0000" ,
        "value" : "52.778690338134766"
      } ,
      {
        "time_utc" : "2012-08-22T00:51:44+0000" ,
        "value" : "52.08208084106445"
      } ,
      {
        "time_utc" : "2012-08-22T00:46:44+0000" ,
        "value" : "52.42387771606445"
      } ,
      {
        "time_utc" : "2012-08-22T00:41:44+0000" ,
        "value" : "52.2672004699707"
      }
    ] ,
    "key" : "iaas:vm:CPU_Utilization:523CAE80A305928C9C5BE8A67A4181FD"
  }
}

```

Similarly, to specify a different rollup unit, the following interaction shows the HOURLY rollup for the last 7 hours:

Table 53-23 Service Template Resource

Feature	Description
URL	https://example.oracle.com/em/cloud/metric/iaas%3Avm%3ACPU_Utilization%3A523CAE80A305928C9C5BE8A67A4181FD?time_range_epoch=1345571178252~1345611178252&rollup_unit=HOURLY
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Method	GET
Since	12.1.0.4 Cloud Service Portal Plug-in

Here is the response from the web service for the aggregated information:

```

{
  "uri" : "/em/cloud/metric/iaas%3Avm%3ACPU_Utilization%3A523CAE80A305928C9C5BE8A67A4181FD" ,
  "name" : "CPU_Utilization" ,
  "media_type" : "application/oracle.com.cloud.common.Metric+json" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "type" : "NUMBER" ,
}

```

```
"current_value" : "52.37758255004883" ,
"current_time" : "2012-08-22T04:55:13+0000" ,
"time_range" :
[
  "2012-08-21T17:46:18+0000" ,
  "2012-08-22T04:52:58+0000"
] ,
"time_range_epoch" :
[
  "1345571178252" ,
  "1345611178252"
] ,
"rollup_unit" : "HOUR" ,
"values" :
[
  {
    "time_utc" : "2012-08-21T23:00:00+0000" ,
    "average" : "52.6733585993448905" ,
    "min" : "52.130245208740234" ,
    "max" : "53.29022216796875" ,
    "std" : "3.55263697371071501307481053785512321532E-01"
  } ,
  {
    "time_utc" : "2012-08-21T22:00:00+0000" ,
    "average" : "5.24303614298502599166666666666666666666667E01" ,
    "min" : "51.621360778808594" ,
    "max" : "52.85725402832031" ,
    "std" : "3.63521555326025399658498002900543252046E-01"
  } ,
  {
    "time_utc" : "2012-08-21T21:00:00+0000" ,
    "average" : "52.6410032908121745" ,
    "min" : "52.04186248779297" ,
    "max" : "53.23821258544922" ,
    "std" : "3.21552680564547999623645642115362106482E-01"
  } ,
  {
    "time_utc" : "2012-08-21T20:00:00+0000" ,
    "average" : "7.60534032185872416666666666666666666666667E00" ,
    "min" : "0" ,
    "max" : "52.8489990234375" ,
    "std" : "1.80268512452981440717409537961069439254E01"
  } ,
  {
    "time_utc" : "2012-08-21T19:00:00+0000" ,
    "average" : "0" ,
    "min" : "0" ,
    "max" : "0" ,
    "std" : "0"
  } ,
  {
    "time_utc" : "2012-08-21T18:00:00+0000" ,
    "average" : "0" ,
    "min" : "0" ,
    "max" : "0" ,
    "std" : "0"
  }
] ,
"key" : "iaas:vm:CPU_Utilization:523CAE80A305928C9C5BE8A67A4181FD"
}
```

53.5 Service Request REST APIs

This section covers the following REST APIs for rescheduling and deleting DBaaS and MWaaS service requests.

Table 53-24 Supported Methods for Service Request

Method	Query Parameters	Request Payload	Response Payload	Canonical Link	Description
PUT	NA	{"newdate": "8/23/2013 4:46:12 AM"}	Status Message (json payload)	em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/<id>	Reschedules service request based on the id and attributes. Date must be specified in the format yyyy-MM-dd'T'HH:mm:ss'Z
DELETE	NA	None	None	em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/<service-request-id>	Cancels GET specified ServiceRequest
GET	NA	NA	List of requests as json payload	em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/	Retrieves a list of all service requests.

53.6 Service Request Collection

ServiceRequestCollection is a collection resource representing a Cloud Administrator's view of all the accessible Service Request resources (which can be canceled or rescheduled). The following table describes the ServiceRequestCollection data model.

Table 53-25 ServiceRequestCollection Data Model

Field	Type	Occurs	Description
name	String	1	Displays the name of this collection resource.
type	String	1	Indicates the type of collection resource.
hasMore	Boolean	1	Indicates whether there are more elements in the collection.
count	Integer	1	Number of elements in the collection resource.
items	Collection <Request>	1	List of ServiceRequest resources. If there are no instance, this list will be blank.

Table 53-25 (Cont.) ServiceRequestCollection Data Model

Field	Type	Occurs	Description
totalCount	Integer	1	Total number of requests.
canonicalLink	URI	1	A GET against this URI refreshes the client representation of this resource.
selfLink	URI	1	Refers to the resource equivalent of the containing elements.

EM CLI Verbs for Database as a Service Administrator

This chapter provides details on the Enterprise Manager Command Line Interface (EM CLI) verbs for Enterprise Manager Self Service Applications administration users for Database as a Service (DBaaS). For other EM CLI verbs related to cloud administration see *Enterprise Manager Command Line Interface Guide*.

The EM CLI enables you to access Enterprise Manager Cloud Control functionality from text-based consoles (shells and command windows) for a variety of operating systems. You can call Enterprise Manager functionality using custom scripts, such as SQL*Plus, OS shell, Perl, or Tcl, thus easily integrating Enterprise Manager Functionality with a company's business process.

The following sections are covered in this chapter:

- [PaaS Zone EM CLI Verbs](#)
- [Software Pool EM CLI Verbs](#)
- [Database Quota EM CLI Verbs](#)
- [Database Request Settings EM CLI Verbs](#)
- [Database Size EM CLI Verbs](#)
- [Database Profile EM CLI Verbs](#)
 - [About Database Provisioning Profile Types](#)
 - [Creating Provisioning Profiles using EM CLI](#)
 - [Sample EM CLI Property Files](#)
 - [Database Profile EM CLI Verbs](#)
 - [Creating a Database Profile Using EM CLI Verbs](#)
 - [Editing a Database Profile Using EM CLI Verbs](#)
 - [Deleting a Database Profile Using EM CLI Verbs](#)
 - [Viewing All the Database Profiles](#)
 - [Refreshing a Database Profile Using EM CLI Verbs](#)
- [Service Template EM CLI Verbs](#)
- [Service Template Executable .json Files](#)
- [Creating a Database Clone Using EM CLI Verbs](#)
- [Refreshing a Database Using EM CLI Verbs](#)
- [Deleting a Database Using EM CLI Verbs](#)
- [Deleting a Database Clone Using EM CLI Verbs](#)
- [Database Fleet Maintenance EM CLI Verbs](#)

- [Database Request Handling EM CLI Verbs](#)
- [Cloning a Pluggable Database](#)
- [Creating a Test Master Pluggable Database](#)
- [Transferring Data Between Databases](#)
- [Backing Up Datafiles and Metadata of a Pluggable Database](#)
- [Importing Data from Export Dumps to a Database](#)
- [Using the db_clone_management EM CLI Verb](#)
- [Invoking a REST API Using EM CLI Verb](#)

All PaaS infrastructure zone EM CLI operations are available only to users with a EM_CLOUD_ADMINISTRATOR role and Software pool operations are available only to users with a EM_SSA_ADMINISTRATOR role. EM CLI verbs will obtain user information from the security context and grant permission only those users authorized to perform these operations.

54.1 PaaS Zone EM CLI Verbs

The following table provides details of the supported verbs for the PaaS zone resource.

Table 54-1 Paas Zone EM CLI Verbs

Verb	Description	Format
emcli create_paas_zone	<p>Creates a PaaS infrastructure zone.</p> <ul style="list-style-type: none"> name - Name of the PaaS infrastructure zone to be created. credential - Global named credentials to be used for provisioning in this PaaS infrastructure zone. hosts - Comma separated list of the host targets to be added as members of this Paas infrastructure zone. PaaS infrastructure zone can contain either hosts or Oracle VM zones as members. ovm_zones - Comma separated list of the Oracle VM zone targets to be added as members of this Paas infrastructure zone. roles - Comma separated list of SSA roles that can access this PaaS infrastructure zone. description - Description of the PaaS infrastructure zone. cpu_utilization - This placement policy constraint allows the cloud administrator to set maximum thresholds for any host. Value entered must be between 1 and 100. If not provided, the default value is taken to be 80 percent. This parameter is not needed if Oracle VM zone targets are added as members. memory_utilization - This is a placement policy constraint for the PaaS infrastructure zone. The value entered must be between 1 and 100. If it is not provided, the default value is taken to be 80 percent. This parameter is not needed if Oracle VM zone targets are added as members. <p>Example:</p> <pre>emcli create_paas_zone -name=MyPaaSZone -credential=AIME__N -hosts=xyxy.example.com -roles="SSA_USER_ROLE1" -description="Test PaaS zone" -cpu_utilization=90 -memory_utilization=90</pre> <p>Sample Output: PaaS Infrastructure Zone "MyPaaSZone" created successfully.</p>	<pre>emcli create_paas_zone -name=<Name of PaaS zone> -credential=<Global Named Credential> [-hosts=<Host1,Host2,Host3...>] [-ovm_zones=<OVMZone1,OVMZone2,OVMZone3...>] [-roles=<SsaRole1,SsaRole2,...>] [-description=<Description of PaaS zone>] [-cpu_utilization=<Value between 1 and 100>] [-memory_utilization=<Value between 1 and 100>]</pre>

Table 54-1 (Cont.) Paas Zone EM CLI Verbs

Verb	Description	Format
emcli update_paas_zone	<p>Updates a PaaS infrastructure zone.</p> <ul style="list-style-type: none"> name - Name of the existing PaaS infrastructure zone. credential - Global named credentials to be updated. add_hosts - Comma separated list of the host targets to be added as members of the Paas infrastructure zone. The hosts to be added should not have been added to other existing PaaS zones. remove_hosts - Comma separated list of the host targets to be removed from the Paas infrastructure zone. add_ovm_zones - Comma separated list of the Oracle VM zone targets to be added as members of the Paas infrastructure zone. The Oracle VM zones to be added should not have been added to other existing PaaS zones. remove_ovm_zones - Comma separated list of the Oracle VM zone targets to be removed from the Paas infrastructure zone. add_roles - Comma separated list of SSA roles to be added that can access the PaaS infrastructure zone. remove_roles - Comma separated list of SSA roles to be removed from the PaaS infrastructure zone. description - Updated description of the PaaS infrastructure zone. cpu_utilization - This placement policy constraint allows the cloud administrator to set maximum thresholds for any host. The value entered must be between 1 and 100. memory_utilization - This placement policy constraint is for the memory utilization of the PaaS infrastructure zone. The value entered must be between 1 and 100. <p>Example:</p> <pre>emcli update_paas_zone -name=MyPaaSZone -credential=AIME_N -add_hosts=xyxy.example.com -remove_hosts=xyxy.example.com -add_roles="SSA_USER_ROLE1" -remove_roles="SSA_USER_ROLE2" -description="Test PaaS zone" -cpu_utilization=90 -memory_utilization=90</pre> <p>Sample Output: PaaS Infrastructure Zone "MyPaaSZone" updated successfully.</p>	<pre>emcli update_paas_zone -name=<Name of PaaS zone> [-description=<Description of PaaS zone>] [-credential=<Global Named Credential>] [-add_hosts=<Host1,Host2,Host3...>] [-remove_hosts=<Host4,Host5...>] [-add_ovm_zones=<OVMZone1,OVMZone2,OVMZone3...>] [-remove_ovm_zones=<OVMZone4,OVMZone5...>] [-add_roles=<SsaRole1,SsaRole2,...>] [-remove_roles=<SsaRole3,SsaRole4,...>] [-cpu_utilization=<Value between 1 and 100>] [-memory_utilization=<Value between 1 and 100>]</pre>

Table 54-1 (Cont.) PaaS Zone EM CLI Verbs

Verb	Description	Format
emcli delete_paas_zone	<p>Deletes a PaaS infrastructure zone. The PaaS infrastructure zone cannot be deleted if there is an existing Software pool associated with it.</p> <ul style="list-style-type: none"> name - Name of the existing PaaS infrastructure zone to be deleted. <p>Example:</p> <pre>emcli delete_paas_zone -name=MyPaaSZone</pre> <p>Sample Output:</p> <pre>PaaS Infrastructure Zone "MyPaaSZone" deleted successfully</pre>	<pre>emcli delete_paas_zone -name=<Name of PaaS zone></pre>
emcli get_paas_zone_detail	<p>Retrieves the PaaS infrastructure zone details.</p> <ul style="list-style-type: none"> name - Details of the existing PaaS infrastructure zone, such as Name, Description, Named Credentials, Number of Hosts, Roles, Maximum Memory Allocation (%), and Maximum CPU Utilization (%). <p>Example:</p> <pre>emcli get_paas_zone_detail -name=MyPaaSZone</pre> <p>Sample Output:</p> <pre>Name MyPaaSZone Description TEST zone Named Credentials AIME_N Number of Hosts 1 Roles SSA_USER_ROLE1 Maximum Memory Allocation (%) 90 Maximum CPU Utilization (%) 90</pre>	<pre>emcli get_paas_zone_detail -name=<Name of PaaS zone></pre>

54.2 Software Pool EM CLI Verbs

The following table provides details of the supported verbs for the Software pool resource.

Table 54-2 Software Pool EM CLI Verbs

Verb	Description	Format
emcli create_pool	<p>Creates a database, schema, or pluggable database pool.</p> <ul style="list-style-type: none"> name - Name of the Software pool to be created. target_type - Target type of the Software pool to be created. For example: <code>mwaas_zone</code> for middleware pool, <code>oracle_cloud_zone</code> for database pool, and <code>schaas_pool</code> for schema pool. paas_zone - Name of PaaS infrastructure zone in which the Software pool is to be created. members - Comma separated list of targets to be added as members of the Software pool. description - Description of the Software pool. placement_constraints - Comma separated key value pairs of the placement constraints that allow the self service administrator to set maximum ceilings for resource utilization. This provides protection for the members of the database pool in terms of resource consumption. Use the <code>get_pool_allowed_placement_constraints</code> verb to get the available placement constraints for a pool target type. member_constraints - Comma separated key value pairs that restricts the addition of member targets to a software pool with a set criteria. Use the <code>get_pool_allowed_member_constraints</code> verb to get the available member constraints and their possible values for a pool target type. properties - Comma separated key value pairs for additional properties that need to be specified based on the software pool target type. <p>Note:</p> <ul style="list-style-type: none"> To procure the GUID run the following command: <pre>emcli get_procedures [-type={procedure type}]</pre> <p>Sample command:</p> <pre>emcli get_procedures -type=DBPROV</pre> <ul style="list-style-type: none"> Root credentials are optional. They are required if you want to use the pool for snap cloned database requests. Grid Infrastructure credentials are optional. They are required if you are creating only a RAC database. ASM credentials are optional. They are required if you want to use the database pool for live cloning of a database using ASM. An existing pool with similar configuration can be associated to the new database pool as a standby pool. To do so use the <code>standby_pools</code> property. To associate multiple pools the pool names should be separated using the pipe symbol. <p>Examples:</p> <ul style="list-style-type: none"> Database pool - <pre>emcli create_pool -name=MyDbPool -target_type=oracle_cloud_zone</pre>	<pre>emcli create_pool -name=<Name of Software Pool> -target_type=<Target type of Software Pool> -paas_zone=<PaaS Infrastructure Zone of Software Pool> -members=<Member1, Member2...> [-description=<Description of Software Pool>] [-placement_constraints=<constraint1=value1, constraint2=value2...>] [-member_constraints=<constraint1=value1, constraint2=value2>] [-properties=<property1=value1, property2=value2>]</pre>

Table 54-2 (Cont.) Software Pool EM CLI Verbs

Verb	Description	Format
	<pre>-paas_zone=MyPaaSZone -members=OraDb11g_home1_1_slc03qtn -description="Test Database Pool" -member_constraints= "CONFIGURATION=oracle_database, VERSION=11.2.0.2.0, PLATFORM=226" -placement_constraints= "MAX_INSTANCES=7" -properties= "host_credential_guid=DBA449B8967AAF77E040F00A73B11F55, root_credential_guid=DBA449B8967AAF77E040F00A73B11F55" grid_credential_guid=DBA449B8967AAF77E040F00A73B11F55, asm_credential_guid=DBA449B8967AAF77E040F00A73B11F55 , standby_pools=DB_POOL1 DB_POOL2</pre> <p>Sample Output: Software Pool "MyDbPool" created successfully.</p> <ul style="list-style-type: none"> • Schema pool - <pre>emcli create_pool -name= MySchemaPool -target_type= schaas_pool -paas_zone=MyPaaSZone -members= simple.us.example.com -description="Test Schema Pool" -member_constraints= " TARGET_TYPE=oracle_database, VERSION=11.2.0.2.0, PLATFORM=226" -placement_constraints= "MAX_SERVICES=7, USE_WORKLOAD=true, MAX_CPU_USAGE=90, MAX_MEMORY_USAGE=90, ENFORCE_CPU=true" -properties= "host_credential_guid=DBA449B8967AAF77E040F00A73B11F55, database_credential_guid =DBA449B8967AAF77E040F00A73B11F55"</pre> <p>Sample Output: Software Pool "MySchemaPool" created successfully.</p> <ul style="list-style-type: none"> • Pluggable database pool - <pre>emcli create_pool -name= MyPdbPool -target_type= pdbaas_pool -paas_zone=MyPaaSZone -members= database</pre>	

Table 54-2 (Cont.) Software Pool EM CLI Verbs

Verb	Description	Format
	<pre>-description="Test PDB Pool" -member_constraints= TARGET_TYPE_CDB=oracle_database, VERSION_CDB=12.1.0.1.0, PLATFORM_CDB=226" -placement_constraints= "MAX_PDB_SERVICES=7, PDBS_USE_WORKLOAD=true, MAX_CPU_USAGE_BY_PDBS=90, MAX_MEMORY_USAGE_BY_PDBS=90, PDBS_ENFORCE_CPU=true" -properties= "host_credential_guid=DBA449B8967AAF77E040F00A73B11F 55, gi_credential_guid=DBA449B8967AAF77E040F00A73B11F55, cdb_credential_guid =DBA449B8967AAF77E040F00A73B11F55"</pre>	
	<p>Sample Output: Software Pool "MySchemaPool" created successfully</p>	

Table 54-2 (Cont.) Software Pool EM CLI Verbs

Verb	Description	Format
emcli update_pool	<p>Updates a a database, schema, or pluggable database pool (whichever specified).</p> <ul style="list-style-type: none"> name - Name of the existing Software pool. target_type - Target type of the existing Software pool. For example: mwaas_zone for middleware pool, oracle_cloud_zone for database pool, and schaas_pool for schema pool. description - Description of the Software pool. add_members - Comma separated list of targets to be added as members of the Software pool. The targets to be added must satisfy the member constraints of the Software pool. remove_members - Member targets to be removed from the Software pool. placement_constraints - Comma separated key value pairs of the placement constraints that allow the self service administrator to set maximum ceilings for resource utilization. This provides protection for the members of the Software pool in terms of resource consumption. properties - Comma separated key value pairs for properties that need to be updated based on the Software pool target type. <p>Examples:</p> <ul style="list-style-type: none"> Database pool - <pre>emcli update_pool -name=MyDbPool -target_type=oracle_cloud_zone -paas_zone=MyPaaSZone -add_members= OraDb11g_home1_1_slc03qtn -remove_members= OraDb11g_home1_2_slc01mdr -description="Test Database Pool" -placement_constraints= "MAX_INSTANCES=7" -properties= "host_credential_guid=DBA449B8967AAF77E040F00A73B11F55, root_credential_guid=DBA449B8967AAF77E040F00A73B11F55"</pre> <p>Sample Output: Software Pool "MyDbPool" updated successfully.</p> Schema pool - <pre>emcli update_pool -name= MySchemaPool -target_type= schaas_pool -add_members= simple.us.example.com -remove_members= Simple1.us.example.com -description="Test Database Pool"</pre> 	<pre>emcli update_pool - name=<Name of Software Pool> -target_type=<Target type of Software Pool> [-description=<Description of Software Pool>] [-add_members=<Member1, Member2...>] [- remove_members=<Member4, Member5...>] [- placement_constraints=<constr aint1=value1,constraint2=value 2...>] [-properties=<property1=value1, property2=value2>]</pre>

Table 54-2 (Cont.) Software Pool EM CLI Verbs

Verb	Description	Format
	<pre>-placement_constraints= "MAX_SERVICES=17, USE_WORKLOAD=false, MAX_CPU_USAGE=90, MAX_MEMORY_USAGE=90, ENFORCE_CPU=false"</pre> <p>Sample Output: Software Pool "MySchemaPool" updated successfully.y.</p> <ul style="list-style-type: none"> • Pluggable database pool - <pre>emcli update_pool -name= MyPdbPool -target_type= pdbaas_pool -paas_zone=MyPaaSZone -add_members=database -remove_members=database -description="Test PDB Pool" -placement_constraints= "MAX_PDB_SERVICES=7, PDBS_USE_WORKLOAD=true, MAX_CPU_USAGE_BY_PDBS=90, MAX_MEMORY_USAGE_BY_PDBS=90, PDBS_ENFORCE_CPU=true" -properties= "host_credential_guid=DBA449B8967AAF77E040F00A73B11F55, gi_credential_guid=DBA449B8967AAF77E040F00A73B11F55, cdb_credential_guid =DBA449B8967AAF77E040F00A73B11F55"</pre> <p>Sample Output: Software Pool "MyPdbPool" updated successfully.</p>	

Table 54-2 (Cont.) Software Pool EM CLI Verbs

Verb	Description	Format
emcli delete_pool	<p>Deletes a database, scheme, or pluggable database pool. The software pool cannot be deleted if there is an existing Service template associated with it.</p> <ul style="list-style-type: none"> name - Name of an existing software pool. target - Target type of the software pool. <p>Examples:</p> <ul style="list-style-type: none"> Database pool - <pre>emcli delete_pool -name=MyDbPool -target_type=oracle_cloud_zone</pre> <p>Sample Output: Software Pool "MyDbPool" deleted successfully.</p> Schema pool - <pre>emcli delete_pool -name=MySchemaPool -target_type= schaas_pool</pre> <p>Sample Output: Software Pool "MySchemaPool" deleted successfully.</p> Pluggable database pool - <pre>emcli delete_pool -name= MyPdbPool -target_type= pdbaas_pool</pre> <p>Sample Output: Software Pool "MyPdbPool" deleted successfully.</p> 	<pre>emcli delete_pool -name=<Name of Software Pool> -target_type=<Target type of Software Pool></pre>

Table 54-2 (Cont.) Software Pool EM CLI Verbs

Verb	Description	Format
emcli get_pool_detail	<p>Retrieves the software pool details, such as name, target type, description, PaaS infrastructure zone, number of members, placement constraints, and member constraints.</p> <ul style="list-style-type: none"> name - Name of the Software pool. target - Target type of the Software pool <p>Examples:</p> <ul style="list-style-type: none"> Database pool - <pre>emcli get_pool_detail -name=MyDbPool -target_type=oracle_cloud_zone</pre> <p>Sample Output:</p> <pre>Name MyDbPool Target Type oracle_cloud_zone Description Test Database Pool Paas Infrastructure Zone SLC01MDR_ZONE Number of Members 1 Placement Constraints MAX_INSTANCES : 10 Member Constraints CONFIGURATION : DatabaseInstance VERSION : 11.2.0.2.0 , PLATFORM : Linux x86-64</pre> Schema pool - <pre>emcli get_pool_detail -name=MySchemaPool -target_type= schaas_pool</pre> <p>Sample Output:</p> <pre>Name MyRchemaPool Target Type schaas_pool Description Test Schema Pool Paas Infrastructure Zone SLC01MDR_ZONE Number of Members 1 Placement Constraints MAX_CPU_USAGE : 90 , ENFORCE_CPU : false , MAX_MEMORY_USAGE : 90 , MAX_SERVICES : 17 , USE_WORKLOAD : false Member Constraints VERSION : 11.2.0.2.0 , PLATFORM : Linux x86-64 , TARGET_TYPE : Database Instance</pre> Pluggable database pool - <pre>emcli get_pool_detail -name= MyPdbPool -target_type= pdbaas_pool</pre> <p>Sample Output:</p> <pre>Name MyPdbPool Target Type pdbaas_pool</pre> 	<pre>emcli get_pool_detail -name=<Name of Software Pool> -target_type=mwaas_zone</pre>

Table 54-2 (Cont.) Software Pool EM CLI Verbs

Verb	Description	Format
	Description Test PDB Pool Paas Infrastructure Zone PDB_ZONE Number of Members 1 Placement Constraints MAX_MEMORY_USAGE_BY_PDBS : 90 , MAX_CPU_USAGE_BY_PDBS : 90 , MAX_PDB_SERVICES : 7 , PDBS_ENFORCE_CPU : false , PDBS_USE_WORKLOAD :false Member Constraints PLATFORM_CDB : Linux x86-64 , TARGET_TYPE_CDB : Database Instance, VERSION_CDB : 12.1.0.1.0	

54.3 Database Quota EM CLI Verbs

The following table provides details of the supported verbs for Database quota.

Table 54-3 Database Quota Em CLI Verbs

Verb	Description	Format
emcli create_dbaas_quota	<p>Creates database quota for a EM_SSA_USER role.</p> <ul style="list-style-type: none"> role_name: Name of SSA user Role for which quota is to be created databases: Number of database service requests allowed. schema_services: Number of schema service requests allowed. pluggable_databases: Number of pluggable database requests allowed. memory: Amount of memory usage allowed. storage: Amount of storage usage allowed. <p>Example</p> <pre>emcli create_dbaas_quota -role_name="My Role" -databases="10" -schema_services="10" - pluggable_databases="10" -memory="99" -storage="99"</pre> <p>Sample Output</p> <p>Quota for "MyRole" setup successfully.</p>	<pre>emcli create_dbaas_quota -role_name="<Name of SSA User Role>" -databases="<Number of Database Requests>" -schema_services="<Number of Schema Service Requests>" -pluggable_databases="<Number of Pluggable Database Service Requests>" -memory="<Memory(GB)>" -storage="<Storage(GB)>"</pre>

Table 54-3 (Cont.) Database Quota Em CLI Verbs

Verb	Description	Format
emcli update_dbaas_quota	<p>Updates the database quota for the SSA user role.</p> <ul style="list-style-type: none"> role_name - Name of the SSA user role for which quota is to be updated. databases - Number of database service requests allowed. schema_services - Number of schema service requests allowed. pluggable_databases - Number of PDB service requests allowed. memory - Amount of memory usage allowed. storage - Amount of storage space usage allowed. <p>Example</p> <pre>emcli update_dbaas_quota -role_name="My Role" -databases="10" -schema_services="10" -pluggable_databases="10" -memory="99" -storage="99"</pre> <p>Sample Output Quota for "My Role" updated successfully.</p>	<pre>emcli update_dbaas_quota -role_name="<Name of SSA User Role>" -databases="<Number of Database Requests>" -schema_services="<Number of Schema Service Requests>" -pluggable_databases="<Number of Pluggable Database Service Requests>" -memory="<Memory(GB)>" -storage="<Storage(GB)>"</pre>
emcli delete_dbaas_quota	<p>Deletes the database quota for a SSA User Role.</p> <ul style="list-style-type: none"> role_name - Name of the SSA user role for which quota is to be deleted. <p>Example</p> <pre>emcli delete_dbaas_quota -role_name="My Role"</pre> <p>Sample Output Quota for "My Role" deleted successfully.</p>	<pre>emcli delete_dbaas_quota -role_name="<Name of SSA User Role>"</pre>

Table 54-3 (Cont.) Database Quota Em CLI Verbs

Verb	Description	Format
emcli get_dbaas_quota	Lists the database quota setup for SSA user roles. Example emcli get_dbaas_quota Sample Output: ROLE_NAME: SSA_USER_ROLE1 NUMBER_OF_SCHEMA_SERVICES: 99 MEMORY: 99 STORAGE: 99 NUMBER_OF_PLUGGABLE_DATABASES: 99NUMBER_OF_DB_INSTANCES : 99 Quotas for Roles retrieved successfully	emcli get_dbaas_quota

54.4 Database Request Settings EM CLI Verbs

The following table provides details of the supported verbs for Database request settings.

Table 54-4 Database Request Settings EM CLI Verbs

Verb	Description	Format
emcli update_dbaas_request_settings	Updates the Database request settings. <ul style="list-style-type: none"> future_reservation_length - The time duration before which a Self Service user can schedule a request. maximum_archive_duration - The duration of time after which the "Completed", Self service create requests will be purged from the repository. default_retirement_period - The maximum amount of time for which Self service user can retain a service instance. Example: emcli update_dbaas_request_settings -future_reservation_length="2 Months" -maximum_archive_duration="10 Weeks" -default_retirement_period="No Reservation" Sample Output: Request settings updated successfully	emcli update_dbaas_request_settings - future_reservation_length="<Future Request Scheduling Period>" - maximum_archive_duration="<Request Purging Duration>" - default_retirement_period="<Default Retention Duration>"

Table 54-4 (Cont.) Database Request Settings EM CLI Verbs

Verb	Description	Format
emcli get_dbaas_request_settings	Retrieves the PaaS infrastructure zone details. Example: emcli get_dbaas_request_settings Sample Output: Future Reservation Length : 2 Months Maximum Archive Duration : 10 Weeks Default Retirement Period : 1 Years Request Settings retrieved successfully.	emcli get_dbaas_request_settings

54.5 Database Size EM CLI Verbs

The table below lists the supported verbs for Database size resource.

Table 54-5 Database Size EM CLI Verbs

Verb	Description	Format
emcli create_database_size	Specify one or more attributes that make up this database size. The different attributes are separated by a semicolon (;). Attributes specified in the database size override values specified in the service template <ul style="list-style-type: none"> • name- Create a name for the size. • description - Create a description for the size. • attributes - The different attributes are separated by a semicolon (;). Users can specify values for the following attributes: <ul style="list-style-type: none"> – cpu: Total number of CPU cores. – memory: Total maximum memory in GB. – processes: Total number of processes that can simultaneously connect to Oracle. – storage: Total storage that is allocated to Oracle (in GB). Example: emcli create_database_size -name=Small -description="Small size database" -attributes="cpu:4;storage:50;memory:4" Sample Output: Database size 'Small' has been successfully created.	emcli create_database_size -name="<Size name>" -description="<Size description>" [-attributes="cpu:<number of cores>; memory:<memory in GB>; processes:<max number of processes>; storage:<Total Storage in GB allocated to database>";

Table 54-5 (Cont.) Database Size EM CLI Verbs

Verb	Description	Format
emcli update_database_size	<p>Specify one or more attributes that have to be modified. The different attributes are separated by a semicolon (;). If you want to remove an attribute from the database size definition, specify 'remove' against that attribute.</p> <ul style="list-style-type: none"> • name - Name of the existing database. • description - Updates the description of the existing size. • attributes - The different attributes are separated by a semicolon (;). Users can specify values for the following attributes: <ul style="list-style-type: none"> – cpu: Total number of CPU cores. – memory: Total maximum memory in GB. – processes: Total number of processes that can simultaneously connect to Oracle. – storage: Total storage that is allocated to Oracle (in GB). <p>Example:</p> <pre>emcli update_database_size -name=Small - description="Small size database" - attributes="cpu:4;storage:50;memory:4"</pre> <p>Sample Output: Database size 'Small' has been successfully updated.</p>	<pre>emcli update_database_size -name="<Existing size name>" -description="<Size description>" [-attributes="cpu:<number of cores>; memory:<memory in GB>; processes:<max number of processes>; storage:<Total storage in GB allocated to database>;"]</pre>
emcli delete_database_size	<p>Deletes database size.</p> <p>name - Name of the existing database size.</p> <p>Example:</p> <pre>emcli delete_database_size -name=small</pre> <p>Sample Output: Database size 'Small' has been successfully deleted.</p>	<pre>emcli delete_database_size -name="<Existing size name>"</pre>

Table 54-5 (Cont.) Database Size EM CLI Verbs

Verb	Description	Format
emcli list_database_sizes	<p>Lists all the database sizes that have been created. [name]: A complete or a partial string. Example:</p> <pre>emcli list_database_sizes emcli list_database_sizes -name="Extra*"</pre> <p>Sample Output: Name:Extra-Small Description:Extra-small CPU(cores):4 Memory(GB):4 Storage(GB):Not Specified Processes(Units):Not Specified</p> <p>Name:Small Description:Small database CPU(cores):8 Memory(GB):8 Storage(GB):Not Specified Processes(Units):Not Specified</p>	emcli list_database_sizes[name]: A complete or a partial string.

54.6 Database Profile EM CLI Verbs

This section explains the different database provisioning profiles used for Database as a Service. It also explains how these profiles can be created using the EM CLI verbs. The following topics are covered:

- [About Database Provisioning Profile Types](#)
- [Creating Provisioning Profiles using EM CLI](#)
- [Creating a Database Profile Using EM CLI Verbs](#)
- [Editing a Database Profile Using EM CLI Verbs](#)
- [Deleting a Database Profile Using EM CLI Verbs](#)
- [Viewing All the Database Profiles](#)
- [Refreshing a Database Profile Using EM CLI Verbs](#)

54.6.1 About Database Provisioning Profile Types

Given below are the four types of Database provisioning profiles used in Database as a Service and Schema as a Service:

- [DBCA Template](#)
- [RMAN](#)
- [Snapclone](#)
- [Schema](#)

54.6.1.1 DBCA Template

The DBCA template supports both structure plus data and structure only types. This database provisioning profile is created from the production or source database registered with Enterprise Manager.

**Note:**

Structure and data requires a shutdown of the database. It should be used for very small databases (< 50GB).

54.6.1.2 RMAN

This data content of this database provisioning profile comprises the RMAN backup pieces. Any of the following methods can be used to create the RMAN profile:

- Hot RMAN backup - This option is enabled only when the archive log mode on the source database is turned ON.
- Cold RMAN backup - In this case, the source database is brought down to take the RMAN backup.
- Existing backup - This option can be used when the RMAN backup is already taken on the source and you want to use one of the existing RMAN backups to create a profile.
- Existing backup pieces when there is no access to the source database - Create profile source database using existing backup pieces when there is no access to the source database. This option can be used when the RMAN backup is already taken on the source and kept in a known location. This option is only supported using EM CLI verbs.

54.6.1.3 Snapclone

The data content of this database provisioning profile is derived from Snapshot information on the filer (NetApp or SunZFS filer) of all the volumes where the datafiles for the source database are residing.

54.6.1.4 Schema

The data content of this database provisioning profile is compiled from an export dump created using the Data pump tool. You can choose to export Schema objects (structure only) or the Schema with data (structure and data).

Note that you cannot export empty schemas or include Oracle schemas (these schemas are not available for selection). Schemas that are filtered out are listed below:

Table 54-6 Filtered Out Schema

Schema	Schema	Schema	Schema	Schema
ANONYMOUS	DMSYS	OASPUBLIC	OWBSYS	TSMSYS
APEX_030200	EXFSYS	ODM	OWBSYS_AUDIT	WEBSYS
APEX_PUBLIC_USER	FLows_	ODM_MTR	SCOTT	WK_PROXY
APPQOSSYS	FLows_03000	OLAPSYS	SI_INFORMTN_SCHEM A	WK_TEST
AURORA\$JIS\$UTILITY\$	FLows_FILES	ORACLE_OCM	SPATIAL_CSW_ADMIN_ USR	WKPROXY
AURORA\$ORB\$UNAUTH ENTICATED	LBACSYS	ORDDATA	SPATIAL_WFS_ADMIN_ USR	WKSYS
BI	MDDATA	ORDPLUGINS	SYS	WMSYS
CTXSYS	MDSYS	ORDSYS	SYSMAN	XDB
DBSNMP	MGMT_VIEW	OSE\$HTTP\$ADMIN	SYSTEM	XS\$NULL
DIP	MTSSYS	OUTLN	TRACESRV	

54.6.2 Creating Provisioning Profiles using EM CLI

This method allows the administrators or cloud provisioning operators to create the database provisioning profile using EM CLI verbs. The following is the syntax of the verb:

```
emcli create_dbprofile -input_file=data:<Prop file name>
```

For the verb description and options see [Table 54-13](#).

For the steps to be followed to create a database profile, see [Creating a Database Profile Using EM CLI Verbs](#).

This command takes in a property file that completely describes the type of profile that will be created and the options used. For property files of different database provisioning profiles, see [Sample EM CLI Property Files](#).

54.6.3 Sample EM CLI Property Files

The following sections provide sample EMCLI property files for the database provisioning profiles:

- [DBCA Template](#)
- [New RMAN Backup from the Source Database](#)
- [Existing RMAN Backup from the Source Database](#)
- [Existing RMAN Backup on the Stage Location](#)
- [Snapclone Database](#)
- [Schema Database](#)

54.6.3.1 DBCA Template

Table 54-7 EMCLI Property Files for DBCA Template

Name	Required	Description	Variable
Reference Database	true	The source database from which the profile will be created.	REFERENCE_DATABASE=
Type of the reference database	true	The target type of the source database (oracle_database or rac_database)	REFERENCE_DATABASE_TYPE=
Reference Node	false	The reference node from which the profile will be created. Applicable only for RAC and Cluster targets	REF_NODE_SELECTED=
Create the database gold image	false	Includes the database gold image as part of the profile.	DATABASE_GOLD_IMAGE_TYPE=
Create the GI gold image	false	Includes the GI gold image as part of the profile.	GI_GOLD_IMAGE_TYPE=
Create the database gold image	false	Includes the database gold image as part of the profile.	DATA_CONTENT_MODE=
Create mode for the data content	false	The create mode decides whether to use existing data or create new data.	CREATE_DATA_OPTION=
The content that will be included in the backup	false	The data content that gets included in the backup can be metadata or data.	DATA_CONTENT=
Reference Host Credentials	false	The credentials to be used for OS authentication.	REF_HOST_CREDENTIALS=
Database Credentials	false	The credentials to be used for performing database related operations.	REF_DB_CREDENTIALS=
Grid Infrastructure Credentials	false	The credentials to be used for OS authentication for grid infrastructure.	REF_GI_CREDENTIALS=
Root Credentials	false	Root credentials to be required to perform privileged operations on host.	REF_HOST_ROOT_CREDENTIALS=
Convert to OFA format	false	Converts to the OFA format.	CONVERT_TO_OFA=
Profile Name	true	Name of the profile.	PROFILE_NAME=
Profile Description	false	Name with which the profile should be created.	PROFILE_DESC=
Profile location	true	Location of the profile in the software library.	PROFILE_LOCATION=

Table 54-7 (Cont.) EMCLI Property Files for DBCA Template

Name	Required	Description	Variable
Profile Version	false	Version of the profile. If nothing is specified, the Database version is used.	PROFILE_VERSION=
Profile Vendor	false	Vendor of the profile. The default is Oracle.	PROFILE_VENDOR=
Profile notes	false	Notes for the profile.	PROFILE_NOTES=
Create Image version flag	false	Flag to indicate if only the image version needs to be created.	DB_GOLD_IMAGE_CREATE_VERSION_ONLY=
Create Image version flag	false	Flag to indicate if only the image version needs to be created.	GI_GOLD_IMAGE_CREATE_VERSION_ONLY=
GI Home gold image id	false	Entity ID of the gold image.	GI_GOLD_IMAGE_ID=
Database home gold image id	false	Entity ID of the gold image.	DB_GOLD_IMAGE_ID=
Database gold image id	false	Entity ID of the gold image.	DB_GOLD_IMAGE_ID=
Database gold image name	false	Entity name of the database gold image.	DB_GOLD_IMAGE_ENTITY_NAME=
Grid Infrastructure gold image name	false	Entity name of the database gold image.	GI_GOLD_IMAGE_ENTITY_NAME=
Data gold image name	false	Entity name of the data gold image.	DATA_GOLD_IMAGE_ENTITY_NAME=
Working Directory	false	Working directory is the location where the files are staged.	WORKING_DIRECTORY=
Storage Type	false	The list of valid storage types are NFS, AGENT, and OmsShared.	STORAGE_TYPE_FOR_SOFTWARE=
Storage Name	false	The storage name as configured in the software library.	STORAGE_NAME_FOR_SOFTWARE=
NFS Mount Point	false	Location at which the NFS server is mounted on the host.	NFS_LOCAL_MOUNT_POINT_FOR_SOFTWARE=
Storage Type	false	The list of valid storage types are NFS, AGENT, and OmsShared	STORAGE_TYPE_FOR_DATA=
Storage Name	false	The storage name as configured in the software library.	STORAGE_NAME_FOR_DATA=
NFS Mount Point	false	Location at which the NFS server is mounted on the host.	NFS_LOCAL_MOUNT_POINT_FOR_DATA=

Table 54-7 (Cont.) EMCLI Property Files for DBCA Template

Name	Required	Description	Variable
Is the profile initiated by end user	false	Indicates if the profile initiated by end user ia a part of backup process or the database.	USER_INITIATED=
Is Database target available	false	Indicates if the Database target is available.	DB_TARGET_AVAILABLE=
Platform Name of Source Database	false	Platform Name of Source Database. For example: Linux x86-64, Oracle Solaris on x86-64 (64-bit) etc.	SOURCE_DB_PLATFORM_NAME=
Schedule for Profile Execution	false	Schedule for the profile execution.	PROFILE_SCHEDULE=
Profile Single Refresh	false	Single refresh of the profile.	PROFILE_SINGLE_REFRESH=
Profile Purge Policy Type	false	Profile purge policy type.	PROFILE_PURGE_POLICY_TYPE=
Profile Purge Policy Value	false	Profile purge policy value.	PROFILE_PURGE_POLICY_VALUE=
Profile Image Version	false	Profile image version.	PROFILE_IMAGE_VERSION=
Profile location list	false	Location of the profile list.	PROFILE_LOC_LIST

54.6.3.2 New RMAN Backup from the Source Database

Table 54-8 EMCLI Property Files for a New RMAN Backup

Name	Required	Description	Variable
Reference Database	true	The source database from which the profile will be created	REFERENCE_DATABASE=
Type of the reference database	true	The target type of the source database (oracle_database or rac_database)	REFERENCE_DATABASE_TYPE=
Reference Node	false	The reference node from which the profile will be created. Applicable only for RAC and Cluster targets	REF_NODE_SELECTED=

Table 54-8 (Cont.) EMCLI Property Files for a New RMAN Backup

Name	Required	Description	Variable
Backup mechanism for data	false	Variable to identify what mode needs to be used for creating backup data. Possible values are EXPORT, DBCA_TEMPLATE, RMAN, and THIN_PROVISIONING	DATA_CONTENT_MODE=RMAN
The content that will be included in the backup	false	The data content that gets included in the backup can be metadata or data. Possible values are METADATA_ONLY and METADATA_AND_DATA.	DATA_CONTENT=METADATA_AND_DATA
Reference Host Credentials	true	The credentials that will be used for OS authentication. Format is <Cred Name:Owner>. If this is not provided, preferred credentials will be checked against NormalHostCreds.	REF_HOST_CREDENTIALS =
Database Credentials	false	The credentials that will be used for performing database authentication. Format is <Cred Name:Owner>. If this is not provided, preferred credentials will be checked against SysDbuCreds	REF_DB_CREDENTIALS=
Profile Name	true	Name of the profile	PROFILE_NAME=
Profile Description	false	Name with which the profile should be created.	PROFILE_DESC=
Profile location	true	Location of the profile in software library	PROFILE_LOCATION=
Profile Version	false	Version of the profile. If none is specified, the Database version shall be used.	PROFILE_VERSION=
Profile Vendor	false	Vendor of the profile. Default is Oracle.	PROFILE_VENDOR=
Profile notes	false	Notes for the profile.	PROFILE_NOTES=
Working Directory	false	Working directory is the location where the files are staged.	WORKING_DIRECTORY=
Is the profile initiated by end user	true	Is the profile initiated by end user as part of backup process or the database.	USER_INITIATED=false

Table 54-8 (Cont.) EMCLI Property Files for a New RMAN Backup

Name	Required	Description	Variable
Is Database target available	false	Is Database target available. Must be set to 'true' for this use case.	DB_TARGET_AVAILABLE=true
Backup Type	false	Backup type.	RMAN.BACKUP_TYPE=
Number of RMAN Channels to use(Default No of Channels : 2	false	Number of Channels to be used. Possible Values: like 1, 2 or 3.	RMAN.RMAN_CHANNELS=
Retain backup until	false	Retain backup until. Format: mm/dd/yyyy.	RMAN.RETAIN_UNTIL=
Encryption Type	false	Encryption Type. Possible Values: ON, OFF.	RMAN.ENCRYPTION_TYPE=
Encryption Password/Key	false	Encryption key which was used to encrypt the backup.	RMAN.ENCRYPTION_PASSWORD=
Compression Type	false	Compression type. Possible Values: HIGH, MEDIUM, LOW.	RMAN.COMPRESSION_TYPE=
RMAN Backup Location	true	Location of the RMAN Backups.	RMAN.RMAN_BACKUP_LOCATION=
Backup file format	false	Backup file format.	RMAN.BACKUP_FILE_FORMAT=
Backup file tag	false	Backup file tag.	RMAN.BACKUP_FILE_TAG=
Source: Control File Location	false	Location of the Control File.	RMAN.CONTROL_FILE_NAME=
Control File Tag	false	Control File Tag.	RMAN.CONTROL_FILE_TAG=
Source: Database SID	false	Database SID of the source database.	RMAN.ORACLE_DB_SID=
Initialize File Name	false	Initialize file name.	RMAN.INIT_FILE_NAME=
User List File Name	false	Name of the users list file. this file should be kept in location specified for RMAN_BACKUP_LOCATION.	RMAN.USERLIST_FILE_NAME=
GDB Name of source Db	false	GDB Name of source Db.	RMAN.DATABASE_NAME=
use existing RMAN Backup	true	use existing RMAN Backup. This should be set to 'NO' for this use case.	RMAN.USE_EXISTING_BACKUP=NO

54.6.3.3 Existing RMAN Backup from the Source Database

Table 54-9 EMCLI Property Files for a Existing RMAN Backup

Name	Required	Description	Variable
Reference Database	true	The source database from which the profile will be created	REFERENCE_DATABASE=
Type of the reference database	true	The target type of the source database (oracle_database or rac_database)	REFERENCE_DATABASE_TYPE=
Reference Node	false	The reference node from which the profile will be created. Applicable only for RAC and Cluster targets	REF_NODE_SELECTED=
Backup mechanism for data	false	Variable to identify what mode needs to be used for creating backup data. Possible values are EXPORT, DBCA_TEMPLATE, RMAN, and THIN_PROVISIONING	DATA_CONTENT_MODE=RMAN
The content that will be included in the backup	false	The data content that gets included in the backup can be metadata or data. Possible values are METADATA_ONLY and METADATA_AND_DATA.	DATA_CONTENT=METADATA_AND_DATA
Reference Host Credentials	true	The credentials that will be used for OS authentication. Format is <Cred Name:Owner>. If this is not provided, preferred credentials will be checked against NormalHostCreds.	REF_HOST_CREDENTIALS=
Database Credentials	false	The credentials that will be used for performing database authentication. Format is <Cred Name:Owner>. If this is not provided, preferred credentials will be checked against SysDbuCreds	REF_DB_CREDENTIALS=
Profile Name	true	Name of the profile	PROFILE_NAME=
Profile Description	false	Name with which the profile should be created.	PROFILE_DESC=
Profile location	true	Location of the profile in software library.	PROFILE_LOCATION=
Profile Version	false	Version of the profile. If none is specified, the Database version shall be used.	PROFILE_VERSION=
Profile Vendor	false	Vendor of the profile. Default is Oracle.	PROFILE_VENDOR=
Profile notes	false	Notes for the profile.	PROFILE_NOTES=
Working Directory	false	Working directory is the location where the files are staged.	WORKING_DIRECTORY=

Table 54-9 (Cont.) EMCLI Property Files for an Existing RMAN Backup

Name	Required	Description	Variable
Is the profile initiated by end user	true	Is the profile initiated by end user as part of backup process or the database.	USER_INITIATED=false
Is Database target available	false	Is Database target available. Must be set to 'true' for this use case.	DB_TARGET_AVAILABLE=true
Platform Name of Source Database	false	Platform Name of Source Database. For example, Linux x86-64 or Oracle Solaris on x86-64 (64-bit).	SOURCE_DB_PLATFORM_NAME=
Backup Type	false	Backup type.	RMAN.BACKUP_TYPE=
Number of RMAN Channels to use(Default No of Channels : 2)	false	Number of Channels to be used. Possible Values: like 1, 2 or 3.	RMAN.RMAN_CHANNELS=
Retain backup until	false	Retain backup until. Format: mm/dd/yyyy.	RMAN.RETAIN_UNTIL=
Encryption Type	false	Encryption Type. Possible Values: ON, OFF.	RMAN.ENCRYPTION_TYPE=
Source:Encryption Password/Key	false	Encryption key which was used to encrypt the backup.	RMAN.ENCRYPTION_PASSWORD =
Compression Type	false	Compression type. Possible Values: HIGH, MEDIUM, LOW.	RMAN.COMPRESSION_TYPE=
RMAN Backup Location	true	Location of the RMAN Backups.	RMAN.RMAN_BACKUP_LOCATION=
Backup file format	false	Backup file format.	RMAN.BACKUP_FILE_FORMAT=
Backup file tag	false	Backup file tag.	RMAN.BACKUP_FILE_TAG=
Source: Control File Location	false	Location of the Control File.	RMAN.CONTROL_FILE_NAME=
Control File Tag	false	Control File Tag.	RMAN.CONTROL_FILE_TAG=
Source: Database SID	false	Database SID of the source database.	RMAN.ORACLE_DB_SID=
Initialize File Name	false	Initialize file name.	RMAN.INIT_FILE_NAME=
User List File Name	false	Name of the users list file. this file should be kept in location specified for RMAN_BACKUP_LOCATION.	RMAN.USERLIST_FILE_NAME=
GDB Name of source Db	false	GDB Name of source Db.	RMAN.DATABASE_NAME=
use existing RMAN Backup	true	use existing RMAN Backup. This should be set to 'YES' for this use case.	RMAN.USE_EXISTING_BACKUP= YES

54.6.3.4 Existing RMAN Backup on the Stage Location

Table 54-10 EMCLI Property Files for a Existing RMAN Backup on the Stage Location

Name	Required	Description	Variable
Reference Database	true	The source database from which the profile will be created	REFERENCE_DATABASE=
Type of the reference database	true	The target type of the source database (oracle_database or rac_database)	REFERENCE_DATABASE_TYPE=
Reference Node	false	The reference node from which the profile will be created. Applicable only for RAC and Cluster targets	REF_NODE_SELECTED=
Backup mechanism for data	false	Variable to identify what mode needs to be used for creating backup data. Possible values are EXPORT, DBCA_TEMPLATE, RMAN, and THIN_PROVISIONING	DATA_CONTENT_MODE=RMAN
The content that will be included in the backup	false	The data content that gets included in the backup can be metadata or data. Possible values are METADATA_ONLY and METADATA_AND_DATA.	DATA_CONTENT=METADATA_AND_DATA
Reference Host Credentials	true	The credentials that will be used for OS authentication. Format is <Cred Name:Owner>. If this is not provided, preferred credentials will be checked against NormalHostCreds.	REF_HOST_CREDENTIALS=
Database Credentials	false	The credentials that will be used for performing database authentication. Format is <Cred Name:Owner>. If this is not provided, preferred credentials will be checked against SysDbuCreds	REF_DB_CREDENTIALS=
Profile Name	true	Name of the profile	PROFILE_NAME=
Profile Description	false	Name with which the profile should be created.	PROFILE_DESC=
Profile location	true	Location of the profile in software library.	PROFILE_LOCATION=
Profile Version	false	Version of the profile. If none is specified, the Database version shall be used.	PROFILE_VERSION=
Profile Vendor	false	Vendor of the profile. Default is Oracle.	PROFILE_VENDOR=
Profile notes	false	Notes for the profile.	PROFILE_NOTES=
Working Directory	false	Working directory is the location where the files are staged.	WORKING_DIRECTORY=

Table 54-10 (Cont.) EMCLI Property Files for a Existing RMAN Backup on the Stage Location

Name	Required	Description	Variable
Is the profile initiated by end user	true	Is the profile initiated by end user as part of backup process or the database.	USER_INITIATED=false
Is Database target available	false	Is Database target available. Must be set to 'false' for this use case.	DB_TARGET_AVAILABLE=false
Platform Name of Source Database	false	Platform Name of Source Database. For example, Linux x86-64 or Oracle Solaris on x86-64 (64-bit).	SOURCE_DB_PLATFORM_NAME=
Backup Type	false	Backup type.	RMAN.BACKUP_TYPE=
Number of RMAN Channels to use(Default No of Channels : 2)	false	Number of Channels to be used. Possible Values: like 1, 2 or 3.	RMAN.RMAN_CHANNELS=
Retain backup until	false	Retain backup until. Format: mm/dd/yyyy.	RMAN.RETAIN_UNTIL=
Encryption Type	false	Encryption Type. Possible Values: ON, OFF.	RMAN.ENCRYPTION_TYPE=
Source:Encryption Password/Key	false	Encryption key which was used to encrypt the backup.	RMAN.ENCRYPTION_PASSWORD =
Compression Type	false	Compression type. Possible Values: HIGH, MEDIUM, LOW.	RMAN.COMPRESSION_TYPE=
RMAN Backup Location	true	Location of the RMAN Backups.	RMAN.RMAN_BACKUP_LOCATION=
Backup file format	false	Backup file format. Possible Values: %U	RMAN.BACKUP_FILE_FORMAT=
Source: Control File Location	false	Location of the Control File.	RMAN.CONTROL_FILE_NAME=
Control File Tag	false	Control File Tag. Default: control01.ctl	RMAN.CONTROL_FILE_TAG=
Source: Database SID	false	Database SID of the source database.	RMAN.ORACLE_DB_SID=
Initialize File Name	false	Initialize file name.	RMAN.INIT_FILE_NAME=
User List File Name	false	Name of the users list file. this file should be kept in location specified for RMAN_BACKUP_LOCATION.	RMAN.USERLIST_FILE_NAME=
GDB Name of source Db	false	GDB Name of source Db.	RMAN.DATABASE_NAME=
RMDB Version	false	RMDBS version	RMAN.DATABASE_VERSION=

54.6.3.5 Snapclone Database

Table 54-11 EMCLI Property Files for Snapclone Database

Name	Required	Description	Variable
Reference Database	true	The source database from which the profile will be created.	REFERENCE_DATABASE=
Type of the reference database	true	The target type of the source database (oracle_database or rac_database).	REFERENCE_DATABASE_TYPE=
Reference Node	false	The reference node from which the profile will be created. Applicable only for RAC and Cluster targets.	REF_NODE_SELECTED=
Create the database gold image	false	Includes the database gold image as part of the profile.	DATABASE_GOLD_IMAGE_TYPE=
Create the GI gold image	false	Includes the GI gold image as part of the profile.	GI_GOLD_IMAGE_TYPE=
Create the database gold image	false	Includes the database gold image as part of the profile.	DATA_CONTENT_MODE=
Create mode for the data content	false	The create mode decides whether to use existing data or create new data.	CREATE_DATA_OPTION=
The content that will be included in the backup	false	The data content that gets included in the backup can be metadata or data.	DATA_CONTENT=
Reference Host Credentials	false	The credentials to be used for OS authentication.	REF_HOST_CREDENTIALS=
Database Credentials	false	The credentials to be used for performing database related operations.	REF_DB_CREDENTIALS=
Grid infrastructure credentials	false	The credentials to be used for OS authentication for grid infrastructure.	REF_GI_CREDENTIALS=
Root Credentials	false	Root credentials that will be required to perform privileged operations on host.	REF_HOST_ROOT_CREDENTIALS=
Convert to OFA format	false	Converts to the OFA format.	CONVERT_TO_OFA=
Profile Name	true	Name of the profile.	PROFILE_NAME=
Profile Description	false	Name with which the profile should be created.	PROFILE_DESC=
Profile location	true	Location of the profile in the software library.	PROFILE_LOCATION=

Table 54-11 (Cont.) EMCLI Property Files for Snapclone Database

Name	Required	Description	Variable
Profile Version	false	Version of the profile. If nothing is specified, the Database version is used.	PROFILE_VERSION=
Profile Vendor	false	Vendor of the profile. The default is Oracle.	PROFILE_VENDOR=
Profile notes	false	Notes for the profile.	PROFILE_NOTES=
Create Image version flag	false	Flag to indicate if only image version needs to be created.	DB_GOLD_IMAGE_CREATE_VERSION_ONLY=
Create Image version flag	false	Flag to indicate if only image version needs to be created.	GI_GOLD_IMAGE_CREATE_VERSION_ONLY=
GI Home gold image id	false	Entity ID of the gold image.	GI_GOLD_IMAGE_ID=
Database home gold image id	false	Entity ID of the gold image.	DB_GOLD_IMAGE_ID=
Database gold image id	false	Entity ID of the gold image.	DB_GOLD_IMAGE_ID=
Database gold image name	false	Entity name of the database gold image.	DB_GOLD_IMAGE_ENTITY_NAME=
Grid Infrastructure gold image name	false	Entity name of the database gold image.	GI_GOLD_IMAGE_ENTITY_NAME=
Data gold image name	false	Entity name of the data gold image.	DATA_GOLD_IMAGE_ENTITY_NAME=
Working Directory	false	Working directory is the location where the files are staged.	WORKING_DIRECTORY=
Storage Type	false	The list of valid storage types are NFS, AGENT, and OmsShared.	STORAGE_TYPE_FOR_SOFTWARE=
Storage Name	false	The storage name as configured in the software library.	STORAGE_NAME_FOR_SOFTWARE=
NFS Mount Point	false	Location at which the NFS server is mounted on the host.	NFS_LOCAL_MOUNT_POINT_FOR_SOFTWARE=
Storage Type	false	The list of valid storage types are NFS, AGENT, and OmsShared.	STORAGE_TYPE_FOR_DATA=
Storage Name	false	The storage name as configured in the software library.	STORAGE_NAME_FOR_DATA=
NFS Mount Point	false	Location at which the NFS server is mounted on the host.	NFS_LOCAL_MOUNT_POINT_FOR_DATA=

Table 54-11 (Cont.) EMCLI Property Files for Snapclone Database

Name	Required	Description	Variable
Is the profile initiated by end user	false	Is the profile initiated by the end user a part of backup process or the database.	USER_INITIATED=
Is Database target available	false	Is the Database target available.	DB_TARGET_AVAILABLE=
Platform Name of Source Database	false	Platform Name of Source Database. For example: Linux x86-64, Oracle Solaris on x86-64 (64-bit) etc.	SOURCE_DB_PLATFORM_NAME=
Schedule for Profile Execution	false	Schedule for profile execution.	PROFILE_SCHEDULE=
Profile Single Refresh	false	Single refresh of the profile.	PROFILE_SINGLE_REFRESH=
Profile Purge Policy Type	false	Profile purge policy type.	PROFILE_PURGE_POLICY_TYPE=
Profile Purge Policy Value	false	Profile purge policy value.	PROFILE_PURGE_POLICY_VALUE=
Profile Image Version	false	Profile image version.	PROFILE_IMAGE_VERSION=
Profile location list	false	Location of the profile list.	PROFILE_LOC_LIST=

54.6.3.6 Schema Database

Table 54-12 EMCLI Property Files for Schema Database

Name	Required	Description	Variable
The content that will be included in the backup	false	The data content that gets included in the backup can be metadata or data. Possible values are METADATA_ONLY and METADATA_AND_DATA.	DATA_CONTENT=METADATA_AND_DATA
Reference Database	true	The source database from which the profile will be created	REFERENCE_DATABASE=
Type of the reference database	true	The target type of the source database (oracle_database or rac_database)	REFERENCE_DATABASE_TYPE=
Reference Node	false	The reference node from which the profile will be created. Applicable only for RAC and Cluster targets	REF_NODE_SELECTED=

Table 54-12 (Cont.) EMCLI Property Files for Schema Database

Name	Required	Description	Variable
Backup mechanism for data	false	Variable to identify what mode needs to be used for creating backup data. Possible values are EXPORT, DBCA_TEMPLATE, RMAN, and THIN_PROVISIONING	DATA_CONTENT_MODE=EXPORT
Reference Host Credentials	true	The credentials that will be used for OS authentication. Format is <Cred Name:Owner>. If this is not provided, preferred credentials will be checked against NormalHostCreds.	REF_HOST_CREDENTIALS=
Database Credentials	false	The credentials that will be used for performing database authentication. Format is <Cred Name:Owner>. If this is not provided, preferred credentials will be checked against SysDbuCreds	REF_DB_CREDENTIALS=
Profile Name	true	Name of the profile	PROFILE_NAME=
Profile Description	false	Name with which the profile should be created.	PROFILE_DESC=
Profile location	true	Location of the profile in software library.	PROFILE_LOCATION=
Profile Version	false	Version of the profile. If none is specified, the Database version shall be used.	PROFILE_VERSION=
Profile Vendor	false	Vendor of the profile. Default is Oracle.	PROFILE_VENDOR=
Profile notes	false	Notes for the profile.	PROFILE_NOTES=
Data gold image name	true	Entity name of the data gold image	DATA_GOLD_IMAGE_ENTITY_NAME=
Working Directory	false	Working directory is the location where the files are staged.	WORKING_DIRECTORY=
Schemas to be exported	true	List of schemas that needs to be included as part of the export.	EXPORT.SCHEMA_INCLUDE_LIST.0=

Table 54-12 (Cont.) EMCLI Property Files for Schema Database

Name	Required	Description	Variable
Dump Directories	false	List of directory objects that needs to be used for storing export. Format: directory=dir1,file_name=filename1%U.dmp[,max_size=1MB].	EXPORT.DUMP_DIRECTORY_LIST.0=
Log Directory	false	Log directory location where the log file generated during export.	PORT.LOG_FILE_DIRECTORY=
Degree of Parallelism	false	Degree of Parallelism indicates the number of threads. For example, 1 or 2 or 3...	EXPORT.DEGREE_OF_PARALLELISM=

54.6.4 Database Profile EM CLI Verbs

The table below provides the verbs related to database profile.

Table 54-13 Database Profile EM CLI Verbs

Verb	Description	Format
emcli create_dbprofile	<p>Creates a new database profile.</p> <p>Options:</p> <ul style="list-style-type: none"> • -input_file - A property file which completely describes the type of profile that will be created and the options used. Enter <code>emcli help describe_dbprofile_input</code> for help with populating values for the property file. For property file details see Sample EM CLI Property Files. • -schedule <ul style="list-style-type: none"> – frequency: Frequency type with which the Database Profile will be created. It can be interval(in minutes), weekly, monthly or yearly. – start_time: Denotes the starting time of database profile component creation in the format yy-MM-dd HH:mm. – end_time: Denotes the end time of database profile component creation repetition in the format yy-Mm-dd HH:mm. – repeat: Repetition rate at which database profile will be created. If the frequency is interval, then repeat will be in minutes. – months: Number of months after which repetition of database profile component creation should occur. – days: Number of days after which repetition of database profile component creation should occur. – tz: Time zone ID. For example tz:America/New_York. – grace_period: A period of time in minutes that defines the maximum permissible delay when attempting to create a database profile. If the job system cannot start the execution within a time period equal to the scheduled time + grace period, it will set the create database profile to be skipped. By default, grace period is indefinite. • -purge_policy - Purges the collected data based on number of days or count of snapshots. If it is not specified, the default is NONE. Allowed values are DAYS, and SNAPSHOT. <ul style="list-style-type: none"> – DAYS specifies the number of days after which the data component should be purged. – SNAPSHOT specifies the count or number of data components, after which the older data will be purged. <p>Example</p> <pre>emcli create_dbprofile -input_file="data:/tmp/ profile.txt" - schedule="frequency:interval;start_time:14-10-05 05:30;end_time:14-10-12 05:23;repeat: 30;grace_period:60;tz:America/New_York" - purge_policy=DAYS:2</pre>	<pre>emcli create_dbprofile -input_file=data:"absolute file path" [-schedule= [frequency:interval weekly monthly yearly]; start_time:yy-MM-dd HH:mm; end_time:yy-MM-dd HH:mm; [repeat:#m]; [months:#,#,#,...]; [days:#,#,#,...]; [tz:{timezone ID}]; [grace_period:xxx];] [-purge_policy=DAYS SNAPSHOTS: number]</pre>

Table 54-13 (Cont.) Database Profile EM CLI Verbs

Verb	Description	Format
emcli edit_dbprofile	<p>Updates the cloned database profile.</p> <p>Options:</p> <ul style="list-style-type: none"> [-comp_loc] - Indicates the database profile component location in the software library. [-schedule] - Indicates the schedule for cloning. <ul style="list-style-type: none"> [frequency:interval] daily [weekly monthly yearly]; start_time:yy-MM-dd HH:mm; end_time:yy-MM-dd HH:mm; [repeat:#m]; [months:#,#,#,...]; [days:#,#,#,...]; [tz:{java timezone ID}]; [grace_period:xxx]; [-purge_policy] - Indicates the duration after which the purge occurs. <p>Example:</p> <pre>emcli edit_dbprofile -comp_loc="Database Provisioning Profiles/11.2.0.4.0/ linux_x64/Database xyxy.us.example.com Profile100" -schedule="start_time:14-07-22 03:00;frequency:interval;end_time:14-07-22 23:00;repeat:30" -purge_policy="DAYS:1"</pre>	<pre>emcli edit_dbprofile -comp_loc="Database Profile component location in software library" [-schedule= [frequency:interval daily weekly monthly yearly]; start_time:yy-MM-dd HH:mm; end_time:yy-MM-dd HH:mm; [repeat:#m]; [months:#,#,#,...]; [days:#,#,#,...]; [tz:{java timezone ID}]; [grace_period:xxx]; [-purge_policy=days snapshots: number]</pre>
emcli delete_dbprofile	<p>Deletes the database profile.</p> <p>Options:</p> <ul style="list-style-type: none"> comp_loc - Indicates the database profile component location in the software library. [-version] - Indicates the database profile component version name. <p>Examples:</p> <ul style="list-style-type: none"> emcli delete_dbprofile -comp_loc="Database Provisioning Profiles/11.2.0.4.0/linux_x64/Database xyxy.example.com Profile101" emcli delete_dbprofile -comp_loc="Database Provisioning Profiles/11.2.0.4.0/linux_x64/Database xyxy.example.com Profile101" -version="THIN_PROVISIONING_07_25_2014_03_00_AM" 	<pre>emcli delete_dbprofile -comp_loc="Database Profile component location in software library" [-version="Database Profile component version name"]</pre>
emcli list_dbprofiles	<p>Lists the database profiles.</p> <p>Option:</p> <ul style="list-style-type: none"> [-details] - Provides details of the database profiles. <p>Example:</p> <pre>emcli list_dbprofiles -details</pre>	<pre>emcli list_dbprofiles [-details]</pre>

Table 54-13 (Cont.) Database Profile EM CLI Verbs

Verb	Description	Format
emcli refresh_dbprofile	<p>Refreshes the database profile.</p> <p>Options:</p> <ul style="list-style-type: none"> -comp_loc - Indicates the database profile component location in the software library. <p>Example:</p> <pre>emcli refresh_dbprofile -comp_loc="Database Provisioning Profiles/11.2.0.4.0/linux_x64/ Database xyxy.example.com Profile102"</pre>	<pre>emcli refresh_dbprofile -comp_loc="Database Profile component location in software library"</pre>
emcli delete_database	<p>Deletes the database.</p> <p>Options:</p> <ul style="list-style-type: none"> input_file - Indicates the file containing properties required for deleting a database. For details, see Deleting a Database Using EM CLI Verbs. <p>Example:</p> <pre>emcli delete_database -input_file=data:u01/files/delete_clone.props</pre> <p>The properties file contains the following:</p> <pre>DB_TARGET_GUID=<TARGET GUID for database to be deleted> HOST_CREDS=<Name of EM Credential:EM User> HOST_NAME=<Host Name Database Resides on> ORACLE_BASE=<Database to be removed Base> ORACLE_HOME=<Database to be removed Home> DBNAME=<Database Name> DB_SID=<Database SID, Not Service Name> DB_TARGET_NAME=<Target name of Database in EM></pre>	<pre>emcli delete_database -input_file=data:"File containing properties required for deleting a database"</pre>

Table 54-13 (Cont.) Database Profile EM CLI Verbs

Verb	Description	Format
emcli delete_oracle_d atabase <command>	<p>Deletes the single instance database based on the <command> entered.</p> <p>Command:</p> <ul style="list-style-type: none"> software - deletes the Single Instance database home. listeners - deletes or de-configures listeners running from the Oracle home. all - deletes the instances, listeners and the software home. <p>Options:</p> <ul style="list-style-type: none"> input_file - Indicates the file containing properties required for deleting a database. [-schedule] - Indicates the schedule for cleanup: <ul style="list-style-type: none"> frequency - Frequency type with which the Oracle Database will be removed. It can be interval (in minutes), weekly, monthly or yearly start_time - Denotes the starting time of Cleanup Oracle Database in the format yy-MM-dd HH:mm end_time - Denotes the end time of Cleanup Oracle Database in the format yy-Mm-dd HH:mm repeat - Repetition rate at Cleanup Oracle Database. If the frequency is interval, then repeat will be in minutes months - Number of months after which repetition of Cleanup Oracle Database occurs days - Number of days after which repetition of Cleanup Oracle Database occurs tz - Time Zone ID for example tz:America/New_York <p>Example:</p> <pre>emcli delete_oracle_database -all - input_file=data:u01/loc/del_db.props</pre> <p>The properties file contains the following:</p> <pre>ORACLE_HOME_TARGET_LIST= Oracle Home Target Name in Enterprise Manager ORACLE_HOME_NORMAL_CRED_NAME= Oracle Home credential name in the format <cred name>:<cred owner> ORACLE_HOME_ROOT_CRED_NAME= Oracle Home root credentials in the format <cred name>:<cred owner> TMP_DIR_LOC= Temporary Working Directory</pre>	<pre>emcli delete_oracle_database <command>: software [-listeners]- all [-input_file=data:"File containing properties required for deleting a clone"] [-schedule= [frequency:interval daily weekly monthly yearly]; start_time:yy-MM-dd HH:mm; end_time:yy-MM-dd HH:mm; [repeat:#m]; [months:#,#,#,...]; [days:#,#,#,...]; [tz:{java timezone ID}]; [grace_period:xxx];</pre>

Table 54-13 (Cont.) Database Profile EM CLI Verbs

Verb	Description	Format
emcli delete_oracle_re start <command>	<p>De-configures and deletes the Oracle Restart (SIHA and instances) based on the <command> entered.</p> <p>Commands:</p> <ul style="list-style-type: none"> instance - de-configures the Oracle Restart (SIHA) instance only. software - deletes the empty Oracle Restart (SIHA) home. all - de-configures and deletes Oracle Restart (SIHA) home. <p>Options:</p> <ul style="list-style-type: none"> input_file - Indicates the file containing properties required for deleting a database. [-schedule] - Indicates the schedule for cleanup and restart: <ul style="list-style-type: none"> frequency - Frequency type with which the Oracle Database will be removed. It can be interval (in minutes), weekly, monthly or yearly start_time - Denotes the starting time of Cleanup Oracle Database in the format yy-MM-dd HH:mm end_time - Denotes the end time of Cleanup Oracle Database in the format yy-Mm-dd HH:mm repeat - Repetition rate at Cleanup Oracle Database. If the frequency is interval, then repeat will be in minutes months - Number of months after which repetition of Cleanup Oracle Database occurs days - Number of days after which repetition of Cleanup Oracle Database occurs tz - Time Zone ID for example tz:America/New_York <p>Example:</p> <pre>emcli delete_oracle_restart -all - input_file=data:u01/loc/del_siha.props</pre> <p>The properties file contains the following:</p> <pre>ORACLE_HOME_TARGET_LIST=Oracle Home Target Name in Enterprise Manager ORACLE_HOME_NORMAL_CRED_NAME= Oracle Home credential name in the format <cred name>:<cred owner> ORACLE_HOME_ROOT_CRED_NAME= Oracle Home root credentials in the format <cred name>:<cred owner> TMP_DIR_LOC= Temporary Working Directory</pre>	<pre>emcli delete_oracle_database <command>: instance [-software]- all [-input_file=data:"File containing properties required for deleting a clone"] [-schedule= [frequency:interval daily weekly monthly yearly]; start_time:yy-MM-dd HH:mm; end_time:yy-MM-dd HH:mm; [repeat:#m]; [months:#,#,#,...]; [days:#,#,#,...]; [tz:{java timezone ID}]; [grace_period:xxx];</pre>

Table 54-13 (Cont.) Database Profile EM CLI Verbs

Verb	Description	Format
emcli db_clone_management - refreshDatabase	<p>Refreshes the database.</p> <p>Commands:</p> <p>Options:</p> <ul style="list-style-type: none"> -input_file - Indicates the input file that defines the input field values. <p>Example:</p> <pre>emcli db_clone_management -refreshDatabase - input_file=data:"/tmp/refr.txt"</pre>	<pre>emcli db_clone_management - refreshDatabase -input_file=data:"file:path"</pre>
<div style="border: 1px solid #0070C0; padding: 10px; background-color: #E6F2FF;"> <p> Note:</p> <p>To know the input file parameters that need to be set/provided, enter the command, <code>emcli db_clone_management -refreshDatabase -print_properties</code>.</p> </div>		
emcli db_clone_management - deleteDatabase	<p>Deletes the database.</p> <p>Options:</p> <ul style="list-style-type: none"> input_file - Indicates the file containing properties required for deleting a database. For details, see Deleting a Database Clone Using EM CLI Verbs. <p>Example:</p> <pre>emcli db_clone_management -deleteDatabase - input_file=data:u01/files/delete_clone.props</pre>	<pre>emcli db_clone_management - deleteDatabase -input_file="File containing properties required for deleting a clone"</pre>
<div style="border: 1px solid #0070C0; padding: 10px; background-color: #E6F2FF;"> <p> Note:</p> <ul style="list-style-type: none"> To know the input file parameters that need to be set/provided, enter the command, <code>emcli db_clone_management -deleteDatabase -print_properties</code>. The delete database verb uses the Named credentials that is set in the software pool and not the Preferred credentials. </div>		

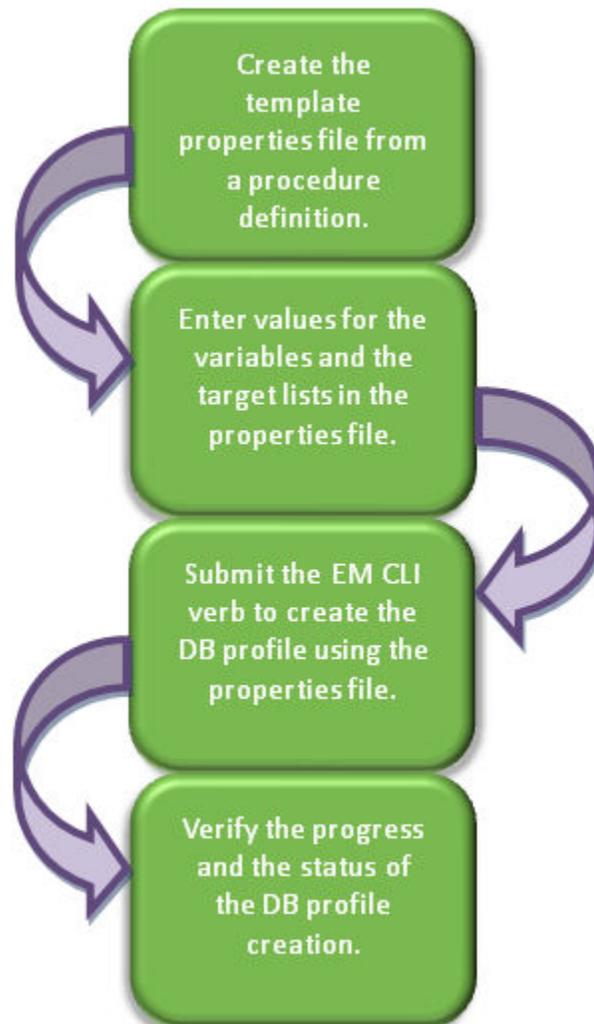
54.6.5 Creating a Database Profile Using EM CLI Verbs

This section describes the procedure to create a database profile, RMAN backup, RMAN image backup or a Snapshot backup using EM CLI verbs.

 **Note:**

The procedure to create a RMAN backup, RMAN image backup or Snapshot database is the same as the procedure to be followed to create a database profile. However, the only difference is in the property file used for the different flavours.

Figure 54-1 Creating a Database Profile Using EM CLI Verbs



Follow the steps below to create a database profile:

1. Create a template properties file from a procedure definition.

To create a template properties file follow the steps below:

- a. Retrieve the GUID or the name of the procedure. Run the following command to retrieve these.

```
emcli get_procedures
[-type={procedure type}]
```

Sample command:

```
emcli get_procedures -type=DBPROV
```

Sample output:

GUID	Type	Name	Version	Owner	Parent Procedure
0A15E9DC285B2EF5E053E87BF00A6701	DBPROV	CLOUD_DEPLOY_SOFTWARE_NAME			
		Software Life Cycle Management Procedure	14.52	ORACLE	
0A15E9DC20712EF5E053E87BF00A6701	DBPROV	CLEANUP_DB_PROC			
		Cleanup Mass Database	13.0	ORACLE	
0A15E9DC205C2EF5E053E87BF00A6701	DBPROV	DBREPLAYCLIENTDP_NG			
		Provision Oracle Database Client	14.0	ORACLE	
0A15E9DC204E2EF5E053E87BF00A6701	DBPROV	SIHA_SIDB_PROC			
		Provision Oracle Database	14.0	ORACLE	

- b. Input the GUID or the name as an input value in the following command to generate a template properties file.

```
emcli describe_procedure_input
[-procedure={procedure GUID}]
[-name={procedure name or procedure configuration}]
[-owner={owner of the procedure or procedure configuration}][-
parent_proc={procedure of the procedure configuration. This only applies to
describe a procedure configuration with the same name}]
```

Sample command:

```
emcli describe_procedure_input -
procedure=0A15E9DC204E2EF5E053E87BF00A6701> /tmp/snapprofile.txt
```

2. Enter new values in the properties file.

Use an editor to edit the properties file. Enter the desired values for the variables and save the properties file.

For different flavours of database profile see the following:

- To create a new database profile with data and structure configure the mandatory parameters, and required optional parameter (DATA_CONTENT=METADATA_AND_DATA) in the [Table 54-14](#).
- To create a new database profile with data only configure the mandatory parameters, and required optional parameter (DATA_CONTENT=DATA) in the [Table 54-14](#).
- To create an RMAN backup, see [Table 54-15](#).
- To create an RMAN image backup see [Table 54-16](#).
- To create an snapshot database, configure the mandatory parameters along with the REF_NODE_SELECTED, DATA_CONTENT, REF_HOST_CREDENTIALS, REF_DB_CREDENTIALS, PROFILE_VERSION, and PROFILE_VENDOR parameters in [Table 54-15](#).

Table 54-14 Sample Properties File for Creating a New Database Profile

Parameters	Sample values	Description
Mandatory Parameters REFERENCE_DATA BASE	REFERENCE_DATABAS E=dbname.xyz.com	The source database from which the profile is to be created.
REFERENCE_DATA BASE_TYPE	REFERENCE_DATABAS E_TYPE=oracle_databas e	The target type of the source database. Accepted values are oracle_database or rac_database.
DATA_CONTENT_M ODE	DATA_CONTENT_MOD E=STORAGE_SNAPSH OT	Data Mode for which the database profile needs to be submitted. The accepted values are: EXPORT, DBCA_TEMPLATE, RMAN, DNFS, and STORAGE_SNAPSHOT.
PROFILE_NAME	PROFILE_NAME=Profile _snap	Name of the profile.
PROFILE_LOCATION	PROFILE_LOCATION=D atabase Provisioning Profiles/11.2.0.4.0/ linux_x64/	Location of the profile in the software library.
Optional Parameters REF_NODE_SELECT ED	REF_NODE_SELECTED = xyy.us.example.com	The reference node from which the profile is to be created. This parameter is applicable only for RAC and cluster targets.
DATABASE_GOLD_I MAGE_TYPE	N/A	Includes the database gold image as part of the profile.
GI_GOLD_IMAGE_T YPE	N/A	Includes the GI gold image as part of the profile.
CREATE_DATA_OPT ION	N/A	Indicates if existing data is to be used or to create new data.
DATA_CONTENT	DATA_CONTENT=META DATA_AND_DATA	The data content that gets included in the backup can be METADATA_AND_DATA or METADATA_ONLY.
REF_HOST_CREDE NTIALS	REF_HOST_CREDENTI ALS=AE_2COOL:ARA1	The credentials for OS authentication.
REF_DB_CREDENTI ALS	REF_DB_CREDENTIAL S=SYS_WD:RAH	The credentials for performing database related operation.
REF_GI_CREDENTIA LS	N/A	The credentials for OS authentication of grid infrastructure.
REF_HOST_ROOT_ CREDENTIALS	REF_HOST_ROOT_CR EDENTIALS= AE_2OOL:RA1	Root credentials required to perform privileged operations on host.
CONVERT_TO_OFA	N/A	Converts to OFA format.
PROFILE_DESC	PROFILE_DESC=11204 SnapClone profile 1	Description of the profile.
PROFILE_VERSION	N/A	Version of the profile. If this parameter is not specified, the database version is used.

Table 54-14 (Cont.) Sample Properties File for Creating a New Database Profile

Parameters	Sample values	Description
PROFILE_VENDOR	N/A	Vendor of the profile. The default is Oracle.
PROFILE_NOTES	N/A	Notes for the profile.
DB_GOLD_IMAGE_CREATE_VERSION_ONLY	N/A	Flag to indicate if only image version needs to be created.
GI_GOLD_IMAGE_CREATE_VERSION_ONLY	N/A	Flag to indicate if only image version needs to be created.
GI_GOLD_IMAGE_ID	N/A	Entity ID of the GI gold image.
DB_GOLD_IMAGE_ID	N/A	Entity ID of the DB gold image.
DB_GOLD_IMAGE_ENTITY_NAME	N/A	Entity name of the database gold image.
GI_GOLD_IMAGE_ENTITY_NAME	N/A	Entity name of the GI gold image.
DATA_GOLD_IMAGE_ENTITY_NAME	N/A	Entity name of the data gold image.
WORKING_DIRECTORY	WORKING_DIRECTORY=/tmp	Working directory is the location where the files are staged.
STORAGE_TYPE_FOR_SOFTWARE	N/A	The list of valid storage types are NFS, AGENT, and OmsShare.
STORAGE_NAME_FOR_SOFTWARE	N/A	The storage name as configured in the software library.
NFS_LOCAL_MOUNT_POINT_FOR_SOFTWARE	N/A	Location at which the NFS server is mounted on the host.
STORAGE_TYPE_FOR_DATA	N/A	The list of valid storage types are NFS, AGENT, and OmsShared.
STORAGE_NAME_FOR_DATA	N/A	The storage name as configured in the software library.
NFS_LOCAL_MOUNT_POINT_FOR_DATA	N/A	Location at which the NFS server is mounted on the host.
USER_INITIATED	N/A	Indicates if the profile initiated by end user is a part of backup process or the database.
DB_TARGET_AVAILABLE	N/A	Indicates if the database target is available.
SOURCE_DB_PLATFORM_NAME	N/A	Platform name of source database. For example: Linux x86-64, Oracle Solaris on x86-64 (64-bit), etc.
PROFILE_SCHEDULE	N/A	Schedule for profile execution.

Table 54-14 (Cont.) Sample Properties File for Creating a New Database Profile

Parameters	Sample values	Description
PROFILE_SINGLE_REFRESH	N/A	Single refresh of the profile.
PROFILE_PURGE_POLICY_TYPE	N/A	Type of profile purge policy. Accepted values are SNAPSHOTS or DAYS. The default value is NONE.
PROFILE_PURGE_POLICY_VALUE	N/A	Value of profile purge policy.
PROFILE_IMAGE_VERSION	N/A	Version of the profile image.

Table 54-15 Sample Properties File for Creating a Full Backup Profile

Parameters	Sample values	Description
Mandatory Parameters REFERENCE_DATA_BASE	REFERENCE_DATABAS E=dbname.xyz.com	The source database from which the profile will be created.
REFERENCE_DATA_BASE_TYPE	REFERENCE_DATABAS E_TYPE=oracle_databas e	The target type of the source database. It can be oracle_database or rac_database.
DATA_CONTENT_MODE	DATA_CONTENT_MOD E=STORAGE_SNAPSH OT	Data Mode for which the database profile needs to be submitted. It can have the following values: EXPORT, DBCA_TEMPLATE, RMAN, DNFS, CONT_SYNC, and STORAGE_SNAPSHOT.
PROFILE_NAME	PROFILE_NAME=Profile _snap	Name of the profile.
PROFILE_LOCATION	PROFILE_LOCATION=D atabase Provisioning Profiles/11.2.0.4.0/ linux_x64/	Location of the profile in software library.
BACKUP_FILE_TAG	BACKUP_FILE_TAG=dat a_backup_14194170519 61	Tag of backup files.
BACKUP_TYPE	BACKUP_TYPE=OFFLIN E	Type of backup. Accepted values are OFFLINE or ONLINE. The default is OFFLINE.
BACKUP_FILE_FORMAT	BACKUP_FILE_FORMA T=backup_%U	Format of backup file.
RMAN_CHANNELS	RMAN_CHANNELS=2	Number of RMAN channels.
RMAN_BACKUP_LOCATION	RMAN_BACKUP_LOCA TION=/oradbnas/ aime_slc05ntg/sec	Location where RMAN backup files will be created. This parameter is mandatory if IS_SAVE_TARGET_PROFILE is set to Y and DATA_CONTENT_MODE is RMAN or DNFS.

Table 54-15 (Cont.) Sample Properties File for Creating a Full Backup Profile

Parameters	Sample values	Description
CONT_SYNC.MOUNT_POINT_LIST.0	CONT_SYNC.MOUNT_POINT_LIST.0=/smf/ cont_sync	Mount point list.
CONT_SYNC.MOUNT_POINT_LIST.1	CONT_SYNC.MOUNT_POINT_LIST.1=/smfslot/ sun1	Mount point list.
CONT_SYNC.WRITABLE_SPACE_LIST.0	CONT_SYNC.WRITABLE_SPACE_LIST.0=10	Writable space list.
CONT_SYNC.WRITABLE_SPACE_LIST.1	CONT_SYNC.WRITABLE_SPACE_LIST.1=10	Writable space list.
CONT_SYNC.STORAGE_HARDWARE_NAME_LIST.0	CONT_SYNC.STORAGE_HARDWARE_NAME_LIST.0=sl.example.com	Storage hardware name list.
CONT_SYNC.STORAGE_HARDWARE_NAME_LIST.1	CONT_SYNC.STORAGE_HARDWARE_NAME_LIST.1=sl.example.com	Storage hardware name list.
CONT_SYNC.STORAGE_PROJECT_NAME_LIST.0	CONT_SYNC.STORAGE_PROJECT_NAME_LIST.0=emdev01	Storage project name list.
CONT_SYNC.STORAGE_PROJECT_NAME_LIST.1	CONT_SYNC.STORAGE_PROJECT_NAME_LIST.1=emdev01	Storage project name list.
Optional Parameters REF_NODE_SELECTED	REF_NODE_SELECTED = slch.xyz.com	The reference node from which the profile will be created. This parameter is applicable only for RAC and cluster targets.
DATABASE_GOLD_IMAGE_TYPE	N/A	Includes the database gold image as part of the profile.
GI_GOLD_IMAGE_TYPE	N/A	Includes the GI gold image as part of the profile.
CREATE_DATA_OPTION	NA	Indicates if existing data is to be used or to create new data.
DATA_CONTENT	DATA_CONTENT=META DATA_AND_DATA	The data content that gets included in the backup can be METADATA_AND_DATA or DATA.
REF_HOST_CREDENTIALS	REF_HOST_CREDENTIALS=AE_2COL:RA1	The credentials for OS authentication.
REF_DB_CREDENTIALS	REF_DB_CREDENTIALS=SYS_WL1:RA1	The credentials for performing database related operation.
REF_GI_CREDENTIALS	N/A	The credentials for OS authentication of grid infrastructure.
REF_HOST_ROOT_CREDENTIALS	REF_HOST_ROOT_CREDENTIALS=AE_2L:RA1	Root credentials required to perform privileged operations on host.
CONVERT_TO_OFA	N/A	Converts to OFA format.

Table 54-15 (Cont.) Sample Properties File for Creating a Full Backup Profile

Parameters	Sample values	Description
PROFILE_DESC	PROFILE_DESC=11204 SnapClone profile 1	Description of the profile.
PROFILE_VERSION	N/A	Version of the profile. If this parameter is not specified, the database version is used.
PROFILE_VENDOR	N/A	Vendor of the profile. The default is Oracle.
PROFILE_NOTES	N/A	Notes for the profile.
DB_GOLD_IMAGE_C REATE_VERSION_O NLY	N/A	Flag to indicate if only image version needs to be created.
GI_GOLD_IMAGE_C REATE_VERSION_O NLY	N/A	Flag to indicate if only image version needs to be created.
GI_GOLD_IMAGE_ID	N/A	Entity ID of the GI gold image.
DB_GOLD_IMAGE_I D	N/A	Entity ID of the DB gold image.
DB_GOLD_IMAGE_E NTITY_NAME	N/A	Entity name of the database gold image.
GI_GOLD_IMAGE_E NTITY_NAME	N/A	Entity name of the GI gold image.
DATA_GOLD_IMAGE _ENTITY_NAME	N/A	Entity name of the data gold image.
WORKING_DIRECTO RY	WORKING_DIRECTORY =/tmp	Working directory is the location where the files are staged.
STORAGE_TYPE_FO R_SOFTWARE	N/A	The list of valid storage types are NFS, AGENT, and OmsShared.
STORAGE_NAME_F OR_SOFTWARE	N/A	The storage name as configured in the software library.
NFS_LOCAL_MOUN T_POINT_FOR_SOF TWARE	N/A	Location at which the NFS server is mounted on the host.
STORAGE_TYPE_FO R_DATA	N/A	The list of valid storage types are NFS, AGENT, and OmsShared.
STORAGE_NAME_F OR_DATA	N/A	The storage name as configured in the software library.
NFS_LOCAL_MOUN T_POINT_FOR_DAT A	N/A	Location at which the NFS server is mounted on the host.
USER_INITIATED	N/A	Indicates if the profile initiated by end user is a part of backup process or the database.
DB_TARGET_AVAIL ABLE	N/A	Indicates if the database target is available.

Table 54-15 (Cont.) Sample Properties File for Creating a Full Backup Profile

Parameters	Sample values	Description
SOURCE_DB_PLATF ORM_NAME	N/A	Platform name of source database. For example: Linux x86-64, Oracle Solaris on x86-64 (64-bit), etc.
PROFILE_SCHEDUL E	N/A	Schedule for profile execution.
PROFILE_SINGLE_R EFRESH	N/A	Single refresh of the profile.
PROFILE_PURGE_P OLICY_TYPE	N/A	Type of profile purge policy. Accepted values are SNAPSHOTS or DAYS. The default value is NONE.
PROFILE_PURGE_P OLICY_VALUE	N/A	Value of profile purge policy.
PROFILE_IMAGE_VE RSION	N/A	Version of the profile image.

Table 54-16 Sample Properties File for Creating a Thin Backup Profile

Parameters	Sample values	Description
Mandatory Parameters REFERENCE_DATA BASE	REFERENCE_DATABAS E=dbname.example.com	The source database from which the profile will be created.
REFERENCE_DATA BASE_TYPE	REFERENCE_DATABAS E_TYPE=oracle_databas e	The target type of the source database. It can be oracle_database or rac_database.
DATA_CONTENT_M ODE	DATA_CONTENT_MOD E=STORAGE_SNAPSH OT	Data Mode for which the database profile needs to be submitted. It can have the following values: EXPORT, DBCA_TEMPLATE, RMAN, DNFS, CONT_SYNC, and STORAGE_SNAPSHOT
PROFILE_NAME	PROFILE_NAME=Profile _snap	Name of the profile.
PROFILE_LOCATION	PROFILE_LOCATION=D atabase Provisioning Profiles/11.2.0.4.0/ linux_x64/	Location of the profile in software library.
DNFS.BACKUP_FILE _TAG	DNFS.BACKUP_FILE_T AG=data_backup_14194 17051961	Tag of backup files.
DNFS.BACKUP_TYP E	DNFS.BACKUP_TYPE= OFFLINE	Type of backup. Accepted values are OFFLINE or ONLINE. The default is OFFLINE.
DNFS.BACKUP_FILE _FORMAT	DNFS.BACKUP_FILE_F ORMAT=backup_%U	Format of backup file.

Table 54-16 (Cont.) Sample Properties File for Creating a Thin Backup Profile

Parameters	Sample values	Description
DNFS.BACKUP_LOCA TION	DNFS.BACKUP_LOCATI ON=/oradbnas/ aime_slc05ntg/suk	Location where RMAN backup files will be created. It is mandatory if IS_SAVE_TARGET_PROFILE is set to Y and DATA_CONTENT_MODE is RMAN or DNFS.
DNFS.BACKUP_IMA GE_MODE	DNFS.BACKUP_IMAGE _MODE=OfflineImage	Backup Image Mode
DNFS.BACKUP_IMA GE_TYPE	DNFS.BACKUP_IMAGE _TYPE=RMANImage	Type of backup Image.
CONT_SYNC.MOUN T_POINT_LIST.0	CONT_SYNC.MOUNT_P OINT_LIST.0=/smf/ cont_sync	Mount point list.
CONT_SYNC.MOUN T_POINT_LIST.1	CONT_SYNC.MOUNT_P OINT_LIST.1=/smfslot/ sun1	Mount point list.
CONT_SYNC.WRITA BLE_SPACE_LIST.0	CONT_SYNC.WRITABL E_SPACE_LIST.0=10	Writable space list.
CONT_SYNC.WRITA BLE_SPACE_LIST.1	CONT_SYNC.WRITABL E_SPACE_LIST.1=10	Writable space list.
CONT_SYNC.STORA GE_HARDWARE_NA ME_LIST.0	CONT_SYNC.STORAGE _HARDWARE_NAME_LI ST.0=sl.example.com	Storage hardware name list.
CONT_SYNC.STORA GE_HARDWARE_NA ME_LIST.1	CONT_SYNC.STORAGE _HARDWARE_NAME_LI ST.1=sl.example.com	Storage hardware name list.
CONT_SYNC.STORA GE_PROJECT_NAM E_LIST.0	CONT_SYNC.STORAGE _PROJECT_NAME_LIST .0=emdev01	Storage project name list.
CONT_SYNC.STORA GE_PROJECT_NAM E_LIST.1	CONT_SYNC.STORAGE _PROJECT_NAME_LIST .1=emdev01	Storage project name list.
Optional Parameters REF_NODE_SELECT ED	REF_NODE_SELECTED = slnh.us.example.com	The reference node from which the profile will be created. This parameter is applicable only for RAC and cluster targets.
DATABASE_GOLD_I MAGE_TYPE	N/A	Includes the database gold image as part of the profile.
GI_GOLD_IMAGE_T YPE	N/A	Includes the GI gold image as part of the profile.
CREATE_DATA_OPT ION	N/A	Indicates if existing data is to be used or to create new data.
DATA_CONTENT	DATA_CONTENT=META DATA_AND_DATA	The data content that gets included in the backup can be METADATA_AND_DATA or DATA.
REF_HOST_CREDE NTIALS	REF_HOST_CREDENTI ALS=AE_2CL:RA1	The credentials for OS authentication.

Table 54-16 (Cont.) Sample Properties File for Creating a Thin Backup Profile

Parameters	Sample values	Description
REF_DB_CREDENTIALS	REF_DB_CREDENTIALS=SYS_W1:RA1	The credentials for performing database related operation.
REF_GI_CREDENTIALS	N/A	The credentials for OS authentication of grid infrastructure.
REF_HOST_ROOT_CREDENTIALS	REF_HOST_ROOT_CREDENTIALS=AE_2CL:RA1	Root credentials required to perform privileged operations on host.
CONVERT_TO_OFA	N/A	Converts to OFA format.
PROFILE_DESC	PROFILE_DESC=11204 SnapClone profile 1	Description of the profile.
PROFILE_VERSION	N/A	Version of the profile. If this parameter is not specified, the database version is used.
PROFILE_VENDOR	N/A	Vendor of the profile. The default is Oracle.
PROFILE_NOTES	N/A	Notes for the profile.
DB_GOLD_IMAGE_CREATE_VERSION_ONLY	N/A	Flag to indicate if only image version needs to be created.
GI_GOLD_IMAGE_CREATE_VERSION_ONLY	N/A	Flag to indicate if only image version needs to be created.
GI_GOLD_IMAGE_ID	N/A	Entity ID of the GI gold image.
DB_GOLD_IMAGE_ID	N/A	Entity ID of the DB gold image.
DB_GOLD_IMAGE_ENTITY_NAME	N/A	Entity name of the database gold image.
GI_GOLD_IMAGE_ENTITY_NAME	N/A	Entity name of the GI gold image.
DATA_GOLD_IMAGE_ENTITY_NAME	N/A	Entity name of the data gold image.
WORKING_DIRECTORY	WORKING_DIRECTORY=/tmp	Working directory is the location where the files are staged.
STORAGE_TYPE_FOR_SOFTWARE	N/A	The list of valid storage types are NFS, AGENT, and OmsShared.
STORAGE_NAME_FOR_SOFTWARE	N/A	The storage name as configured in the software library.
NFS_LOCAL_MOUNT_POINT_FOR_SOFTWARE	N/A	Location at which the NFS server is mounted on the host.
STORAGE_TYPE_FOR_DATA	N/A	The list of valid storage types are NFS, AGENT, and OmsShared.
STORAGE_NAME_FOR_DATA	N/A	The storage name as configured in the software library.

Table 54-16 (Cont.) Sample Properties File for Creating a Thin Backup Profile

Parameters	Sample values	Description
NFS_LOCAL_MOUN T_POINT_FOR_DAT A	N/A	Location at which the NFS server is mounted on the host.
USER_INITIATED	N/A	Indicates if the profile initiated by end user ia a part of backup process or the database.
DB_TARGET_AVAIL ABLE	N/A	Indicates if the database target is available.
SOURCE_DB_PLATF ORM_NAME	N/A	Platform name of source database. For example: Linux x86-64, Oracle Solaris on x86-64 (64-bit), etc.
PROFILE_SCHEDUL E	N/A	Schedule for profile execution.
PROFILE_SINGLE_R EFRESH	N/A	Single refresh of the profile.
PROFILE_PURGE_P OLICY_TYPE	N/A	Type of profile purge policy. Accepted values are SNAPSHOTS or DAYS. The default value is NONE.
PROFILE_PURGE_P OLICY_VALUE	N/A	Value of profile purge policy.
PROFILE_IMAGE_VE RSION	N/A	Version of the profile image.
USE_EXISTING_BAC KUP	N/A	Whether exiting backup is to be used.

- Execute the following EM CLI verb to create a database profile, using the updated properties file as the input file.

```
emcli create_dbprofile
    -input_file=data:"file:path"
    [-schedule=
        [frequency:interval|daily|weekly|monthly|yearly];
        start_time:yy-MM-dd HH:mm;
        end_time:yy-MM-dd HH:mm;
        [repeat:#m];
        [months:#,#,#,...];
        [days:#,#,#,...];
        [tz:{java timezone ID}];
        [grace_period:xxx];
        [-purge_policy=days|snapshots: number]
```

Samples:

```
emcli create_dbprofile -input_file=data:"/tmp/snapprofile.txt" -
schedule="start_time:14-06-23 01:00;frequency:yearly;end_time:14-05-28
01:00;days:1,3,8,7,10;months:1,3,9,11,1" -purge_policy="SNAPSHOTS:1"
```

```
emcli create_dbprofile -input_file=data:"/tmp/snapprofile.txt" -
schedule="start_time:14-05-28 01:00;frequency:monthly;end_time:14-05-28
01:00;days:1,3,8,7" -purge_policy="DAYS:1"
```

```
emcli create_dbprofile -input_file=data:"/tmp/snapprofile.txt" -
```

```
schedule="start_time:14-05-28 01:00;frequency:weekly;end_time:14-05-28
01:00;days:1,3,7" -purge_policy="SNAPSHOTS:1"
```

```
emcli create_dbprofile -input_file=data:"/tmp/snapprofile.txt" -
schedule="start_time:14-05-28 01:00;frequency:daily;end_time:14-05-28 01:00" -
purge_policy="DAYS:1" -purge_policy="SNAPSHOTS:1"
```

```
emcli create_dbprofile -input_file=data:"/tmp/snapprofile.txt" -
schedule="start_time:14-07-22 03:00;frequency:interval;end_time:14-07-22
07:00;repeat:30" -purge_policy="SNAPSHOTS:1"
```

Sample output:

Create Database Profile deployment procedure has been submitted successfully with the instance name :

```
'CreateDatabaseProfile_SYSMAN_06_23_2014_01_00_PM' and
```

```
execution_guid='0AE6096550756B26E0539878B10A6FF5'
```

You can track the status of profile creation using the following command:

```
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5 -xml -details -
showJobOutput
```

4. Verify the status of the database profile creation by executing the following EM CLI verb.

```
emcli get_instance_status
[-instance={instance guid}]
[-exe=execution guid]
[-xml]
[-details]
[-showJobOutput]
[-tailLength={last N characters}]]
```

Sample:

```
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5
```

Sample Output:

```
0AE6096550716B26E0539878B10A6FF5, PROFILE,
CreateDatabaseProfile_SYSMAN_12_23_2014_23_18_PM, Running
```

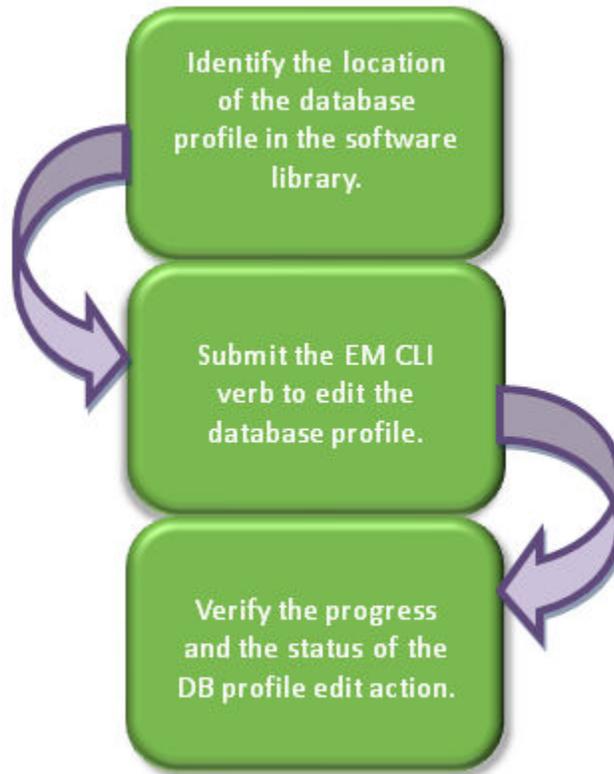
To know the complete status of each of the steps in xml format, execute the following command.

```
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5 -xml -details -
showJobOutput
```

54.6.6 Editing a Database Profile Using EM CLI Verbs

This section describes the procedure to edit a database profile using EM CLI verbs.

Figure 54-2 Editing a Database Profile Using EM CLI Verbs



Follow the steps below to edit a database profile:

1. Identify the location of the database profile in the software library.

Execute the following command to locate the database profile.

```
emcli list_dbprofiles
[-details]
```

Sample command:

```
emcli list_dbprofiles
```

Sample output:

```
Name=Profile_snap,Location=Database Provisioning Profiles/11.2.0.4.0/linux_x64/
Name=Profile_rman,Location=Database Provisioning Profiles/11.2.0.4.0/linux_x64/
```

2. Edit the database profile with the following command, using the obtained location.

```
emcli edit_dbprofile
-comp_loc="Database Profile component location in software library"
[-schedule=
    [frequency:interval| daily |weekly|monthly|yearly];
    start_time:yy-MM-dd HH:mm;
    end_time:yy-MM-dd HH:mm;
    [repeat:#m];
    [months:#,#,#,...];
    [days:#,#,#,...];
    [tz:{java timezone ID}];
```

```

        [grace_period:xxx];
    ]
    [-purge_policy=days| snapshots: number]

```

Sample command:

```

emcli edit_dbprofile -comp_loc="Database Provisioning Profiles/11.2.0.4.0/
linux_x64/Profile_snap " -schedule="start_time:14-07-22
03:00;frequency:interval;end_time:14-07-22 23:00;repeat:30" -purge_policy="DAYS:
1"

```

Sample output:

The Create Database Profile deployment procedure with new schedule and purge policy has been submitted successfully with the instance name :

```

'CreateDatabaseProfile_SYSMAN_07_22_2014_03_00_PM' and execution_guid=
'0AE6096550756B26E0539878B10A6FF5'

```

You can track the status of profile creation using the following command:

```

emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5 -xml -details -
showJobOutput

```

3. Verify the status of the database profile edit by executing the following EM CLI verb.

```

emcli get_instance_status
[-instance={instance guid}]
[-exe=execution guid]
[-xml]
[-details]
[-showJobOutput]
[-tailLength={last N characters}]]

```

Sample:

```

emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5

```

Sample output:

```

0AE6096550716B26E0539878B10A6FF5, PROFILE,
CreateDatabaseProfile_SYSMAN_07_22_2014_03_00_PM, Running

```

To know the complete status of each of the steps in xml format, execute the following command.

```

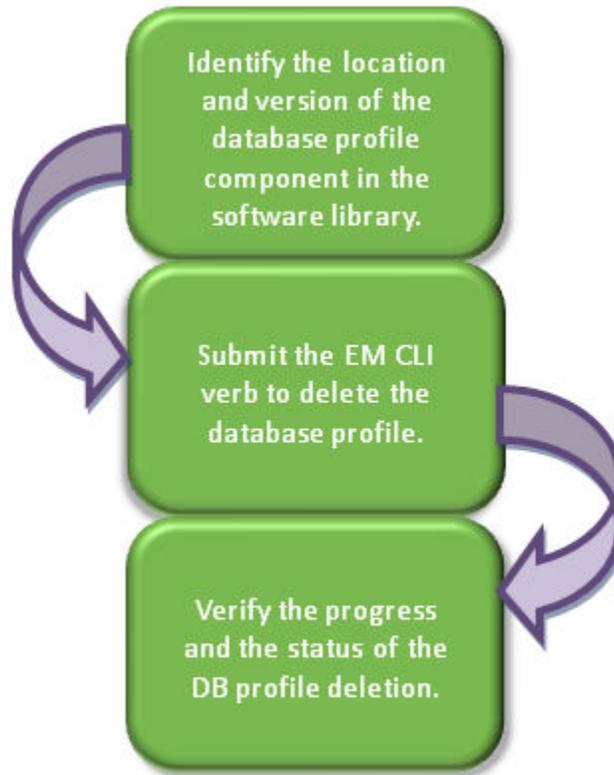
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5 -xml -details -
showJobOutput

```

54.6.7 Deleting a Database Profile Using EM CLI Verbs

This section describes the procedure to delete a database profile using EM CLI verbs.

Figure 54-3 Deleting a Database Profile Using EM CLI Verbs



Follow the steps below to delete a database profile:

1. Identify the location and version of the database profile component in the software library.

Execute the following command to locate the database profile.

```
emcli list_dbprofiles  
[-details]
```

Sample command:

```
emcli list_dbprofiles
```

Sample output:

```
Name=Profile_snap,Location=Database Provisioning Profiles/11.2.0.4.0/  
linux_x64/,Type=STORAGE_SNAPSHOT,Status=Ready,Description= Database Reference  
Profile 05-11-2014 12:40 PM from database.mycompany.com  
Version: STORAGE  
SNAPSHOT_05_11_2014_12_40_PM: ,contains=STORAGE_SNAPSHOT(s),removalOverdue=0,  
sourceDatabaseName=database.mycompany.com.
```

```
Name=Profile_rman,Location=Database Provisioning Profiles/11.2.0.4.0/  
linux_x64/,Type=RMAN,Status=Ready,Description=Database Reference Profile  
04-11-2014 12:40 PM from database.mycompany.com  
Version : RMAN_04_11_2014_12_40_PM,contains=RMAN(s),removalOverdue=0,  
sourceDatabaseName=database.mycompany.com.
```

2. Delete the database profile with the following command, using the obtained location and version.

```
emcli delete_dbprofile
  -comp_loc="Database Profile component location in software library"
  [-version="Database Profile component version name"]
```

Sample command:

```
emcli delete_dbprofile -comp_loc="Database Provisioning Profiles/11.2.0.4.0/
linux_x64/Profile_snap"
```

```
emcli delete_dbprofile -comp_loc="Database Provisioning Profiles/11.2.0.4.0/
linux_x64/ Profile_snap" -version="STORAGE SNAPSHOT__05_11_2014_12_40_PM"
```

Sample output:

Delete Database Profile deployment procedure has been submitted successfully with the instance name : 'DeleteDatabaseProfile_SYSMAN_07_22_2014_03_00_PM' and execution_guid='0AE6096550756B26E0539878B10A6FF5'

You can track the status of profile creation using the following command:
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5 -xml -details -showJobOutput

3. Verify the status of the database profile deletion by executing the following EM CLI verb.

```
emcli get_instance_status
[-instance={instance guid}]
[-exe=execution guid]
[-xml]
[-details]
[-showJobOutput]
[-tailLength={last N characters}]]
```

Sample:

```
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5
```

Sample output:

```
0AE6096550716B26E0539878B10A6FF5, PROFILE,
DeleteDatabaseProfile_SYSMAN_07_22_2014_03_00_PM, COMPLETED
```

To know the complete status of each of the steps in xml format, execute the following command.

```
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5 -xml -details -
showJobOutput
```

54.6.8 Viewing All the Database Profiles

Execute the following command to view all the database profiles with their details.

```
emcli list_dbprofiles
[-details]
```

Sample command:

```
emcli list_dbprofiles
```

Sample output:

```
Name=Profile_snap,Location=Database Provisioning Profiles/11.2.0.4.0/
linux_x64/,Type=STORAGE_SNAPSHOT,Status=Ready,Description= Database Reference
Profile 05-11-2014 12:40 PM from database.mycompany.com
Version: STORAGE
```

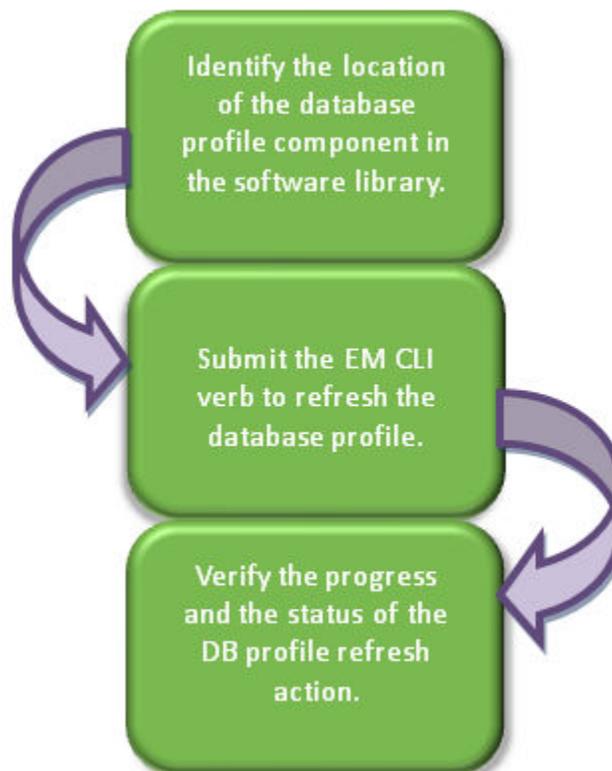
```
SNAPSHOT_05_11_2014_12_40_PM: ,contains=STORAGE_SNAPSHOT(s),removalOverdue=0,  
sourceDatabaseName=database.mycompany.com.
```

```
Name=Profile_rman,Location=Database Provisioning Profiles/11.2.0.4.0/  
linux_x64/,Type=RMAN,Status=Ready,Description=Database Reference Profile 04-11-2014  
12:40 PM from database.mycompany.com  
Version : RMAN_04_11_2014_12_40_PM,contains=RMAN(s),removalOverdue=0,  
sourceDatabaseName=database.mycompany.com.
```

54.6.9 Refreshing a Database Profile Using EM CLI Verbs

This section describes the procedure to refresh a database profile using EM CLI verbs.

Figure 54-4 Refreshing a Database Profile Using EM CLI Verbs



Follow the steps below to refresh a database profile:

1. Identify the location of the database profile component in the software library.

Execute the following command to locate the database profile.

```
emcli list_dbprofiles  
[-details]
```

Sample command:
emcli list_dbprofiles

Sample output:

```
Name=Profile_snap,Location=Database Provisioning Profiles/11.2.0.4.0/linux_x64/
Name=Profile_rman,Location=Database Provisioning Profiles/11.2.0.4.0/linux_x64/
```

2. Refresh the database profile with the following command, using the obtained location.

```
emcli refresh_dbprofile
  -comp_loc="Database Profile component location in software library"
```

Sample command:

```
emcli refresh_dbprofile -comp_loc="Database Provisioning Profiles/11.2.0.4.0/
linux_x64/ Profile_snap"
```

Sample output:

```
A Refresh Single Profile procedure has been submitted successfully with the
instance name :
'RefreshSingleProfile_SYSMAN_07_22_2014_03_00_PM' and execution_guid=
'0AE6096550756B26E0539878B10A6FF5'
You can track the status of profile creation using the following command:
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5 -xml -details -
showJobOutput
```

3. Verify the status of the database profile refresh by executing the following EM CLI verb.

```
emcli get_instance_status
[-instance={instance guid}]
[-exe=execution guid]
[-xml]
[-details]
[-showJobOutput]
[-tailLength={last N characters}]]
```

Sample:

```
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5
```

Sample output:

```
0AE6096550716B26E0539878B10A6FF5, PROFILE,
RefreshSingleProfile_SYSMAN_07_22_2014_03_00_PM, Running
```

To know the complete status of each of the steps in xml format, execute the following command.

```
emcli get_instance_status -exe=0AE6096550756B26E0539878B10A6FF5 -xml -details -
showJobOutput
```

54.7 Service Template EM CLI Verbs

The table below lists the supported verbs for Service Template resource.

The .json file content samples are provided in [Service Template Executable .json Files](#).

Table 54-17 Service Template EM CLI Verbs

Verb	Description	Format
emcli create_service_template	<p>Creates a database, schema, or pluggable database service template.</p> <p>The <code>input_file</code> should be a JSON based metadata file which should have the necessary configuration for the specific service template creation.</p> <p>Samples of the JSON service executable metadata files are available at Service Template Executable .json Files.</p> <p>Examples:</p> <ul style="list-style-type: none"> Database service template- <pre>emcli create_service_template -name="Database service template" -service_family="DBAAS" -service_type="DB" -pool_target_type="oracle_cloud_zone" -software_pools="MyPool0H" -roles="SSA_USER_ROLE" -description="Database small instance service template." -input_file="data:executable.json"</pre> <p>Sample Output: Service Template "My Service Template" created successfully</p> Schema service template- <pre>emcli create_service_template -name="Schema service template" -service_family="DBAAS" -service_type="SCHEMA" -pool_target_type="schaas_pool" -software_pools="MySCHPool" -roles="SSA_USER_ROLE" -description="Schema small instance service template." -input_file="data:executable.json"</pre> <p>Sample Output: Service Template "My Schema Service Template" created successfully</p> Pluggable database service template - <pre>emcli create_service_template -name="PDB service template" -service_family="DBAAS" -service_type="PDB" -pool_target_type="pdbaas_pool" -software_pools="MyPDBPool" -roles="SSA_USER_ROLE" -description="PDB small instance service template." -input_file="data:executable.json"</pre> 	<pre>emcli create_service_template -name="<Name of Service Template>" -service_family="<Service family for which the Service Template is being created>" -service_type="<Service type for which the Service Template is being created>"] -pool_target_type="Target type of Software Pools to be associated with the Service Template" - software_pools="<SwPool1,Sw Pool2,SwPool3,...>" [- roles="<SsaRole1,SsaRole2,...>"] [-description="<Description of Service Template>"] [-input_file="data:<Name of Service executable MetaData File>"]</pre>

Table 54-17 (Cont.) Service Template EM CLI Verbs

Verb	Description	Format
	<p>Sample Output: Service Template "My PDB Service Template" created successfully.</p>	
emcli delete_service_template	<p>Deletes the Service template.</p> <p>Example:</p> <pre>emcli delete_service_template -name="Database service template" -service_family="DBAAS"</pre> <p>Sample Output: Service Template with name " Database service template " and service family " DBAAS " deleted successfully.</p>	<pre>emcli delete_service_template -name="<Name of Service Template>" -service_family="<Service family to which the Service Template belongs>"]</pre>
emcli get_service_templates	<p>Retrieves the list of available service templates based on the service family passed.</p> <p>Example:</p> <pre>emcli get_service_templates -service_family="DBAAS"</pre> <p>Sample Output: Name Service Family Description</p> <pre>ServiceTemplatel DBAAS ServiceTemplatelDescription</pre>	<pre>emcli get_service_templates [-service_family="<Service family filter used for filtering the service templates>"]</pre>

54.8 Service Template Executable .json Files

Samples of Service Template executable .json files are listed below:

- [DBCA Based Service Template .json File](#)
- [Standby DBCA Based Service Template .json File](#)
- [RMAN Based Single Instance Database Service Template .json File](#)
- [RMAN Based Single Instance Database with Single Instance Standby Service Template .json File](#)
- [RMAN Based RAC One Node Database Service Template .json File](#)
- [RMAN Based RAC One Node Database with Standby Service Template .json File](#)
- [RMAN Based RAC Database with Single Instance Standby Service Template .json File](#)
- [RAC Database with Standby Using a DBCA Template Service Template .json File](#)
- [DNFS Based Database Service Template .json File](#)
- [Snap Clone Single Instance Database with Archiving Enabled Service Template .json File](#)
- [Schema Based Service Template .json File](#)

- [Pluggable Database Service Template .json File](#)
- [RAC Pluggable Database Using an Empty Pluggable Database Service Template .json File](#)
- [RAC Pluggable Database Using a Profile Pluggable Database Service Template .json File](#)
- [Clone DB Based Service Template .json File](#)
- [Full Clone Using an RMAN Duplicate Service Template .json File](#)
- [Snapclone Database Using Live Clone Template on EMC Storage Service Template .json File](#)

54.8.1 DBCA Based Service Template .json File

```
{
  "name": "Create ST for SI Db using DBCA Template - ASM Subh_2",
  "description": "Creates Single Instance DB",
  "roles": [ "SSA_USER_ROLE" ],
  "serviceType": "DB",
  "serviceTemplateTypeId": "61",
  "rscProvAssocOption": [ "byRscProvInst" ],
  "resourceProvider": {
    "lookupCharacteristics": [
      {
        "characteristics": [
          {
            "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
            "values": [ "137F74D7A8359A60762ED550341A5F47" ],
            "targetType": {
              "targetType": "oracle_cloud_zone",
              "targetTypeName": "Database Pool",
              "parentTargetType": "self_service_zone",
              "parentTargetTypeName": "PaaS Infrastructure Zone"
            }
          }
        ]
      },
      {
        "purposeId": 1
      }
    ]
  },
  "payloads": [ { "name": "PROFILE_COMPONENT_URN", "value":
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_DbProfile:
269BA6C90E6A5000E053C075B10A51A3:0.1" } ],
  "configurations": [
    { "name": "REF_ZONE", "value": "Salt Lake City Zone" },
    { "name": "REF_POOL", "value": "SI Databases Pool_Oracle_DB_11g" },
    { "name": "REF_HOST", "value": "xyz.example.com" },
    { "name": "REF_TGT", "value": "xyz.example.com" },
    { "name": "DBCA_TEMPLATE:DB_STORAGE_TYPE", "value": "ASM" },
    { "name": "DBCA_TEMPLATE:REC_STORAGE_TYPE_SAME_AS_DB_FILES", "value": "Y" },
    { "name": "DBCA_TEMPLATE:FLASH_RECOVERY_AREA_SIZE", "value": "4038" },
    { "name": "DBCA_TEMPLATE:DATA_FILE_LOCATION", "value": "DATA" },
    { "name": "DBCA_TEMPLATE:REDO_FILE_LOCATION", "value": "RECO" },
    { "name": "DBCA_TEMPLATE:ARCHIVE_LOG_MODE", "value": "Y" },
    { "name": "DBCA_TEMPLATE:RECOVERY_FILE_LOCATION", "value": "RECO" },
    { "name": "DATABASE_TYPE", "value": "oracle_database" },
    { "name": "COMMON_DOMAIN_NAME", "value": "us.example.com" },
    { "name": "ORACLE.SYSMAN.SSA.PROVISIONING_TYPE", "values": [ "DBCA_TEMPLATE" ] },
    { "name": "ENTITY_TYPE", "value": "USE_PROFILE" },

```

```
{ "name": "PROFILE_COMPONENT_URN", "value":
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_DbProfile:
269BA6C90E6A5000E053C075B10A51A3:0.1" },
{
  "name": "USER_PRIVILEGES",
  "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY
OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE ANY INDEX, CREATE JOB,
CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY TRIGGER, CREATE ANY TYPE,
CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY, SELECT ANY DICTIONARY"
},
{ "name": "SID_OPTION", "value": "ssauser" },
{ "name": "SELECT_ORACLE_HOME_OPTION", "value": "SELECT_ORACLE_HOME_AT_RUNTIME" },
{ "name": "COMMON_DB_SYS_PASSWORD", "value": "welcome" },
{ "name": "DB_ADMIN_PASSWORD_SAME", "value": "true" },
{ "name": "INIT_PARAMS", "values": [
  "sga_target=1073741824",
  "pga_aggregate_target=1073741824"
]
},
{ "name": "LISTENER_PORT", "value": "1521" },
{ "name": "TARGET_PROP_LIST",
  "values": [
    "Site:null:false:false",
    "Contact:xxxx:false:true",
    "Downtime Contact:null:false:false",
    "Location:null:false:false",
    "LifeCycle Status:null:false:false",
    "Department:null:false:false",
    "Comment:Testing:false:true",
    "Line of Business:null:false:false"
  ]
}
]
}
```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in [About Cloud Resources](#).
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.2 Standby DBCA Based Service Template .json File

```
{
  "name": "TestDbTemplate1",
  "serviceType": "DB",
  "serviceFamily": "DBAAS",
  "description": "This is a test database dbca service template 1",
```

```

"poolIds":[ "D125A1536E9ADC36CC24EAB058B9E7AC" ],
  "serviceExecutableMeta":{
"type":"CDP",
"configurations":[
  { "name":"PROFILE_COMPONENT_URN", "value":"oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:F1EA40D2AE964994E0436051F20AFE32:0.1" },
  { "name":"DATABASE_TYPE", "value":"rac_database" },
  { "name":"COMMON_DB_SYSTEM_PASSWORD", "value":"welcome" },
  { "name":"COMMON_DB_DBSNMP_PASSWORD", "value":"welcome" },
  { "name":"COMMON_DB_SYS_PASSWORD", "value":"welcome" },
  { "name":"DB_ADMIN_PASSWORD_SAME", "value":"true" },
  { "name":"INSTANCE_COUNT", "value":"2" },
  { "name":"SID_OPTION", "value":"ssauser" },
  { "name":"COMMON_DB_SID", "value":"mydb1" },
  { "name":"COMMON_DOMAIN_NAME", "value":"us.example.com" },
  { "name":"LISTENER_PORT", "value":"1521"},
  { "name":"STAGE_LOCATION", "value":"/scratch" },
  { "name":"REF_ZONE", "value":"SLC00ECPQ_ZONE" },
  { "name":"REF_POOL", "value":"PRIMARY_RAC_POOL" },
  { "name":"REF_HOST", "value":"xyxy.example.com" },
  { "name":"REF_TGT", "value":"xxy.example.com" },
  { "name":"ROLE_NAME", "value":"ROLE_Oct_31_2014_17_59_PM" },
  { "name":"ROLE_DESC", "value":"New database role to be assigned to master
account." },
  { "name":"USER_PRIVILEGES", "value":"CREATE SESSION, ALTER SESSION, CREATE
INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE
ANY INDEX, CREATE JOB, CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY
TRIGGER, CREATE ANY TYPE, CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY,
SELECT ANY DICTIONARY" },
  { "name":"DEFAULT_DATABASE_SIZE", "value":"small" },
  { "name":"DATABASE_SIZES", "value":"","values":["small","medium"]},
  { "name":"TARGET_PROP_LIST", "value":"","
    "values":[
      "Department:value:false:false",
      "Location:null:false:false",
      "Comment:null:false:false",
      "LifeCycle Status:null:false:false",
      "Line of Business:null:false:false",
      "Contact:null:false:false"
    ]
  },
  { "name":"CUSTOM_TARGET_PROP_LIST", "value":"","
    "values":[
      "Department:value:false:false
    ]
  },
  { "name":"DBCA_TEMPLATE:DB_STORAGE_TYPE", "value":"ASM" },
  { "name":"DBCA_TEMPLATE:DATA_FILE_LOCATION", "value":"DATA" },
  { "name":"DBCA_TEMPLATE:REC_STORAGE_TYPE_SAME_AS_DB_FILES", "value":"Y" },
  { "name":"DBCA_TEMPLATE:ARCHIVE_LOG_MODE", "value":"Y" },
  { "name":"DBCA_TEMPLATE:FLASH_RECOVERY_AREA_SIZE", "value":"2048" },
  { "name":"DBCA_TEMPLATE:RECOVERY_FILE_LOCATION", "value":"RECO" },
  { "name":"DBCA_TEMPLATE:REDO_FILE_LOCATION", "value":"RECO" },
  {
"name":"INIT_PARAMS",
"subconfigurations":[
  { "name":"INIT_PARAMS:1", "value":"sga_target=1073741824" },
  { "name":"INIT_PARAMS:2", "value":"pga_aggregate_target=1073741824" }
]
},
{ "name":"STANDBY_REQUIRED", "value":"true" },
{ "name":"STANDBY_REQUIRED_LOCK", "value":"false" },

```

```
{ "name": "STANDBY_WORK_DIR", "value": "/tmp" },
{ "name": "PRIMARY_PROTECTION_MODE", "value": "MAXIMIZE AVAILABILITY" },
{ "name": "DBAAS_SSA_STANDBY_CUSTOM_PRE_SCRIPTS_URN", "value": "" },
{ "name": "DBAAS_SSA_STANDBY_CUSTOM_POST_SCRIPTS_URN", "value": "" },
{ "name": "STANDBY_DB_DETAILS", "value": "", "values": [
"pool=RAC_11204_Tier_2;databaseSIDPrefix=;databaseType=rac_database;standbyConfigName
=Near
DR;redoMode=SYNC;realtimeQuery=true;databaseRACInstanceCount=2;databaseDelay=30;datab
aseUniqueName=;standbyStorageType=FS;standbyStorageLocation=;standbyFRAType=FS;standb
yFRALocation=;standbyFRASize=;standbyLsnrPort=;domainName=us.example.com",
"pool=SI_11204;databaseSIDPrefix=;databaseType=oracle_database;standbyConfigName=Far
DR;redoMode=ASYNC;realtimeQuery=false;databaseRACInstanceCount=2;databaseDelay=60;dat
abaseUniqueName=;standbyStorageType=FS;standbyStorageLocation=;standbyFRAType=FS;stan
dbyFRALocation=;standbyFRASize=;standbyLsnrPort=;domainName=us.example.com"]}

]
}
```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below,

```
oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:
01AB6F25F31B7671E0537850B10A9B85:0.1 is the ID.
```

```
Pre or Post Standby Database Script,0.1,Pre or Post Standby Database
Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:p
rovisioning:1:cmp:COMP_Directives:none:
01AB6F25F31B7671E0537850B10A9B85:0.1
```
- To derive the REF_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.3 RMAN Based Single Instance Database Service Template .json File

```
{
  "name": "Database Service - RMAN Based with archiving with SI Standby",
  "description": "This creates Database Archiving log mode.",
```

```

"serviceType": "DB",
"serviceTemplateTypeId": "81",
"rscProvAssocOption": [
  "byRscProvInst"
],
"resourceProvider": {
  "lookupCharacteristics": [
    {
      "characteristics": [
        {
          "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
          "values": [
            "1898CF93BD39C19BF032672271BC4B44"
          ],
          "targetType": {
            "targetType": "oracle_cloud_zone",
            "targetTypeName": "Database Pool",
            "parentTargetType": "self_service_zone",
            "parentTargetTypeName": "PaaS Infrastructure Zone"
          }
        }
      ],
      "purposeId": 1
    }
  ],
  "payloads": [
    {
      "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F:0.1"
    }
  ],
  "configurations": [
    {
      "name": "STAGE_LOCATION",
      "value": "/scratch/emga/backups/rman/"
    },
    {
      "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F:0.1"
    },
    {
      "name": "SELECT_ORACLE_HOME_OPTION",
      "value": "SELECT_ORACLE_HOME_FROM_REQUEST"
    },
    {
      "name": "REF_TGT",
      "value": "xyz.example.com"
    },
    {
      "name": "REF_HOST",
      "value": "xyz.example.com"
    },
    {
      "name": "REF_ZONE",
      "value": "Salt Lake City Zone"
    },
    {
      "name": "zoneTargetName",

```

```
    "value": "Salt Lake City Zone"
  },
  {
    "name": "REF_POOL",
    "value": "Databases Pool"
  },
  {
    "name": "DATABASE_TYPE",
    "value": "oracle_database"
  },
  {
    "name": "COMMON_DB_SYS_PASSWORD",
    "value": "welcome"
  },
  {
    "name": "LISTENER_PORT",
    "value": "1521"
  },
  {
    "name": "PROFILE_VERSION",
    "value": "latest"
  },
  {
    "name": "COMMON_DB_SID",
    "value": "db"
  },
  {
    "name": "TARGET_PROP_LIST",
    "values": [
      "Contact:9980697299:false:false",
      "Location:null:false:false",
      "LifeCycle Status:null:false:false",
      "Department:null:false:false",
      "Comment:null:false:false",
      "Line of Business:null:false:false"
    ]
  },
  {
    "name": "USER_PRIVILEGES",
    "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY
OPERATOR, CREATE ANY PROCEDURE"
  },
  {
    "name": "RMAN.DB_STORAGE_TYPE",
    "value": "FS"
  },
  {
    "name": "RMAN.FRA_STORAGE_TYPE",
    "value": "FS"
  },
  {
    "name": "RMAN.FRA_SIZE",
    "value": "4038"
  },
  {
    "name": "RMAN.USE_ARCHIVING",
    "value": "YES"
  },
  {
    "name": "RMAN.DATA_FILE_LOCATION",
    "value": "/scratch/emga/app/emga/oradata"
```

```

    },
    {
      "name": "RMAN.REDO_FILE_LOCATION",
      "value": "/scratch/emga/app/emga/fast_recovery_area"
    },
    {
      "name": "RMAN.RECOVERY_FILE_LOCATION",
      "value": "/scratch/emga/app/emga/fast_recovery_area"
    },
    {
      "name": "RMAN.WORK_DIR_LOC",
      "value": "/tmp/work"
    },
    {
      "name": "RMAN.DB_ADMIN_PASSWORD_SAME",
      "value": "Y"
    },
    {
      "name": "RMAN.DATABASE_PASSWORDS",
      "value": "welcome"
    },
    {
      "name": "RMAN.BACKUP_LOCATION",
      "value": "/scratch/emga/backups/rman/"
    },
    {
      "name": "RMAN.USE_OFA",
      "value": "N"
    },
    {
      "name": "COMMON_DOMAIN_NAME",
      "value": "us.example.com"
    },
    {
      "name": "STANDBY_DB_DETAILS",
      "values": [
        "pool=Near DR
Pool;databaseSIDPrefix=;databaseType=oracle_database;standbyConfigName=Near
DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUniqueName=;standbyStorageType=FS;standbyStorageLocation=;standbyFRAType=FS;standbyFRALocation=;standbyFRASize=;standbyLsnrPort=;domainName=us.example.com"
      ]
    }
  ]
}

```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in [About Cloud Resources](#).
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.4 RMAN Based Single Instance Database with Single Instance Standby Service Template .json File

```
{
  "name": "Database Service - RMAN Based with archiving with SI Standby",
  "description": "This creates Database Archiving log mode.",

```

```
"serviceType": "DB",
"serviceTemplateTypeId": "81",
"rscProvAssocOption": [
  "byRscProvInst"
],
"resourceProvider": {
  "lookupCharacteristics": [
    {
      "characteristics": [
        {
          "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
          "values": [
            "1898CF93BD39C19BF032672271BC4B44"
          ],
          "targetType": {
            "targetType": "oracle_cloud_zone",
            "targetTypeName": "Database Pool",
            "parentTargetType": "self_service_zone",
            "parentTargetTypeName": "PaaS Infrastructure Zone"
          }
        }
      ],
      "purposeId": 1
    }
  ],
  "payloads": [
    {
      "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F:0.1"
    }
  ],
  "configurations": [
    {
      "name": "STAGE_LOCATION",
      "value": "/scratch/emga/backups/rman/"
    },
    {
      "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F:0.1"
    },
    {
      "name": "SELECT_ORACLE_HOME_OPTION",
      "value": "SELECT_ORACLE_HOME_FROM_REQUEST"
    },
    {
      "name": "REF_TGT",
      "value": "xyz.example.com"
    },
    {
      "name": "REF_HOST",
      "value": "xyz.example.com"
    },
    {
      "name": "REF_ZONE",
      "value": "Salt Lake City Zone"
    },
    {
      "name": "zoneTargetName",
```

```
    "value": "Salt Lake City Zone"
  },
  {
    "name": "REF_POOL",
    "value": "Databases Pool"
  },
  {
    "name": "DATABASE_TYPE",
    "value": "oracle_database"
  },
  {
    "name": "COMMON_DB_SYS_PASSWORD",
    "value": "welcome"
  },
  {
    "name": "LISTENER_PORT",
    "value": "1521"
  },
  {
    "name": "PROFILE_VERSION",
    "value": "latest"
  },
  {
    "name": "COMMON_DB_SID",
    "value": "db"
  },
  {
    "name": "TARGET_PROP_LIST",
    "values": [
      "Contact:9980697299:false:false",
      "Location:null:false:false",
      "LifeCycle Status:null:false:false",
      "Department:null:false:false",
      "Comment:null:false:false",
      "Line of Business:null:false:false"
    ]
  },
  {
    "name": "USER_PRIVILEGES",
    "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY
OPERATOR, CREATE ANY PROCEDURE"
  },
  {
    "name": "RMAN.DB_STORAGE_TYPE",
    "value": "FS"
  },
  {
    "name": "RMAN.FRA_STORAGE_TYPE",
    "value": "FS"
  },
  {
    "name": "RMAN.FRA_SIZE",
    "value": "4038"
  },
  {
    "name": "RMAN.USE_ARCHIVING",
    "value": "YES"
  },
  {
    "name": "RMAN.DATA_FILE_LOCATION",
    "value": "/scratch/emga/app/emga/oradata"
```

```

    },
    {
      "name": "RMAN.REDO_FILE_LOCATION",
      "value": "/scratch/emga/app/emga/fast_recovery_area"
    },
    {
      "name": "RMAN.RECOVERY_FILE_LOCATION",
      "value": "/scratch/emga/app/emga/fast_recovery_area"
    },
    {
      "name": "RMAN.WORK_DIR_LOC",
      "value": "/tmp/work"
    },
    {
      "name": "RMAN.DB_ADMIN_PASSWORD_SAME",
      "value": "Y"
    },
    {
      "name": "RMAN.DATABASE_PASSWORDS",
      "value": "welcome"
    },
    {
      "name": "RMAN.BACKUP_LOCATION",
      "value": "/scratch/emga/backups/rman/"
    },
    {
      "name": "RMAN.USE_OFA",
      "value": "N"
    },
    {
      "name": "COMMON_DOMAIN_NAME",
      "value": "us.example.com"
    },
    {
      "name": "STANDBY_DB_DETAILS",
      "values": [
        "pool=Near DR
Pool;databaseSIDPrefix=;databaseType=oracle_database;standbyConfigName=Near
DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUniqueName=;standbyStorageType=FS;standbyStorageLocation=;standbyFRAType=FS;standbyFRALocation=;standbyFRASize=;standbyLsnrPort=;domainName=us.example.com"
      ]
    }
  ]
}

```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.5 RMAN Based RAC One Node Database Service Template .json File

```
{
  "name": "Create Databases on RAC One database",
  "description": "Creates Databases on RAC.",
}
```

```

"serviceType": "DB",
"serviceTemplateTypeId": "81",
"rscProvAssocOption": [
  "byRscProvInst"
],
"resourceProvider": {
  "lookupCharacteristics": [
    {
      "characteristics": [
        {
          "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
          "values": [
            "647E8750A1C3835557165B499B269FB3"
          ],
          "targetType": {
            "targetType": "oracle_cloud_zone",
            "targetTypeName": "Database Pool",
            "parentTargetType": "self_service_zone",
            "parentTargetTypeName": "PaaS Infrastructure Zone"
          }
        }
      ],
      "purposeId": 1
    }
  ],
  "payloads": [
    {
      "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1E4F60D72C912160E053C075B10A29F5:0.1"
    }
  ],
  "configurations": [
    { "name": "STAGE_LOCATION",
      "value": "/scratch/emga/backups/rman/" },
    { "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1E4F60D72C912160E053C075B10A29F5:0.1" },
    { "name": "SELECT_ORACLE_HOME_OPTION",
      "value": "SELECT_ORACLE_HOME_FROM_REQUEST" },
    { "name": "REF_TGT",
      "value": "abc.example.com" },
    { "name": "REF_HOST",
      "value": "adc.example.com" },
    { "name": "REF_ZONE",
      "value": "Salt Lake City Zone" },
    { "name": "zoneTargetName",
      "value": "Salt Lake City Zone" },
    { "name": "REF_POOL",
      "value": "RAC Databases Pool" },
    { "name": "DATABASE_TYPE",
      "value": "rac_database" },
    { "name": "IS_RAC_ONE",
      "value": "Y" },
    { "name": "COMMON_DB_SYS_PASSWORD",
      "value": "welcome" },
    { "name": "LISTENER_PORT",
      "value": "1521" },
    { "name": "PROFILE_VERSION",
      "value": "latest" },

```

```
{ "name": "COMMON_DB_SID",
  "value": "db"},
{ "name": "TARGET_PROP_LIST",
  "values": [
    "Contact:9980697299:false:false",
    "Location:null:false:false",
    "LifeCycle Status:null:false:false",
    "Department:null:false:false",
    "Comment:null:false:false",
    "Line of Business:null:false:false"
  ]
},
{ "name": "USER_PRIVILEGES",
  "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY
OPERATOR, CREATE ANY PROCEDURE"},
{ "name": "RMAN:DB_STORAGE_TYPE",
  "value": "FS"},
{ "name": "RMAN:FRA_SIZE",
  "value": "4038"},
{ "name": "RMAN:USE_ARCHIVING",
  "value": "NO"},
{ "name": "RMAN:DATA_FILE_LOCATION",
  "value": "/scratch/emga/app/emga/oradata"},
{ "name": "RMAN:WORK_DIR_LOC",
  "value": "/tmp/work"},
{ "name": "RMAN:DB_ADMIN_PASSWORD_SAME",
  "value": "Y"},
{ "name": "RMAN:DATABASE_PASSWORDS",
  "value": "welcome"},
{ "name": "RMAN:BACKUP_LOCATION",
  "value": "/oradbnas/backups/rman/"},
{ "name": "RMAN:USE_OFA",
  "value": "N"},
{ "name": "COMMON_DOMAIN_NAME",
  "value": "us.example.com"}
]
}
```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.6 RMAN Based RAC One Node Database with Standby Service Template .json File

```
{
  "name": "RAC One Database Provisioning with RAC One Standby and SI Standby",
  "description": "Creates RAC One Databases with RAC One Standby and SI Standby.",
}
```

```
"serviceType": "DB",
"serviceTemplateTypeId": "81",
"rscProvAssocOption": [
  "byRscProvInst"
],
"resourceProvider": {
  "lookupCharacteristics": [
    {
      "characteristics": [
        {
          "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
          "values": [
            "647E8750A1C3835557165B499B269FB3"
          ],
          "targetType": {
            "targetType": "oracle_cloud_zone",
            "targetTypeName": "Database Pool",
            "parentTargetType": "self_service_zone",
            "parentTargetTypeName": "PaaS Infrastructure Zone"
          }
        }
      ],
      "purposeId": 1
    }
  ],
  "payloads": [
    {
      "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1E4F60D72C912160E053C075B10A29F5:0.1"
    },
    {
      "name": "STAGE_LOCATION",
      "value": "/scratch/emga/backups/rman/"
    },
    {
      "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1E4F60D72C912160E053C075B10A29F5:0.1"
    },
    {
      "name": "SELECT_ORACLE_HOME_OPTION",
      "value": "SELECT_ORACLE_HOME_FROM_REQUEST"
    },
    {
      "name": "REF_TGT",
      "value": "adc.example.com"
    },
    {
      "name": "REF_HOST",
      "value": "adc.example.com"
    },
    {
      "name": "REF_ZONE",
      "value": "Salt Lake City Zone"
    },
    {
      "name": "zoneTargetName",
      "value": "Salt Lake City Zone"
    },
    {
      "name": "REF_POOL",
      "value": "RAC Databases Pool"
    },
    {
      "name": "DATABASE_TYPE",
      "value": "rac_database"
    },
    {
      "name": "IS_RAC_ONE",
      "value": "Y"
    },
    {
      "name": "COMMON_DB_SYS_PASSWORD",
      "value": "welcome"
    },
    {
      "name": "LISTENER_PORT",
      "value": "1521"
    },
    {
      "name": "PROFILE_VERSION",
      "value": "latest"
    },
    {
      "name": "COMMON_DB_SID",
      "value": "db"
    },
  ]
}
```

```

    { "name": "TARGET_PROP_LIST",
      "values": [
        "Contact:9980697299:false:false",
        "Location:null:false:false",
        "LifeCycle Status:null:false:false",
        "Department:null:false:false",
        "Comment:null:false:false",
        "Line of Business:null:false:false"
      ]
    },
    { "name": "USER_PRIVILEGES",
      "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY
OPERATOR, CREATE ANY PROCEDURE",
      { "name": "RMAN:DB_STORAGE_TYPE",
        "value": "FS" },
      { "name": "RMAN:FRA_SIZE",
        "value": "4038" },
      { "name": "RMAN:USE_ARCHIVING",
        "value": "NO" },
      { "name": "RMAN:DATA_FILE_LOCATION",
        "value": "/scratch/emga/app/emga/oradata" },
      { "name": "RMAN:WORK_DIR_LOC",
        "value": "/tmp/work" },
      { "name": "RMAN:DB_ADMIN_PASSWORD_SAME",
        "value": "Y" },
      { "name": "RMAN:DATABASE_PASSWORDS",
        "value": "welcome" },
      { "name": "RMAN:BACKUP_LOCATION",
        "value": "/oradbnas/backups/rman/" },
      { "name": "RMAN:USE_OFA",
        "value": "N" },
      { "name": "COMMON_DOMAIN_NAME",
        "value": "us.example.com" },
      { "name": "STANDBY_REQUIRED",
        "value": "true" },
      { "name": "STANDBY_DB_DETAILS",
        "value": "",
        "values": [
          "pool=SI Databases Zone - Oracle 11g -
Standby;databaseSIDPrefix=st;databaseType=oracle_database;standbyConfigName=Near
DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUniqueName=;standbySto
rageType=FS;standbyStorageLocation=;standbyFRAType=FS;standbyFRALocation=;standbyFRAS
ize=;standbyLsnrPort=;domainName=us.example.com"
        ]
      }
    }
  ]
}

```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.7 RMAN Based RAC Database with Single Instance Standby Service Template .json File

```
{
  "name" : "Create Databases on RAC with SI Standby",
  "description" : "Creates Databases on RAC.",
}
```

```

"serviceType" : "DB",
"serviceTemplateTypeId" : "81",
"rscProvAssocOption" : [ "byRscProvInst" ],
"resourceProvider" : {
  "lookupCharacteristics" : [ {
    "characteristics" : [ {
      "name" : "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
      "values" : [ "647E8750A1C3835557165B499B269FB3" ],
      "targetType" : {
        "targetType" : "oracle_cloud_zone",
        "targetTypeName" : "Database Pool",
        "parentTargetType" : "self_service_zone",
        "parentTargetTypeName" : "PaaS Infrastructure Zone"
      }
    }
  ]
},
  "purposeId" : 1
} ]
},
"payloads" : [ {
  "name" : "PROFILE_COMPONENT_URN",
  "value" : "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1E4F60D72C912160E053C075B10A29F5:0.1"
} ],
"configurations" : [ {
  "name" : "STAGE_LOCATION",
  "value" : "/scratch/emga/backups/rman/"} ,
  { "name" : "PROFILE_COMPONENT_URN",
    "value" : "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1E4F60D72C912160E053C075B10A29F5:0.1" }
  { "name" : "SELECT_ORACLE_HOME_OPTION",
    "value" : "SELECT_ORACLE_HOME_FROM_REQUEST" },
  { "name" : "REF_TGT",
    "value" : "adc.us.example.com" },
  { "name" : "REF_HOST",
    "value" : "adc.us.example.com" },
  { "name" : "REF_ZONE",
    "value" : "Salt Lake City Zone" },
  { "name" : "zoneTargetName",
    "value" : "Salt Lake City Zone" },
  { "name" : "REF_POOL",
    "value" : "RAC Databases Pool" },
  { "name" : "DATABASE_TYPE",
    "value" : "oracle_database" },
  { "name" : "COMMON_DB_SYS_PASSWORD",
    "value" : "welcome" },
  { "name" : "LISTENER_PORT",
    "value" : "1521" },
  { "name" : "PROFILE_VERSION",
    "value" : "latest" },
  { "name" : "COMMON_DB_SID",
    "value" : "db" },
  { "name" : "TARGET_PROP_LIST",
    "values" : [ "Contact:9980697299:false:false", "Location:null:false:false",
"LifeCycle Status:null:false:false", "Department:null:false:false",
"Comment:null:false:false", "Line of Business:null:false:false" ]},
  { "name" : "USER_PRIVILEGES",
    "value" : "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR,
CREATE ANY PROCEDURE" },
  { "name" : "RMAN:DB_STORAGE_TYPE",
    "value" : "FS" },
  { "name" : "RMAN:FRA_SIZE",

```

```

    "value" : "4038"},
    {"name" : "RMAN:USE_ARCHIVING",
    "value" : "NO"},
    {"name" : "RMAN:DATA_FILE_LOCATION",
    "value" : "/scratch/emga/app/emga/oradata"},
    {"name" : "RMAN:WORK_DIR_LOC",
    "value" : "/tmp/work"},
    {"name" : "RMAN:DB_ADMIN_PASSWORD_SAME",
    "value" : "Y"},
    {"name" : "RMAN:DATABASE_PASSWORDS",
    "value" : "welcome"},
    {"name" : "RMAN:BACKUP_LOCATION",
    "value" : "/oradbnas/backups/rman/"},
    {"name" : "RMAN:USE_OFA",
    "value" : "N"},
    {"name" : "COMMON_DOMAIN_NAME",
    "value" : "us.example.com"},
    {"name": "CUSTOM_PRE_CREATE_SCRIPTS_URN",
    "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:
01AB6F25F31B7671E0537850B10A9B85:0.1"},,
    {"name": "CUSTOM_POST_CREATE_SCRIPTS_URN",
    "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:
01AB6F25F31B7671E0537850B10A9B85:0.1"},,
    {"name": "STANDBY_REQUIRED",
    "value": "true"},
    {"name": "STANDBY_DB_DETAILS",
    "value": "",
    "values": [
        "pool=SI Databases Zone - Oracle 11g -
Standby;databaseSIDPrefix=st;databaseType=oracle_database;standbyConfigName=Near
DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUniqueName=;standbySto
rageType=FS;standbyStorageLocation=;standbyFRAType=FS;standbyFRALocation=;standbyFRAS
ize=;standbyLsnrPort=;domainName=us.example.com"
    ]
    }
}
}
}

```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.8 RAC Database with Standby Using a DBCA Template Service Template .json File

```
{
  "name": "Create RAC Db with Standby using DBCA Template - BofA -ASM",
  "description": "Service Template for Non-CDB; 12cR1_2(12.1.0.2); RAC; ASM",
```

```
"serviceType": "DB",
"serviceTemplateTypeId": "61",
"rscProvAssocOption": [
  "byRscProvInst"
],
"roles": [
  "SSAUSERROLE"
],
"resourceProvider": {
  "lookupCharacteristics": [
    {
      "characteristics": [
        {
          "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
          "values": [
            "4C5795E605D71F59BAF9F6AD702E25E1"
          ],
          "targetType": {
            "targetType": "oracle_cloud_zone",
            "targetTypeName": "Database Pool",
            "parentTargetType": "self_service_zone",
            "parentTargetTypeName": "PaaS Infrastructure Zone"
          }
        }
      ],
      "purposeId": 1
    }
  ],
  "payloads": [
    {
      "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:246E84D11ED13BD0E050F90AE5852BC8:0.1"
    }
  ],
  "configurations": [
    {
      "name": "REF_ZONE",
      "value": "Clusters Zone - Oracle DB 12c"
    },
    {
      "name": "REF_HOST",
      "value": "xyz.example.com"
    },
    {
      "name": "REF_POOL",
      "value": "RAC Databases Pool_Oracle_DB_12c"
    },
    {
      "name": "DBCA_TEMPLATE:DB_STORAGE_TYPE",
      "value": "ASM"
    },
    {
      "name": "DBCA_TEMPLATE:REC_STORAGE_TYPE_SAME_AS_DB_FILES",
      "value": "Y"
    },
    {
      "name": "DBCA_TEMPLATE:ARCHIVE_LOG_MODE",
      "value": "N"
    }
  ],
```

```

{
  "name": "DBCA_TEMPLATE:FLASH_RECOVERY_AREA_SIZE",
  "value": "4038"
},
{
  "name": "DBCA_TEMPLATE:DATA_FILE_LOCATION",
  "value": "DATA"
},
{
  "name": "DBCA_TEMPLATE:REDO_FILE_LOCATION",
  "value": "DATA1"
},
{
  "name": "DBCA_TEMPLATE:RECOVERY_FILE_LOCATION",
  "value": "DATA1"
},
{
  "name": "DATABASE_TYPE",
  "value": "rac_database"
},
{
  "name": "INSTANCE_COUNT",
  "value": "2"
},
{
  "name": "COMMON_DOMAIN_NAME",
  "value": "us.example.com"
},
{
  "name": "ORACLE.SYSMAN.SSA.PROVISIONING_TYPE",
  "values": [
    "DBCA_TEMPLATE"
  ]
},
{
  "name": "ENTITY_TYPE",
  "value": "USE_PROFILE"
},
{
  "name": "REF_TGT",
  "value": "xyz.example.com"
},
{
  "name": "SID_OPTION",
  "value": "prefix"
},
{
  "name": "PROFILE_COMPONENT_URN",
  "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:246E84D11ED13BD0E050F90AE5852BC8:0.1"
},
{
  "name": "PROFILE_VERSION",
  "value": "latest"
},
{
  "name": "USER_PRIVILEGES",
  "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY
OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE ANY INDEX, CREATE JOB,
CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY TRIGGER, CREATE ANY TYPE,
CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY, SELECT ANY DICTIONARY"
}

```

```

    },
    {
      "name": "COMMON_DB_SID",
      "value": "RFTDB"
    },
    {
      "name": "INIT_PARAMS",
      "subconfigurations": [
        "sga_target=1073741824",
        "pga_aggregate_target=1073741824"
      ]
    },
    {
      "name": "SELECT_ORACLE_HOME_OPTION",
      "value": "SELECT_ORACLE_HOME_AT_RUNTIME"
    },
    {
      "name": "COMMON_DB_SYS_PASSWORD",
      "value": "welcome1"
    },
    {
      "name": "DB_ADMIN_PASSWORD_SAME",
      "value": "true"
    },
    {
      "name": "LISTENER_PORT",
      "value": "1521"
    },
    {
      "name": "STANDBY_REQUIRED",
      "value": "true"
    },
    {
      "name": "STANDBY_DB_DETAILS",
      "value": "",
      "values": [
        "pool=SI Databases Zone - Oracle 11g -
Standby;databaseSIDPrefix=st;databaseType=oracle_database;standbyConfigName=Near
DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUniqueName=;standbySto
rageType=FS;standbyStorageLocation=;standbyFRAType=FS;standbyFRALocation=;standbyFRAS
ize=;standbyLsnrPort=;domainName=us.example.com"
      ]
    },
    {
      "name": "DATABASE_SIZES",
      "values": [
        "Big",
        "Small"
      ]
    },
    {
      "name": "DEFAULT_DATABASE_SIZE",
      "value": "Big"
    }
  ]
}

```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.9 DNFS Based Database Service Template .json File

```
{
  "name" : "DB Clones",
  "description" : "This clones a database based on NFS.",
  "serviceType" : "DB",
  "serviceTemplateTypeId" : "81",
```

```

"rscProvAssocOption" : [ "byRscProvInst" ],
"resourceProvider" : {
  "lookupCharacteristics" : [ {
    "characteristics" : [ {
      "name" : "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
      "values" : [ "1898CF93BD39C19BF032672271BC4B44" ],
      "targetType" : {
        "targetType" : "oracle_cloud_zone",
        "targetTypeName" : "Database Pool",
        "parentTargetType" : "self_service_zone",
        "parentTargetTypeName" : "PaaS Infrastructure Zone"
      }
    }
  ] ],
  "purposeId" : 1
} ],
},
"payloads" : [ {
  "name" : "PROFILE_COMPONENT_URN",
  "value" : "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F:0.1"
} ],
"configurations" : [ {
  "name" : "STAGE_LOCATION",
  "value" : "/scratch/emga/backups/rman/"
}, {
  "name" : "PROFILE_COMPONENT_URN",
  "value" : "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F:0.1"
}, {
  "name": "SELECT_ORACLE_HOME_OPTION",
  "value": "SELECT_ORACLE_HOME_FROM_REQUEST",
}, {
  "name" : "REF_TGT",
  "value" : "abc.example.com"
}, {
  "name" : "REF_HOST",
  "value" : "abc.example.com"
}, {
  "name" : "REF_ZONE",
  "value" : "Salt Lake City Zone"
}, {
  "name" : "zoneTargetName",
  "value" : "Salt Lake City Zone"
}, {
  "name" : "REF_POOL",
  "value" : "Databases Pool"
}, {
  "name" : "DATABASE_TYPE",
  "value" : "oracle_database"
}, {
  "name" : "COMMON_DB_SYS_PASSWORD",
  "value" : "welcome"
}, {
  "name" : "LISTENER_PORT",
  "value" : "1521"
}, {
  "name" : "PROFILE_VERSION",
  "value" : "latest"
}, {
  "name" : "COMMON_DB_SID",
  "value" : "db"
}, {
  "name" : "TARGET_PROP_LIST",
  "values" : [ "Contact:9980697299:false:false", "Location:null:false:false",
"LifeCycle Status:null:false:false", "Department:null:false:false",
"Comment:null:false:false", "Line of Business:null:false:false" ]
}, {
  "name" : "USER_PRIVILEGES",
  "value" : "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR,
CREATE ANY PROCEDURE"
}, {
  "name" : "DNFS.DATA_FILE_LOCATION",
  "value" : "/scratch/emga/app/emga/oradata"
}, {
  "name" : "DNFS.REDO_FILE_LOCATION",
  "value" : "/scratch/emga/app/emga/fast_recovery_area"
}, {
  "name" : "DNFS.RECOVERY_FILE_LOCATION",

```

```
"value" : "/scratch/emga/app/emga/fast_recovery_area"}
{"name" : "DNFS.FRA_SIZE",
"value" : "4038"}
{"name" : "DNFS.USE_ARCHIVING",
"value" : "YES"}
{"name" : "DNFS.WORK_DIR_LOC",
"value" : "/tmp/work"}
{"name" : "DNFS.DB_ADMIN_PASSWORD_SAME",
"value" : "Y"}
{"name" : "DNFS.BACKUP_LOCATION",
"value" : "/scratch/emga/backups/rman_image/"}
{"name" : "DNFS.USE_OFA",
"value" : "N"}
{"name" : "COMMON_DOMAIN_NAME",
"value" : "us.example.com"} ]
}
```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.10 Snap Clone Single Instance Database with Archiving Enabled Service Template .json File

```
{
  "name" : "Create Snap Database using Snapshots",
  "description" : "Creates Databases on SI hosts.",
```

```

"serviceType" : "DB",
"serviceTemplateTypeId" : "81",
"rscProvAssocOption" : [ "byRscProvInst" ],
"resourceProvider" : {
  "lookupCharacteristics" : [ {
    "characteristics" : [ {
      "name" : "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
      "values" : [ "503073C7912B1C65B66E240C433012A9" ],
      "targetType" : {
        "targetType" : "oracle_cloud_zone",
        "targetTypeName" : "Database Pool",
        "parentTargetType" : "self_service_zone",
        "parentTargetTypeName" : "PaaS Infrastructure Zone"
      }
    }
  ]
}, {
  "purposeId" : 1
} ]
},
"payloads" : [ {
  "name" : "PROFILE_COMPONENT_URN",
  "value" : "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:247BF4B378FF253FE053C075B10A794A:0.1"
} ],
"configurations" : [ {
  "name" : "STAGE_LOCATION",
  "value" : "/scratch/emga/backups/rman/"
}, {
  "name" : "PROFILE_COMPONENT_URN",
  "value" : "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:247BF4B378FF253FE053C075B10A794A:0.1"
}, {
  "name" : "REF_TGT",
  "value" : "xyz.example.com"
}, {
  "name" : "REF_HOST",
  "value" : "xyz.example.com"
}, {
  "name" : "REF_ZONE",
  "value" : "Single Instances Zone"
}, {
  "name" : "zoneTargetName",
  "value" : "Single Instances Zone"
}, {
  "name" : "REF_POOL",
  "value" : "SI Databases Pool - Version 11_2_0_4"
}, {
  "name" : "DATABASE_TYPE",
  "value" : "oracle_database"
}, {
  "name" : "COMMON_DB_SYS_PASSWORD",
  "value" : "welcome"
}, {
  "name" : "LISTENER_PORT",
  "value" : "1521"
}, {
  "name" : "PROFILE_VERSION",
  "value" : "latest"
}, {
  "name" : "COMMON_DB_SID",
  "value" : "db"
}, {

```

```
    "name" : "TARGET_PROP_LIST",
    "values" : [ "Contact:9980697299:false:false", "Location:null:false:false",
"LifeCycle Status:null:false:false", "Department:null:false:false",
"Comment:null:false:false", "Line of Business:null:false:false" ]
  }, {
    "name" : "USER_PRIVILEGES",
    "value" : "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR,
CREATE ANY PROCEDURE"
  }, {
    "name" : "THIN_PROVISIONING:LISTENER_PORT",
    "value" : "1522"
  }, {
    "name" : "THIN_PROVISIONING:REDO_LOG_GROUP_COUNT",
    "value" : "2"
  }, {
    "name" : "THIN_PROVISIONING:TEMP_TABLESPACE_SIZE",
    "value" : "520"
  }, {
    "name" : "THIN_PROVISIONING:USE_ARCHIVING",
    "value" : "YES"
  }, {
    "name" : "THIN_PROVISIONING:MOUNT_POINT_LIST",
    "values" : [ "/hkdb" ]
  }, {
    "name" : "THIN_PROVISIONING:MOUNT_ADDL_SIZE_LIST",
    "values" : [ "5.0" ]
  }, {
    "name" : "THIN_PROVISIONING:REDO_LOG_FILE_TYPE",
    "value" : "Same as source"
  }, {
    "name" : "INIT_PARAMS",
    "values" : [ "sga_target=1073741824", "pga_aggregate_target=1073741824" ]
  }, {
    "name" : "COMMON_DOMAIN_NAME",
    "value" : "us.example.com"
  } ]
}
```

 **Note:**

In the JSON body mentioned above:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate `serviceType:DB` in the JSON response. Note the `serviceTemplateTypeId` under `serviceType:DB` and use the value in the POST body shown above.
- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as `SELECT_ORACLE_HOME_AT_RUNTIME`, or to be selected by the SSA user by entering the value as `SELECT_ORACLE_HOME_FROM_REQUEST`.

These parameters are mandatory and are required to identify the reference target to create the database.

54.8.11 Schema Based Service Template .json File

```
{
  "name": "TestSchaasTemplate3",
  "serviceType": "SCHEMA",
  "serviceFamily": "DBAAS",
  "description": "This is a test schaaas service template 1",
```

```

"poolIds":[ "9D3187DE6B1115791D71D2827FB98558" ],
"roles":[
  { "name":"SSA_USER_ROLE1" }
],
"serviceExecutableMeta":{
  "type":"CDP",
  "configurations":[
    { "name":"ROLE_NAME", "value":"SampleRole" },
    { "name":"MAX_NUMBER_OF_SCHEMAS", "value":"2" },
    { "name":"ENFORCE_STORAGE_CONSTRAINT", "value":"NO_LIMIT" },
    { "name":"AUTO_EXTEND_BLOCK_SIZE", "value":"1024" },
    { "name":"REF_ZONE", "value":"ABC_ZONE" },
    { "name":"REF_POOL", "value":"SCH_POOL" },
    { "name":"REF_HOST", "value":"abc.mycompany.com" },
    { "name":"REF_DB", "value":"simple.us.example.com" },
    { "name":"CREATE_SCHEMA_OPTION", "value":"EMPTY_SCHEMAS" },
    { "name":"SCHAAS_CUSTOM_PRE_SCRIPTS_URN", "value":"oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1"},
    { "name":"SCHAAS_CUSTOM_POST_SCRIPTS_URN", "value":"oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1"},
    {
      "name":"REMAP_TABLESPACE_LIST",
      "value":"",
      "values":["TBSP1", "TBSP2", "TBSP3"]
    },
    {
      "name":"REMAP_TABLESPACE_INIT_SIZE_LIST",
      "value":"",
      "values":["TBSP1:0.1", "TBSP2:0.2", "TBSP3:0.3"]
    },
    {
      "name":"REMAP_TABLESPACE_INCR_SIZE_LIST",
      "value":"",
      "values":["TBSP1:0.1", "TBSP2:0.2", "TBSP3:0.3"]
    },
    {
      "name":"REMAP_TABLESPACE_MAX_SIZE_LIST",
      "value":"",
      "values":["TBSP1:50.0", "TBSP2:30", "TBSP3:20"]
    },
    { "name":"CREATE_SCHEMA_OPTION", "value":"EMPTY_SCHEMAS" },
    {
      "name":"WORKLOADS",
      "subconfigurations":[
        {
          "name":"WORK_LOADS:1",
          "subconfigurations":[
            { "name":"name", "value":"large " },
            { "name":"description", "value":"large workload" },
            { "name":"default", "value":"Y" },
            { "name":"CPU", "value":"6" },
            { "name":"Memory", "value":"4048" },
            { "name":"Storage", "value":"2024" }
          ]
        }
      ]
    }
  ]
}

```

```
}
}
```

54.8.12 Pluggable Database Service Template .json File

```
{
  "name": "TestPdbTemplate1",
  "serviceType": "PDB",
  "serviceFamily": "DBAAS",
  "description": "This is a test pluggable database service template 1",
  "poolIds": [ "FF394120842D8C71CC92BE6A4D5A488E" ],
  "roles": [
    { "name": "SSA_USER_ROLE1" }
  ],
  "serviceExecutableMeta": {
    "type": "CDP",
    "configurations": [
      {
        "name": "TABLESPACE_ENCRYPTION_ALGORITHM",
        "subconfigurations": [
          { "name": "name", "value": "NONE" }
        ]
      },
      { "name": "MAX_TABLESPACE_ALLOWED", "value": "2" },
      { "name": "PDB_SID_PREFIX", "value": "mypdb" },
      { "name": "ENFORCE_STORAGE_CONSTRAINT", "value": "NO_LIMIT" },
      { "name": "AUTO_EXTEND_BLOCK_SIZE", "value": "1024" },
      { "name": "REF_DATA_ZONE", "value": "PDB_Zone" },
      { "name": "REF_DATA_TARGET", "value": "database" },
      { "name": "REF_DATA_TARGET_TYPE", "value": "oracle_database" },
      { "name": "REF_DATA_POOL", "value": "PDB_POOL" },
      { "name": "REF_DATA_HOST", "value": "abc.mycompany.com" },
      { "name": "SELECT_TARGET_OPTION", "value": "SELECT_TARGET_FROM_REQUEST" },
      { "name": "CREATE_PDB_OPTION", "value": "EMPTY_PDB" },

      { "name": "PDBAAS_CUSTOM_PRE_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1" },

      { "name": "PDBAAS_CUSTOM_POST_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1" },
      { "name": "PRIVILEGES",
        "value": "",
        "values": [ "CREATE TYPE", "CREATE VIEW", "CREATE DIMENSION", "CREATE SESSION", "CREATE TRIGGER", "CREATE OPERATOR", "CREATE SYNONYM", "CREATE TABLE", "CREATE PROCEDURE", "CREATE INDEXTYPE", "CREATE SEQUENCE" ]
      },
      { "name": "ROLE_OPTION", "value": "CUSTOM_NEW_ROLE" },
      {
        "name": "INIT_PARAMS",
        "subconfigurations": [
          { "name": "INIT_PARAMS:1", "value": "/*.cursor_sharing=EXACT" },
          { "name": "INIT_PARAMS:2", "value": "/*.open_cursors=200" }
        ]
      },
      {
        "name": "WORKLOADS",
        "subconfigurations": [
          {
            "name": "WORK_LOADS:1",
            "subconfigurations": [

```


54.8.13 RAC Pluggable Database Using an Empty Pluggable Database Service Template .json File

```
{
  "name": "Create RAC PDBs using empty PDB option",
  "description": "Creates PDBs on cluster.",
  "serviceType": "PDB",
  "serviceTemplateTypeId": "94",
  "rscProvAssocOption": [
    "byRscProvInst"
  ],
  "roles": [
    "SSA_USER_ROLE"
  ],
  "resourceProvider": {
    "lookupCharacteristics": [
      {
        "characteristics": [
          {
            "name": "ORACLE.SYSMAN.SSA.PDBAAS_POOL",
            "values": [
              "DFB8F2A53429AF99EF2020C56E11FEE9"
            ],
            "targetType": {
              "targetType": "pdbaas_pool",
              "targetTypeName": "Pluggable Database Pool",
              "parentTargetType": "self_service_zone",
              "parentTargetTypeName": "PaaS Infrastructure Zone"
            }
          }
        ]
      }
    ],
    "purposeId": 1
  }
},
"payloads": [
  {
    "name": "DBDELETE_PRESCRIPT",
    "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:246A484D511C1CFE053C075B10AEF2D:0.1"
  },
  {
    "name": "DBDELETE_POSTSCRIPT",
    "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:246A484D51201CFE053C075B10AEF2D:0.1"
  }
],
"characteristics": [
  {
    "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT",
    "displayName": "Department",
    "value": "Development",
    "required": true,
    "editable": false,
    "visible": true
  },
  {
    "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION",
```

```
        "displayName": "Location",
        "values": "Bangalore",
        "required": false,
        "editable": true,
        "visible": true
    }
],
"configurations": [
    {
        "name": "REF_DATA_ZONE",
        "value": "Single Instances Zone"
    },
    {
        "name": "SELECT_TARGET_OPTION",
        "value": "SELECT_TARGET_FROM_REQUEST"
    },
    {
        "name": "CUSTOM_ROLE_NAME",
        "value": "PDBAAS_NOV_13_2015_16_51_PM"
    },
    {
        "name": "TARGET_PROP_LIST",
        "values": [
            "Site:null:false:false",
            "Contact:null:false:false",
            "Downtime Contact:null:false:false",
            "Location:null:false:false",
            "LifeCycle Status:null:false:false",
            "Department:Development:true:true",
            "Comment:This is for testing:false:false",
            "Line of Business:null:false:false"
        ]
    },
    {
        "name": "PDBAAS_CUSTOM_PRE_SCRIPTS_URN",
        "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:
2469CA4C8C7B4E34E053C075B10A74AD:0.2"
    },
    {
        "name": "WORKLOADS",
        "subvalues": [
            {
                "name": "Small",
                "subvalues": [
                    {
                        "name": "name",
                        "value": "SmallPdb"
                    },
                    {
                        "name": "description",
                        "value": "small workload"
                    }
                ]
            },
            {
                "name": "default",
                "value": "N"
            },
            {
                "name": "CPU",
                "value": "2"
            }
        ]
    }
]
```

```
        "name": "Memory",
        "value": "2"
    },
    {
        "name": "Storage",
        "value": "5"
    },
    {
        "name": "Sessions",
        "value": "100"
    }
]
}
}
},
{
    "name": "PRIVILEGES",
    "type": "VECTOR",
    "description": "List of privileges of custom new role that will be applied on
pluggable database administrator.",
    "displayName": "PRIVILEGES",
    "required": false,
    "secret": false,
    "values": [
        "CREATE SESSION",
        "ALTER SESSION",
        "CREATE DIMENSION",
        "CREATE INDEXTYPE",
        "CREATE ANY OPERATOR",
        "CREATE ANY PROCEDURE",
        "CREATE ANY SEQUENCE",
        "CREATE ANY INDEX",
        "CREATE JOB",
        "CREATE ANY MATERIALIZED VIEW",
        "CREATE ANY TABLE",
        "CREATE ANY TRIGGER",
        "CREATE ANY TYPE",
        "CREATE ANY VIEW",
        "CREATE ANY SYNONYM",
        "CREATE ANY DIRECTORY",
        "SELECT ANY DICTIONARY",
        "SELECT ANY TABLE"
    ]
},
{
    "name": "REF_DATA_TARGET_TYPE",
    "value": "rac_database"
},
{
    "name": "REF_DATA_ZONE",
    "value": "Clusters Zone - Oracle DB 12c"
},
{
    "name": "REF_DATA_HOST",
    "value": "xyz.example.com"
},
{
    "name": "REF_DATA_TARGET",
    "value": "cdbfs"
},
{
```

```
    "name": "REF_DATA_POOL",
    "value": "RAC Pluggable DBs"
  },
  {
    "name": "PDBAAS_CUSTOM_POST_SCRIPTS_URN",
    "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:
2469CA4C8C7F4E34E053C075B10A74AD:0.2"
  },
  {
    "name": "SELECT_TARGET_OPTION",
    "value": "SELECT_TARGET_AT_RUNTIME"
  },
  {
    "name": "MAX_TABLESPACE_ALLOWED",
    "value": "1"
  },
  {
    "name": "ROLE_OPTION",
    "value": "CUSTOM_NEW_ROLE"
  },
  {
    "name": "CREATE_PDB_OPTION",
    "value": "EMPTY_PDB"
  },
  {
    "name": "INIT_PARAMS",
    "values": [
      "*.cursor_sharing=EXACT",
      "*.open_cursors=300"
    ]
  }
]
}
```

 **Note:**

- To get the software library ID of the "PDBAAS_CUSTOM_PRE_SCRIPTS_URN" and "PDBAAS_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

`Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1`
- To derive the REF_DATA_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "poolIds", execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate "serviceType": "DB" in the JSON response. Note the `serviceTemplateTypeId` under "serviceType": "DB" and use the value in the POST body shown above.
- In the table above, the `SELECT_TARGET_OPTION` parameter defines if the SSA User has the option to select the Container Database (CDB) while requesting for a PDB. If the value for the parameter is set as `SELECT_TARGET_FROM_REQUEST`, then the SSA User has the option to choose the CDB. If no value is defined, or if the value is set to `SELECT_TARGET_AT_RUNTIME`, then the placement algorithm selects the CDB.

54.8.14 RAC Pluggable Database Using a Profile Pluggable Database Service Template .json File

```
{
  "name": "Create RAC PDBs using Profile PDB option",
  "description": "Creates PDBs on cluster.",
  "serviceType": "PDB",
  "serviceTemplateTypeId": "94",
  "rscProvAssocOption": [
    "byRscProvInst"
  ],
  "roles": [
    "SSA_USER_ROLE"
  ],
  "resourceProvider": {
    "lookupCharacteristics": [
      {
        "characteristics": [
          {

```

```

        "name": "ORACLE.SYSMAN.SSA.PDBAAS_POOL",
        "values": [
            "DFB8F2A53429AF99EF2020C56E11FEE9"
        ],
        "targetType": {
            "targetType": "pdbaas_pool",
            "targetTypeName": "Pluggable Database Pool",
            "parentTargetType": "self_service_zone",
            "parentTargetTypeName": "PaaS Infrastructure Zone"
        }
    },
    "purposeId": 1
}
],
"payloads": [
    {
        "name": "DBDELETE_PRESCRIPT",
        "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:
246A484D511C1CFFE053C075B10AEF2D:0.1"
    },
    {
        "name": "DBDELETE_POSTSCRIPT",
        "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:
246A484D51201CFFE053C075B10AEF2D:0.1"
    }
],
"characteristics": [
    {
        "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_CONTACT",
        "displayName": "Contact",
        "values": [],
        "required": false,
        "editable": true,
        "visible": true
    },
    {
        "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER",
        "displayName": "Cost Center",
        "values": [],
        "required": false,
        "editable": true,
        "visible": true
    },
    {
        "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT",
        "displayName": "Department",
        "values": [],
        "required": false,
        "editable": true,
        "visible": true
    },
    {
        "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DOWNTIME_CONTACT",
        "displayName": "Downtime Contact",
        "values": [],
        "required": false,
        "editable": true,
        "visible": true
    }
],

```

```

{
  "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS",
  "displayName": "Lifecycle Status",
  "values": [
    "Development",
    "MissionCritical",
    "Production",
    "Stage",
    "Test"
  ],
  "required": false,
  "editable": true,
  "visible": true
},
{
  "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS",
  "displayName": "Line of Business",
  "values": [],
  "required": false,
  "editable": true,
  "visible": true
},
{
  "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION",
  "displayName": "Location",
  "values": [],
  "required": false,
  "editable": true,
  "visible": true
}
],
"configurations": [
  {
    "name": "REF_DATA_ZONE",
    "value": "Single Instances Zone"
  },
  {
    "name": "SELECT_TARGET_OPTION"
    "value": "SELECT_TARGET_FROM_REQUEST"
  },
  {
    "name": "TARGET_PROP_LIST",
    "values": [
      "Site:null:false:false",
      "Contact:null:false:false",
      "Downtime Contact:null:false:false",
      "Location:null:false:false",
      "LifeCycle Status:null:false:false",
      "Department:Development:true:true",
      "Comment:This is for testing:false:false",
      "Line of Business:null:false:false"
    ]
  },
  {
    "name": "PDBAAS_CUSTOM_PRE_SCRIPTS_URN",
    "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:
2469CA4C8C7B4E34E053C075B10A74AD:0.2"
  },
  {
    "name": "WORKLOADS",
    "subvalues": [

```

```
{
  "name": "Small",
  "subvalues": [
    {
      "name": "name",
      "value": "SmallPdb"
    },
    {
      "name": "description",
      "value": "small workload"
    },
    {
      "name": "default",
      "value": "N"
    },
    {
      "name": "CPU",
      "value": "2"
    },
    {
      "name": "Memory",
      "value": "2"
    },
    {
      "name": "Storage",
      "value": "5"
    },
    {
      "name": "Sessions",
      "value": "100"
    }
  ]
},
{
  "name": "ROLE_OPTION",
  "value": "CUSTOM_NEW_ROLE"
},
{
  "name": "CUSTOM_ROLE_NAME",
  "value": "PDBAAS_NOV_13_2015_16_51_PM"
},
{
  "name": "CUSTOM_ROLE_DESC",
  "value": "New db role to be assigned to pluggable database administrator."
},
{
  "name": "PRIVILEGES",
  "values": [
    "CREATE SESSION",
    "ALTER SESSION",
    "CREATE DIMENSION",
    "CREATE INDEXTYPE",
    "CREATE ANY OPERATOR",
    "CREATE ANY PROCEDURE",
    "CREATE ANY SEQUENCE",
    "CREATE ANY INDEX",
    "CREATE JOB",
    "CREATE ANY MATERIALIZED VIEW",
    "CREATE ANY TABLE",
```

```

        "CREATE ANY TRIGGER",
        "CREATE ANY TYPE",
        "CREATE ANY VIEW",
        "CREATE ANY SYNONYM",
        "CREATE ANY DIRECTORY",
        "SELECT ANY DICTIONARY",
        "SELECT ANY TABLE"
    ]
},
{
    "name": "REF_DATA_TARGET_TYPE",
    "value": "rac_database"
},
{
    "name": "REF_DATA_ZONE",
    "value": "Clusters Zone - Oracle DB 12c"
},
{
    "name": "REF_DATA_HOST",
    "value": "xyz.example.com"
},
{
    "name": "REF_DATA_TARGET",
    "value": "cdbfs"
},
{
    "name": "REF_DATA_POOL",
    "value": "RAC Pluggable DBs"
},
{
    "name": "PDBAAS_CUSTOM_POST_SCRIPTS_URN",
    "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:
2469CA4C8C7F4E34E053C075B10A74AD:0.2"
},
{
    "name": "SELECT_TARGET_OPTION",
    "value": "SELECT_TARGET_AT_RUNTIME"
},
{
    "name": "MAX_TABLESPACE_ALLOWED",
    "value": "1"
},
{
    "name": "CREATE_PDB_OPTION",
    "value": "PDB_FROM_PROFILE"
},
{
    "name": "PROFILE_URN",
    "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:246C1E85296C29A1E053C075B10A7DFA:0.1"
},
{
    "name": "SHARED_STAGE_LOCATION",
    "value": "/u04/app/hhkaur/product/12.1.0/dbhome_2/rdbms/xml/schema"
},
{
    "name": "TABLESPACE_SIZE",
    "values": [
        "0.7715",
        "0.6152",
        "0.0586",
    ]
}

```

```

        "0.0049"
    ],
    {
        "name": "INIT_PARAMS",
        "values": [
            "*.cursor_sharing=EXACT",
            "*.open_cursors=300"
        ]
    },
    {
        "name": "PDB_SID_PREFIX",
        "value": "prp"
    }
]
}

```

Note:

- To get the software library ID of the "PDBAAS_CUSTOM_PRE_SCRIPTS_URN" and "PDBAAS_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.


```

Pre or Post Standby Database Script,0.1,Pre or Post Standby Database
Script,Ready,Directives,,Production,ORACLE,,,oracle:defaultService:em:p
rovisioning:1:cmp:COMP_Directives:none:
01AB6F25F31B7671E0537850B10A9B85:0.1

```
- To derive the REF_DATA_ZONE to be associated with the Service template, execute a GET request.
- To derive the ID of the Software Pool that needs to be entered as "poolIds", execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the `serviceTemplateTypeId` value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate "serviceType": "DB" in the JSON response. Note the `serviceTemplateTypeId` under "serviceType": "DB" and use the value in the POST body shown above.
- In the table above, the `SELECT_TARGET_OPTION` parameter defines if the SSA User has the option to select the Container Database (CDB) while requesting for a PDB. If the value for the parameter is set as `SELECT_TARGET_FROM_REQUEST`, then the SSA User has the option to choose the CDB. If no value is defined, or if the value is set to `SELECT_TARGET_AT_RUNTIME`, then the placement algorithm selects the CDB.

54.8.15 Clone DB Based Service Template .json File

```

{
  "type": "CDP",
  "configurations": [
    { "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:E9F67B964802DD32E040F20A60514EB5:0.1" },
    { "name": "DATABASE_TYPE", "value": "oracle_database" },
    { "name": "COMMON_DB_SYSTEM_PASSWORD", "value": "welcome" },
    { "name": "COMMON_DB_DBSNMP_PASSWORD", "value": "welcome" },
    { "name": "COMMON_DB_SYS_PASSWORD", "value": "welcome" },
    { "name": "COMMON_DB_SID", "value": "norm" },
    { "name": "COMMON_DOMAIN_NAME", "value": "us.example.com" },
    { "name": "LISTENER_PORT", "value": "1521" },
    { "name": "STAGE_LOCATION", "value": "/tmp/rman_backup/backup1383140909156" },
    { "name": "REF_ZONE", "value": "SLC01HZK_ZONE" },
    { "name": "SID_OPTION", "value": "ssouser" },
    { "name": "COMMON_DB_SID", "value": "mydb1" },
    { "name": "REF_POOL", "value": "PRIMARY_DB2" },
    { "name": "REF_HOST", "value": "xyxy.example.com" },
    { "name": "REF_TGT", "value": "xxxy.example.com" },
    { "name": "ROLE_NAME", "value": "ROLE_Oct_31_2014_17_59_PM" },
    { "name": "ROLE_DESC", "value": "New database role to be assigned to master
account." },
    { "name": "USER_PRIVILEGES", "value": "CREATE SESSION, ALTER SESSION, CREATE
INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE
ANY INDEX, CREATE JOB, CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY
TRIGGER, CREATE ANY TYPE, CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY,
SELECT ANY DICTIONARY" },
    { "name": "DEFAULT_DATABASE_SIZE", "value": "small" },
    { "name": "DATABASE_SIZES", "value": "", "values": ["small", "medium"] },
    { "name": "ENTITY_TYPE", "value": "USE_PROFILE" },
    { "name": "PROFILE_VERSION", "value": "latest" },
    { "name": "TARGET_PROP_LIST", "value": "",
      "values": [
        "Department:value:false:false",
        "Location:null:false:false",
        "Comment:null:false:false",
        "LifeCycle Status:null:false:false",
        "Line of Business:null:false:false",
        "Contact:null:false:false"
      ]
    },
    { "name": "CUSTOM_TARGET_PROP_LIST", "value": "",
      "values": [
        "Department:value:false:false"
      ]
    },
    { "name": "RMAN:DB_STORAGE_TYPE", "value": "FS" },
    { "name": "RMAN:FRA_STORAGE_TYPE", "value": "FS" },
    { "name": "RMAN:DATA_FILE_LOCATION", "value": "/scratch/app/oracle/oradata" },
    { "name": "RMAN:RECOVERY_FILE_LOCATION", "value": "/scratch/app/oracle/fra" },
    { "name": "RMAN:REDO_FILE_LOCATION", "value": "/scratch/app/oracle/fra" },
    { "name": "RMAN:FRA_SIZE", "value": "5000" },
    { "name": "RMAN:REC_STORAGE_TYPE_SAME_AS_DB_FILES", "value": "Y" },
    { "name": "RMAN:ARCHIVE_LOG_MODE", "value": "Y" },
    { "name": "RMAN:FLASH_RECOVERY_AREA_SIZE", "value": "5000" },
    { "name": "CLONE_OR_FULL_DB", "value": "CLONE_DB" },
    { "name": "USER_INITIATED_BACKUP_LOCATION", "value": "/tmp" },
    { "name": "ALLOW_BACKUPS", "value": "true" },
  ]
}

```

```

    { "name": "MAX_BACKUPS_ALLOWED", "value": "7" },
    { "name": "STAGE_LOCATION", "value": "/tmp" },
    { "name": "RMAN:USE_ARCHIVING", "value": "Y" },
    {
      "name": "INIT_PARAMS",
      "subconfigurations": [
        { "name": "INIT_PARAMS:1", "value": "sga_target=314572800" },
        { "name": "INIT_PARAMS:2", "value": "pga_aggregate_target=209715200" },
        { "name": "INIT_PARAMS:3", "value": "*.control_files='/scratch/app/oracle/oradata/
simple/control01.ctl', '/scratch/app/oracle/fast_recovery_area/simple/
control02.ctl'" },
        { "name": "INIT_PARAMS:4", "value": "*.db_name='simple'" }
      ]
    }
  ]
}

```

54.8.16 Full Clone Using an RMAN Duplicate Service Template .json File

```

{
  "type": "CDP",
  "configurations": [
    { "name": "DATABASE_TYPE", "value": "oracle_database" },
    { "name": "COMMON_DB_SYSTEM_PASSWORD", "value": "welcome" },
    { "name": "COMMON_DB_DBSNMP_PASSWORD", "value": "welcome" },
    { "name": "COMMON_DB_SYS_PASSWORD", "value": "welcome" },
    { "name": "COMMON_DB_SID", "value": "norm" },
    { "name": "COMMON_DOMAIN_NAME", "value": "us.example.com" },
    { "name": "LISTENER_PORT", "value": "1521" },
    { "name": "STAGE_LOCATION", "value": "/tmp/rman_backup/backup1383140909156" },
    { "name": "REF_ZONE", "value": "SLC01HZK_ZONE" },
    { "name": "SID_OPTION", "value": "ssouser" },
    { "name": "COMMON_DB_SID", "value": "mydb1" },
    { "name": "REF_POOL", "value": "PRIMARY_DB2" },
    { "name": "REF_HOST", "value": "xyxy.example.com" },
    { "name": "REF_TGT", "value": "xxxy.example.com" },
    { "name": "ROLE_NAME", "value": "ROLE_Oct_31_2014_17_59_PM" },
    { "name": "ROLE_DESC", "value": "New database role to be assigned to master account." },
    { "name": "USER_PRIVILEGES", "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE,
CREATE ANY OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE ANY INDEX,
CREATE JOB, CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY TRIGGER,
CREATE ANY TYPE, CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY, SELECT
ANY DICTIONARY" },
    { "name": "DEFAULT_DATABASE_SIZE", "value": "small" },
    { "name": "DATABASE_SIZES", "value": "", "values": ["small", "medium"] },
    { "name": "LIVE_CLONE_DATABASE_GUID", "value": "75D1AA10AE406B671F72A601AA8DC86F" },
    { "name": "ENTITY_TYPE", "value": "USE_DATABASE" },
    { "name": "LIVE_CLONE_TYPE", "value": "USE_FULLCLONE" },
    { "name": "SRC_HOST_CREDS", "value": "CREDNAME:OWNER" },
    { "name": "SRC_DB_CREDS", "value": "CREDNAME:OWNER" },
    { "name": "TARGET_PROP_LIST", "value": "",
      "values": [
        "Department:value:false:false",
        "Location:null:false:false",
        "Comment:null:false:false",
        "LifeCycle Status:null:false:false",
        "Line of Business:null:false:false",
        "Contact:null:false:false"
      ]
    }
  ]
}

```

```

    },
    { "name": "CUSTOM_TARGET_PROP_LIST", "value": "",
      "values": [
        "Department:value:false:false"
      ]
    },
    {
      "name": "INIT_PARAMS"
      "subconfigurations": [
        { "name": "INIT_PARAMS:1", "value": "sga_target=314572800" },
        { "name": "INIT_PARAMS:2", "value": "pga_aggregate_target=209715200" },
        { "name": "INIT_PARAMS:3", "value": "*.control_files='/scratch/app/oracle/oradata/
simple/control01.ctl','/scratch/app/oracle/fast_recovery_area/simple/
control02.ctl'" },
        { "name": "INIT_PARAMS:4", "value": "*.db_name='simple'" }
      ]
    }
  ]
}

```

54.8.17 Snapclone Database Using Live Clone Template on EMC Storage Service Template .json File

```

{
  "type": "CDP",
  "configurations": [
    { "name": "DATABASE_TYPE", "value": "oracle_database" },
    { "name": "COMMON_DB_SYSTEM_PASSWORD", "value": "welcome" },
    { "name": "COMMON_DB_DBSNMP_PASSWORD", "value": "welcome" },
    { "name": "COMMON_DB_SYS_PASSWORD", "value": "welcome" },
    { "name": "COMMON_DB_SID", "value": "norm" },
    { "name": "COMMON_DOMAIN_NAME", "value": "us.example.com" },
    { "name": "LISTENER_PORT", "value": "1521" },
    { "name": "STAGE_LOCATION", "value": "/tmp/rman_backup/backup1383140909156" },
    { "name": "REF_ZONE", "value": "SLC01HZK_ZONE" },
    { "name": "SID_OPTION", "value": "ssouser" },
    { "name": "COMMON_DB_SID", "value": "mydbl" },
    { "name": "REF_POOL", "value": "PRIMARY_DB2" },
    { "name": "REF_HOST", "value": "xyxy.example.com" },
    { "name": "REF_TGT", "value": "xyxy.example.com" },
    { "name": "ROLE_NAME", "value": "ROLE_Oct_31_2014_17_59_PM" },
    { "name": "ROLE_DESC", "value": "New database role to be assigned to master account." },
    { "name": "USER_PRIVILEGES", "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE,
CREATE ANY OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE ANY INDEX,
CREATE JOB, CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY TRIGGER,
CREATE ANY TYPE, CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY, SELECT
ANY DICTIONARY" },
    { "name": "DEFAULT_DATABASE_SIZE", "value": "small" },
    { "name": "DATABASE_SIZES", "value": "", "values": ["small", "medium"] },
    { "name": "LIVE_CLONE_DATABASE_GUID", "value": "75D1AA10AE406B671F72A601AA8DC86F" },
    { "name": "ENTITY_TYPE", "value": "USE_DATABASE" },
    { "name": "LIVE_CLONE_TYPE", "value": "USE_SNAPCLONE" },
    { "name": "SRC_HOST_CREDS", "value": "CREDNAME:OWNER" },
    { "name": "SRC_DB_CREDS", "value": "CREDNAME:OWNER" },
    { "name": "TARGET_PROP_LIST", "value": "",
      "values": [
        "Department:value:false:false",
        "Location:null:false:false",
        "Comment:null:false:false",

```

```

        "Lifecycle Status:null:false:false",
        "Line of Business:null:false:false",
        "Contact:null:false:false"]
    },
    { "name":"CUSTOM_TARGET_PROP_LIST","value":"","
      "values":[
        "Department:value:false:false
      ]
    },
    {
      "name":"INIT_PARAMS",
      "subconfigurations":[
        { "name":"INIT_PARAMS:1", "value":"sga_target=314572800" },
        { "name":"INIT_PARAMS:2", "value":"pga_aggregate_target=209715200" },
        { "name":"INIT_PARAMS:3", "value":"*.control_files='/scratch/app/oracle/oradata/
simple/control01.ctl','/scratch/app/oracle/fast_recovery_area/simple/
control02.ctl'" },
        { "name":"INIT_PARAMS:4", "value":"*.db_name='simple'" }
      ]
    }
  ]
}

```

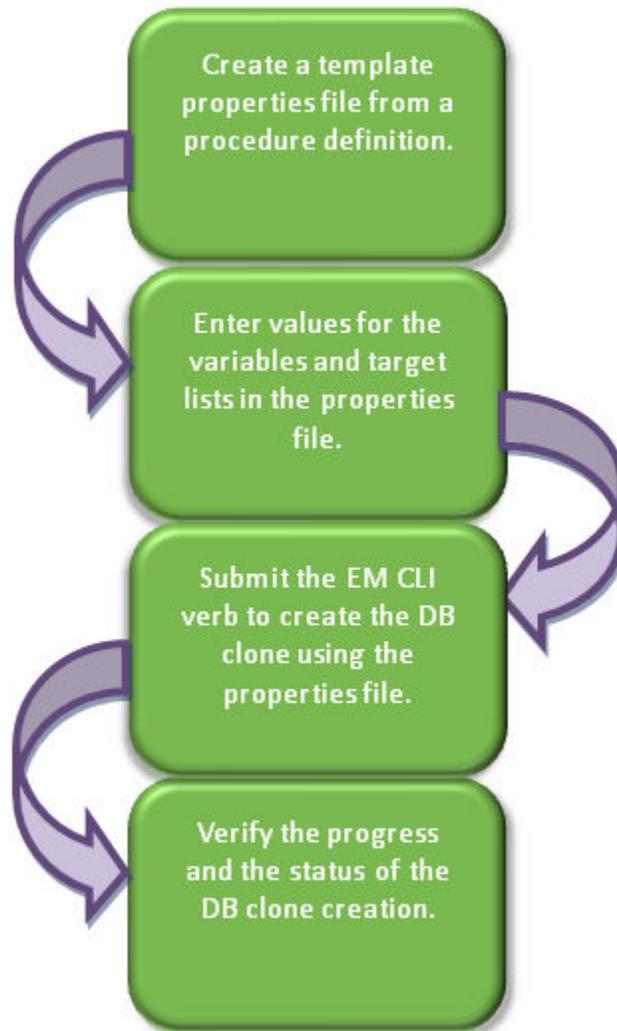
54.9 Creating a Database Clone Using EM CLI Verbs

This section describes the procedure to create a database clone using EM CLI verbs.

Note:

The procedure to create a Test master database is the same as the procedure to be followed to create a database clone. However, the only difference is in the property file parameters used to create the clone when compared to the property file parameters for Test master database.

Figure 54-5 Creating a Database Clone Using EM CLI Verbs



Follow the steps below to create a database clone or a Test master database:

1. Create a template properties file from a procedure definition.
There are two approaches for creating a template properties file. Follow either method 1 or method 2 (given below).
 - **Method 1: Using Enterprise Manager UI to create a clone of a database and generate the properties file from it**
To create a template properties file follow the steps below:
 - a. Create a database clone via the Enterprise Manger UI.
Note down the **Deployment Procedure Instance Name** while creating the clone.

For example, Deployment Procedure Instance Name =
CloneDatabase_SYSMAN_12_24_2014_15_58_PM.

- b. Use the instance name in the following command to generate a template properties file.

```
emcli get_instance_data
[-instance={instance_guid}]
[-exec={execution_guid}]
[-name={execution name}]
[-owner={execution owner}]
```

Sample:

```
emcli get_instance_data -name='CloneDatabase_SYSMAN_12_24_2014_15_58_PM'
-owner='SYSMAN' > /tmp/create_clone.props
```

- **Method 2: Generating the properties file using EM CLI verbs**

To create a template properties file using EM CLI verbs, follow the steps below:

- a. Retrieve the GUID or the name of the procedure. Run the following command to retrieve these.

```
emcli get_procedures
[-type={procedure type}]
```

Sample command:

```
emcli get_procedures -type=DBConfig
```

Sample output:

GUID	Type	Name
0A15E9DC20772EF5E053E87BF00A6701	DBConfig	db_clone_eb_procedure
db_clone_eb_procedure	2.12	ORACLE
0A15E9DC20A12EF5E053E87BF00A6701	DBConfig	db_config_procedure
DB Snap Clone	2.2	ORACLE
0A15E9DC20422EF5E053E87BF00A6701	DBConfig	config_db_create_procedure
Create Oracle Database	1.5	ORACLE

- b. Input the GUID or the name as an input value in the following command to generate a template properties file.

```
emcli describe_procedure_input
[-procedure={procedure GUID}]
[-name={procedure name or procedure configuration}]
[-owner={owner of the procedure or procedure configuration}]
[-parent_proc={procedure of the procedure configuration. This only
applies to describe a procedure configuration with the same name}]
```

Sample command:

```
emcli describe_procedure_input -
procedure=0A15E9DC20A12EF5E053E87BF00A6701 > /tmp/create_clone.props
```

2. Enter new values in the properties file.

Use an editor to edit the properties file. Enter the desired values for the variables and save the properties file.

The table below shows the properties file parameters used to create a database clone. To see the properties file parameters for creating a Test master database, see [Table 54-19](#).

 **Note:**

To see the list of required and optional variables in the properties file, enter the command `emcli db_clone_management <command> -print_properties`. Where, <command> can be one of the following: -
createFullClone, -createTestMaster, -createCloneDB, -createSnapClone, -createSnapshotClone, Or -cloneToCloud.

Table 54-18 Sample Properties File for Creating a Database Clone

Parameters	Sample values	Description
Mandatory Parameters CLONE_TYPE	CLONE_TYPE=DUPLICATE	Type of clone. Valid values are DUPLICATE, SNAP, DNFS_PROFILE, CONT_SYNC_PROFILE, and RMAN_PROFILE.
SRC_DB_TARGET_NAME	SRC_DB_TARGET_NAME=xxyy.us.example.com	Source database target name.
SRC_DB_TARGET_TYPE	SRC_DB_TARGET_TYPE=oracle_database	Source database target type. Valid values are oracle_database and rac_database.
SRC_DB_CRED	SRC_DB_CRED=NC_CRED:SYSCO	Source database credentials in the format: <NAME:OWNER>.
SRC_HOST_NORMAL_NAMED_CRED	SRC_HOST_NORMAL_NAMED_CRED=NC_HOST_CRED:SYSCO	Source host credentials in the format: <NAME:OWNER>.
COMMON_GLOBAL_DB_NAME	COMMON_GLOBAL_DB_NAME=clonedb.example.com	Global database name of the clone database.
COMMON_DB_SID	COMMON_DB_SID=clonedb	SID of the clone database.
DB_TARGET_NAME	DB_TARGET_NAME=clonedb.xxy.example.com	Clone database target name.
DATABASE_TYPE	DATABASE_TYPE=dbTypeSI	Indicates the type of database. Accepted values are - dbTypeSI and dbTypeRAC.
TARGET_HOST_LIST	TARGET_HOST_LIST=desthost.example.com	Destination host name where the clone database will be created.
ORACLE_HOME_NAME	ORACLE_HOME_NAME=OraDB12Home2_29	Name of destination Oracle home.
ORACLE_HOME_LOC	ORACLE_HOME_LOC=/scratch/app/product/11.2.0./dbhome_1	Location of destination Oracle home.
ORACLE_BASE_LOC	ORACLE_BASE_LOC=/scratch/app	Location of destination Oracle base.
HOST_NORMAL_NAMED_CRED	HOST_NORMAL_NAMED_CRED=NC_HOST_CRED:SYSCO	Destination host credentials in the format: <NAME:OWNER>.

Table 54-18 (Cont.) Sample Properties File for Creating a Database Clone

Parameters	Sample values	Description
DB_STORAGE_TYPE	DB_STORAGE_TYPE=FS	Database files storage type. Valid values are FS and ASM.
DB_FILE_LOC	DB_FILE_LOC=/scratch/app/oradata	Location where database files will be created for the clone database..
FRA_STORAGE_TYPER	FRA_STORAGE_TYPE=FS	Fast Recovery Area storage type. Valid values are FS and ASM.
FLASH_REC_AREA	FLASH_REC_AREA=/scratch/user/app/fra	Location where recovery related files (archived redo logs, RMAN backups, and other related files) are created.
FRA_SIZE	FRA_SIZE=4395	Fast Recovery Area size.
ARCHIVE_LOG_MODE	ARCHIVE_LOG_MODE=NO	Whether the clone database should be in ARCHIVELOG mode. Accepted values are YES and NO.
DEST_LISTENER_SELECTION	DEST_LISTENER_SELECTION=DEST_DB_HOME	Indicates whether the listener specified is a Grid Home listener. Valid values are GRID_INFRA and DEST_DB_HOME.
LISTENER_PORT	LISTENER_PORT=1526	Port of the listener with which the clone database is to be registered.
ENABLE_LIVE_CLONE	ENABLE_LIVE_CLONE=true	Indicates if live clone is to be enabled. Accepted vaules are true and false.
DB_ADMIN_PASSWORD_SAME	DB_ADMIN_PASSWORD_SAME=true	Indicates if the passwords for SYSTEM, SYS and DBSNMP users are same or different. Accepted values are true or false.
DATABASE_PASSWORDS	DATABASE_PASSWORDS=right1	Common password of SYSTEM, SYS and DBSNMP users. This is applicable only when the parameter DB_ADMIN_PASSWORD_SAME=true.
DB_TEMPLATE_STAGE	DB_TEMPLATE_STAGE=/tmp	Temporary staging area used to store files transferred from source host.
Optional Parameters CLUSTERNAME	CLUSTERNAME=cluster	Name of the destination cluster. This is applicable only if DATABASE_TYPE=dbTypeRAC.
RAC_CONFIG_TYPE	RAC_CONFIG_TYPE=ADMIN_MANAGED	Destination cluster database type. This is applicable only if DATABASE_TYPE= dbTypeRAC. Valid value is ADMIN_MANAGED.
RAC_NODE_LIST	RAC_NODE_LIST=node1,node2	List of RAC nodes where the clone database will be created. This is applicable only if DATABASE_TYPE=dbTypeRAC.
IS_RAC_ONE	IS_RAC_ONE=false	Indicates if it's a RAC One node. This is applicable only if DATABASE_TYPE= dbTypeRAC
SRC_HOST_NORMAL_PREF_CREDENTIAL_NAME	SRC_HOST_NORMAL_PREF_CREDENTIAL_NAME=HostCredsNormal	Source database preferred credentials.

Table 54-18 (Cont.) Sample Properties File for Creating a Database Clone

Parameters	Sample values	Description
ASMSYSPWD	ASMSYSPWD=String1	Source ASM password. This is applicable only if the source database is on ASM.
HOST_NORMAL_PREF_CRED_SET_NAME	HOST_NORMAL_PREF_CRED_SET_NAME=HostCredsNormal	Destination host preferred credentials.
HOST_PRIV_NAMED_CRED	HOST_PRIV_NAMED_CRED=HOST_PRIV_CRED:SYSCO	Destination host root credentials. This is applicable only if CLONE_TYPE=SNAP.
HOST_PRIV_PREF_CRED_SET_NAME	HOST_PRIV_PREF_CRED_SET_NAME=HostCredsPriv	Destination host preferred root credentials. This is applicable only if CLONE_TYPE=SNAP.
PROFILE_INTERNAL_PATH	N/A	Profile internal path of the backup. This is applicable only if a profile is used for clone.
PROFILE_VERSION_URN	N/A	Profile version URN of the backup. This is applicable only if a profile is used for clone.
BACKUP_LOCATION_NAME	BACKUP_LOCATION_NAME=/scratch/databkp	Database backups' location. This is applicable if it's not a live clone.
BACKUP_TAG	N/A	Datafiles tag of the RMAN legacy backup. This is applicable only if using non-profile based RMAN backups for clone.
CONTROL_FILE_TAG	N/A	Control files tag of the RMAN legacy backup. This is applicable only if using non-profile based RMAN backups for clone.
PIT_DATETIME	N/A	Point in time recovery using date and time. This is applicable if it's not a live clone.
PIT_SCN	N/A	Point in time recovery using SCN. This is applicable if it's not a live clone.
IS_SAVE_PROFILE	N/A	Indicates that a snapshot profile of the source database will be created. This is applicable only if CLONE_TYPE=SNAP.
COMMON_DOMAIN_NAME	COMMON_DOMAIN_NAME=xyy.example.com	Domain of clone database.
COMMON_DB_DBSNMP_PASSWORD	COMMON_DB_DBSNMP_PASSWORD=right	DBSNMP user password for the clone database. This is applicable only when the parameter DB_ADMIN_PASSWORD_SAME=false.

Table 54-18 (Cont.) Sample Properties File for Creating a Database Clone

Parameters	Sample values	Description
COMMON_DB_SYSTEM_PASSWORD	COMMON_DB_SYSTEM_PASSWORD=right	SYSTEM user password for the clone database. This is applicable only when the parameter DB_ADMIN_PASSWORD_SAME=false.
COMMON_DB_SYS_PASSWORD	COMMON_DB_SYS_PASSWORD=right	SYS user password for the clone database. This is applicable only when the parameter DB_ADMIN_PASSWORD_SAME=false.
MOUNT_POINT_PREFIX	MOUNT_POINT_PREFIX=/vol1/prefix	Mount point prefix. This parameter is applicable only if CLONE_TYPE=SNAP.
MOUNT_POINT_LIST	MOUNT_POINT_LIST=volname1	Storage Volume name. This parameter is applicable only if CLONE_TYPE=SNAP.
MOUNT_ADDL_SIZE_LIST	MOUNT_ADDL_SIZE_LIST=2	Writable space. This parameter is applicable only if CLONE_TYPE=SNAP.
USE_OFA	USE_OFA=false	Indicates if Oracle Flexible Architecture should be used for customizations of the database storage files locations. Valid values are true and false.
OFA_TEMP_FILE_LOCATION	OFA_TEMP_FILE_LOCATION=/scratch/user/app/oradata/temp	Location where temporary files are to be created. This parameter is applicable only if USE_OFA=true.
OFA_REDO_LOG_LOCATION	OFA_REDO_LOG_LOCATION=/scratch/user/app/oradata/rlog	Location where Redo log files are to be created. This parameter is applicable only if USE_OFA=true.
OFA_CONTROL_FILE_LOCATION	OFA_CONTROL_FILE_LOCATION=/scratch/user/app/control	Location where the control files are to be created. This parameter is applicable only if USE_OFA=true.
IS_SAVE_TARGET_PROFILE	IS_SAVE_TARGET_PROFILE=Y	Indicates if a profile of the clone database should be created. Valid values are Y and N.
NEW_PROFILE_LOCATION	NEW_PROFILE_LOCATION=Database Provisioning Profiles/12.1.0.1.0/Linux_x86_64	Location of the profile in software library. This parameter is applicable only if IS_SAVE_TARGET_PROFILE=Y.
NEW_PROFILE_NAME	NEW_PROFILE_NAME=Clone Profile	Name of the new DB Profile to be created. This parameter is applicable only if IS_SAVE_TARGET_PROFILE=Y.
PROFILE_DESC	PROFILE_DESC=Database Reference Profile 24-12-2014 04:00 PM from orcl.xyc.example.com Version : 12.1.0.1.0	Description of the profile. This parameter is applicable only if IS_SAVE_TARGET_PROFILE=Y.

Table 54-18 (Cont.) Sample Properties File for Creating a Database Clone

Parameters	Sample values	Description
PROFILE_NOTES	PROFILE_NOTES=Host Name: xyz.example.com Database: orcl.xyz.example.com	Notes for the profile. This parameter is applicable only if IS_SAVE_TARGET_PROFILE=Y.
PROFILE_VENDOR	PROFILE_VENDOR=Oracle	Vendor of the profile. This parameter is applicable only if IS_SAVE_TARGET_PROFILE=Y
PROFILE_VERSION	PROFILE_VERSION=12.1.0.1.0	Version of the profile. This parameter is applicable only if IS_SAVE_TARGET_PROFILE=Y
DATA_CONTENT_MODE	DATA_CONTENT_MODE=RMAN	Data mode for the database profile. The accepted values are: RMAN, and DNFS. This parameter is applicable only if IS_SAVE_TARGET_PROFILE=Y.
RMAN_BACKUP_LOCATION	RMAN_BACKUP_LOCATION=/scratch/user/app/backup	Location where RMAN backup files will be created. This is applicable only if IS_SAVE_TARGET_PROFILE =Y and DATA_CONTENT_MODE is RMAN or DNFS.
BACKUP_FILE_TAG	BACKUP_FILE_TAG=dat a_backup_14194170519 61	Tag to be associated with backup files. This parameter is mandatory if IS_SAVE_TARGET_PROFILE is set to Y and DATA_CONTENT_MODE is RMAN.
BACKUP_TYPE	BACKUP_TYPE=OFFLINE	Type of backup. It can be OFFLINE or ONLINE. The default is Offline. This parameter is applicable only if IS_SAVE_TARGET_PROFILE =Y.
PROFILE_PURGE_POLICY_TYPE	PROFILE_PURGE_POLICY_TYPE=SNAPSHOTS, ,	Profile purge policy type. Accepted values are SNAPSHOTS or DAYS. This parameter is applicable only if IS_SAVE_TARGET_PROFILE =Y.
PROFILE_PURGE_POLICY_VALUE	PROFILE_PURGE_POLICY_VALUE=1	Profile purge policy value. This parameter is applicable only if IS_SAVE_TARGET_PROFILE =Y
PROFILE_SCHEDULE	N/A	Schedule for profile creation.
IS_TESTMASTER_DATABASE	IS_TESTMASTER_DATABASE=N	Indicates your choice of creating the clone database as the Test master database. Accepted values are Y or N.
ENABLE_DATA_MASKING	ENABLE_DATA_MASKING=true	Indicates if data mask needs to be applied. Accepted values are true and false.
MASKING_DEFINITION_NAME	MASKING_DEFINITION_NAME=MASK_DEF_10	Name of the masking definition. This parameter is applicable only if ENABLE_DATA_MASK= true.
CUSTOM_PRE_SCRIPTS_URN	N/A	URN of the pre-cloning script in software library.

Table 54-18 (Cont.) Sample Properties File for Creating a Database Clone

Parameters	Sample values	Description
CUSTOM_POST_SCRIPTS_URN	N/A	URN of the post-cloning script in software library.
POST_SQL_SCRIPT_URN	N/A	URN of the post-cloning SQL script in software library.
RUN_AS_USER	RUN_AS_USER =sys	Name of the user to run post-cloning SQL script. This parameter is applicable only if POST_SQL_SCRIPT_URN is specified.
RUN_AS_USER_PASSWORD	RUN_AS_USER_PASSWORD =right	Password of the user to run post-cloning SQL script. This parameter is applicable only if POST_SQL_SCRIPT_URN is specified.
EXECUTION_MODE	EXECUTION_MODE = PROVISIONING	Mode of execution.
CONFIGURE_WITH_ORACLE_RESTART	CONFIGURE_WITH_ORACLE_RESTART=N	Indicates if the clone database should be configured with Oracle restart.

Table 54-19 Sample Properties File for Creating a Test Master Database

Parameters	Sample values	Description
Mandatory Parameters CLONE_TYPE	CLONE_TYPE=DUPLICATE	Type of clone. The default value is DUPLICATE.
COMMON_DB_DBSNMP_PASSWORD	COMMON_DB_DBSNMP_PASSWORD=come	Password to be set for DBSNMP user in the clone database.
COMMON_DB_SID	COMMON_DB_SID=clonedb	SID of the clone database.
COMMON_DB_SYSTEM_PASSWORD	COMMON_DB_SYSTEM_PASSWORD=sysco	Password to be set for SYSTEM user in the clone database.
COMMON_DB_SYS_PASSWORD	COMMON_DB_SYS_PASSWORD=sysco	Password to be set for SYS user in the clone database.
DATABASE_PASSWORDS	DATABASE_PASSWORDS=Sysco1	Password of clone database.
COMMON_GLOBAL_DB_NAME	COMMON_GLOBAL_DB_NAME=clonedb.xyz.com	Global clone database name.
DB_ADMIN_PASSWORDS_SAME	DB_ADMIN_PASSWORDS_SAME=true	Whether the passwords for SYSTEM, SYS and DBSNMP users are same or different. Accepted values are true or false.
DEST_LISTENER_SELECTION	DEST_LISTENER_SELECTION=DEST_DB_HOME	Oracle home location of the destination.
HOST_NORMAL_NAME_CRED	HOST_NORMAL_NAME_CRED=HOST:SYSCO	Credentials of the host.

Table 54-19 (Cont.) Sample Properties File for Creating a Test Master Database

Parameters	Sample values	Description
IS_TESTMASTER_D ATABASE	IS_TESTMASTER_DAT ABASE=Y	Indicates if you want create the clone database as Test master database. Accepted values are Y or N. The default value is N.
USAGE_MODE	USAGE_MODE = testMaster	Mode of use of the clone database.
CLOUD_TARGET	CLOUD_TARGET = true	Indicates if the cloud target is allowed.
LISTENER_PORT	LISTENER_PORT=1526	Port of the listener with which the clone database is to be registered.
ORACLE_BASE_LOC	ORACLE_BASE_LOC=/ scratch/app	Location of Oracle base.
ORACLE_HOME_LO C	ORACLE_HOME_LOC=/ scratch/app/product/ 11.2.0/dbhome_1	Location of Oracle home.
EM_USER	EM_USER=sys	EM user name.
EM_PWD	EM_PWD=Sys1	EM password.
SRC_DB_CRED	SRC_DB_CRED=DB:SY SCO	Credentials of the source database.
SRC_DB_TARGET_N AME	SRC_DB_TARGET_NA ME=orcl.xyz.com	Source database target name.
SRC_HOST_NORMA L_NAMED_CRED	SRC_HOST_NORMAL_ NAMED_CRED=HOST:S YSCO	Credentials of the host database.
TARGET_HOST_LIS T	TARGET_HOST_LIST=bl r22.xyz.com	List of target hosts.
Optional Parameters ARCHIVE_LOG_MOD E	ARCHIVE_LOG_MODE= NO	Indicates if the clone database should be in archive log mode. The default value is NO.
BACKUP_FILE_TAG	BACKUP_FILE_TAG=dat a_backup_14194170519 61	Tag to be associated with backup files. This parameter is mandatory if IS_SAVE_TARGET_PROFILE is set to Y and DATA_CONTENT_MODE is RMAN.
BACKUP_TYPE	BACKUP_TYPE=OFFLIN E	Type of backup. Accepted values are OFFLINE or ONLINE. The default value is OFFLINE.
COMMON_DOMAIN_ NAME	COMMON_DOMAIN_NA ME=xxy.example.com	Domain of the clone database.
CONFIGURE_WITH_ ORACLE_RESTART	CONFIGURE_WITH_OR ACLE_RESTART=N	Indicates if you want to configure clone database with oracle restart. The default value is N.
DATABASE_TYPE	DATABASE_TYPE=dbTy peSI	Accepted values are - Single Instance Database, RAC Database and RAC One Node Database. The default value is Single Instance Database.

Table 54-19 (Cont.) Sample Properties File for Creating a Test Master Database

Parameters	Sample values	Description
DATA_CONTENT_MODE	DATA_CONTENT_MODE=RMAN	Data mode for which the database profile needs to be submitted. It can have the following values: EXPORT, DBCA_TEMPLATE, RMAN, DNFS, CONT_SYNC, and STORAGE_SNAPSHOT.
DB_FILE_LOC	DB_FILE_LOC=/scratch/app/oradata	Location where data files, tmp files, redo log files, and control files are created.
DB_STORAGE_TYPE	DB_STORAGE_TYPE=FS	Database storage type. Accepted values are File System (FS) and ASM. The default value is FS.
DB_TARGET_NAME	DB_TARGET_NAME=clonedb.xxy.example.com	Clone database target name.
DB_TEMPLATE_STAGE	DB_TEMPLATE_STAGE=/scratch/view_storage/emagent/gcagent/em_staging	Staging area used to store files transferred from source host.
ENABLE_LIVE_CLONE	ENABLE_LIVE_CLONE=true	Indicates if live clone is to be enabled. The default value is true.
IS_SAVE_TARGET_PROFILE	IS_SAVE_TARGET_PROFILE=Y	Indicates if you want to create a DB profile using the clone database. Accepted values are Y or N. The default value is N.
NEW_PROFILE_LOCATION	NEW_PROFILE_LOCATION=Database Provisioning Profiles/12.1.0.1.0/Linux86_64	Location of the profile in software library. This parameter is mandatory if IS_SAVE_TARGET_PROFILE is set to Y.
NEW_PROFILE_NAME	NEW_PROFILE_NAME=Clone Profile	Name of the new DB profile to be created. It is mandatory if IS_SAVE_TARGET_PROFILE is set to Y.
ORACLE_HOME_NAME	ORACLE_HOME_NAME=OraDB12Home2_29_idc.example.com	Name of Oracle home.
PDB_ADMIN_PASSWORD	N/A	Pluggable database admin password.
PROFILE_DESC	PROFILE_DESC=Database Reference Profile 24-12-2014 04:00 PM from orcl.xyc.example.com Version : 12.1.0.1.0	Description of the profile.
PROFILE_NOTES	PROFILE_NOTES=Host Name: xyz.example.com Database: orcl.xyc.example.com Data Content: Structure and Data	Notes for the profile.

Table 54-19 (Cont.) Sample Properties File for Creating a Test Master Database

Parameters	Sample values	Description
PROFILE_VENDOR	PROFILE_VENDOR=Oracle	Vendor of the profile. The default is Oracle.
PROFILE_VERSION	PROFILE_VERSION=12.1.0.1.0	Version of the profile. If no value is specified, the database version is used.
RMAN_BACKUP_LOCATION	RMAN_BACKUP_LOCATION=/scratch/app/backup	Location where RMAN backup files is to be created. This parameter is mandatory if IS_SAVE_TARGET_PROFILE is set to Y and DATA_CONTENT_MODE is RMAN or DNFS.
SRC_DB_TARGET_TYPE	SRC_DB_TARGET_TYPE=oracle_database	Type of source database.
MASKING_DEFINITION_NAME	MASKING_DEFINITION_NAME=MASK_DEF_10	Name of the masking definition to be applied after cloning the database.
ENABLE_DATA_MASK	ENABLE_DATA_MASK=true	Indicates if data mask is to be enabled. The default value is false.
PROFILE_PURGE_POLICY_TYPE	PROFILE_PURGE_POLICY_TYPE=SNAPSHOTS	Profile purge policy type. Accepted values are SNAPSHOTS or DAYS. The default value is NONE.
PROFILE_PURGE_POLICY_VALUE	PROFILE_PURGE_POLICY_VALUE=1	Profile purge policy value.
PROFILE_SCHEDULE	N/A	Schedule for profile execution.
WORKING_DIRECTORY	WORKING_DIRECTORY=/tmp	The location where the files are staged.
FLASH_REC_AREA	N/A	Location where recovery related files (archived redo logs, RMAN backups, and other related files) are created. The storage type of Fast Recovery Area will be same as that of database files location.
FRA_STORAGE_TYPE	N/A	Is the same as Database storage type.

3. Execute one of the following EM CLI verbs to create a database clone (or Test master), using the updated properties file as the input file:

- **For a full database clone** - `emcli db_clone_management -createFullClone -input_file="path to the cloning properties file"`
- **For a DNFS profile based database clone** - `emcli db_clone_management -createCloneDB -input_file="path to the cloning properties file"`
- **For a database snap clone** - `emcli db_clone_management -createSnapClone -input_file="path to the cloning properties file"`
- **For a database snapshot clone** - `emcli db_clone_management -createSnapshotClone -input_file="path to the cloning properties file"`
- **For a database clone on to the cloud** - `emcli db_clone_management -cloneToCloud -input_file="path to the cloning properties file"`

- For creating a Test Master database - `emcli db_clone_management - createTestMaster -input_file="path to the cloning properties file"`

Samples:

```
emcli db_clone_management -createFullClone -inputFile=/tmp/create_clone.props
emcli db_clone_management -createCloneDB -input_file=/tmp/create_clone.props
emcli db_clone_management -createSnapClone -inputFile=/tmp/create_clone.props
emcli db_clone_management -createSnapshotClone -input_file=/tmp/
create_clone.props
emcli db_clone_management -cloneToCloud -inputFile=/tmp/create_clone.props
emcli db_clone_management -createTestMaster -inputFile=/tmp/create_clone.props
```

Sample output:

```
Submitting clone database procedure... 0AF491A8D9FE29F2E0539878B10A6333
Deployment procedure submitted successfully
```

4. Verify the status of the database clone creation by executing the following EM CLI verb.

```
emcli get_instance_status
[-instance={instance guid}]
[-exe=execution guid]
[-xml]
[-details]
[-showJobOutput]
[-tailLength={last N characters}]]
```

Sample:

```
emcli get_instance_status -instance=0AF491A8D9FE29F2E0539878B10A6333
```

Sample output:

```
0AF491A8DA0529F2E0539878B10A6333, DBConfig, db_config_procedure 1419435633924,
COMPLETED
```

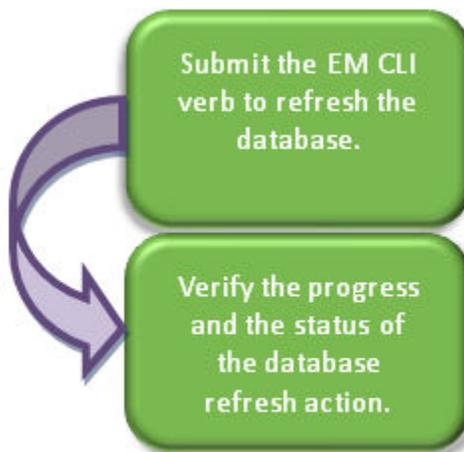
To know the complete status of each of the steps in xml format, execute the following command.

```
emcli get_instance_status -instance=0AF491A8D9FE29F2E0539878B10A6333 -xml -
details -showJobOutput
```

54.10 Refreshing a Database Using EM CLI Verbs

This section describes the procedure to refresh a database using EM CLI verbs.

Figure 54-6 Refreshing a Database Using EM CLI Verbs



Follow the steps below to refresh a database:

1. Refresh the database by executing the `emcli db_clone_management -refreshDatabase` command mentioned below.

The EM CLI command requires a properties file as an input. The properties file details are mentioned in the table below.

 **Note:**

To see the list of required and optional variables in the properties file, enter the command `emcli db_clone_management -refreshDatabase -print_properties`.

Table 54-20 Sample Properties File for Refreshing a Database

Parameters	Sample values	Description
Mandatory Parameters DB_TEMPLATE_STAGE	DB_TEMPLATE_STAGE =/tmp	Staging area used to store files transferred from source host.
COMMON_DB_SYSTEM_PASSWORD	COMMON_DB_SYSTEM_PASSWORD=come	Password to be set for SYSTEM user.
COMMON_DB_DBSNMP_PASSWORD	COMMON_DB_DBSNMP_PASSWORD=come	Password to be set for DBSNMP user.
COMMON_DB_SYS_PASSWORD	COMMON_DB_SYS_PASSWORD=come	Password to be set for SYS user.
ASMSYSPWD	ASMSYSPWD=come	ASM SYS password to login to ASM. This parameter is only applicable if database files are on ASM. Otherwise, it is not required.

Table 54-20 (Cont.) Sample Properties File for Refreshing a Database

Parameters	Sample values	Description
CLONE_TYPE	CLONE_TYPE=RMAN_P ROFILE	Type of clone.
TARGET_TYPE	TARGET_TYPE=rac_dat abase	Type of target. Accepted values are oracle_database or rac_database.
TARGET_NAME	TARGET_NAME= database1	Name of the target.
Optional Parameters	ORACLE_HOME_LOC=/	Location of Oracle home.
ORACLE_HOME	u01/user/app/user/ product/11.2.0/dbhome_1	
SRC_SYS_PWD	SRC_SYS_PWD=Come	Source SYS password.
SRC_SID	SRC_SID=orcl	Source database SID.

```
emcli db_clone_management -refreshDatabase
                        -input_file=data:"file:path"
```

Sample:

```
emcli db_clone_management -refreshDatabase -input_file=data:"/tmp/refr.txt"
```

Output:

```
Refresh Database deployment procedure has been submitted successfully with the
instance
name:"RefreshDatabase_SYSMAN_06_23_2014_01_00_PM" and
execution_guid='0AE6096550756B26E0539878B10A6FF5'
```

To know the status of the procedure in xml format, execute the following command.

```
emcli get_instance_status -exec=0AE6096550756B26E0539878B10A6FF5 -xml -details -
showJobOutput
```

2. Verify the status of the database refresh by executing the following EM CLI verb.

```
emcli get_instance_status
[-instance={instance guid}]
[-exe=execution guid]
[-xml]
[-details]
[-showJobOutput]
[-tailLength={last N characters}]
```

Sample:

```
emcli get_instance_status -exe=0AFDFE7D36525B18E0539878B10A39FB
```

Sample output:

```
00AFDFE7D36555B18E0539878B10A39FB, DBPROV,
RefreshDatabase_SYSMAN_06_23_2014_01_00_PM, COMPLETED
```

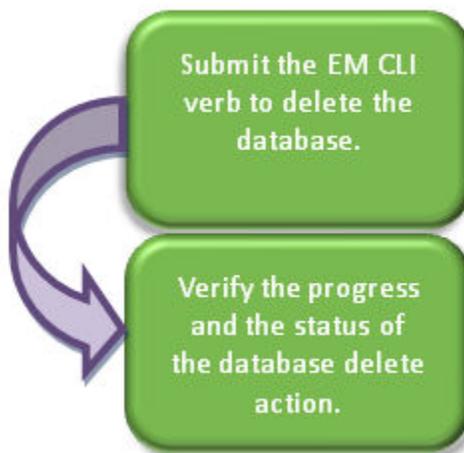
To know the complete status of each of the steps in xml format, execute the following command.

```
emcli get_instance_status -exe=0AF491A8D9FE29F2E0539878B10A6333 -xml -details -
showJobOutput
```

54.11 Deleting a Database Using EM CLI Verbs

This section describes the procedure to delete a database using EM CLI verbs.

Figure 54-7 Deleting a Database Using EM CLI Verbs



Follow the steps below to delete a database :

1. Delete the database with the `emcli delete_database` command mentioned below.
The EM CLI command requires a properties file as an input. The properties file details are mentioned in the table below.

Table 54-21 Sample Properties File for Deleting a Database

Parameters	Sample values	Description
Mandatory Parameters HOST_CREDS	HOST_CREDS=sys:come ,	Credentials of the host in <Credentials name>:<Credentials owner> format.
DB_TARGET_GUID	DB_TARGET_GUID=083 B2D3F9B911BD3E05398 78B10A3096	GUID of the target database. Select the Target_GUID from mgmt\$target, where target_name='MyDB.example.com' and target_type='rac_database'
DATABASE_TYPE	DATABASE_TYPE=dbTypeSI, peSI,	Type of database. Permissible values are either dbTypeSI or dbTypeRAC.
DB_ORACLE_HOME_LOC	DB_ORACLE_HOME_LO C=/u01/oracle/product/ dbhome,	Location of Oracle home.
DB_TARGET_NAME	DB_TARGET_NAME=m2. xyz.com,	Name of the target database.

Table 54-21 (Cont.) Sample Properties File for Deleting a Database

Parameters	Sample values	Description
DB_SID	DB_SID=clem	Database SID. In case of a RAC database provide the same value as provided for DB_TARGET_NAME.
HOST_NAME	HOST_NAME=abc.example.com,	Name of the host in case of a SI database. In case of a RAC database enter the Cluster database target host name. To retrieve it, use the EM repository query (select host_name from mgmt\$target where target_name='MyDB.example.com' and target_type='rac_database').
ORACLE_BASE	ORACLE_BASE=/u01/app/oracle	Oracle base location.
DBNAME	DBNAME=clem	Database name in case of SI database. In case of a RAC database enter the Cluster database target 'DBName' Target property. To retrieve this property use the EM repository query (select property_value from mgmt\$target_properties where target_name='MyDB.example.com' and target_type='rac_database' and property_name='DBName')
Optional Parameters ROOT_CREDS	ROOT_CREDS=ABDCGA45268SDF	Privileged credentials GUID. This parameter is required if the target database is snapshot based and mounted on a volume.

```
emcli delete_database
-input_file=data:"Path of file containing properties required for deleting a
database"
```

Sample:

```
emcli delete_database -input_file=data:u01/files/delete_clone.props
```

Output:

```
Submitting delete database procedure...
0AFDFE7D36525B18E0539878B10A39FB
Deployment procedure submitted successfully
```

 **Note:**

The delete database verb uses the Named credentials that is set in the software pool and not the Preferred credentials.

2. Verify the status of the database deletion by executing the following EM CLI verb.

```
emcli get_instance_status
[-instance={instance_guid}]
[-exe=execution_guid]
```

```
[-xml  
[-details]  
[-showJobOutput]  
[-tailLength={last N characters}]]
```

Sample:

```
emcli get_instance_status -instance=0AFDFE7D36525B18E0539878B10A39FB
```

Output:

```
0AFDFE7D36555B18E0539878B10A39FB, DBPROV, DB_CLEANUP_PROC 1419457116034,  
COMPLETED
```

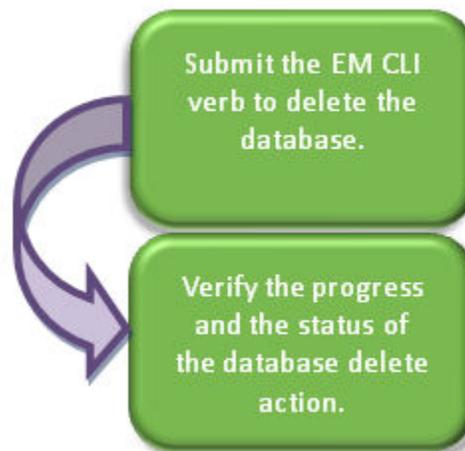
To know the complete status of each of the steps in xml format, execute the following command.

```
emcli get_instance_status -instance=0AF491A8D9FE29F2E0539878B10A6333 -xml -  
details -showJobOutput
```

54.12 Deleting a Database Clone Using EM CLI Verbs

This section describes the procedure to delete a database clone using EM CLI verbs.

Figure 54-8 Deleting a Database Clone Using EM CLI Verbs



Follow the steps below to delete a database clone:

1. Delete the database clone with the `emcli db_clone_management -deleteDatabase` command mentioned below.

The EM CLI command requires a properties file as an input. The properties file details are mentioned in the table below.

 **Note:**

To see the list of required and optional variables in the properties file, enter the command `emcli db_clone_management -deleteDatabase -print_properties`.

Table 54-22 Sample Properties File for Deleting a Database

Parameters	Sample values	Description
Mandatory Parameters HOST_CREDS	HOST_CREDS=sys:ome, HOST_CREDS	Credentials of the host in <Credentials name>:<Credentials owner> format.
DB_TARGET_GUID	DB_TARGET_GUID=083B2D3F9B911BD3E0539878B10A3096	GUID of the target database. Select the Target_GUID from mgmt\$target, where target_name='MyDB.example.com' and target_type='rac_database'
DATABASE_TYPE	DATABASE_TYPE=dbTypeSI,	Type of database. Permissible values are either dbTypeSI or dbTypeRAC.
DB_ORACLE_HOME_LOC	DB_ORACLE_HOME_LOC=/u01/oracle/product/dbhome,	Location of Oracle home.
DB_TARGET_NAME	DB_TARGET_NAME=m2.xyz.com,	Name of the target database.
DB_SID	DB_SID=clem	Database SID. In case of a RAC database provide the same value as provided for DB_TARGET_NAME.
HOST_NAME	HOST_NAME=abc.example.com,	Name of the host in case of a SI database. In case of a RAC database enter the Cluster database target host name. To retrieve it, use the EM repository query (select host_name from mgmt\$target where target_name='MyDB.example.com' and target_type='rac_database').
ORACLE_BASE	ORACLE_BASE=/u01/app/oracle	Oracle base location.
DBNAME	DBNAME=clem	Database name in case of SI database. In case of a RAC database enter the Cluster database target 'DBName' Target property. To retrieve this property use the EM repository query (select property_value from mgmt\$target_properties where target_name='MyDB.example.com' and target_type='rac_database' and property_name='DBName')

Table 54-22 (Cont.) Sample Properties File for Deleting a Database

Parameters	Sample values	Description
Optional Parameters ROOT_CREDS	ROOT_CREDS=ABDCG A45268SDF	Privileged credentials GUID. This parameter is required if the target database is snapshot based and mounted on a volume.

```
emcli db_clone_management -deleteDatabase
-input_file=data:"Path of file containing properties required for deleting a
clone"
```

Sample:

```
emcli db_clone_management -deleteDatabase -input_file=data:u01/files/
delete_clone.props
```

Output:

```
Submitting delete database procedure...
0AFDFE7D36525B18E0539878B10A39FB
Deployment procedure submitted successfully
```

 **Note:**

The delete database verb uses the Named credentials that is set in the software pool and not the Preferred credentials.

2. Verify the status of the database clone deletion by executing the following EM CLI verb.

```
emcli get_instance_status
[-instance={instance guid}]
[-exe=execution guid]
[-xml]
[-details]
[-showJobOutput]
[-tailLength={last N characters}]
```

Sample:

```
emcli get_instance_status -instance=0AFDFE7D36525B18E0539878B10A39FB
```

Output:

```
0AFDFE7D36555B18E0539878B10A39FB, DBPROV, DB_CLEANUP_PROC 1419457116034,
COMPLETED
```

To know the complete status of each of the steps in xml format, execute the following command.

```
emcli get_instance_status -instance=0AF491A8D9FE29F2E0539878B10A6333 -xml -
details -showJobOutput
```

54.13 Database Fleet Maintenance EM CLI Verbs

The following table provides details of the verbs supported for Database fleet maintenance.

 **Note:**

The EM CLI verb options mentioned in square brackets - [] are optional.

Table 54-23 Database Software Maintenance EM CLI Verbs

Verb	Description	Format
emcli db_software_maintenance - createSoftwareImage	<p>Creates a new software image provided in the oracle home. The <code>createSoftwareImage</code> verb takes either data (a <code>.txt</code> file) or <code>getInputVariableList</code> from the command line.</p> <ul style="list-style-type: none"> input_file- Path of the input file. getInputVariableList - Provides the list of variables to be specified in the input file. <p>Examples:</p> <ul style="list-style-type: none"> To get the list of all the parameters to be passed inside the data file, run the following command: <pre>emcli db_software_maintenance - createSoftwareImage - getInputVariableList=true</pre> To create a new image and a version, use the following example: <pre>emcli createSoftwareImage - input_file="data:"/home/user/input_rac"</pre> <p>Where the contents of the <code>input_rac</code> file are:</p> <ul style="list-style-type: none"> IMAGE_NAME=DbGoldImage IMAGE_DESCRIPTION=Gold Image for 11g db REF_TARGET_NAME=ORACLE_HOME IMAGE_SWLIB_LOC=Oracle Home Provisioning Profiles/11.2.0.3.0/linux_x64 REF_HOST_CREDENTIALS=ZONE_CREDENTIALS:TESTSUPERADMIN WORKING_DIRECTORY=/tmp STORAGE_TYPE_FOR_SWLIB=OmsShared STORAGE_NAME_FOR_SWLIB=swlib VERSION_NAME=Version1 To only create a new version into an existing image, see the following example: <pre>emcli db_software_maintenance - createSoftwareImage -input_file="data:"/ home/user/input_rac"</pre> <p>Where the contents of the <code>input_rac</code> file are:</p> <ul style="list-style-type: none"> IMAGE_ID=01B5F14FD57D7B89E05313B2F00A739F REF_TARGET_NAME=ORACLE_HOME IMAGE_SWLIB_LOC=Oracle Home Provisioning Profiles/11.2.0.3.0/linux_x64 REF_HOST_CREDENTIALS=ZONE_CREDENTIALS:TESTSUPERADMIN WORKING_DIRECTORY=/tmp STORAGE_TYPE_FOR_SWLIB=OmsShared 	<ul style="list-style-type: none"> emcli db_software_maintenance -createSoftwareImage -getInputVariableList=true emcli createSoftwareImage -input_file="data:"/home/user/ input_rac"

Table 54-23 (Cont.) Database Software Maintenance EM CLI Verbs

Verb	Description	Format
	<ul style="list-style-type: none"> - STORAGE_NAME_FOR_SWLIB=swlib - VERSION_NAME=Version1 	
emcli db_software_maintenance -createVersion	<p>Creates a new version in an existing image using an existing software library component.</p> <ul style="list-style-type: none"> • version_name - Name of the version. • image_id - Name of the image. • external_id - External ID of the version. For example, the URN of the software library gold image. • status - Status of the version. For example, DRAFT, ACTIVE, CURRENT, or RESTRICTED. <p>Example:</p> <pre>emcli db_software_maintenance -createVersion -version_name="Version1" - image_id="01B5F14FD57D7B89E05313B2F00A739F" - external_id="oracle:defaultService:em:provis ioning:1:cmp:COMP_Component:SUB_OracleDB: 0191172464DD36B6E05313B2F00AB90A:0.1" - status=CURRENT</pre>	<pre>emclu db_software_maintenance -createVersion- version_name="Versionx" -image_id="xxxx" -external_id="yyyy" -status="CURRENT"</pre>
emcli db_software_maintenance -subscribeTarget	<p>Creates a new or modifies the existing target subscription.</p> <ul style="list-style-type: none"> • target_name - Name of the target. • target_type - Target type. • [parent_target_name] - Parent target name. • [parent_target_type] - Parent target type. • image_id - Name of the image. • version_id - Name of the version <p>Example:</p> <pre>emcli db_software_maintenance - subscribeTarget -target_name="POOL NAME" - target_type=oracle_cloud_zone - image_id=FE55AD7AB28974EFE04313B2F00AD4A0</pre>	<pre>emcli db_software_maintenance -subscribeTarget - target_name="xxx" -target_type="yyy" -parent_target_name="xxx" -parent_target_type="yyy" -image_id="zzz" -version_id="xxx"</pre>
emcli db_software_maintenance -updateVersionStatus	<p>Updates version of the image.</p> <ul style="list-style-type: none"> • version_id - Id of the version. • status - Status of the version. For example, DRAFT, ACTIVE, CURRENT, or RESTRICTED. <p>Example:</p> <pre>emcli db_software_maintenance - updateVersionStatus - version_id=02A635A0D8D904A4E05362F3E40ADF08 -status=CURRENT</pre>	<pre>emcli db_software_maintenance -updateVersionStatus -version_id="xxx" -status="CURRENT"</pre>

Table 54-23 (Cont.) Database Software Maintenance EM CLI Verbs

Verb	Description	Format
emcli db_software_maintenance -getImageSubscriptions	Returns the list of subscribed targets. <ul style="list-style-type: none"> image_id- Name of the image. <p>Example:</p> <pre>emcli db_software_maintenance - getImageSubscriptions - image_id="01B5F14FD57D7B89E05313B2F00A739F"</pre>	emcli db_software_maintenance -getImageSubscriptions -image_id="xxx"
emcli db_software_maintenance -deleteImage	Deletes an image. <ul style="list-style-type: none"> image_id - Name of the image to be deleted. [force] - Deletes forcibly even if the image has subscribed targets. <p>Example:</p> <pre>emcli db_software_maintenance -deleteImage - image_id="01B5F14FD57D7B89E05313B2F00A739F"</pre>	emcli db_software_maintenance -deleteImage -image_id="xxxx"
emcli db_software_maintenance -unsubscribeTarget	Unsubscribes the target. <ul style="list-style-type: none"> target_name - Name of the target. target_type - Target type. image_id - Name of the image. <p>Example:</p> <pre>emcli db_software_maintenance - unsubscribeTarget -target_name="POOL NAME" - target_type=oracle_cloud_zone - image_id=FE55AD7AB28974EFE04313B2F00AD4A0</pre>	emcli db_software_maintenance -unsubscribeTarget -target_name="xxx" -target_type=yyyy -image_id=zzz
emcli db_software_maintenance -searchImage	Searches the image based on the provided filters. Use '%' for wildcard. <ul style="list-style-type: none"> [name_pattern] - Indicates the name pattern. [version_pattern] - Indicates the version pattern. [description_pattern] - Indicates the version pattern. [owner] - Indicates the owner name. [target_type] - Indicates the target type. [platform_id] - Indicates the platform ID. For example, 226 for Linux x86_64. <p>Examples:</p> <ul style="list-style-type: none"> emcli db_software_maintenance -searchImage -name_pattern="%GI%" emcli db_software_maintenance -searchImage -platform_id="226" 	emcli db_software_maintenance -searchImage -platform_id="xxx" -[name_pattern="name_pattern"] -[version_pattern="version_pattern"] -[description_pattern="description_pattern"] -[owner="owner"] -[target_type="target_type"] -[platform_id="platform_id"]
emcli db_software_maintenance -getTargetSubscriptions	Returns the list of subscriptions for the given target. <ul style="list-style-type: none"> target_name - Name of the target. target_type - Target type. image_type - Type of the image. <p>Example:</p> <pre>emcli db_software_maintenance - getTargetSubscriptions -target_name="POOL NAME" -target_type="oracle_cloud_zone"</pre>	emcli db_software_maintenance -getTargetSubscriptions -target_name="xxxx" -target_type="yyyy" -image_type="zzzz"

Table 54-23 (Cont.) Database Software Maintenance EM CLI Verbs

Verb	Description	Format
emcli db_software_maintenance -getVersions	Returns the list of the versions for the given image. <ul style="list-style-type: none"> image_id - Name of the image. [version_status] - Status filter for the version. <p>Example:</p> <pre>emcli db_software_maintenance -getVersions image_id="01B5F14FD57D7B89E05313B2F00A739F" -version_status=CURRENT</pre>	emcli db_software_maintenance -getVersions -image_id="xxxx" -version_status=CURRENT
emcli db_software_maintenance -getImage	Returns the list of image present in the system. Example: emcli db_software_maintenance -getImage	emcli db_software_maintenance -getImage
emcli db_software_maintenance -getSubscriptionsForContainer	Return the subscriptions for the container target such as the database pool. <ul style="list-style-type: none"> image_id - Name of the image. target_name - Name of the target. target_type - Target type in EM. <p>Example:</p> <pre>emcli db_software_maintenance - getSubscriptionsForContainer - target_name="POOL NAME" - target_type=oracle_cloud_zone - image_id=FE55AD7AB28974EFE04313B2F00AD4A0</pre>	emcli db_software_maintenance -getSubscriptionsForContainer -target_name="xxxx" -target_type="yyyy" -image_id="zzzz"
emcli db_cloud_maintenance -activateSoftware	Activates a new software of the pool. <ul style="list-style-type: none"> pool_name - Name of the pool. pool_type - Type of the pool. [force] - Forcibly activates the new members. <p>Example:</p> <pre>emcli db_cloud_maintenance -activateSoftware -pool_name=POOL -pool_type=oracle_cloud_zone -force=true</pre>	emcli db_cloud_maintenance -activateSoftware -pool_name=xxxx -pool_type="yyy" -force="true"

Table 54-23 (Cont.) Database Software Maintenance EM CLI Verbs

Verb	Description	Format
emcli db_cloud_maintenance -performOperation	<p>Creates a new cloud maintenance operation.</p> <ul style="list-style-type: none"> name= "name" - Name of the operation. description= "description" - Description of the operation. purpose= "purpose" - Purpose of the maintenance window. The possible values are: UPDATE_DB, UPDATE_RACDB, UPDATE_GI, DEPLOY_DB_SOFTWARE, DEPLOY_GI_SOFTWARE, DEPLOY_RAC_SOFTWARE, ROLLBACK_DB, ROLLBACK_GI, ROLLBACK_RACDB, and CLEANUP_SOFTWARE. [start_schedule= "start_schedule"] - Start Schedule. The input for start_schedule is of the format- yyyy-MM-dd HH:mm:ss. For example, start_schedule="2013-11-11 12:15:30". The default start time is - immediate. pool_name= "pool_name" - Name of the pool. pool_type= "pool_type" - Type of the pool. [input_file= "data:input_file"] - Input data for the maintenance action. For example, input_file="data:~/input_files/data. [target_type= "target_type"] - Target type. The default target type is identified based on the purpose. For example, if purpose is DEPLOY_DB, the default target type is oracle_home. [target_list= "target_list"] - Comma separated target list. The target list is the list of entities based on the target type that is selected. For example, target_type=rac_database target_list="rac1.example.com,rac2.example.com". The default target_list is based on the purpose. For example if the purpose is DEPLOY_DB, the default target list is the list of oracle homes present in the pool. <p>Example:</p> <pre>emcli db_cloud_maintenance -performOperation -name="Update RAC Database " - description="Update RAC database Instance" - purpose="UPDATE_RACDB" - start_schedule="start_time:2014/09/01 00:00" -pool_name="POOL NAME" - pool_type=oracle_cloud_zone - target_type=rac_database - target_list="rac1.example.com"</pre>	<pre>emcli db_cloud_maintenance -performOperation -name="update" -description="Update RAC database Instance" -purpose="UPDATE_RACDB" -start_schedule="start_time: 2014/09/01 00:00" -pool_name="xxx" -pool_type="yyy" -target_type=rac_database -target_list="rac1.example.com"</pre>

54.14 Database Request Handling EM CLI Verbs

The table below lists the supported verbs for database request handling.

Table 54-24 Force Cleanup EM CLI Verbs

Verb	Description	Format
emcli cleanup_dbaas_reques ts	<p>Removes/cleans-up a failed request from the host and EM.</p> <p>Cleans-up all failed requests from a pool. Optionally, it cleans-up failed requests for a specific user.</p> <p>The options <code>-ids</code> and <code>-pool_name</code> cannot be used together.</p> <ul style="list-style-type: none"> • <code>ids</code> - The request ID to be used for filtering cloud requests separated by semicolon(;). • <code>pool_name</code> - The name of the pool from which requests have to be cleaned-up. • <code>pool_type</code> - The type of pool. The possible values are: <ul style="list-style-type: none"> – For Database pools: <code>database</code> – For Schema pools: <code>schema</code> – For Pluggable database pools: <code>pluggable_database</code> • <code>user</code> - User Name to be used for filtering requests for delete. • <code>all</code> - Cleans-up all requests - both successful and failed, cancels the requests that are in scheduled state, and leaves the "in progress" requests as is. If this option is not specified, cleanup will be performed on failed requests only. <p>Note:</p> <p>The clean-up operation explained here can also be performed using a REST API. For details, see Clearing a Collection of Service Requests.</p> <p>Example:</p> <pre>emcli cleanup_dbaas_requests -ids="10" emcli helpemcli cleanup_dbaas_requests - ids="10;11;12" emcli cleanup_dbaas_requests - pool_name="database_pool" - pool_type="database" emcli cleanup_dbaas_requests - pool_name="database_pool" - pool_type="database" -all emcli cleanup_dbaas_requests - pool_name="database_pool" - pool_type="database" -all -user="SSA_USER"</pre> <p>Sample Output:</p> <pre>Service Template "My Schema Service Template" created successfully</pre>	<pre>emcli cleanup_dbaas_requests [-ids="<request id>"] [-name="<size name>"] [-target_name="<target name>"] [-target_type="<rac_database oracle_database oracle_dbsvc oracle_pdb>"] [- host_creds="<credname:credowner >"] [- root_creds="<credname:credowner >"] [-pool_name="<pool name>"] [-pool_type="<database schema pluggable_database>"] [-user="<SSA User name>"] [-all] [-description="<size description>"] [- attributes="<cpu:<value>;memory:< value>;storage:<value>>"]</pre>

Table 54-24 (Cont.) Force Cleanup EM CLI Verbs

Verb	Description	Format
emcli dbaas_artifacts -list_reserved_artifacts	<p>Lists the existing reserved artifacts.</p> <p>Examples:</p> <ul style="list-style-type: none"> emcli dbaas_artifacts -list_reserved_artifacts -type="SID" <p>For Single Instance databases, enter type="SID", where SID is the user readable artifact name of the ORACLE_SID.</p> <ul style="list-style-type: none"> emcli dbaas_artifacts -list_reserved_artifacts -type="SERVICE_NAME" (for database instances) emcli dbaas_artifacts -list_reserved_artifacts -type="PDB_NAME" (for pluggable databases) emcli dbaas_artifacts -list_reserved_artifacts -type="TABLESPACE_NAME" (for schemas) emcli dbaas_artifacts -list_reserved_artifacts -all (for databases, pluggable databases and schemas) 	<p>emcli dbaas_artifacts -list_reserved_artifacts</p> <p>-type</p> <p>-requestId</p> <p>[-all]</p>
emcli dbaas_artifacts -remove_reserved_artifact	<p>Removes/cleans-up the specified reserved names and artifacts.</p> <p>To identify or derive the values for the type and value parameters, refer the previous command (emcli dbaas_artifacts -list_reserved_artifacts).</p> <p>Examples:</p> <ul style="list-style-type: none"> emcli dbaas_artifacts -remove_reserved_artifact -type=SID -value="DBS1" emcli dbaas_artifacts -remove_reserved_artifact -type=SERVICE_NAME -value="DBS1s" 	<p>emcli dbaas_artifacts -remove_reserved_artifact</p> <p>-type=<SID, or SERVICE_NAME, or PDB_NAME, or TABLESPACE_NAME></p> <p>-value=<value for the specified type></p>

54.15 Cloning a Pluggable Database

The EM CLI verb `emcli pdb_clone_management` creates a new clone of an existing pluggable database.

The details of the verb are as follows:

Table 54-25 Pluggable Database Cloning EM CLI Verb

Verb	Description	Format
emcli pdb_clone_management	<p>Creates a new clone of an existing pluggable database.</p> <ul style="list-style-type: none"> -input_file - Location of the file containing properties required for cloning the pluggable database. See Table 54-26 for details. [-cloneToOracleCloud] - Indicates that the destination container database (CDB) is on Oracle Cloud. [-enableTestMaster] - Enables the given PDB target as Test Master in Enterprise Manager. [-diabileTestMaster] - Removes the given PDB target as Test Master in Enterprise Manager. <p>Example:</p> <pre>emcli pdb_clone_management - input_file=data:/u01/files/pdb_clone.props</pre>	<pre>emcli pdb_clone_management -input_file [-cloneToOracleCloud] [-enableTestMaster] [-disableTestMaster]</pre>

The table below explains the required parameters and values in the properties file that needs to be used as an input file for cloning a pluggable database. You can either have a full clone of the pluggable database or a snapshot clone. For details of full clone and snapshot clones see, [Pluggable Database Full Clone Methods](#), and [Pluggable Database Snapshot Clone Types](#).

Table 54-26 Sample Properties File for Cloning a Pluggable Database

Parameters	Sample values	Description
Mandatory Parameters SRC_PDB_TARGET	SRC_PDB_TARGET=cdb _prod_PDB	Enterprise Manager (EM) target name of the source pluggable database (PDB).
SRC_HOST_CREDS	SRC_HOST_CREDS=NC _HOST_SHYSYSO	Named credentials for the source target host.
SRC_CDB_CREDS	SRC_CDB_CREDS=NC_ DB_SYS:SYSCO	Named credentials for the source CDB.
SRC_WORK_DIR	SRC_WORK_DIR=/tmp/ source	Work directory at the source host where files are temporarily stored. If this parameter is not provided, the agent work directory is used.
DEST_HOST_CREDS	DEST_HOST_CREDS=N C_SLEO_SSH:SYSCO	Named credentials for the destination target host. If destination host is on Oracle Cloud, then the value for this parameter should be the host SSH credentials.
DEST_LOCATION	DEST_LOCATION=/ scratch/app/cdb_tm/ HR_TM_PDB6	Data file location in the destination where the new PDB should be hosted.
DEST_CDB_TARGET	DEST_CDB_TARGET=cd b_tm	EM target name of CDB where the new PDB should be cloned.
DEST_CDB_TYPE	DEST_CDB_TYPE=oracle _database	EM target type of the destination CDB.

Table 54-26 (Cont.) Sample Properties File for Cloning a Pluggable Database

Parameters	Sample values	Description
DEST_CDB_CREDS	DEST_CDB_CREDS=NC_DB_SYS:SYSCO	Named credentials for the destination CDB.
DEST_PDB_NAME	DEST_PDB_NAME=HR_TM_PDB6	Name of the new PDB.
Optional Parameters		
SRC_CDB_TARGET	SRC_CDB_TARGET=cdb_prod_DB	EM target name of the CDB containing the source PDB.
SRC_CDB_TYPE	N/A	EM target type of the CDB containing the source PDB.
IS_SNAPSHOT_COPY	IS_SNAPSHOT_COPY=true	Indicates that the clone is a snapshot clone.
SRC_HOST	SRC_HOST=xyz.example.com	EM target name of the host containing the source CDB. If this value is not provided, it will be derived from the CDB.
DEST_HOST	DEST_HOST=xyz.example.com	EM target name of host containing the destination CDB. If this value is not provided, it will be derived from the CDB.
EXISTING_BACKUP	EXISTING_BACKUP=/user1/pdbbackup/app/PROD_PDB_Backup_14297779	Indicates the absolute location of the existing backup in the file system, and if it should be used to clone the new PDB.
EXISTING_BACKUP_METADATA	EXISTING_BACKUP_METADATA=/user1/pdbbackup	Absolute location of the metadata template of the backup. This parameter is required, if EXISTING_BACKUP is provided.
BACKUP_TYPE	BACKUP_TYPE=OSIMAG E	Indicates the backup type. The accepted values are TAR, OSIMAGE, and RMAN. If an existing backup (EXISTING_BACKUP parameter) is provided, this parameter represents the type of the backup. If not, this parameter represents the type of backup that should be taken during job execution. If both, EXISTING_BACKUP and BACKUP_TYPE are not provided, the source PDB, will be unplugged, and copied over to the destination for creating a new clone. Once the datafiles are copied, the source PDB will be plugged back.

54.15.1 Pluggable Database Full Clone Methods

The different methods of full cloning that are possible with a pluggable database are mentioned below. The process of achieving them are by configuring certain parameters in the properties file, while using the `emcli pdb_clone_management` verb.

- Operating System (OS) Image backup (supported only for Oracle Cloud)

Takes a backup of the source PDB and creates a new PDB. The `BACKUP_TYPE` parameter should specify the type of backup. The `EXISTING_BACKUP` and `EXISTING_BACKUP_METADATA` parameters should not be provided.

- Existing backup (supported for on-premise PDBs and Oracle Cloud PDBs)
Uses an existing backup of the source PDB and creates a new PDB. The `BACKUP_TYPE` parameter should specify the type of backup. The `EXISTING_BACKUP` parameter should specify the location with the backup name and `EXISTING_BACKUP_METADATA` should specify the location and the metadata file name for the backup.

 **Note:**

If the destination PDB and the source PDB are in different CDBs wherein, both the CDBs are on-premise (or on Oracle Cloud), then ensure that the source PDB is in read-write mode. This is necessary since a database link is created in the destination CDB for cloning the PDB, and a temporary user is created in the source PDB for using the database link. If there is an existing database link in the destination CDB that connects to the source PDB, then use the parameter `EXISTING_DB_LINK_NAME` to provide the database link name in the properties file.

- Unplug/plug (supported only for Oracle Cloud)
Unplugs the source PDB and creates a new PDB at the destination using the unplugged source, and then plugs the source back. Both, `EXISTING_BACKUP` and `BACKUP_TYPE` parameters should not be provided.

54.15.2 Pluggable Database Snapshot Clone Types

The different methods of snapshot cloning that are possible with a pluggable database on-premise are mentioned below. The process of achieving them are by configuring certain parameters in the properties file, while using the `emcli pdb_clone_management verb`.

 **Note:**

For all the snapshot clone types, in addition to the mandatory parameters in [Table 54-26](#), add the parameter `IS_SNAPSHOT_COPY=true`, to the properties file. A sample of the properties file is shown below:

```
#-----#
# SOURCE                                     #
#-----#
SRC_PDB_TARGET=tmcdb_Host1.mycompany.com_PPDB1_TM1
SRC_CDB_TARGET=tmcdb_Host1.mycompany.com
SRC_CDB_TYPE=oracle_database
SRC_CDB_CREDS=NC_SYS_CDB:SYSMAN
SRC_HOST_CREDS=NC_HOST_EXA:SYSMAN
#-----#
# DESTINATION                               #
#-----#
DEST_PDB_NAME=PPDB1_SCL1
DEST_CDB_TARGET=tmcdb_Host1.mycompany.com
DEST_CDB_TYPE=oracle_database
DEST_CDB_CREDS=NC_SYS_CDB:SYSMAN
DEST_HOST_CREDS=NC_HOST_EXA:SYSMAN
DEST_LOCATION=+SPARSEEDG
DEST_PDB_ADMIN_NAME=PDBADMIN
DEST_PDB_ADMIN_PWD=admpass
DEST_PDB_DISPLAY_NAME=PRD_SnapshotCopy_1
DEST_WORK_DIR=/tmp
#-----#
# Snapshot Copy flag                         #
#-----#
IS_SNAPSHOT_COPY = true
```

- **Exadata sparse clone snapshot**
The Exadata sparse clone snapshot will work only if the destination PDB data file location is in sparse ASM disk group in an Exadata machine, and the source and destination PDB data files share the same ASM instance.
Set the value of the `DEST_LOCATION` to create an Exadata sparse clone. The `DEST_LOCATION` should be the name of the ASM sparse disk group. For example, `+SPARCEDG`.
- **ACFS (ASM cluster file system) snapshot**
The ACFS snapshot will work only if the source and destination PDB data file location is in common ACFS file system.
- **CLONEDB initialization parameter set to FALSE**
When you create a snapshot clone of a source PDB and the `CLONEDB` initialization parameter of the destination host is set to `FALSE`, the underlying file system for the source PDB's files must support storage snapshots. Such file systems include Oracle Automatic Storage Management Cluster File System (Oracle ACFS) and Direct NFS Client storage.
- **CLONEDB initialization parameter set to TRUE**
When you create a clone of a source PDB and the `CLONEDB` initialization parameter of the destination host is set to `TRUE`, the underlying file system for the

source PDB's files can be any local file system, network file system (NFS), or clustered file system that has Direct NFS enabled. However, the source PDB must remain in open read-only mode as long as any clones exist.

54.16 Creating a Test Master Pluggable Database

The EM CLI verb `emcli pdb_clone_management` creates a new clone of an existing pluggable database. The same verb is used to create a Test Master of a pluggable database. However, the properties file used for the verb is different. For details of the verb see [Table 54-25](#). For details of the properties file used to create the Test Master see [Table 54-27](#).

Table 54-27 Sample Properties File for Creating a Pluggable Database Test Master

Parameters	Sample values	Description
Mandatory Parameters to Create a Test Master SRC_PDB_TARGET	SRC_PDB_TARGET=cdb _prod_PDB	Enterprise Manager (EM) target name of the source pluggable database (PDB).
SRC_HOST_CREDS	SRC_HOST_CREDS=NC _HOST_SAY:SYSCO	Named credentials for the source target host.
SRC_CDB_CREDS	SRC_CDB_CREDS=NC_ DB_SYS:SYSCO	Named credentials for the source CDB.
SRC_WORK_DIR	SRC_WORK_DIR=/tmp/ source	Work directory at the source host where files are temporarily stored. If this parameter is not provided, the agent work directory is used.
DEST_HOST_CREDS	DEST_HOST_CREDS=N C_SLO_SSH:SYSCO	Named credentials for the destination target host. If destination host is on Oracle Cloud, then the value for this parameter should be the host SSH credentials.
DEST_LOCATION	DEST_LOCATION=/ scratch/app/cdb_tm/ HR_TM_PDB6	Data file location in the destination where the new PDB should be hosted.
DEST_CDB_TARGET	DEST_CDB_TARGET=cd b_tm	EM target name of CDB where the new PDB should be cloned.
DEST_CDB_TYPE	DEST_CDB_TYPE=oracle _database	EM target type of the destination CDB.
DEST_CDB_CREDS	DEST_CDB_CREDS=NC_ DB_SYS:SYSCO	Named credentials for the destination CDB.
DEST_PDB_NAME	DEST_PDB_NAME=HR_T M_PDB6	Name of the new PDB.
IS_CREATE_AS_TES TMASTER	IS_CREATE_AS_TESTM ASTER=true	Flag to set the cloned PDB as a Test Master PDB in the EM.

Table 54-27 (Cont.) Sample Properties File for Creating a Pluggable Database Test Master

Parameters	Sample values	Description
Mandatory Parameters (along with the above) to Create a Test Master on Exadata ASM ACL_DF_GROUP	ACL_DF_GROUP=oinstall	Group name to provide the permission to the Exadata ASM disk group data files of the cloned PDB.
ACL_DF_OWNER	ACL_DF_OWNER=oracle	Owner name to provide the required permission to the Exadata ASM disk group data files of the cloned PDB.
Optional Parameters MASKING_DEFINITION_NAME	MASKING_DEFINITION_NAME=CRM_Masking_Defn	Name of the masking definition in EM that will be applied on the cloned PDB.
CUSTOM_PRE_SCRIPTS_URN	CUSTOM_PRE_SCRIPTS_URN=oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:14288BACD7BB765FE0533B79B10AA480:0.3	Software library URN of the script to be run before creating the clone PDB in the destination host.
CUSTOM_POST_SCRIPTS_URN	CUSTOM_POST_SCRIPTS_URN=oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:14288BACD7C1765FE0533B79B10AA480:0.3	Software library URN of the script to be run after creating the clone PDB in the destination host.
POST_SQL_SCRIPT_URN	POST_SQL_SCRIPT_URN=oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_Generic:142899134B2C25E8E0533B79B10A2D54:0.1	Software library URN of the SQL script to be run in the destination CDB after creating the clone PDB.
RUN_AS_USER	RUN_AS_USER=sys	User name to run the post SQL script.
RUN_AS_USER_PWD	RUN_AS_USER_PWD=gosad	Password to run the post SQL script.
ACL_DF_GROUP_PERM	ACL_DF_GROUP_PERM=read only	Level of permission to be given to the group for the Exadata ASM disk group data files of the cloned PDB.
ACL_DF_OWNER_PERM	ACL_DF_OWNER_PERM=read only	Level of permission to be given to the owner for the Exadata ASM disk group data files of the cloned PDB.
ACL_DF_OTHER_PERM	ACL_DF_OTHER_PERM=read only	Level of permission to be given to others for the Exadata ASM disk group data files of the cloned PDB.
SRC_CDB_TARGET	SRC_CDB_TARGET=cdb_prod_t_DB	EM target name of the CDB containing the source PDB.

Table 54-27 (Cont.) Sample Properties File for Creating a Pluggable Database Test Master

Parameters	Sample values	Description
SRC_CDB_TYPE	N/A	EM target type of the CDB containing the source PDB.
SRC_HOST	SRC_HOST=xyz.example.com	EM target name of the host containing the source CDB. If this value is not provided, it will be derived from the CDB.
DEST_HOST	DEST_HOST=xyz.example.com	EM target name of host containing the destination CDB. If this value is not provided, it will be derived from the CDB.
EXISTING_BACKUP	EXISTING_BACKUP=/user1/pdbbackup/app/PROD_PDB_Backup_14297779	Indicates the absolute location of the existing backup in the file system, and if it should be used to clone the new PDB.
EXISTING_BACKUP_METADATA	EXISTING_BACKUP_METADATA=/user1/pdbbackup	Absolute location of the metadata template of the backup. This parameter is required, if EXISTING_BACKUP is provided.
BACKUP_TYPE	BACKUP_TYPE=OSIMAG E	Indicates the backup type. The accepted values are TAR, OSIMAGE, and RMAN. If an existing backup (EXISTING_BACKUP parameter) is provided, this parameter represents the type of the backup. If not, this parameter represents the type of backup that should be taken during job execution. If both, EXISTING_BACKUP and BACKUP_TYPE are not provided, the source PDB, will be unplugged, and copied over to the destination for creating a new clone. Once the datafiles are copied, the source PDB will be plugged back.

A sample of the properties file for creating a Test Master PDB on Exadata is shown below:

```
#-----#
# SOURCE                                     #
#-----#
SRC_PDB_TARGET=ProdCDB_Host1.mycompany.com_PROD_PDB1
SRC_CDB_TARGET=ProdCDB_Host1.mycompany.com
SRC_CDB_TYPE=oracle_database
SRC_CDB_CREDS=NC_SYS_CDB:SYSMAN
SRC_HOST_CREDS=NC_HOST_EXA:SYSMAN
#-----#
# DESTINATION                               #
#-----#
DEST_PDB_NAME=PPDB1_TM1
DEST_CDB_TARGET=tmcdb_Host1.mycompany.com
DEST_CDB_TYPE=oracle_database
DEST_CDB_CREDS=NC_SYS_CDB:SYSMAN
DEST_HOST_CREDS=NC_HOST_EXA:SYSMAN
```

```

DEST_LOCATION=+DATA1
DEST_PDB_ADMIN_NAME=PDBADMIN
DEST_PDB_ADMIN_PWD=admpass
DEST_PDB_DISPLAY_NAME=PRD_TestMaster
DEST_WORK_DIR=/tmp
#-----#
# Exadata Test Master related props#
#-----#
IS_CREATE_AS_TESTMASTER=true
ACL_DF_OWNER=oracle
ACL_DF_GROUP=oinstall
#-----#
# PDB Clone Pre & Post Processing #
#-----#
MASKING_DEFINITION_NAME=CRM_Masking_Defn
CUSTOM_PRE_SCRIPTS_URN=oracle:defaultService:em:provisioning:
1:cmp:COMP_Directives:none:14288BACD7BB765FE0533B79B10AA480:0.3
CUSTOM_POST_SCRIPTS_URN=oracle:defaultService:em:provisioning:
1:cmp:COMP_Directives:none:14288BACD7C1765FE0533B79B10AA480:0.3
POST_SQL_SCRIPT_URN=oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_Generic:142899134B2C25E8E0533B79B10A2D54:0.1
RUN_AS_USER=sys
RUN_AS_USER_PWD=syspass

```

54.17 Transferring Data Between Databases

The details of the EM CLI verb used to transfer data are as follows:

Table 54-28 Data Transfer EM CLI Verb

Verb	Description	Format
emcli data_transfer	<p>Transfers data from the source database to the target database.</p> <ul style="list-style-type: none"> -input_file - Location of the file containing the properties required for transferring data. See Table 54-29 for details. <p>Example:</p> <pre>emcli data_transfer - input_file=data:/u01/files/ data_transfer.props</pre>	emcli data_transfer -input_file

The table below explains the required parameters and values in the properties file that needs to be used as an input file for transferring data.

Table 54-29 Sample Properties File for Transferring Data

Parameters	Sample values	Description
Mandatory Parameters SOURCE_LOCATION	SOURCE_LOCATION=/tm p/newp/ PDB_Backup_142800380 3938	Location of the data at the source host.
SRC_HOST	SRC_HOST=bl.example.c om	The source host containing the data.

Table 54-29 (Cont.) Sample Properties File for Transferring Data

Parameters	Sample values	Description
SRC_HOST_CREDS	SRC_HOST_CREDS=NC_HOST_SHY:SYS	Credentials for the host on which the data is located. If the source host is on Oracle Cloud, the value should be host SSH credentials.
DEST_HOST	DEST_HOST=slc0.example.com	The destination host where the data should be copied to.
DEST_HOST_CREDS	DEST_HOST_CREDS=NC_SLO_SSH	Credentials for the host where the data should be copied to. If the destination host is on Oracle Cloud, the value should be host SSH credentials.
DEST_LOCATION	DEST_LOCATION=/scratch/app3/oradata/migda	Location on the destination host where the data should be copied to.

54.18 Backing Up Datafiles and Metadata of a Pluggable Database

The details of the EM CLI verb used to backup datafiles and metadata of a pluggable database are as follows:

Table 54-30 EM CLI Verb for Datafile and Metadata Backup of Pluggable Databases

Verb	Description	Format
emcli pdb_backup	<p>Takes a backup of datafiles and metadata xml of the specified pluggable database.</p> <ul style="list-style-type: none"> -input_file - Location of the file containing the properties required for taking a backup of the PDB. See Table 54-31 for details. <p>Example:</p> <pre>emcli pdb_backup -input_file=data:/u01/files/pdb_backup.props</pre>	emcli pdb_backup -input_file

The table below explains the required parameters and values in the properties file that needs to be used as an input file for backup of datafiles and metadata of a pluggable database.

Table 54-31 Sample Properties File for Datafile and Metadata Backup of a Pluggable Database

Parameters	Sample values	Description
Mandatory Parameters TARGET_HOST_LIST	TARGET_HOST_LIST=xy.z.abccorp.com	Host on which the target Container database (CDB)/Pluggable database (PDB) is hosted.

Table 54-31 (Cont.) Sample Properties File for Datafile and Metadata Backup of a Pluggable Database

Parameters	Sample values	Description
HOST_NORMAL_NAMED_CRED	HOST_NORMAL_NAMED_CRED=XYZ_CRED:CRE D_OWNER	Host credentials.
SRC_CDB_NAMED_CRED	SRC_CDB_NAMED_CRED=CDB1_CRED:CRE D_OWNER	SYSDBA credentials of the source CDB.
SRC_CDB_TARGET_NAME	SRC_CDB_TARGET_NAME=CDB1	The target name of the CDB which hosts the PDB.
SRC_CDB_TARGET_TYPE	SRC_CDB_TARGET_TYPE=oracle_database	CDB target type.
SRC_PDB_TARGET_NAME	SRC_PDB_TARGET_NAME=CDB1_PDB1	The target name of the PDB whose backup is required.
BACKUP_LOCATION	BACKUP_LOCATION=/scratch/pdbBackup	Path of the file system where the backup should be copied to.
WORK_DIR_LOCATION	WORK_DIR_LOCATION=/tmp	Temporary staging location on the source host.
ORACLE_HOME_LOC	ORACLE_HOME_LOC=/scratch/d121hmcasm/ product/12.1.0/dbhome_1	Oracle home of the CDB.

54.19 Importing Data from Export Dumps to a Database

The details of the EM CLI verb used to import data from export dumps to a database are as follows:

Table 54-32 EM CLI Verb for Importing Data from Export Dumps to a Database

Verb	Description	Format
emcli dbimport	Imports data from export dumps to the specified database target. <ul style="list-style-type: none"> -input_file - Location of the file containing the properties required for importing data from export dumps. See Table 54-33 for details. <p>Example:</p> <pre>emcli dbimport -inputFile=data:/u01/files/ dbimport.props</pre>	emcli dbimport -input_file

The table below explains the required parameters and values in the properties file that needs to be used as an input file for importing data from export dumps to a database.

Table 54-33 Sample Properties File for Importing Data from Export Dumps to a Database

Parameters	Sample values	Description
Mandatory Parameters DESTINATION_TARGET ET	DESTINATION_TARGET= SS_OPC_DB	Destination PDB target (or DB target) where the schema should be imported.
DESTINATION_TARGET_TYPE	DESTINATION_TARGET_ TYPE=oracle_database	The destination target type.
DATABASE_CREDENTIAL	DATABASE_CREDENTIAL= L=SYSDBA:SYS	SYSDBA credentials of the target.
HOST_NAMED_CREDENTIAL	HOST_NAMED_CREDENTIAL= TIAL=AE_NC:SYS	Credentials of the host where the destination target is hosted.
PROFILE_LOCATION	PROFILE_LOCATION=Da tabase Provisioning Profiles/12.1.0.1.0/ linux_x64/Export Dump of Sample schemas10	Location of the profile which is created during export.
REMAP_SCHEMA_LIST.(x)	REMAP_SCHEMA_LIST. 0=HR:HR REMAP_SCHEMA_LIST. 1=OE:OE REMAP_SCHEMA_LIST. 2=PM:PM REMAP_SCHEMA_LIST. 3=IX:IX REMAP_SCHEMA_LIST. 4=SH:SH REMAP_SCHEMA_LIST. 5=BI:BI	List of schemas that needs to be imported.
REMAP_TABLESPACE_LIST.(x)	REMAP_TABLESPACE_L IST. 0=EXAMPLE:MYTBSP1 REMAP_TABLESPACE_L IST.1=USERS:MYTBSP1 REMAP_TABLESPACE_L IST.2=SYSTEM:MYTBSP1	Schema corresponding tablespaces for the schema import.
DEGREE_OF_PARALLELISM	DEGREE_OF_PARALLEL ISM=1	Indicates if the data needs to imported in parallel.
DUMP_FILE_LIST.(x)	DUMP_FILE_LIST.0= scratch/aime/dumpdir/ sampschemas.dmp	Location of the dump file in the destination host.
IMPORT_LOG_FILE_DIRECTORY	IMPORT_LOG_FILE_DIR ECTORY=DATA_PUMP_ DIR	Location where the log files should be stored. This is a directory object inside the database.
FORWARDER_HOST	FORWARDER_HOST=slo. us.example.com	Indicates the forwarder host.
FORWARDER_CREDENTIAL	FORWARDER_CREDENTIAL= AIME_NC:SYSMAN	Indicates the forwarder host credentials.

Table 54-33 (Cont.) Sample Properties File for Importing Data from Export Dumps to a Database

Parameters	Sample values	Description
WORKING_DIRECTORY	WORKING_DIRECTORY= /tmp	Temporary staging location on the source host.

54.20 Using the db_clone_management EM CLI Verb

`emcli db_clone_management` is an umbrella EM CLI verb which can be used to perform various tasks for database management. For various actions though the verb remains the same the command within the verb varies. For details, see the table below.

Table 54-34 db_clone_management EM CLI Verb Description

Verb	Description	Format
emcli db_clone_management <command> <options>	<p>Verb for database clone life-cycle management.</p> <p>Commands:</p> <ul style="list-style-type: none"> -createFullClone - Creates a full clone database. -createTestMaster - Creates a Test Master database. -createCloneDB - Creates a CloneDB database. -createSnapClone - Creates a Snap Clone database. -createSnapshotClone - Creates an Exadata Sparse clone database. -cloneToCloud - Clones a database to Oracle Cloud. -enableTestMaster - Enables a database as Test Master. -disableTestMaster - Disables a Test Master database. -refreshDatabase - Refreshes a database from its source. -deleteDatabase - Deletes a database and removes the target from Enterprise Manager. -listClones - Lists the clones of a database. -listTestMasters - Lists the Test Master databases. -listDatabaseBackups - Lists RMAN backup and image profiles of a database. -listDatabaseSnapshots - Lists snapshot profiles of a database. <p>Options:</p> <ul style="list-style-type: none"> -target_name - Name of the database target. -target_type - Type of the database target. Possible values are: "oracle_database" for a single instance database or "rac_database" for a RAC database. This option needs to be specified if -target_name option is specified. -clone_type - Type of clone. Possible values are: "LIVE" to perform a live clone or "POINT_IN_TIME" to perform a prior point in time clone. -input_file - Path of the file containing input properties. <p>Help options:</p> <ul style="list-style-type: none"> -print_properties - Lists the input properties required for database clone procedures. This option mandates the presence of -target_name and -target_type. -usage - Use this option to show detailed usage of the verb. 	<p>emcli db_clone_management <command></p> <p>-target_name="database target name"</p> <p>-target_type="database target type - oracle_database rac_database>"</p> <p>[-clone_type="clone type - <LIVE POINT_IN_TIME>"]</p> <p>{-input_file="path of the input properties file" -print_properties="print properties for the input file"}</p> <p>{-usage}</p>

54.21 Invoking a REST API Using EM CLI Verb

`emcli invoke_ws` is an EM CLI verb used to invoke a REST API to perform the action expected by the REST API. The medium however is Enterprise Manager command line interface.

Table 54-35 Invoking a REST API Using an EM CLI Verb

Verb	Description	Format
<code>emcli invoke_ws</code>	<p>Invokes the Enterprise Manager Web service to act as per the REST API passed via this verb.</p> <p>Options:</p> <ul style="list-style-type: none"> -wsname - Indicates the URI of the resource. -method - Specifies of the REST method. -payload - Indicates the json/xml input payload. -accept - Payload type. These are standard REST API values. -type - Standard REST API response types. -param - This option is used to pass a form/query parameter value. For example, <code>-param="name:value"</code>. More than one parameter can be specified. For example, <code>-param="name:value" -param="zip:12345"</code>. <p>The parameter can be provided through a file. For example, the parameters can be specified in a text file with name <code>file.txt</code> and the command can have the options as: <code>-param="name:tag" -input_file="tag:file.txt"</code>, wherein the parameter <code>name</code> will derive the value from the input file <code>file.txt</code>.</p> <ul style="list-style-type: none"> -input_file - Use this option to pass in payload or param value from file. <p>Examples:</p> <ul style="list-style-type: none"> <code>emcli invoke_ws -wsname=/em/websvcs/restful/emws/core/v0/list/dataservice -method=get -param="name:Administrators"</code> Invokes list resource and sources all administrators <code>emcli invoke_ws -wsname=/em/websvcs/restful/emws/core/v0/list/dataservice -method=get -param="name:tag" -input_file="tag:file.txt"</code> Invokes list resource and sources all administrators. The <code>name</code> parameter is read from <code>file.txt</code>. 	<pre>emcli invoke_ws -wsname=<WebService Name> -method=<method name> [-payload=<Payload>] [-accept=<accept type>] [-type=response type] [-param=Query Parameters] [-input_file=<Input File for payload data>]</pre>

A sample of the contents of the `file.txt` is shown below.

```
Name:Administrators
Zip:23456
```

Database as a Service Administrator REST APIs

This chapter describes the resource models for the Administration flows of Database as a Service (DBaaS) REST APIs, and their responses.

The following topics are covered in this chapter:

- [Summary of Database as a Service Administrator REST APIs](#)
- [Creating a New DBaaS Cloud Setup Using REST APIs](#)
- [Database as a Service Administrator Operations REST APIs](#)
 - [PaaS Zones and PaaS Zone REST APIs](#)
 - [Software Pools and Software Pool REST APIs](#)
 - [Database Request Settings REST APIs](#)
 - [Database Quota REST APIs](#)
 - [Service Template REST APIs](#)
- [Database as a Service Administrator REST APIs](#)
- [DB Relocation REST API](#)
- [PDB Onboarding on DBaaS Cloud REST API](#)
- [PDB Relocation REST API](#)

55.1 Summary of Database as a Service Administrator REST APIs

The table below shows a summary of all the DBaaS Administrator REST APIs covered in this chapter.

Table 55-1 Summary of Administrator DBaaS REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
PaaS zones	Table 55-3	Viewing Details of the PaaS Zones Resource	Creating a PaaS Zone	Updating a PaaS Zone	Not Supported
PaaS zone	Table 55-5	Viewing Details of a PaaS Zone Resource	Not Supported	Not Supported	Deleting a PaaS Zone

Table 55-1 (Cont.) Summary of Administrator DBaaS REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
Software pools	Table 55-12	Viewing Details of the Software Pools Resource	<ul style="list-style-type: none"> Database pool - Creating a Database Pool; Schema pool - Creating a Schema Pool; Pluggable database pool - Creating a Pluggable Database Pool 	<ul style="list-style-type: none"> Database pool - Updating a Database Pool Schema pool - Updating a Schema Pool Pluggable database pool - Updating a Pluggable Database Pool 	Not supported
Software pool	Table 55-14	<ul style="list-style-type: none"> Viewing Details of a Software Pool Resource Viewing Details of a Software Pool Capacity 	Not supported	Not supported	Deleting a Database / Schema / Pluggable Database Pool
DBaaS request settings	Table 55-26	Viewing Details of the DBaaS Request Settings Resource	Creating Database Request Settings	Not supported	Not supported
DBaaS quota	Table 55-30	Viewing Details of the DBaaS Quota Resource	Creating DBaaS Quota for a Role	Updating DBaaS Quota for a Role	Deleting DBaaS Quota for a Role
Service templates	Table 55-36	Viewing Details of the Service Templates Resource	Service Templates and Service Template REST API Examples	Not supported	Not Supported

Table 55-1 (Cont.) Summary of Administrator DBaaS REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
Service template	Table 55-38	Viewing Details of the ServiceTemplate Resource	Not supported	Supported	Deleting a Database / Schema / Pluggable Database Service Template

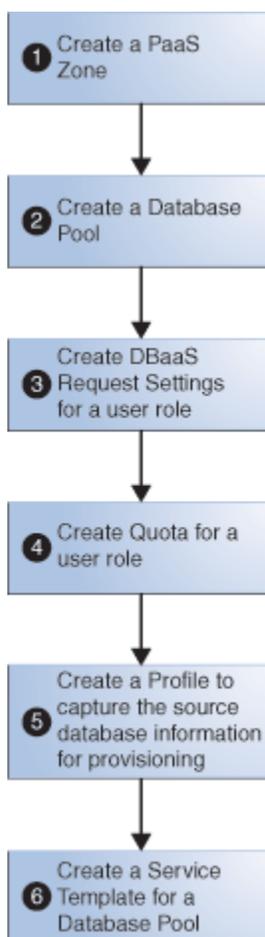
 **Note:**

In the table above, "supported" indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

55.2 Creating a New DBaaS Cloud Setup Using REST APIs

The Cloud Administrator sets up the cloud infrastructure for DBaaS. The figure below illustrates the steps to be followed to setup the DBaaS cloud setup.

Figure 55-1 Creating a New DBaaS Cloud Resource



As an example, [Table 55-2](#) illustrates a step-by-step process to create DBaaS using REST APIs and EM CLI verbs (where necessary).



Note:

The process below provides references to the REST APIs wherever possible. However, you can perform the same operations using EM CLI verbs. To know the corresponding EM CLI verbs refer to Chapter 10, EM CLI Verbs for Database as a Service Administrator.

Table 55-2 Creating DBaaS using REST APIs

Step	Action
1	Create a PaaS infrastructure zone. Refer to Creating a PaaS Zone . Note: To view the existing PaaS zones perform a GET operation. Refer to Viewing Details of the PaaS Zones Resource .

Table 55-2 (Cont.) Creating DBaaS using REST APIs

Step	Action
2	<p>Create one of the following Database Pools:</p> <ul style="list-style-type: none"> • Database Pool - refer to Creating a Database Pool • Schema Pool - refer to Creating a Schema Pool • Pluggable Database Pool - refer to Creating a Pluggable Database Pool <p>Note: To view the existing Database Pools perform a GET operation. Refer to Viewing Details of the Software Pools Resource</p>
3	Create DBaaS Request Settings for a user role. Refer to Creating Database Request Settings .
4	<p>Create Quota for a user role. Refer to Creating DBaaS Quota for a Role.</p> <p>Note: This step is optional.</p>
5	<p>Create a Profile to capture the source database information for provisioning. Refer to EM CLI Verbs for Database as a Service Administrator .</p> <p>A profile can represent a complete database or a set of related schemas that form an application.</p>
6	<p>Create a Service Template for any one of the following based on the selected Database Pool:</p> <ul style="list-style-type: none"> • Database Pool - refer to: <ul style="list-style-type: none"> – Creating a Service Template for DBCA Based Database – Creating a Service Template for RMAN Based Single Instance Database – Creating a Service Template for RMAN Based Single Instance Database with Single Instance Standby – Creating a Service Template for RMAN Based RAC One Node Database – Creating a Service Template for RMAN Based RAC One Node Database With Standby – Creating a Service Template for RMAN Based RAC Database With Standby – Creating a Service Template for DNFS Based Database • Schema Pool - refer to Creating a Service Template for a Schema • Pluggable Database Pool - refer to Creating a Service Template for a Pluggable Database

The DBaaS cloud setup is ready to be administered.

55.3 Database as a Service Administrator Operations REST APIs

This section covers all the REST APIs for the Cloud Administrator flows. The REST APIs in this section are classified as follows:

- [PaaS Zones and PaaS Zone REST APIs](#)
- [Software Pools and Software Pool REST APIs](#)
- [Database Request Settings REST APIs](#)
- [Database Quota REST APIs](#)
- [Service Template REST APIs](#)

55.3.1 PaaS Zones and PaaS Zone REST APIs

The REST APIs in this section are categorized as PaaS zones REST APIs and PaaS zone REST APIs. PaaS zone represents a PaaS Infrastructure Zone whereas PaaS

zones is a collection resource representing a Cloud Administrator's view of a group of all the accessible individual PaaS zone resources.

This section covers the following:

- [PaaS Zones REST APIs](#)
- [PaaS Zone REST APIs](#)
- [PaaS Zones and PaaS Zone REST API Examples](#)

55.3.1.1 PaaS Zones REST APIs

PaaS zones is a collective representation of all the individual PaaS zone resources. PaaS zones has the media type `application/oracle.com.cloud.common.PaaSZones+json`.

The following table describes the PaaS zones data model.

Table 55-3 PaaS Zones Data Model

Field	Type	Description	Occurs
Name	String	Displays name of this collection resource.	1
Type	String	Type of this collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1
Count	Integer	Number of elements returned.	1
Items	Collection <PaaSZone>	List of PaaS zone resources. If there are no instances, the items will be present but will be empty.	1
totalCount	Integer	Total number of PaaS zone resources.	1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent to the containing elements.	1

55.3.1.1.1 Supported Request Methods for PaaS Zones

The following table lists all the operations that are supported on the PaaS zones resources.

Table 55-4 Supported Request Methods for PaaS Zones

GET	POST	PUT	DELETE
Yes	Yes	Yes	No

55.3.1.2 PaaS Zone REST APIs

This resource represents a PaaS Infrastructure Zone. PaaS zone has the media type `application/oracle.com.cloud.common.PaaSZone+json`.

The following table describes the PaaS zone data model.

Table 55-5 PaaS Zone Data Model

Field	Name	Description	Occurs
Name	String	A human readable name given to the PaaS zone. This field is non-editable.	1
displayName	String	Display name for the PaaS zone.	0..1
guid	String	Unique GUID of the PaaS zone that identifies the resource.	1
description	String	A brief description of the PaaS zone.	0..1
targetType	String	Target type of the PaaS zone to be created..	1
Members	Collection<members>	Members of PaaS zone. These must be added as EM targets in advance.	1
credentials	Collection<PaaSzone_Credential>	Credentials associated with the PaaS zone.	1
placementConstraints	Collection<EntityValueHolder>	Placement constraints for the PaaS zone that allows the cloud administrator to set a maximum ceilings for resource utilization.	0..1
characteristics	Collection<EntityValueHolder>	Characteristics associated with the PaaS zone.	1
canonicalLink	URI	A GET against this URI refreshes the client representation of the PaaS zone.	1

55.3.1.2.1 Supported Request Methods for PaaS Zone

The following table lists all the operations that are supported on the PaaS zone resources.

Table 55-6 Supported Request Methods for PaaS Zone

GET	POST	PUT	DELETE
Yes	No	No	Yes

55.3.1.3 PaaS Zones and PaaS Zone REST API Examples

The following sections provide examples of interaction with Enterprise Manager Cloud Control 12.1.0.3 with Cloud Application plug-in 12.1.0.7 and higher. The following examples are covered:

- [Viewing Details of the PaaS Zones Resource](#)
- [Viewing Details of a PaaS Zone Resource](#)
- [Creating a PaaS Zone](#)
- [Updating a PaaS Zone](#)
- [Deleting a PaaS Zone](#)

55.3.1.3.1 Viewing Details of the PaaS Zones Resource

A GET request issued on the Resource Providers resource with the query parameter "type=self_service_zone" provides the details of all the individual PaaS zones which are already existing in the PaaS zones resource.

Table 55-7 GET Request Configuration for Viewing Details of the PaaS Zones Resource

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders?type=self_service_zone
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below:

```
{
  "name": "Resource Providers",
  "type": "Resource Provider",
  "canonicalLink": {
    "href": "https://example.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders"
  },
  "totalResults": 1,
  "cfwItems": [
    {
      "id": "15",
      "name": "pzone1",
      "type": "self_service_zone",
      "guid": "A3CF2D49CFF3F3E664D073303EA51F8E",
      "canonicalLink": {
        "href": "https://example.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/15"
      }
    },
    {
      "id": "16",
      "name": "Test Zone 2",
      "type": "self_service_zone",
      "guid": "EF3830C71CC54B50B963376F9217AB95",
      "canonicalLink": {
        "href": "https://example.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/16"
      }
    },
    {
      "id": "17",
      "name": "test paas zone",
      "type": "self_service_zone",
      "guid": "5D7548C1B879A51CFD894CEA8D5FB19B",
      "canonicalLink": {
        "href": "https://example.com/em/websvcs/restful/extws/cloudservices/"
      }
    }
  ]
}
```

```

admin/cfw/v2/resourceproviders/17"
    }
  },
  {
    "id": "18",
    "name": "Test Zone",
    "type": "self_service_zone",
    "guid": "34405E0876B271E754B1A829BDFD06B9",
    "canonicalLink": {
      "href": "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v2/resourceproviders/18"
    }
  }
]
}

```

55.3.1.3.2 Viewing Details of a PaaS Zone Resource

The GET request on the PaaS zone resource can be issued to retrieve its details. The configuration for GET to PaaS zone is as follows:

Table 55-8 GET Request Configuration for Viewing Details of a PaaS Zones Resource

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/23
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below:

```

{
  "name": "My Test Zone",
  "type": "self_service_zone",
  "memberTargetType": "host",
  "members": [
    "example.com"
  ],
  "credentials": [
    { "name": "normal_credential_guid",
      "value": "NC_HOST_2015-10-09-095917" }
  ],
  "placementConstraints": [
    { "name": "MAX_CPU_UTILIZATION",
      "value": [ "80" ] },
    { "name": "MAX_MEMORY_ALLOCATION",
      "value": [ "80" ] }
  ],
  "memberConstraints": [],
  "characteristics": [
    { "name": "ORACLE.SYSMAN.CFW.SELF_SERVICE_ZONE",
      "value": [ "34405E0876B271E754B1A829BDFD06B9" ] },
    { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_CONTACT",

```

```

        "value": [ ] },
    {
      "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER",
      "value": [ ] },
    {
      "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT",
      "value": [ ] },
    {
      "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DOWNTIME_CONTACT",
      "value": [ ] },
    {
      "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS",
      "value": [ ] },
    {
      "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS",
      "value": [ ] },
    {
      "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION",
      "value": [ ] }
  ],
  "canonicalLink": { "href": "https://example.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/23" }
}

```

55.3.1.3.3 Creating a PaaS Zone

A PaaS zone is created with a POST request on the PaaS zones collection resource.

The configuration for POST to PaaS zones is as follows:

Table 55-9 POST Request Configuration for Creating a PaaS Zone

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "useExistingTarget": false, "name": "My Test Zone", "type": "self_service_zone", "credentials": [{ "name": "normal_credential_guid", "value": "MY_ZONE_CREDS0afb3e85-f" }], "memberTargetType": "host", "members": ["example.com"], "placementConstraints": [{ "name": "MAX_CPU_UTILIZATION", "value": "90" }] } </pre>
Request method	POST

A sample of the response received is shown below.

```

{
  "message": "Resource provider with name \"My Test Zone\" and type \"self_service_zone\" created successfully.",
  "canonicalLink": {
    "href": "https://example.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/23"
  }
}

```

```
}
}
```

55.3.1.3.4 Updating a PaaS Zone

The PUT request with payload updates an existing PaaS Infrastructure Zone.

The configuration for PUT to PaaS zones is as follows:

Table 55-10 PUT Request Configuration for Updating a PaaS Zone

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/23
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ <pre> "memberTargetType": "host", "credentials": [{ "name": "normal_credential_guid", "value": "NC_HOST_2015-10-09-095917" }], "placementConstraints": [{ "name": "MAX_CPU_UTILIZATION", "value": ["92"] }] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "message": "Resource provider with ID \"23\" updated successfully."
}
```

55.3.1.3.5 Deleting a PaaS Zone

The DELETE request on the URI of the PaaS zone can be issued to delete a PaaS zone Instance. The configuration for deleting in PaaS zone is as follows:

Table 55-11 DELETE Request Configuration to delete a PaaS Zone

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/23
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
{
  "message": "Resource provider with ID \"23\" deleted successfully."
}
```

55.3.2 Software Pools and Software Pool REST APIs

This section covers the following:

- [Software Pools](#)
- [Software Pool](#)
- [Software Pool REST API Examples](#)

55.3.2.1 Software Pools

Software pools is a collection resource representing an SSA Administrator's view of all the accessible individual Software pool resources. Software pools has the media type `application/oracle.com.cloud.common.SoftwarePools+json`.

The following table describes the Software pools data model.

Table 55-12 Software Pools Data Model

Field	Type	Description	Occurs
Name	String	Displays name of this collection resource.	1
Type	String	Type of this collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1
Count	Integer	Number of elements returned.	1
Items	Collection <PaaSZone>	List of PaaS zone resources. If there are no instances, the items will be present but will be empty.	1
totalCount	Integer	Total number of PaaS zone resources.	1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent to the containing elements.	1

55.3.2.1.1 Supported Request Methods for Software Pools

The following table lists all the operations that are supported on the Software pools resources.

Table 55-13 Supported Request Methods for Software Pools

GET	POST	PUT	DELETE
Yes	Yes	Yes	No

55.3.2.2 Software Pool

A Software pool resource represents a collection of homogeneous servers or clusters that are used to service requests within a PaaS Infrastructure Zone. All members within a Software pool must be of the same type and must belong to the same PaaS Infrastructure Zone. Software pool has the media type `application/oracle.com.cloud.common.SoftwarPool+json`.

The following table describes the Software pool data model.

Table 55-14 Software Pool Data Model

Field	Type	Description	Occurs
Name	String	A human readable name given to the Software pool.	1
ID	String	Pool GUID that uniquely identifies the resource.	1
Description	String	As brief description given to the software pool.	0..1
poolTargetType	String	Target type of the Software Pool to be created. Example : "oracle_cloud_zone" for Database Pool, "schaas_pool" for Schema Pool, "pdbaas_pool" for Pluggable Database Pool.	1
paasZone	String	Name of the PaaS zone associated with this Software Pool.	1
Members	Collection <String>	Members of PaaS zone. They can be either Host members or Oracle VM Zone members.	1
memberType	String	The target type of the members of PaaS zone. It can be either "host" for Host members or "oracle_vm_zone" for Oracle VM Zone members.	1
Constraints	Collection <Entity Value Holder>	Placement Policy Constraints for a software pool allow the self service administrator to set maximum ceilings for resource utilization.	0..1
Filters	Collection <EntityValueHolder>	Filters on a Software Pool restrict the addition of member targets to it with a set criteria.	1
Properties	Collection <String>	Additional properties that need to be specified for a specific pool target type.	1
membersToAdd	Collection <String>	Targets to be added to an existing Software Pool while editing it.	0..1
membersToRemove	Collection <String>	Targetst to be removed from an existing Software Pool while editing it.	0..1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1

55.3.2.2.1 Supported Request Methods for Software Pool

The following table lists all the operations that are supported on the Software pool resources.

Table 55-15 Supported Request Methods for Software Pool

GET	POST	PUT	DELETE
Yes	No	No	Yes

55.3.2.3 Software Pool REST API Examples

The following sections provide examples of interaction with Enterprise Manager Cloud Control 12.1.0.3 with Cloud Application plug-in 12.1.0.7 and higher. The following examples are covered here:

- [Viewing Details of the Software Pools Resource](#)
- [Viewing Details of a Software Pool Resource](#)
- [Viewing Details of a Software Pool Capacity](#)
- [Creating a Database Pool](#)
- [Updating a Database Pool](#)
- [Creating a Schema Pool](#)
- [Updating a Schema Pool](#)
- [Creating a Pluggable Database Pool](#)
- [Updating a Pluggable Database Pool](#)
- [Deleting a Database / Schema / Pluggable Database Pool](#)

55.3.2.3.1 Viewing Details of the Software Pools Resource

Table 55-16 GET Request Configuration for Viewing Details of the Software Pools Resource

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "Software Pools",
  "type": "Software Pool",
  "hasMore": false,
  "count": 4,
  "items": [
    {
      "name": "SI Databases Zone",
      "type": "oracle_cloud_zone",
```

```

    "id": "EF658526512C5CFEF593EB295D0CFAD5",
    "zoneName": "Salt Lake City Zone",
    "canonicalLink": "https://xyz.example.com:4473/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/EF658526512C5CFEF593EB295D0CFAD5"
  },
  {
    "name": "Pluggable Databases Pool",
    "type": "pdbaas_pool",
    "id": "9FC634F035161C9260CD943970BAC1C8",
    "zoneName": "Salt Lake City Zone",
    "canonicalLink": "https://xyz.example.com:4473/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/9FC634F035161C9260CD943970BAC1C8"
  },
  {
    "name": "Primary DB Pool",
    "type": "oracle_cloud_zone",
    "id": "B1E3A8872D1A503DA1F1756CD18207B4",
    "zoneName": "Salt Lake City II",
    "canonicalLink": "https://xyz.example.com:4473/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/B1E3A8872D1A503DA1F1756CD18207B4"
  },
  {
    "name": "Standby DB Pool",
    "type": "oracle_cloud_zone",
    "id": "A5B6272EC680EFAB1B53842EC4256AAB",
    "zoneName": "Salt Lake City II",
    "canonicalLink": "https://xyz.example.com:4473/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/A5B6272EC680EFAB1B53842EC4256AAB"
  }
],
"totalCount": 4,
"canonicalLink": "https://xyz.example.com:4473/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools",
"selfLink": "https://xyz.example.com:4473/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/softwarepools"
}

```

55.3.2.3.2 Viewing Details of a Software Pool Resource

The GET request on the Software pool URI can be issued to retrieve its details.

The configuration for GET on Software pool is as follows:

Table 55-17 GET Request Configuration for Viewing Details of the Software Pool Resource

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "name": "DB_POOL",
  "description": "Database Pool of Oracle Homes",
  "type": "Database Zone",
  "id": "E827809080C16F75E040F20A60511EA2",
  "zoneName": "SLC01MDR_ZONE",
  "members": {
    "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2/members",
    "numberOfPoolMembers": "1"
  },
  "constraints": {
    "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2/constraints",
    "numberOfConstraints": "1"
  },
  "filters": {
    "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2/filters",
    "numberOfFilters": "3"
  },
  "properties": {
    "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2/properties",
    "numberOfPropertiess": "0"
  },
  "createdOn": "2013-10-07 06:27:17",
  "createdBy": null,
  "modifiedOn": null,
  "modifiedBy": null,
  "owner": "SYSMAN",
  "etag": null,
  "lastModified": null,
  "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2",
  "selfLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2"
}

```

55.3.2.3.3 Viewing Details of a Software Pool Capacity

The GET request on the Software pool capacity URI can be issued to retrieve its details.

In the table below, the URI to view the Software pool capacity is `/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/CODE0DEB3A8195A4707704360463060B/capacity`. However, it can be modified to add certain query parameters to view the desired output. The query parameters and their descriptions are given below:

- `showUsageSummary`: Includes resource utilization data at pool level. Values can be “yes”, “y”, or “true” which are all case insensitive. If value is not provided or if the given value is other than the listed values, “usageSummary” will not be available in the response.
- `showMemberLevelUsage`: Includes resource utilization data at pool member level. Values can be “yes”, “y”, or “true” which are all case insensitive. If value is not

provided or if the given value is other than the listed values, "memberLevelUsage" will not be available in the response.

- **diskGroups:** Provides the list of ASM disk group names for storage computation. If the value is not provided, storage values will not be available in the response. Multiple values can be provided by using the format given below in the request URI:
 diskGroups=<Value1>&diskGroups=<Value2>&...
- **cpuMemAveUtilDays:** Indicates the number of days to include the collected metrics for computing CPU and memory utilization. If no value is provided, the default value is taken as 7 days.

The configuration for GET on Software pool is as follows:

Table 55-18 GET Request Configuration for Viewing Details of the Software Pool Capacity

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E284FAAA7FBA6A06F7090115A3E07299/capacity?showMemberLevelUsage=y&showUsageSummary=true&diskGroups=RECO1&diskGroups=DATA1&cpuMemAveUtilDays=3
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{ "name": "DB Pool 1",
  "type": "oracle_cloud_zone",
  "poolInfo":
    { "poolName": "DB Pool 1",
      "poolId": "CODE0DEB3A8195A4707704360463060B",
      "poolDescription": "Exadata hosts Oracle Home",
      "dbConfiguration": "Cluster Database",
      "dbVersion": "12.1.0.2.0",
      "paasZone": "zone1" },
  "standByPools" :
    [ { "poolName": "Standby Pool 1",
        "poolId": "6AF0F5A23BE120F4EAEC29236853D6B8",
        "poolDescription": "Standby Oracle Home",
        "dbConfiguration": "Cluster Database",
        "dbVersion": "12.1.0.2.0",
        "paasZone": "zone2" } ],
  "usageSummary":
    { "numberOfDbs": "2",
      "numberOfHosts": "2",
      "cores":
        { "total": "64",
          "allocated": "8",
          "available": "56",
          "unit": "cores" },
      "memory":
        { "total": "504",
```

```

        "allocated": "3.53",
        "available": "500.47",
        "unit": "GB"},
    "storage":
    { "total": "29073.24",
      "allocated": "12765.99",
      "available": "16307.25",
      "unit": "GB"}},
  "memberLevelUsage":
  [{ "host": "MyHost1.example.com",
    "oracleHomeLocation": "/u01/app/oracle/product/12.1.0.2/dbhome_1",
    "numberOfDbs": "1",
    "cores":
    { "total": "32",
      "allocated": "4",
      "available": "28",
      "unit": "cores"},
    "cpuUtilizationPercentage": "12.77",
    "memory":
    { "total": "251.99",
      "allocated": "1.77",
      "available": "250.23",
      "unit": "GB"},
      "memoryUtilizationPercentage": "59.66"},
    { "host": "MyHost2.example.com",
      "oracleHomeLocation": "/u01/app/oracle/product/12.1.0.2/dbhome_1",
      "numberOfDbs": "1",
      "cores":
      { "total": "32",
        "allocated": "4",
        "available": "28",
        "unit": "cores"},
      "cpuUtilizationPercentage": "9.45",
      "memory":
      { "total": "251.99",
        "allocated": "1.77",
        "available": "250.23",
        "unit": "GB"},
        "memoryUtilizationPercentage": "66.75"}]},
  "canonicalLink": "https://MyHost.example.com:4900/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/CODE0DEB3A8195A4707704360463060B/capacity"}

```

55.3.2.3.4 Creating a Database Pool

A POST operation is issued on Software Pools Collection resource to create a Database Pool.

The configuration for POST to Software pools is as follows:

Table 55-19 POST Request Configuration for Creating a Database Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-19 (Cont.) POST Request Configuration for Creating a Database Pool

Feature	Description
Body	<pre> { "name": "DB_POOL", "poolTargetType": "oracle_cloud_zone", "description": "Database Pool of Oracle Homes", "paasZone": "SLC01MDR_ZONE", "members": ["OraDb11g_home1_2_slc01mdr"], "serviceFamily": "DBAAS", "serviceType": "DBAAS", "constraints": { "items": [{ "name": "MAX_INSTANCES", "value": "10" }] }, "filters": { "items": [{ "name": "CONFIGURATION", "value": "oracle_database" }, { "name": "VERSION", "value": "11.2.0.2.0" }, { "name": "PLATFORM", "value": "226" }] }, "properties": { "items": [{ "name": "host_credential_guid", "value": "E84E88308E46A725E040F20A605125DD" }, { "name": "root_credential_guid", "value": "E84E88308E46A725E040F20A605125DD" }, { "name": "standby_pools", "value": "DB_POOL1 DB_POOL2" }] } } </pre>
	<p>Note:</p> <ul style="list-style-type: none"> • name: Indicates the name of the pool. • poolTargetType: Indicates the target type for DBaaS pool. oracle_cloud_zone is the target type specific for DB OH pool. • paasZone: Indicates the name of the PaaS infrastructure zone. • members: Is a comma and string separated list of target names of Oracle homes, and members of the pool. • constraints: Indicates the constraints on the pool. Allowed values is MAX_INSTANCES. • filters: Indicates the filters applicable to define the version and type of the oracle homes of the pool, including VERSION, CONFIGURATION (oracle_database, rac_database) and PLATFORM (provide reference to list of code, for example, 226 for linux). • properties: Indicates the collection resource to define properties of the pool like Host credential GUID, Root credential GUID, and Standby pools.

Table 55-19 (Cont.) POST Request Configuration for Creating a Database Pool

Feature	Description
	To identify the Named credential GUID use the EM CLI verb <code>emcli list_named_credential</code> or <code>emcli get_named_credential</code> .
Request method	POST

A sample of the response received is shown below.

```
{
  "name": "DB_POOL",
  "description": "Database Pool of Oracle Homes",
  "type": "Database Zone",
  "id": "E827809080C16F75E040F20A60511EA2",
  "zoneName": "SLC01MDR_ZONE",
  "members": {
    "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2/members",
    "numberOfPoolMembers": "1"
  },
  "constraints": {
    "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2/constraints",
    "numberOfConstraints": "1"
  },
  "filters": {
    "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2/filters",
    "numberOfFilters": "3"
  },
  "properties": {
    "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2/properties",
    "numberOfPropertiess": "0"
  },
  "createdOn": "2013-10-07 06:27:17",
  "createdBy": null,
  "modifiedOn": null,
  "modifiedBy": null,
  "owner": "SYSMAN",
  "etag": null,
  "lastModified": null,
  "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2",
  "selfLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2"
}
```

55.3.2.3.5 Updating a Database Pool

A PUT operation is issued on Software Pools Collection resource to update a Database Pool.

The configuration for PUT to Software pools is as follows:

Table 55-20 PUT Request Configuration for Updating a Database Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "name": "DB_POOL", "poolTargetType": "oracle_cloud_zone", "description": "Database Pool of Oracle Homes", "membersToAdd": ["OraDb11g_home1_2_abc"], "membersToRemove": ["OraDb11g_home1_2_abc"], "constraints": { "items": [{"name": "MAX_INSTANCES", "value": "8"}]}, "properties": { "items": [{"name": "host_credential_guid", "value": "E84E88308E46A725E040F20A605125DD"}, {"name": "root_credential_guid", "value": "E84E88308E46A725E040F20A605125DD"}, {"name": "standby_pools", "value": "DB_POOL"}] } }</pre> <p>Note: Ensure at least one member remains as a part of the pool while issuing the request. If all the members are added to the <code>membersToRemove</code> attribute, the PUT request may fail.</p>
Request method	PUT

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  message: "Software Pool  " DB_POOL" updated successfully."
}
```

55.3.2.3.6 Creating a Schema Pool

A POST operation is issued on Software Pools Collection resource to create a Software Pool.

The configuration for POST to Software pools is as follows:

Table 55-21 POST Request Configuration for Creating a Schema Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-21 (Cont.) POST Request Configuration for Creating a Schema Pool

Feature	Description
Body	<pre> { "name": "SCHEMA_POOL", "poolTargetType": "schaas_pool", "description": "Schema Service Pool", "paasZone": "SLC01MDR_ZONE", "members": ["simple.example.com"], "serviceFamily": "DBAAS", "serviceType": "SCHEMA", "constraints": { "items": [{"name": "MAX_SERVICES", "value": "20"}, {"name": "USE_WORKLOAD", "value": "true"}, {"name": "MAX_CPU_USAGE", "value": "90"}, {"name": "MAX_MEMORY_USAGE", "value": "90"}, {"name": "ENFORCE_CPU", "value": "true"}] }, "filters": { "items": [{"name": "TARGET_TYPE", "value": "oracle_database"}, {"name": "VERSION", "value": "11.2.0.2.0"}, {"name": "PLATFORM", "value": "226"}] } } </pre>
Request method	POST

A sample of the response received is shown below.

```

Status 201 Created
Content-Type: application/json
{
  "name": "SCHEMA_POOL",
  "description": "Schema Service Pool",
  "type": "Schema Pool",
  "id": "2CFF36A9E92AAD533253871374857D8C",
  "zoneName": "SLC01MDR_ZONE",
  "members": {
    "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/2CFF36A9E92AAD533253871374857D8C/members",
    "numberOfPoolMembers": "1"
  },
  "constraints": {
    "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/2CFF36A9E92AAD533253871374857D8C/constraints",
    "numberOfConstraints": "5"
  },
  "filters": {
    "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/2CFF36A9E92AAD533253871374857D8C/filters",
    "numberOfFilters": "3"
  },
  "properties": {

```

```

    "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/2CFF36A9E92AAD533253871374857D8C/
properties",
    "numberOfPropertiess": "0"},
    "createdOn": "2013-10-07 08:13:48",
    "createdBy": null,
    "modifiedOn": null,
    "modifiedBy": null,
    "owner": "SYSMAN",
    "etag": null,
    "lastModified": null,
    "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/2CFF36A9E92AAD533253871374857D8C",
    "selfLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/2CFF36A9E92AAD533253871374857D8C"
}

```

55.3.2.3.7 Updating a Schema Pool

A PUT operation is issued on Software Pools Collection resource to update a Software Pool.

The configuration for PUT to Software pools is as follows:

Table 55-22 PUT Request Configuration for Updating a Schema Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "name": "SCHEMA_POOL", "poolTargetType": "schaas_pool", "description": "Schema Service Pool", "membersToAdd": ["xyxy.example.com"], "membersToRemove": ["simple.us.example.com"], "constraints": { "items": [{"name": "MAX_SERVICES", "value": "10"}, {"name": "USE_WORKLOAD", "value": "false"}, {"name": "MAX_CPU_USAGE", "value": "90"}, {"name": "MAX_MEMORY_USAGE", "value": "90"}, {"name": "ENFORCE_CPU", "value": "false"}] }, } </pre> <p>Note: Ensure at least one member remains as a part of the pool while issuing the request. If all the members are added to the <code>membersToRemove</code> attribute, the PUT request may fail.</p>
Request method	PUT

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  message: "Software Pool "SCHEMA_POOL" updated successfully.
}
```

55.3.2.3.8 Creating a Pluggable Database Pool

A POST operation is issued on Software Pools collection resource to create a Software Pool. The configuration for POST to Software pools is as follows:

Table 55-23 POST Request Configuration for Creating a Pluggable Database Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "name": "PDB_POOL", "poolTargetType": "pdbaas_pool", "description": "Pluggable Database Pool", "paasZone": "PDB_ZONE", "members": ["database"], "serviceFamily": "DBAAS", "serviceType": "PDB", "constraints": { "items": [{"name": "MAX_PDB_SERVICES", "value": "20"}, {"name": "PDBS_USE_WORKLOAD", "value": "true"}, {"name": "MAX_CPU_USAGE_BY_PDBS", "value": "90"}, {"name": "MAX_MEMORY_USAGE_BY_PDBS", "value": "90"}, {"name": "PDBS_ENFORCE_CPU", "value": "true"}] }, "filters": { "items": [{"name": "TARGET_TYPE_CDB", "value": "oracle_database"}, {"name": "VERSION_CDB", "value": "12.1.0.1.0"}, {"name": "PLATFORM_CDB", "value": "226"}] } }</pre>
Request method	POST

A sample of the response received is shown below.

```
Status 201 Created
Content-Type: application/json
{
  "name": "PDB_POOL",
```

```

"description": "Pluggable Database Pool",
"type": "Pdb Pool",
"id": "E82952BD4C94D443E040F20A605114E6",
"zoneName": "PDB_ZONE",
"members": {
  "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/E82952BD4C94D443E040F20A605114E6/members",
  "numberOfPoolMembers": "1"
},
"constraints": {
  "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/E82952BD4C94D443E040F20A605114E6/
constraints",
  "numberOfConstraints": "5"
},
"filters": {
  "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/E82952BD4C94D443E040F20A605114E6/filters",
  "numberOfFilters": "3"
},
"properties": {
  "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/E82952BD4C94D443E040F20A605114E6/
properties",
  "numberOfPropertiess": "0",
  "createdOn": "2013-10-07 08:29:51",
  "createdBy": null,
  "modifiedOn": null,
  "modifiedBy": null,
  "owner": "SYSMAN",
  "etag": null,
  "lastModified": null,
  "canonicalLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/E82952BD4C94D443E040F20A605114E6",
  "selfLink": "https://xyxy.example.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/softwarepools/E82952BD4C94D443E040F20A605114E6"
}
}

```

A sample json for creating pluggable database pool is shown below:

```

{
  "name": "PDBaaS_NEW_POOL",
  "useExistingTarget": false,
  "type": "pdbaas_pool",
  "memberTargetType": "rac_database",
  "members": ["EM12CDB"],
  "parentResourceProviderId": "161",
  "credentials": [
    { "name": "cdb_credential_guid", "value": "SSA_POC_DBAAS_ADMIN" },
    { "name": "cdb_wallet_password", "value": null },
    { "name": "gi_credential_guid", "value": "SSA_POC_ORACLE" },
    { "name": "host_credential_guid", "value": "SSA_POC_ORACLE" }
  ],
  "placementConstraints": [
    { "name": "MAX_PDB_SERVICES", "value": [ "99" ] },
    { "name": "MAX_CPU_USAGE_BY_PDBS", "value": [ "90" ] },
  ]
}

```

```

    { "name": "MAX_MEMORY_USAGE_BY_PDBS", "value": [ "90" ] },
    { "name": "PDBS_USE_WORKLOAD", "value": [ "true" ] },
    { "name": "PDBS_ENFORCE_CPU", "value": [ "true" ] }
  ],
  "memberConstraints": [
    {
      "name": "ORACLE.SYSMAN.SSA.CONFIGURATION", "value": [ "rac_database" ] },
    { "name": "ORACLE.SYSMAN.CFW.PLATFORM", "value": [ "226" ] },
    { "name": "ORACLE.SYSMAN.CFW.VERSION", "value": [ "12.1.0.2.0" ] }
  ]
}

```

55.3.2.3.9 Updating a Pluggable Database Pool

A PUT operation is issued on Software Pools Collection resource to update a Software Pool.

The configuration for PUT to Software pools is as follows:

Table 55-24 PUT Request Configuration for Updating a Pluggable Database Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "name": "PDB_POOL", "poolTargetType": "pdbaas_pool", "description": "Pluggable Database Pool", "membersToAdd": ["simple.us.example.com"], "membersToRemove": ["simple1.us.example.com"], "constraints": { "items": [{"name": "MAX_PDB_SERVICES", "value": "10"}, {"name": "PDBS_USE_WORKLOAD", "value": "false"}, {"name": "MAX_CPU_USAGE_BY_PDBS", "value": "90"}, {"name": "MAX_MEMORY_USAGE_BY_PDBS", "value": "90"}, {"name": "PDBS_ENFORCE_CPU", "value": >false"}] } } </pre>
Request method	PUT

Note: Ensure at least one member remains as a part of the pool while issuing the request. If all the members are added to the `membersToRemove` attribute, the PUT request may fail.

A sample of the response received is shown below.

```

Status 200 OK
Content-Type: application/json

```

```
{
  message: "Software Pool  "PDB_POOL" updated successfully."
}
```

55.3.2.3.10 Deleting a Database / Schema / Pluggable Database Pool

To delete a SoftwarePool Instance raise the DELETE request on the URI of the Database pool. The configuration for deleting a Software pool is as follows:

Table 55-25 DELETE Request Configuration for Deleting a Database/Schema/Pluggable Database Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E827809080C16F75E040F20A60511EA2
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  message: "Software Pool " E827809080C16F75E040F20A60511EA2" deleted successfully."
}
```

55.3.3 Database Request Settings REST APIs

This section describes the REST request/response interactions for Database Request Settings.

Note:

Request Settings REST APIs are only supported by the Oracle Cloud Application plug-in version 12.1.0.7.0 and higher.

The topics covered in this section are:

- [Database Request Settings Resource Model](#)
- [Dbaas Request Settings Resource](#)
- [Supported Operations for Dbaas Request Settings](#)
- [Dbaas Request Settings REST API Examples](#)

55.3.3.1 Database Request Settings Resource Model

Cloud resources are organized by common service entities, and specific services (for example, Database Request Settings) provide resources by extending these common service entities. The Database Request Settings is a cloud resource for which instance

does not exist. The following sections describe the resources that are supported by the Database Request Settings REST APIs and provide examples of supported operations.

55.3.3.2 Dbaas Request Settings Resource

The Dbaas Request Settings extends the cloud resource. It describes the database request settings related to service instances. Dbaas Request Settings has media type - application/oracle.com.cloud.common.DbaasRequestSettings+json.

The following table describes the Dbaas Request Settings data model.

Table 55-26 DBaaS Request Settings Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the template.	1
description	String	A brief description given to the template	1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
media_type	String	The media type of the service template.	1
service_family_type	String	Dbaas	1
canonicalLink	URI	Can be used to perform cloud interactions like GET and POST.	1
RequestSettings	String	The current database request settings.	1

55.3.3.3 Supported Operations for Dbaas Request Settings

The following table lists all the operations that are supported on the database quota service resources.

Table 55-27 Supported Operations for DBaaS Request Settings

GET	POST	PUT	DELETE
Yes	Yes	Yes	Yes

55.3.3.4 Dbaas Request Settings REST API Examples

The following sections provide examples of interaction with Enterprise Manager Cloud Control. The following examples are covered:

- [Viewing Details of the Dbaas Request Settings Resource](#)
- [Creating Database Request Settings](#)

55.3.3.4.1 Viewing Details of the DbaaS Request Settings Resource

The table below shows the REST API configuration for viewing details of the DBaaS request setting resource.

Table 55-28 GET Request Configuration for Viewing Details of the DBaaS Request Setting Resource

Feature	Description
URI	/em/cloud/dbaas/requestsettings
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/requestsettings" ,
  "name" : "DbaaS Request Settings" ,
  "description" : "DbaaS Request settings" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "media_type" : "application/oracle.com.cloud.common.DbaasRequestSettings+json" ,
  "service_family_type" : "dbaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/requestsettings" ,
  "Request Settings" : {
    "futureReservationLength" : "No Reservation" ,
    "defaultRetirementPeriod" : "No Reservation" ,
    "maximumArchiveDuration" : "No Reservation"
  }
}
```

55.3.3.4.2 Creating Database Request Settings

This section describes how to create the request settings using the cloud resources.

The configuration for POST to DbaaSRequestSettings is as follows:

Table 55-29 POST Request Configuration for Creating DBaaS Request Settings

Feature	Description
URI	em/cloud/dbaas/requestsettings
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.DbaasRequestSettings+json Accept: application/oracle.com.cloud.common.DbaasRequestSettings+json

Table 55-29 (Cont.) POST Request Configuration for Creating DBaaS Request Settings

Feature	Description
Body	<pre>{ "future_reservation_length" : "2 Months", "maximum_archive_duration" : "10 Weeks", "default_retirement_period" : "No Reservation" }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/requestsettings" ,
  "name" : "Dbaas Request Settings" ,
  "description" : "Dbaas Request settings" ,
  "resource_state" : {
    "state" : "READY" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T09:13:03+0000" ,
        "text" : "Request settings have been updated."
      }
    ]
  } ,
  "media_type" : "application/oracle.com.cloud.common.DbaasRequestSettings+json" ,
  "service_family_type" : "dbaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/requestsettings"
}
```

55.3.4 Database Quota REST APIs

This section describes the REST request/response interactions for setting up Quota.

Note:

Quota REST APIs are only supported by the Oracle Cloud Application plug-in version 12.1.0.7.0 and higher.

The topics covered in this section are:

- [Database Quota Resource Model](#)
- [Dbaas Quota Resource](#)
- [Supported Operations for DbaaS Quota](#)
- [Database Quota REST API Examples](#)

55.3.4.1 Database Quota Resource Model

Cloud resources are organized by common service entities, and specific services (for example, Database Quota) provide resources by extending these common service entities. The Database Quota is a cloud resource for which an instance does not exist.

The following sections describe the resources that are supported by the Database Quota REST APIs and provide examples of supported operations.

55.3.4.2 Dbaas Quota Resource

The Dbaas Quota extends the cloud resource. It describes the quota settings for all roles. Dbaas Quota has the media type `application/oracle.com.cloud.common.DbaasQuota+json`.

The following table describes the Dbaas Quota data model.

Table 55-30 Dbaas Quota Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the template.	1
description	String	A brief description given to the template	1
resource_state	String	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
media_type	String	The media type of the service template that. this type represents	1
service_family_type	String	Dbaas	1
canonicalLink	URI	Can be used to perform cloud interactions like GET and POST.	1
databases	String	The databases usage report.	1
schema_services	String	The schema services usage report.	1
pluggable_databases	String	The pluggable databases usage report.	1
memory	String	The memory usage report.	1
storage	String	The storage usage report.	1
Quota	String	The Quota setup details for a role.	1

55.3.4.3 Supported Operations for DbaaS Quota

The following table lists all the operations that are supported on the Database quota resources.

Table 55-31 Supported Operations for DbaaS Quota

GET	POST	PUT	DELETE
Yes	Yes	Yes	Yes

55.3.4.4 Database Quota REST API Examples

The following sections provide examples of interaction with Enterprise Manager Cloud Control 12.1.0.3 with Cloud Application plug-in 12.1.0.7 and higher. The following examples are covered:

- [Viewing Details of the DBaaS Quota Resource](#)
- [Creating DBaaS Quota for a Role](#)
- [Updating DBaaS Quota for a Role](#)
- [Deleting DBaaS Quota for a Role](#)

55.3.4.4.1 Viewing Details of the DBaaS Quota Resource

Table 55-32 GET Request Configuration for Viewing Details of the DBaaS Quota Resource

Feature	Description
URI	/em/cloud/dbaas/quota
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/quota" ,
  "name" : "DbaaS User Quota" ,
  "description" : "User Quota for the user" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "media_type" : "application/oracle.com.cloud.common.DbaasQuota+json" ,
  "service_family_type" : "dbaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/quota" ,
  "databases" : {
    "quota" : "Unlimited" ,
    "used" : "1" ,
    "unit" : "Instance"
  } ,
  "schema_services" : {
    "quota" : "Unlimited" ,
    "used" : "1" ,
    "unit" : "Instance"
  } ,
  "pluggable_databases" : {
```

```

        "quota" : "Unlimited" ,
        "used" : "1" ,
        "unit" : "Instance"
    } ,
    "memory" : {
        "quota" : "Unlimited" ,
        "used" : "0.79" ,
        "unit" : "GB"
    } ,
    "storage" : {
        "quota" : "Unlimited" ,
        "used" : "3.38" ,
        "unit" : "GB"
    } ,
    "Quotas" :
    [
        {
            "Role Name" : "DBAAS_ROLE" ,
            "Memory(GB)" : "99" ,
            "Storage(GB)" : "99" ,
            "Number of Database Requests" : "99" ,
            "Number of Schema Service Requests" : "99" ,
            "Number of Pluggable database Service Requests" : "99"
        }
    ]
}

```

55.3.4.4.2 Creating DBaaS Quota for a Role

This section describes how to create/setup a quota for a role using the Cloud resources.

The configuration for POST to Dbaas Quota is as follows:

Table 55-33 POST Request Configuration for Creating a DBaaS Quota for a Role

Feature	Description
URI	/em/cloud/dbaas/quota
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.DbaasQuota+json Accept: application/oracle.com.cloud.common.DbaasQuota+json
Body	<pre> { "role_name" : "DBAAS_ROLE", "databases" : "10", "schema_services" : "21", "pluggable_databases" : "22", "storage" : "99", "memory" : "99" } </pre>
Request method	POST

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/quota" ,

```

```

"name" : "Dbaas User Quota" ,
"description" : "User Quota for the user" ,
"resource_state" : {
  "state" : "READY" ,
  "messages" :
  [
    {
      "date" : "2013-08-27T08:58:48+0000" ,
      "text" : "Quota for Role DBAAS_ROLE setup successfully."
    }
  ]
} ,
"media_type" : "application/oracle.com.cloud.common.DbaasQuota+json" ,
"service_family_type" : "dbaas" ,
"canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/quota"
}

```

55.3.4.4.3 Updating DBaaS Quota for a Role

This section describes how update the quota already setup for a role using the Cloud resources. The configuration for PUT to DBaaS Quota is as shown in the table below.

Table 55-34 PUT Request Configuration for Updating a DBaaS Quota for a Role

Feature	Description
URI	em/cloud/dbaas/quota
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbaasQuota+json Accept: application/oracle.com.cloud.common.DbaasQuota+json
Body	{ "role_name" : "DBAAS_ROLE", "databases" : "10", "schema_services" : "21", "pluggable_databases" : "22", "storage" : "99", "memory" : "99"
Request method	PUT

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/quota" ,
  "name" : "Dbaas User Quota" ,
  "description" : "User Quota for the user" ,
  "resource_state" : {
    "state" : "READY" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T09:01:56+0000" ,
        "text" : "Quota for Role DBAAS_ROLE updated successfully."
      }
    ]
  }
}

```

```

    ]
  },
  "media_type" : "application/oracle.com.cloud.common.DbaasQuota+json" ,
  "service_family_type" : "dbaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/quota"
}

```

55.3.4.4 Deleting DBaaS Quota for a Role

This section describes how delete the quota setup for a role using the Cloud resources. The configuration for deleting in DBaaS Quota is as follows:

Table 55-35 DELETE Request Configuration for Deleting a DBaaS Quota for a Role

Feature	Description
URI	em/cloud/dbaas/quota
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbaasQuota+json Accept: application/oracle.com.cloud.common.DbaasQuota+json
Body	{ "role_name" : "SSA_USER_ROLE" }
Request method	DELETE

A sample of the response received is shown below.

```

{
  "uri": "/em/cloud/dbaas/quota",
  "name": "Dbaas User Quota",
  "description": "User Quota for the user",
  "resource_state": {
    "state": "READY",
    "messages": [
      {
        "text": "Quota for Role SSA_USER_ROLE deleted successfully.",
        "date": "2015-12-08T07:18:08+0000"
      }
    ]
  },
  "media_type": "application/oracle.com.cloud.common.DbaasQuota+json",
  "service_family_type": "dbaas",
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/quota"
}

```

55.3.5 Service Template REST APIs

This section covers the following:

- [Service Templates Resource](#)

- [Service Template Resource](#)
- [Service Templates and Service Template REST API Examples](#)

55.3.5.1 Service Templates Resource

Service Templates is a collection resource representing a Cloud Administrator's view of all the accessible service template resources. Service Templates has the media type `application/oracle.com.cloud.common.ServiceTemplates+json`.

The following table describes the Service Templates data model.

Table 55-36 Service Templates Data Model

Field	Type	Description	Occurs
Name	String	Displays name of this collection resource.	1
Type	String	Type of this collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1
Count	Integer	Number of elements returned.	1
Items	Collection <ServiceTemplate>	The elements of this collection.	1
totalCount	Integer	Total number of PaaS zone resources.	1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent to the containing elements.	1

55.3.5.1.1 Supported Operations for Service Templates

The following table lists all the operations that are supported on the Service Templates resource.

Table 55-37 Supported Operations for Service Templates

GET	POST	PUT	DELETE
Yes	Yes	No	No

55.3.5.2 Service Template Resource

A service template is a standardized service definition that can be used by self service users to provision a service instance. Service Template has the media type `application/oracle.com.cloud.common.ServiceTemplate+json`.

The following table describes the Service Template data model.

Table 55-38 Service Template Data Model

Field	Type	Description	Occurs
Name	String	A human readable name given to the ServiceTemplate.	1
ID	String	Service Template ID that uniquely identifies the resource.	1
Description	String	As brief description given to the zone.	0..1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
serviceFamily	String	Service family	1
serviceType	String	Service type.	1
Roles	Collection <Role>	SSA roles that can access this service template.	0..1
poolIds	Collection <String>	Software Pool Ids associated with this service template.	1
createdOn	String(Date/ Time)	Time when the resource was created.	0..1
createdBy	String	The user who created the resource.	1
modifiedOn	String(Date/ Time)	Time when the resource was last modified.	0..1
rolesToRemove	Collection <String>	SSA roles to be deleted while editing a PaaS zone.	0..1

55.3.5.2.1 Supported Operations for Service Template

The following table lists all the operations that are supported on the Service Template resource.

Table 55-39 Supported Operations for Service Template

GET	POST	PUT	DELETE
Yes	No	Yes	Yes

55.3.5.3 Service Templates and Service Template REST API Examples

The following sections provide examples of interaction with Enterprise Manager Cloud Control 12.1.0.3 with Cloud Application plug-in 12.1.0.7 and higher. The following examples are covered:

- [Viewing Details of the Service Templates Resource](#)
- [Viewing Details of the ServiceTemplate Resource](#)
- [Creating a Service Template for DBCA Based Database](#)
- [Creating a Service Template for RMAN Based Single Instance Database](#)
- [Creating a Service Template for RMAN Based Single Instance Database with Single Instance Standby](#)

- [Creating a Service Template for RMAN Based RAC One Node Database](#)
- [Creating a Service Template for RMAN Based RAC One Node Database With Standby](#)
- [Creating a Service Template for RMAN Based RAC Database With Standby](#)
- [Creating a Service Template for RAC Database with Standby Using a DBCA Template](#)
- [Creating a Service Template for DNFS Based Database](#)
- [Creating a Service Template for Snap Clone Single Instance Database \(with Archiving Enabled\)](#)
- [Creating a Service Template for Snap Clone Single Instance Database \(without Archiving Enabled\)](#)
- [Creating a Service Template for a Schema](#)
- [Creating a Service Template for a Pluggable Database](#)
- [Creating a Service Template for RAC Pluggable Database Using an Empty Pluggable Database](#)
- [Creating a Service Template for RAC Pluggable Database Using a Profile Pluggable Database](#)
- [Deleting a Database / Schema / Pluggable Database Service Template](#)

55.3.5.3.1 Viewing Details of the Service Templates Resource

The configuration for GET request is shown in the table below.

Table 55-40 GET Request Configuration for Viewing Details of the Service Templates Resource

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "Service Templates",
  "type": "Service Template",
  "totalResults": 5,
  "cfwItems": [
    {
      "id": "1",
      "name": "Database Creation on Individual Hosts",
      "guid": "203D5C842C2C17C3E053C075B10A73E3",
      "canonicalLink": {
        "href": "https://xyz.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/1"
      }
    }
  ]
}
```

```

    }
  },
  {
    "id": "21",
    "name": "Create Databases on 12_1_0_1_x",
    "guid": "204E31F679D421E8E053C075B10A409A",
    "canonicalLink": {
      "href": "https://xyz.example.com:4473/em/websvcs/restful/extws/cloudservices/
admin/cfw/v2/servicetemplates/21"
    }
  },
  {
    "id": "81",
    "name": "Create Databases on Clusters - Based on DB Template",
    "guid": "2068CDF3C0200D7CE053C075B10A7811",
    "canonicalLink": {
      "href": "https://xyz.example.com:4473/em/websvcs/restful/extws/cloudservices/
admin/cfw/v2/servicetemplates/81"
    }
  },
  {
    "id": "61",
    "name": "RMAN ST",
    "guid": "205046BB4D38762EE053C075B10AF091",
    "canonicalLink": {
      "href": "https://xyz.example.com:4473/em/websvcs/restful/extws/cloudservices/
admin/cfw/v2/servicetemplates/61"
    }
  },
  {
    "id": "41",
    "name": "Database Creation on Cluster",
    "guid": "204F067E22C12CFDE053C075B10A8A26",
    "canonicalLink": {
      "href": "https://xyz.example.com:4473/em/websvcs/restful/extws/cloudservices/
admin/cfw/v2/servicetemplates/41"
    }
  }
],
"canonicalLink": {
  "href": "https://xyz.example.com:4473/em/websvcs/restful/extws/cloudservices/
admin/cfw/v2/servicetemplates"
}
}

```

55.3.5.3.2 Viewing Details of the ServiceTemplate Resource

The GET request on the ServiceTemplate URI can be issued to retrieve its details. The configuration for GET to ServiceTemplate is as follows:

Table 55-41 GET Request Configuration for Viewing Details of the Service Template Resource

Feature	Description
URI	/em/websvcs/restful/extws/ cloudservices/admin/cfw/v2/ servicetemplates/61

Table 55-41 (Cont.) GET Request Configuration for Viewing Details of the Service Template Resource

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "id": "61",
  "guid": "205046BB4D38762EE053C075B10AF091",
  "name": "RMAN ST",
  "displayName": "RMAN ST",
  "serviceType": "DB",
  "serviceTemplateTypeId": "81",
  "createdOn": "2015-09-22T05:32:07Z",
  "createdBy": "SYSMAN",
  "modifiedOn": "2015-09-22T05:32:07Z",
  "owner": "SYSMAN",
  "lastModified": "2015-09-22T05:32:07Z",
  "payloads": [
    { "name": "SERVICE_TEMPLATE_PROV_SOURCE",
      "value": null,
      "required": null},
    { "name": "PROFILE_COMPONENT_URN",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:204D498A85D42C6AE053C075B10A6B09:0.1",
      "required": null},
    { "name": "DBDELETE_PRESCRIPT",
      "value": null,
      "required": null},
    { "name": "DBDELETE_POSTSCRIPT",
      "value": null,
      "required": null}
  ],
  "characteristics": [
    { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_CONTACT",
      "displayName": "Contact",
      "values": [],
      "required": false,
      "editable": true,
      "visible": true},
    { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER",
      "displayName": "Cost Center",
      "values": [],
      "required": false,
      "editable": true,
      "visible": true},
    { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT",
      "displayName": "Department",
      "values": [],
      "required": false,
      "editable": true,
      "visible": true},
  ]
}
```

```

{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DOWNTIME_CONTACT",
  "displayName": "Downtime Contact",
  "values": [],
  "required": false,
  "editable": true,
  "visible": true},
{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS",
  "displayName": "Lifecycle Status",
  "values": [
    "Development",
    "MissionCritical",
    "Production",
    "Stage",
    "Test"
  ],
  "required": false,
  "editable": true,
  "visible": true},
{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS",
  "displayName": "Line of Business",
  "values": [],
  "required": false,
  "editable": true,
  "visible": true},
{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION",
  "displayName": "Location",
  "values": [],
  "required": false,
  "editable": true,
  "visible": true},
{ "name": "ORACLE.SYSMAN.SSA.PROVISIONING_TYPE",
  "displayName": "Provisioning Type",
  "values": ["RMAN"],
  "required": false,
  "editable": false,
  "visible": false}
],
"resourceProvider": {
  "lookupCharacteristics": [
    {
      "purposeId": 1,
      "characteristics": [
        { "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE",
          "displayName": "oracle.sysman.ssa.oracle_cloud_zone",
          "targetType": {
            "targetType": "oracle_cloud_zone",
            "targetTypeName": "Database Pool",
            "parentTargetType": "self_service_zone",
            "parentTargetTypeName": "PaaS Infrastructure Zone"},
          "targets": [
            { "guid": "0CAF930826EDE90D8072E4E3ACA8072A",
              "displayName": "RAC Databases Pool _11_2_0_4" }
          ]
        }
      ]
    }
  ]
},
"configurations": [
  { "name": "ssaUser",
    "type": "STRING",

```

```

"value": "",
"displayName": "ssaUser",
"required": false,
"secret": false},
{ "name": "STANDBY_WORK_DIR",
" type": "STRING",
" value": "",
" displayName": "STANDBY_WORK_DIR",
" required": false,
" secret": false},
{ "name": "SID_OPTION",
" type": "STRING",
" description": "Database SID Option to be used. values are ssauser/prefix",
" value": "prefix",
" displayName": "Database SID Option",
" required": false,
" secret": false},
{ "name": "PROFILE_VERSION",
" type": "STRING",
" description": "Profile version to use",
" value": "latest",
" displayName": "Profile version",
" required": false,
" secret": false},
{ "name": "DB_TARGET_DISPLAY_NAME",
" type": "STRING",
" value": "",
" displayName": "DB_TARGET_DISPLAY_NAME",
" required": false,
" secret": false},
{ "name": "REF_TGT",
" type": "STRING",
" value": "xxy.example.com",
" displayName": "REF_TGT",
" required": false,
" secret": false},
{ "name": "USER_PRIVILEGES",
" type": "STRING",
" description": "Comma Seperated List of privileges that will be applied on
role assigned to the master account.",
" value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY
OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE ANY INDEX, CREATE JOB,
CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY TRIGGER, CREATE ANY TYPE,
CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY, SELECT ANY DICTIONARY",
" displayName": "User Privileges",
" required": false,
" secret": false},
{ "name": "COMMON_DB_SID",
" type": "STRING",
" description": "Database SID Prefix",
" value": "rmanri",
" displayName": "Database SID Prefix",
" required": false,
" secret": false},
{ "name": "DBAAS_SSA_STANDBY_CUSTOM_PRE_SCRIPTS_URN",
" type": "STRING",
" description": "Urn of the software library component which has the standby
custom post sql script",
" value": "",
" displayName": "URN of the standby pre sql custom script",
" required": false,

```

```

    "secret": false},
  { "name": "DBAAS_SSA_STANDBY_CUSTOM_POST_SCRIPTS_URN",
    "type": "STRING",
    "description": "Urn of the software library component which has the standby
custom post sql script",
    "value": "",
    "displayName": "URN of the standby post sql custom script",
    "required": false,
    "secret": false},
  { "name": "ssaTargetName",
    "type": "STRING",
    "value": "",
    "displayName": "ssaTargetName",
    "required": false,
    "secret": false},
  { "name": "DB_USER_NAMES",
    "type": "STRING",
    "description": "Database users from source",
    "value": "",
    "displayName": "Database Users from source",
    "required": false,
    "secret": false},
  { "name": "ssaTargetType",
    "type": "STRING",
    "value": "",
    "displayName": "ssaTargetType",
    "required": false,
    "secret": false},
  { "name": "RAC_ONE_SERVICE_NAME",
    "type": "STRING",
    "description": "The name of service for RAC One Node database.",
    "value": "",
    "displayName": "RAC One Service Name",
    "required": false,
    "secret": false},
  { "name": "RUN_AS_USER",
    "type": "STRING",
    "value": "sys",
    "displayName": "RUN_AS_USER",
    "required": false,
    "secret": false},
  { "name": "NONADMIN_SSA_ACC_DB_USER_NAMES",
    "type": "STRING",
    "description": "Database users from source",
    "value":
"OUTLN,ORACLE_OCM,APPQOSSYS,WMSYS,EXFSYS,CTXSYS,XDB,ORDSYS,ORDDATA,ORDPLUGINS,SI_INFO
RMTN_SCHEMA,MDSYS,OLAPSYS,SYSMAN,APEX_030200,FLows_FILES,SCOTT,OWBSYS_AUDIT,OWBSYS",
    "displayName": "Database Users from source",
    "required": false,
    "secret": false},
  { "name": "INIT_PARAMS",
    "type": "VECTOR",
    "description": "The list of initialization values that are as
paramName=paramValue",
    "displayName": "INIT_PARAMS",
    "required": false,
    "secret": false,
    "values": [
      "*.db_block_size=8192",
      "*.audit_trail='db'",
      "*.db_name='mdb00008'",

```

```

    *.cpu_count=0",
    "myracdb1.__sga_target=1275068416",
    *.diagnostic_dest='/u01/app/emga/11.2.0.4'",
    *.control_files='/oradbnas/mdb00008/controlfile/control01.ctl','/oradbnas//
mdb00008/controlfile/control02.ctl'",
    *.audit_file_dest='/u01/app/emga/11.2.0.4/admin/mdb00008/adump'",
    *.pga_aggregate_target=423624704",
    *.processes=150",
    *.db_create_file_dest='/oradbnas/mdb00008'",
    *.db_recovery_file_dest='/oradbnas//mdb00008'",
    *.log_archive_format='%t_%s_%r.dbf"',
    *.compatible='11.2.0.4.0"',
    *.db_recovery_file_dest_size=2097152000",
    *.open_cursors=300",
    *.remote_login_passwordfile='exclusive'",
    *.undo_tablespace='UNDOTBS01'",
    *.db_domain=''
  ]},
  {
    "name": "COMMON_DB_DBSNMP_PASSWORD",
    "type": "STRING",
    "description": "DBSNMP Account password",
    "value": "welcome1",
    "displayName": "DBSNMP Account password",
    "required": false,
    "secret": true},
  {
    "name": "DB_ADMIN_PASSWORD_SAME",
    "type": "STRING",
    "description": "Use the same passwords for SYS, SYSTEM and DBSNMP account",
    "value": "true",
    "displayName": "Use the same passwords for SYS, SYSTEM and DBSNMP account",
    "required": false,
    "secret": false},
  {
    "name": "DEFAULT_DATABASE_SIZE",
    "type": "STRING",
    "value": "",
    "displayName": "DEFAULT_DATABASE_SIZE",
    "required": false,
    "secret": false},
  {
    "name": "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN",
    "type": "STRING",
    "description": "Urn of the software library component which has the custom
post sql script",
    "value": "",
    "displayName": "URN of the pre sql custom script",
    "required": false,
    "secret": false},
  {
    "name": "RUN_AS_USER_PWD",
    "type": "STRING",
    "value": "",
    "displayName": "RUN_AS_USER_PWD",
    "required": false,
    "secret": false},
  {
    "name": "IS_RAC_ONE",
    "type": "STRING",
    "description": "Boolean value to show RAC One Target Type, (true/false)",
    "value": "N",
    "displayName": "RAC One Target Type",
    "required": false,
    "secret": false},
  {
    "name": "PROFILE_VERSION_URN",
    "type": "STRING",

```

```

    "description": "Profile Version Selected by user for creating database.",
    "value": "",
    "displayName": "Profile Version Selected",
    "required": false,
    "secret": false},
  { "name": "HOSTS_FOR_PLACEMENT",
    "type": "STRING",
    "description": "Comma separated value of the name of hosts which will be used
for the custom placement of the requested database instance. This list of hosts
should have their database homes present in the selected zone and pool of the
service template.",
    "value": "",
    "displayName": "Host(s) name to be selected in the DB pool for custom
placement",
    "required": false,
    "secret": false},
  { "name": "PROVISIONING_TYPE",
    "type": "STRING",
    "value": "",
    "displayName": "PROVISIONING_TYPE",
    "required": false,
    "secret": false},
  { "name": "STANDBY_REQUIRED_LOCK",
    "type": "STRING",
    "value": "",
    "displayName": "STANDBY_REQUIRED_LOCK",
    "required": false,
    "secret": false},
  { "name": "LOCK_DOMAIN_NAME",
    "type": "STRING",
    "description": "Accepts Database Domain Name from SSA user",
    "value": "false",
    "displayName": "Accepts the database Domain Name from SSA user ",
    "required": false,
    "secret": false},
  { "name": "ROLE_NAME",
    "type": "STRING",
    "description": "Name of the database role which will assigned to the master
account.",
    "value": "ROLE_Sep_22_2015_11_01_AM",
    "displayName": "Database Role Name",
    "required": false,
    "secret": false},
  { "name": "STANDBY_DATABASE_MASTER",
    "type": "STRING",
    "value": "",
    "displayName": "STANDBY_DATABASE_MASTER",
    "required": false,
    "secret": false},
  { "name": "ASM_DSKGRP_PREFIX",
    "type": "STRING",
    "description": "ASM Diskgroup prefix to be used for all the new diskgroups to
be created",
    "value": "",
    "displayName": "ASM Diskgroup Prefix for all new diskgroups",
    "required": false,
    "secret": false},
  { "name": "DB_USER_PASSWORDS",
    "type": "STRING",
    "description": "Passwords for Database users from source",
    "displayName": "Passwords for Database Users from source",

```

```

    "required": false,
    "secret": true},
  { "name": "ASM_OPTION",
    "type": "STRING",
    "description": "ASM Diskgroup Option to be used. values are ssauser/prefix",
    "value": "",
    "displayName": "ASM Diskgroup Option",
    "required": false,
    "secret": false},
  { "name": "SELECT_ORACLE_HOME_OPTION",
    "type": "STRING",
    "description": "Option for selecting the DB Oracle Home that includes runtime
selection or user selection. Possible values are SELECT_ORACLE_HOME_AT_RUNTIME or
SELECT_ORACLE_HOME_FROM_REQUEST",
    "value": "SELECT_ORACLE_HOME_AT_RUNTIME",
    "displayName": "Option for selecting the DB Oracle home",
    "required": false,
    "secret": false},
  { "name": "LISTENER_PORT",
    "type": "STRING",
    "description": "Listener Port (required only for Single Instance Database)",
    "value": "1524",
    "displayName": "Listener Port",
    "required": false,
    "secret": false},
  { "name": "STANDBY_DB_MASTER_DETAILS",
    "type": "VECTOR",
    "displayName": "STANDBY_DB_MASTER_DETAILS",
    "required": false,
    "secret": false,
    "values": []},
  { "name": "COMMON_DOMAIN_NAME",
    "type": "STRING",
    "description": "Database Domain Name",
    "value": "us.example.com",
    "displayName": "Database Domain Name",
    "required": false,
    "secret": false},
  { "name": "WORKLOADS",
    "type": "VECTOR",
    "displayName": "WORKLOADS",
    "required": false,
    "secret": false},
  { "name": "STANDBY_COMMON_DB_SID",
    "type": "STRING",
    "value": "",
    "displayName": "STANDBY_COMMON_DB_SID",
    "required": false,
    "secret": false},
  { "name": "LIVE_CLONE_DATABASE_GUID",
    "type": "STRING",
    "description": "Database Guid to be cloned",
    "value": "",
    "displayName": "Database Guid to be cloned",
    "required": false,
    "secret": false},
  { "name": "COMMON_DB_SYSTEM_PASSWORD",
    "type": "STRING",
    "description": "SYSTEM Account password",
    "value": "welcome1",
    "displayName": "SYSTEM Account password",

```

```

    "required": false,
    "secret": true},
  { "name": "USER_INITIATED_BACKUP_LOCATION",
    "type": "STRING",
    "value": "",
    "displayName": "USER_INITIATED_BACKUP_LOCATION",
    "required": false,
    "secret": false},
  { "name": "ssaRequestId",
    "type": "STRING",
    "value": "",
    "displayName": "ssaRequestId",
    "required": false,
    "secret": false},
  { "name": "TARGET_PROP_LIST",
    "type": "VECTOR",
    "description": "The list of initialization values that are as
paramName=paramValue",
    "displayName": "TARGET_PROP_LIST",
    "required": false,
    "secret": false,
    "values": [
      "Site:null:false:false",
      "Contact:null:false:false",
      "Downtime Contact:null:false:false",
      "Location:null:false:false",
      "LifeCycle Status:null:false:false",
      "Department:null:false:false",
      "Comment:null:false:false",
      "Line of Business:null:false:false"
    ]},
  { "name": "LIVE_CLONE_TYPE",
    "type": "STRING",
    "description": "Live Clone Type USE_FULLCLONE/USE_SNAPCLONE",
    "value": "",
    "displayName": "Type of Live Clone",
    "required": false,
    "secret": false},
  { "name": "REF_HOST",
    "type": "STRING",
    "value": "xxy.example.com",
    "displayName": "REF_HOST",
    "required": false,
    "secret": false},
  { "name": "CUSTOM_TARGET_PROP_LIST",
    "type": "VECTOR",
    "description": "The list of initialization values that are as
paramName=paramValue",
    "displayName": "CUSTOM_TARGET_PROP_LIST",
    "required": false,
    "secret": false,
    "values": []},
  { "name": "STANDBY_LISTENER_PORT",
    "type": "STRING",
    "value": "",
    "displayName": "STANDBY_LISTENER_PORT",
    "required": false,
    "secret": false},
  { "name": "CLONE_OR_FULL_DB",
    "type": "STRING",
    "value": "",

```

```

        "displayName": "CLONE_OR_FULL_DB",
        "required": false,
        "secret": false},
    { "name": "DATABASE_TYPE",
      "type": "STRING",
      "description": "Database Type (oracle_database/rac_database)",
      "value": "rac_database",
      "displayName": "Database Type",
      "required": false,
      "secret": false},
    { "name": "PROFILE_COMPONENT_URN",
      "type": "STRING",
      "description": "URN of the Profile component in software library with which
the Database will be created",
      "value": "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:204D498A85D42C6AE053C075B10A6B09:0.1",
      "displayName": "URN of the Profile Component to be used for Database Creation",
      "required": false,
      "secret": false},
    { "name": "VALIDATION_SQL",
      "type": "STRING",
      "description": "Sql script for primary database validation",
      "value": "",
      "displayName": "Sql script for primary database validation",
      "required": false,
      "secret": false},
    { "name": "REFRESH_DATABASE",
      "type": "STRING",
      "value": "",
      "displayName": "REFRESH_DATABASE",
      "required": false,
      "secret": false},
    { "name": "REF_ZONE",
      "type": "STRING",
      "value": "Salt Lake City Zone",
      "displayName": "REF_ZONE",
      "required": false,
      "secret": false},
    { "name": "STANDBY_DELAY_DATABASE_MASTER",
      "type": "STRING",
      "value": "",
      "displayName": "STANDBY_DELAY_DATABASE_MASTER",
      "required": false,
      "secret": false},
    { "name": "zoneTargetName",
      "type": "STRING",
      "value": "",
      "displayName": "zoneTargetName",
      "required": false,
      "secret": false},
    { "name": "PRIMARY_PROTECTION_MODE",
      "type": "STRING",
      "value": "",
      "displayName": "PRIMARY_PROTECTION_MODE",
      "required": false,
      "secret": false},
    { "name": "INSTANCE_COUNT",
      "type": "STRING",
      "description": "Number of RAC Database instances required",
      "value": "2",
      "displayName": "Number of RAC instances",

```

```

    "required": false,
    "secret": false},
  { "name": "USER_PASSWORD",
    "type": "STRING",
    "description": "User Password to login to the given User Name database
account",
    "displayName": "User Password",
    "required": true,
    "secret": true},
  { "name": "MAX_BACKUPS_ALLOWED",
    "type": "STRING",
    "description": "The number of backups enabled for the Database",
    "value": "",
    "displayName": "Number of Backups allowed for the Database",
    "required": false,
    "secret": false},
  { "name": "ENTITY_TYPE",
    "type": "STRING",
    "description": "Entity TYPe USE_PROFILE/USE_DATABASE",
    "value": "USE_PROFILE",
    "displayName": "Entity Type",
    "required": false,
    "secret": false},
  { "name": "DBCREATE_POST_SQL_SCRIPT",
    "type": "STRING",
    "value": "",
    "displayName": "DBCREATE_POST_SQL_SCRIPT",
    "required": false,
    "secret": false},
  { "name": "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN",
    "type": "STRING",
    "description": "Urn of the software library component which has the custom
post sql script",
    "value": "",
    "displayName": "URN of the post sql custom script",
    "required": false,
    "secret": false},
  { "name": "USER_NAME",
    "type": "STRING",
    "description": "User Name (cannot be any of Oracle default accounts) used to
login to the requested database",
    "value": "",
    "displayName": "User Name (cannot be any of Oracle default accounts)",
    "required": true,
    "secret": false},
  { "name": "DATABASE_SIZES",
    "type": "VECTOR",
    "displayName": "DATABASE_SIZES",
    "required": false,
    "secret": false,
    "values": []},
  { "name": "ALLOW_BACKUPS",
    "type": "STRING",
    "description": "Should the backup be enabled for the Database",
    "value": "",
    "displayName": "Enable Backups for the Database",
    "required": false,
    "secret": false},
  { "name": "zoneTargetType",
    "type": "STRING",
    "value": "",

```

```

        "displayName": "zoneTargetType",
        "required": false,
        "secret": false},
    { "name": "STANDBY_REQUIRED",
      "type": "STRING",
      "value": "false",
      "displayName": "STANDBY_REQUIRED",
      "required": false,
      "secret": false},
    { "name": "STANDBY_DB_DETAILS",
      "type": "VECTOR",
      "displayName": "STANDBY_DB_DETAILS",
      "required": false,
      "secret": false,
      "values": []},
    { "name": "COMMON_DB_SYS_PASSWORD",
      "type": "STRING",
      "description": "SYS Account password",
      "value": "welcome1",
      "displayName": "SYS Account password",
      "required": false,
      "secret": true},
    { "name": "REF_POOL",
      "type": "STRING",
      "value": "RAC Databases Pool _11_2_0_4",
      "displayName": "REF_POOL",
      "required": false,
      "secret": false}
  ],
  "canonicalLink": {"href": "https://xyz.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/61"},
  "selfLink": {"href": "https://xyz.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/61"},
  "active": true
}

```

55.3.5.3.3 Creating a Service Template for DBCA Based Database

A POST operation is issued on Service Templates collection resource to create a DBCA based Database Service Template. The configuration for POST to Service Templates is as follows:

Table 55-42 POST Request Configuration for Creating a Service Template for DBCA Based Database

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-42 (Cont.) POST Request Configuration for Creating a Service Template for DBCA Based Database

Feature	Description
Body	<pre> { "name": "Create ST for SI Db using DBCA Template - ASM Subh_2", "description": "Creates Single Instance DB", "roles": ["SSA_USER_ROLE"], "serviceType": "DB", "serviceTemplateTypeId": "61", "rscProvAssocOption": ["byRscProvInst"], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE", "values": ["137F74D7A8359A60762ED550341A5F47"], "targetType": { "targetType": "oracle_cloud_zone", "targetTypeName": "Database Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "PaaS Infrastructure Zone" } }], "purposeId": 1 }] }, "payloads": [{ "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile: 269BA6C90E6A5000E053C075B10A51A3:0.1" }], "configurations": [{ "name": "REF_ZONE", "value": "Salt Lake City Zone" }, { "name": "REF_POOL", "value": "SI Databases Pool_Oracle_DB_1lg" }, { "name": "REF_HOST", "value": "xyz.example.com" }, { "name": "REF_TGT", "value": "xyz.example.com" }, { "name": "DBCA_TEMPLATE:DB_STORAGE_TYPE", "value": "ASM" }, { "name": "DBCA_TEMPLATE:REC_STORAGE_TYPE_SAME_AS_DB_FILES", "value": "Y" }, { "name": "DBCA_TEMPLATE:FLASH_RECOVERY_AREA_SIZE", "value": "4038" }, { "name": "DBCA_TEMPLATE:DATA_FILE_LOCATION", "value": "DATA" }, { "name": "DBCA_TEMPLATE:REDO_FILE_LOCATION", "value": "RECO" }, { "name": "DBCA_TEMPLATE:ARCHIVE_LOG_MODE", "value": </pre>

Table 55-42 (Cont.) POST Request Configuration for Creating a Service Template for DBCA Based Database

Feature	Description
	<pre> "Y" }, { "name": "DBCA_TEMPLATE:RECOVERY_FILE_LOCATION", "value": "RECO" }, { "name": "DATABASE_TYPE", "value": "oracle_database" }, { "name": "COMMON_DOMAIN_NAME", "value": "us.example.com" }, { "name": "ORACLE.SYSMAN.SSA.PROVISIONING_TYPE", "values": ["DBCA_TEMPLATE"] }, { "name": "ENTITY_TYPE", "value": "USE_PROFILE" }, { "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile: 269BA6C90E6A5000E053C075B10A51A3:0.1" }, { "name": "USER_PRIVILEGES", "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE ANY INDEX, CREATE JOB, CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY TRIGGER, CREATE ANY TYPE, CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY, SELECT ANY DICTIONARY" }, { "name": "SID_OPTION", "value": "ssouser" }, { "name": "SELECT_ORACLE_HOME_OPTION", "value": "SELECT_ORACLE_HOME_AT_RUNTIME" }, { "name": "COMMON_DB_SYS_PASSWORD", "value": "welcome" }, { "name": "DB_ADMIN_PASSWORD_SAME", "value": "true" }, { "name": "INIT_PARAMS", "values": ["sga_target=1073741824", "pga_aggregate_target=1073741824"] }, { "name": "LISTENER_PORT", "value": "1521" }, { "name": "TARGET_PROP_LIST", "values": ["Site:null:false:false", "Contact:xxxx:false:true", "Downtime Contact:null:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:null:false:false", "Comment:Testing:false:true", "Line of Business:null:false:false"] }] } </pre>

Note:

Table 55-42 (Cont.) POST Request Configuration for Creating a Service Template for DBCA Based Database

Feature	Description
	<ul style="list-style-type: none"> To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities - name="<Pre or Post Standby Database Script>" - show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none: 01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID. <pre>Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none: 01AB6F25F31B7671E0537850B10A9B85:0.1</pre> To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in Cloud Resource. To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - <code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes</code> and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

 **Note:**

In the REST API body mentioned above:

- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as SELECT_ORACLE_HOME_AT_RUNTIME, or to be selected by the SSA user by entering the value as SELECT_ORACLE_HOME_FROM_REQUEST.

These parameters are mandatory and are required to identify the reference target to create the database.

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"1C39F32393A709C3E053C075B10AEE15\"
created successfully."
}
```

55.3.5.3.4 Creating a Service Template for RMAN Based Single Instance Database

A POST operation is issued on Service Templates collection resource to create a RMAN based Single Instance Database Service Template. The configuration for POST to Service Templates is as follows:

Table 55-43 POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-43 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database

Feature	Description
Body	<pre> { "name": "Database Service - RMAN Based with archiving", "description": "This creates Database Archiving log mode.", "serviceType": "DB", "serviceTemplateTypeId": "81", "rscProvAssocOption": ["byRscProvInst"], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE", "values": ["1898CF93BD39C19BF032672271BC4B44"], "targetType": { "targetType": "oracle_cloud_zone", "targetTypeName": "Database Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "PaaS Infrastructure Zone" } }] }], "purposeId": 1 } }, "payloads": [{ "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F: 0.1" }], "configurations": [{ "name": "STAGE_LOCATION", "value": "/scratch/emga/backups/rman/" }, { "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F: 0.1" }, { "name": "SELECT_ORACLE_HOME_OPTION", "value": "SELECT_ORACLE_HOME_FROM_REQUEST" }] </pre>

Table 55-43 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database

Feature	Description
	<pre> "name": "REF_TGT", "value": "sxy.us.example.com" }, { "name": "REF_HOST", "value": "xyz.example.com" }, { "name": "REF_ZONE", "value": "Salt Lake City Zone" }, { "name": "zoneTargetName", "value": "Salt Lake City Zone" }, { "name": "REF_POOL", "value": "Databases Pool" }, { "name": "DATABASE_TYPE", "value": "oracle_database" }, { "name": "COMMON_DB_SYS_PASSWORD", "value": "welcome" }, { "name": "LISTENER_PORT", "value": "1521" }, { "name": "PROFILE_VERSION", "value": "latest" }, { "name": "COMMON_DB_SID", "value": "db" }, { "name": "TARGET_PROP_LIST", "values": ["Contact:9980697299:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:null:false:false", "Comment:null:false:false", "Line of Business:null:false:false"] }, { "name": "USER_PRIVILEGES", "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, </pre>

Table 55-43 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database

Feature	Description
	<pre> CREATE ANY OPERATOR, CREATE ANY PROCEDURE" }, { "name": "RMAN.DB_STORAGE_TYPE", "value": "FS" }, { "name": "RMAN.FRA_STORAGE_TYPE", "value": "FS" }, { "name": "RMAN.FRA_SIZE", "value": "4038" }, { "name": "RMAN.USE_ARCHIVING", "value": "YES" }, { "name": "RMAN.DATA_FILE_LOCATION", "value": "/scratch/emga/app/emga/oradata" }, { "name": "RMAN.REDO_FILE_LOCATION", "value": "/scratch/emga/app/emga/fast_recovery_area" }, { "name": "RMAN.RECOVERY_FILE_LOCATION", "value": "/scratch/emga/app/emga/fast_recovery_area" }, { "name": "RMAN.WORK_DIR_LOC", "value": "/tmp/work" }, { "name": "RMAN.DB_ADMIN_PASSWORD_SAME", "value": "Y" }, { "name": "RMAN.DATABASE_PASSWORDS", "value": "welcome" }, { "name": "RMAN.BACKUP_LOCATION", "value": "/scratch/emga/backups/rman/" }, { "name": "RMAN.USE_OFA", "value": "N" }, { "name": "COMMON_DOMAIN_NAME", "value": "us.example.com" } </pre>

Table 55-43 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database

Feature	Description
	<pre> }, { "name": "CUSTOM_PRE_CREATE_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1" }, { "name": "CUSTOM_POST_CREATE_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1" }] } </pre>
	<p>Note:</p> <ul style="list-style-type: none"> To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID. <pre> Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultServic e:em:provisioning:1:cmp:COMP_Directives:none: 01AB6F25F31B7671E0537850B10A9B85:0.1 </pre> <ul style="list-style-type: none"> To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in Cloud Resource. To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - <code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes</code> and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

 **Note:**

In the REST API body mentioned above:

- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as SELECT_ORACLE_HOME_AT_RUNTIME, or to be selected by the SSA user by entering the value as SELECT_ORACLE_HOME_FROM_REQUEST.

These parameters are mandatory and are required to identify the reference target to create the database.

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"1C39F32393A709C3E053C075B10AEE15\"
created successfully."
}
```

55.3.5.3.5 Creating a Service Template for RMAN Based Single Instance Database with Single Instance Standby

A POST operation is issued on Service Templates collection resource to create a RMAN based Single Instance Database with Single Instance standby Service Template. The configuration for POST to Service Templates is as follows:

Table 55-44 POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database With Single Instance Standby

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-44 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database With Single Instance Standby

Feature	Description
Body	<pre> { "name": "Database Service - RMAN Based with archiving with SI Standby", "description": "This creates Database Archiving log mode.", "serviceType": "DB", "serviceTemplateTypeId": "81", "rscProvAssocOption": ["byRscProvInst"], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE", "values": ["1898CF93BD39C19BF032672271BC4B44"], "targetType": { "targetType": "oracle_cloud_zone", "targetTypeName": "Database Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "PaaS Infrastructure Zone" } }], "purposeId": 1 }], "payloads": [{ "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F:0.1" }], "configurations": [{ "name": "STAGE_LOCATION", "value": "/scratch/emga/backups/rman/" }, { "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F:0.1" }, { "name": "SELECT_ORACLE_HOME_OPTION", "value": "SELECT_ORACLE_HOME_FROM_REQUEST" }] } </pre>

Table 55-44 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database With Single Instance Standby

Feature	Description
	<pre> { "name": "REF_TGT", "value": "xyz.example.com" }, { "name": "REF_HOST", "value": "xyz.example.com" }, { "name": "REF_ZONE", "value": "Salt Lake City Zone" }, { "name": "zoneTargetName", "value": "Salt Lake City Zone" }, { "name": "REF_POOL", "value": "Databases Pool" }, { "name": "DATABASE_TYPE", "value": "oracle_database" }, { "name": "COMMON_DB_SYS_PASSWORD", "value": "welcome" }, { "name": "LISTENER_PORT", "value": "1521" }, { "name": "PROFILE_VERSION", "value": "latest" }, { "name": "COMMON_DB_SID", "value": "db" }, { "name": "TARGET_PROP_LIST", "values": ["Contact:9980697299:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:null:false:false", "Comment:null:false:false", "Line of Business:null:false:false"] }, { "name": "USER_PRIVILEGES", </pre>

Table 55-44 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database With Single Instance Standby

Feature	Description
	<pre> "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE" }, { "name": "RMAN.DB_STORAGE_TYPE", "value": "FS" }, { "name": "RMAN.FRA_STORAGE_TYPE", "value": "FS" }, { "name": "RMAN.FRA_SIZE", "value": "4038" }, { "name": "RMAN.USE_ARCHIVING", "value": "YES" }, { "name": "RMAN.DATA_FILE_LOCATION", "value": "/scratch/emga/app/emga/oradata" }, { "name": "RMAN.REDO_FILE_LOCATION", "value": "/scratch/emga/app/emga/fast_recovery_area" }, { "name": "RMAN.RECOVERY_FILE_LOCATION", "value": "/scratch/emga/app/emga/fast_recovery_area" }, { "name": "RMAN.WORK_DIR_LOC", "value": "/tmp/work" }, { "name": "RMAN.DB_ADMIN_PASSWORD_SAME", "value": "Y" }, { "name": "RMAN.DATABASE_PASSWORDS", "value": "welcome" }, { "name": "RMAN.BACKUP_LOCATION", "value": "/scratch/emga/backups/rman/" }, { "name": "RMAN.USE_OFA", "value": "N" }, { "name": "COMMON_DOMAIN_NAME", </pre>

Table 55-44 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based Single Instance Database With Single Instance Standby

Feature	Description
	<pre> "value": "us.example.com" }, { "name": "STANDBY_DB_DETAILS", "values": ["pool=Near DR Pool;databaseSIDPrefix=;databaseType=oracle_database;standbyConfigName=Near DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUniqueName=;standbyStorageType=FS;standbyStorageLocation=;standbyFRAType=FS;standbyFRALocation=;standbyFRASize=;standbyLsnrPort=;domainName=us.example.com"] }] } </pre>
Note:	<ul style="list-style-type: none"> To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID. <pre> Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1 </pre> To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in Cloud Resource. To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - <code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes</code> and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

 **Note:**

In the REST API body mentioned above:

- REF_ZONE indicates the reference zone among the zones to be associated with the template.
- REF_POOL indicates the reference pool among the pools to be associated with the template.
- REF_HOST indicates the host of the reference target from the pool targets.
- REF_TGT indicates the reference target from the pool targets.
- SELECT_ORACLE_HOME_OPTION allows the Oracle home to be automatically selected by entering the value as SELECT_ORACLE_HOME_AT_RUNTIME, or to be selected by the SSA user by entering the value as SELECT_ORACLE_HOME_FROM_REQUEST.

These parameters are mandatory and are required to identify the reference target to create the database.

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"xxxx\" created successfully."
}
```

55.3.5.3.6 Creating a Service Template for RMAN Based RAC One Node Database

A POST operation is issued on Service Templates collection resource to create a RMAN based RAC One Node Database Service Template. The configuration for POST to Service Templates is as follows:

Table 55-45 POST Request Configuration for Creating a Service Template for RMAN Based RAC One Node Database

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-45 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based RAC One Node Database

Feature	Description
Body	<pre> { "name": "Create Databases on RAC One database", "description": "Creates Databases on RAC.", "serviceType": "DB", "serviceTemplateTypeId": "81", "rscProvAssocOption": ["byRscProvInst"], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE", "values": ["647E8750A1C3835557165B499B269FB3"], "targetType": { "targetType": "oracle_cloud_zone", "targetTypeName": "Database Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "PaaS Infrastructure Zone" } }] }], "purposeId": 1 } }, "payloads": [{ "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile: 1E4F60D72C912160E053C075B10A29F5:0.1" }], "configurations": [{ "name": "STAGE_LOCATION", "value": "/scratch/emga/backups/rman/" }, { "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile: 1E4F60D72C912160E053C075B10A29F5:0.1" }, { "name": "SELECT_ORACLE_HOME_OPTION", "value": "SELECT_ORACLE_HOME_FROM_REQUEST" }, { "name": "REF_TGT", "value": "abc.example.com" }, { "name": "REF_HOST", "value": "adc.example.com" }, { "name": "REF_ZONE", "value": "Salt Lake City Zone" }, { "name": "zoneTargetName", </pre>

Table 55-45 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based RAC One Node Database

Feature	Description
	<pre> "value": "Salt Lake City Zone"}, {"name": "REF_POOL", "value": "RAC Databases Pool"}, {"name": "DATABASE_TYPE", "value": "rac_database"}, {"name": "IS_RAC_ONE", "value": "Y"}, {"name": "COMMON_DB_SYS_PASSWORD", "value": "welcome"}, {"name": "LISTENER_PORT", "value": "1521"}, {"name": "PROFILE_VERSION", "value": "latest"}, {"name": "COMMON_DB_SID", "value": "db"}, {"name": "TARGET_PROP_LIST", "values": ["Contact:9980697299:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:null:false:false", "Comment:null:false:false", "Line of Business:null:false:false"] }, {"name": "USER_PRIVILEGES", "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE"}, {"name": "RMAN:DB_STORAGE_TYPE", "value": "FS"}, {"name": "RMAN:FRA_SIZE", "value": "4038"}, {"name": "RMAN:USE_ARCHIVING", "value": "NO"}, {"name": "RMAN:DATA_FILE_LOCATION", "value": "/scratch/emga/app/emga/oradata"}, {"name": "RMAN:WORK_DIR_LOC", "value": "/tmp/work"}, {"name": "RMAN:DB_ADMIN_PASSWORD_SAME", "value": "Y"}, {"name": "RMAN:DATABASE_PASSWORDS", "value": "welcome"}, {"name": "RMAN:BACKUP_LOCATION", "value": "/oradbnas/backups/rman/"}, {"name": "RMAN:USE_OFA", "value": "N"}, {"name": "COMMON_DOMAIN_NAME", "value": "us.example.com"}] } </pre>

Note:

Table 55-45 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based RAC One Node Database

Feature	Description
	<ul style="list-style-type: none"> To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID. Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1 To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in Cloud Resource. To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - <code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes</code> and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"xxxx\" created successfully."
}
```

55.3.5.3.7 Creating a Service Template for RMAN Based RAC One Node Database With Standby

A POST operation is issued on Service Templates collection resource to create a RMAN based RAC One Node Database with Standby Service Template.

In the example shown below there are two standbys created, one standby RAC one node database is a Near DR (disaster recovery) created on the same pool as the primary RAC one node database, and the other standby Far DR database is a single instance database created on a different pool. This setup is essential for a disaster recovery setup wherein two standby databases are created for data protection. The POST body shown below can be modified to have only one standby database (either SI or RAC one node) as well.

The configuration is as follows:

Table 55-46 POST Request Configuration for Creating a Service Template for RMAN Based RAC One Node Database With Standby

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-46 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based RAC One Node Database With Standby

Feature	Description
Body	<pre> { "name": "RAC One Database Provisioning with RAC One Standby and SI Standby", "description": "Creates RAC One Databases with RAC One Standby and SI Standby.", "serviceType": "DB", "serviceTemplateTypeId": "81", "rscProvAssocOption": ["byRscProvInst"], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE", "values": ["647E8750A1C3835557165B499B269FB3"], "targetType": { "targetType": "oracle_cloud_zone", "targetTypeName": "Database Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "PaaS Infrastructure Zone" } }], "purposeId": 1 }], "payloads": [{ "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_DbProfile:1E4F60D72C912160E053C075B10A29F5:0.1" }], "configurations": [{ "name": "STAGE_LOCATION", "value": "/scratch/emga/backups/rman/" }, { "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_DbProfile:1E4F60D72C912160E053C075B10A29F5:0.1" }, { "name": "SELECT_ORACLE_HOME_OPTION", "value": "SELECT_ORACLE_HOME_FROM_REQUEST" }, { "name": "REF_TGT", "value": "adc.example.com" }, { "name": "REF_HOST", "value": "adc.example.com" }, { "name": "REF_ZONE", "value": "Salt Lake City Zone" }, { "name": "zoneTargetName", </pre>

Table 55-46 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based RAC One Node Database With Standby

Feature	Description
	<pre> "value": "Salt Lake City Zone"}, {"name": "REF_POOL", "value": "RAC Databases Pool"}, {"name": "DATABASE_TYPE", "value": "rac_database"}, {"name": "IS_RAC_ONE", "value": "Y"}, {"name": "COMMON_DB_SYS_PASSWORD", "value": "welcome"}, {"name": "LISTENER_PORT", "value": "1521"}, {"name": "PROFILE_VERSION", "value": "latest"}, {"name": "COMMON_DB_SID", "value": "db"}, {"name": "TARGET_PROP_LIST", "values": ["Contact:9980697299:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:null:false:false", "Comment:null:false:false", "Line of Business:null:false:false"] }, {"name": "USER_PRIVILEGES", "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE"}, {"name": "RMAN:DB_STORAGE_TYPE", "value": "FS"}, {"name": "RMAN:FRA_SIZE", "value": "4038"}, {"name": "RMAN:USE_ARCHIVING", "value": "NO"}, {"name": "RMAN:DATA_FILE_LOCATION", "value": "/scratch/emga/app/emga/oradata"}, {"name": "RMAN:WORK_DIR_LOC", "value": "/tmp/work"}, {"name": "RMAN:DB_ADMIN_PASSWORD_SAME", "value": "Y"}, {"name": "RMAN:DATABASE_PASSWORDS", "value": "welcome"}, {"name": "RMAN:BACKUP_LOCATION", "value": "/oradbnas/backups/rman/"}, {"name": "RMAN:USE_OFA", "value": "N"}, {"name": "COMMON_DOMAIN_NAME", "value": "us.example.com"}, {"name": "STANDBY_REQUIRED", "value": "true"}, {"name": "STANDBY_DB_DETAILS", "value": "", "values": [</pre>

Table 55-46 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based RAC One Node Database With Standby

Feature	Description
	<pre> "pool=SI Databases Zone - Oracle 11g - Standby;databaseSIDPrefix=st;databaseType=oracle_database;standbyConf igName=Near DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUnique Name=;standbyStorageType=FS;standbyStorageLocation=;standbyFRAType=FS ;standbyFRALocation=;standbyFRASize=;standbyLsnrPort=;domainName=us.e xample.com"] }] } </pre>
	<p>Note:</p> <ul style="list-style-type: none"> To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID. <pre> Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultServic e:em:provisioning:1:cmp:COMP_Directives:none: 01AB6F25F31B7671E0537850B10A9B85:0.1 </pre> <ul style="list-style-type: none"> To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in Cloud Resource. To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - <code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes</code> and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

A sample of the response received is shown below.

```

{
  "message": "Service template with ID \"xxxx\" created successfully."
}

```

55.3.5.3.8 Creating a Service Template for RMAN Based RAC Database With Standby

A POST operation is issued on Service Templates collection resource to create a RMAN based RAC Database with Standby Service Template.

The configuration to create a RAC database with single instance standby database is similar to the configuration for a RAC database with a RAC one node standby. The only difference in the payloads to create different standbys is defined by the configuration parameter STANDBY_DB_DETAILS.

The sample value for the STANDBY_DB_DETAILS parameter for creating a RAC database with RAC one node standby is:

```
"pool=Near RAC DR
Pool;databaseSIDPrefix=;databaseType=rac_database;isRACOne=Y;standbyConfigName=Near
DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUniqueName=;standby
StorageType=FS;standbyStorageLocation=;standbyFRAType=FS;standbyFRALocation=;stand
byFRASize=;standbyLsnrPort=;domainName=us.example.com
```

Whereas, the sample value for the STANDBY_DB_DETAILS parameter for creating a RAC database with single instance standby is:

```
"pool=Near DR
Pool;databaseSIDPrefix=;databaseType=oracle_database;standbyConfigName=Near
DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUniqueName=;standby
StorageType=FS;standbyStorageLocation=;standbyFRAType=FS;standbyFRALocation=;stand
byFRASize=;standbyLsnrPort=;domainName=us.example.com"
```

The sample POST configuration shown below is for a RAC database with single instance standby Service Template. Apply the required value for the STANDBY_DB_DETAILS parameter in the sample shown below:

Table 55-47 POST Request Configuration for Creating a Service Template for RMAN Based RAC Database With Single Instance Standby

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-47 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based RAC Database With Single Instance Standby

Feature	Description
Body	<pre> { "name" : "Create Databases on RAC with SI Standby", "description" : "Creates Databases on RAC.", "serviceType" : "DB", "serviceTemplateTypeId" : "81", "rscProvAssocOption" : ["byRscProvInst"], "resourceProvider" : { "lookupCharacteristics" : [{ "characteristics" : [{ "name" : "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE", "values" : ["647E8750A1C3835557165B499B269FB3"], "targetType" : { "targetType" : "oracle_cloud_zone", "targetTypeName" : "Database Pool", "parentTargetType" : "self_service_zone", "parentTargetTypeName" : "PaaS Infrastructure Zone" } }] }, "purposeId" : 1 }], }, "payloads" : [{ "name" : "PROFILE_COMPONENT_URN", "value" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile: 1E4F60D72C912160E053C075B10A29F5:0.1" }], "configurations" : [{ "name" : "STAGE_LOCATION", "value" : "/scratch/emga/backups/rman/"}, {"name" : "PROFILE_COMPONENT_URN", "value" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile: 1E4F60D72C912160E053C075B10A29F5:0.1"} {"name": "SELECT_ORACLE_HOME_OPTION", "value": "SELECT_ORACLE_HOME_FROM_REQUEST"}, {"name" : "REF_TGT", "value" : "adc.us.example.com"}, {"name" : "REF_HOST", "value" : "adc.us.example.com"}, {"name" : "REF_ZONE", "value" : "Salt Lake City Zone"}, {"name" : "zoneTargetName", "value" : "Salt Lake City Zone"}, {"name" : "REF_POOL", "value" : "RAC Databases Pool"}, {"name" : "DATABASE_TYPE", "value" : "oracle_database"}, {"name" : "COMMON_DB_SYS_PASSWORD", "value" : "welcome"}, {"name" : "LISTENER_PORT", "value" : "1521"}, {"name" : "PROFILE_VERSION", </pre>

Table 55-47 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based RAC Database With Single Instance Standby

Feature	Description
	<pre> "value" : "latest"}, {"name" : "COMMON_DB_SID", "value" : "db"}, {"name" : "TARGET_PROP_LIST", "values" : ["Contact:9980697299:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:null:false:false", "Comment:null:false:false", "Line of Business:null:false:false"]}, {"name" : "USER_PRIVILEGES", "value" : "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE"}, {"name" : "RMAN:DB_STORAGE_TYPE", "value" : "FS"}, {"name" : "RMAN:FRA_SIZE", "value" : "4038"}, {"name" : "RMAN:USE_ARCHIVING", "value" : "NO"}, {"name" : "RMAN:DATA_FILE_LOCATION", "value" : "/scratch/emga/app/emga/oradata"}, {"name" : "RMAN:WORK_DIR_LOC", "value" : "/tmp/work"}, {"name" : "RMAN:DB_ADMIN_PASSWORD_SAME", "value" : "Y"}, {"name" : "RMAN:DATABASE_PASSWORDS", "value" : "welcome"}, {"name" : "RMAN:BACKUP_LOCATION", "value" : "/oradbnas/backups/rman/"}, {"name" : "RMAN:USE_OFA", "value" : "N"}, {"name" : "COMMON_DOMAIN_NAME", "value" : "us.example.com"}, {"name" : "CUSTOM_PRE_CREATE_SCRIPTS_URN", "value" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1"},, {"name" : "CUSTOM_POST_CREATE_SCRIPTS_URN", "value" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1"},, {"name" : "STANDBY_REQUIRED", "value" : "true"}, {"name" : "STANDBY_DB_DETAILS", "value" : "", "values" : ["pool=SI Databases Zone - Oracle 11g - Standby;databaseSIDPrefix=st;databaseType=oracle_database;standbyConf igName=Near DR;redoMode=ASync;realtimeQuery=false;databaseDelay=60;databaseUnique Name=;standbyStorageType=FS;standbyStorageLocation=;standbyFRAType=FS ;standbyFRALocation=;standbyFRASize=;standbyLsnrPort=;domainName=us.e xample.com"] }] } </pre>

Table 55-47 (Cont.) POST Request Configuration for Creating a Service Template for RMAN Based RAC Database With Single Instance Standby

Feature	Description
	<p>Note:</p> <ul style="list-style-type: none"> To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID. <pre>Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</pre> <ul style="list-style-type: none"> To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in Cloud Resource. To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - <code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes</code> and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"xxxx\" created successfully."
}
```

55.3.5.3.9 Creating a Service Template for RAC Database with Standby Using a DBCA Template

A POST operation is issued on ServiceTemplates Collection resource to create a ServiceTemplate for a RAC database with standby using a DBCA template. The configuration for POST to ServiceTemplates is as follows:

Table 55-48 POST Request Configuration for Creating a Service Template for RAC Database with Standby Using a DBCA Template

Feature	Description
URI	<code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-48 (Cont.) POST Request Configuration for Creating a Service Template for RAC Database with Standby Using a DBCA Template

Feature	Description
Body	<pre> { "name": "Create RAC Db with Standby using DBCA Template - BofA - ASM", "description": "Service Template for Non-CDB; 12cR1_2(12.1.0.2); RAC; ASM", "serviceType": "DB", "serviceTemplateTypeId": "61", "rscProvAssocOption": ["byRscProvInst"], "roles": ["SSAUSERROLE"], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE", "values": ["4C5795E605D71F59BAF9F6AD702E25E1"], "targetType": { "targetType": "oracle_cloud_zone", "targetTypeName": "Database Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "PaaS Infrastructure Zone" } }] }], "purposeId": 1 } }, "payloads": [{ "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile: 246E84D11ED13BD0E050F90AE5852BC8:0.1" }], "configurations": [{ "name": "REF_ZONE", "value": "Clusters Zone - Oracle DB 12c" }, { "name": "REF_HOST", "value": "xyz.example.com" }, { "name": "REF_POOL", </pre>

Table 55-48 (Cont.) POST Request Configuration for Creating a Service Template for RAC Database with Standby Using a DBCA Template

Feature	Description
	<pre> "value": "RAC Databases Pool_Oracle_DB_12c" }, { "name": "DBCA_TEMPLATE:DB_STORAGE_TYPE", "value": "ASM" }, { "name": "DBCA_TEMPLATE:REC_STORAGE_TYPE_SAME_AS_DB_FILES", "value": "Y" }, { "name": "DBCA_TEMPLATE:ARCHIVE_LOG_MODE", "value": "N" }, { "name": "DBCA_TEMPLATE:FLASH_RECOVERY_AREA_SIZE", "value": "4038" }, { "name": "DBCA_TEMPLATE:DATA_FILE_LOCATION", "value": "DATA" }, { "name": "DBCA_TEMPLATE:REDO_FILE_LOCATION", "value": "DATA1" }, { "name": "DBCA_TEMPLATE:RECOVERY_FILE_LOCATION", "value": "DATA1" }, { "name": "DATABASE_TYPE", "value": "rac_database" }, { "name": "INSTANCE_COUNT", "value": "2" }, { "name": "COMMON_DOMAIN_NAME", "value": "us.example.com" }, { "name": "ORACLE.SYSMAN.SSA.PROVISIONING_TYPE", "values": ["DBCA_TEMPLATE"] }, { "name": "ENTITY_TYPE", "value": "USE_PROFILE" }, { </pre>

Table 55-48 (Cont.) POST Request Configuration for Creating a Service Template for RAC Database with Standby Using a DBCA Template

Feature	Description
	<pre> "name": "REF_TGT", "value": "xyz.example.com" }, { "name": "SID_OPTION", "value": "prefix" }, { "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile: 246E84D11ED13BD0E050F90AE5852BC8:0.1" }, { "name": "PROFILE_VERSION", "value": "latest" }, { "name": "USER_PRIVILEGES", "value": "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE, CREATE ANY SEQUENCE, CREATE ANY INDEX, CREATE JOB, CREATE ANY MATERIALIZED VIEW, CREATE ANY TABLE, CREATE ANY TRIGGER, CREATE ANY TYPE, CREATE ANY VIEW, CREATE ANY SYNONYM, CREATE ANY DIRECTORY, SELECT ANY DICTIONARY" }, { "name": "COMMON_DB_SID", "value": "RFTDB" }, { "name": "INIT_PARAMS", "subconfigurations": ["sga_target=1073741824", "pga_aggregate_target=1073741824"] }, { "name": "SELECT_ORACLE_HOME_OPTION", "value": "SELECT_ORACLE_HOME_AT_RUNTIME" }, { "name": "COMMON_DB_SYS_PASSWORD", "value": "welcome1" }, { "name": "DB_ADMIN_PASSWORD_SAME", "value": "true" }, { "name": "LISTENER_PORT", "value": "1521" } </pre>

Table 55-48 (Cont.) POST Request Configuration for Creating a Service Template for RAC Database with Standby Using a DBCA Template

Feature	Description
	<pre> "name": "STANDBY_REQUIRED", "value": "true" }, { "name": "STANDBY_DB_DETAILS", "value": "", "values": ["pool=SI Databases Zone - Oracle 11g - Standby;databaseSIDPrefix=st;databaseType=oracle_database;standbyConf igName=Near DR;redoMode=ASYNC;realtimeQuery=false;databaseDelay=60;databaseUnique Name=;standbyStorageType=FS;standbyStorageLocation=;standbyFRAType=FS ;standbyFRALocation=;standbyFRASize=;standbyLsnrPort=;domainName=us.e xample.com"] }, { "name": "DATABASE_SIZES", "values": ["Big", "Small"] }, { "name": "DEFAULT_DATABASE_SIZE", "value": "Big" }] } </pre>

Note:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

```

Pre or Post Standby Database Script,0.1,Pre or Post Standby
Database
Script,Ready,Directives,,Production,ORACLE,,oracle:defaultServic
e:em:provisioning:1:cmp:COMP_Directives:none:
01AB6F25F31B7671E0537850B10A9B85:0.1

```
- To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in [Cloud Resource](#).
- To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the serviceTemplateTypeId value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/`

Table 55-48 (Cont.) POST Request Configuration for Creating a Service Template for RAC Database with Standby Using a DBCA Template

Feature	Description
	servicetemplates/templatetypes and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"xxxxx\" created successfully."
}
```

55.3.5.3.10 Creating a Service Template for DNFS Based Database

A POST operation is issued on Service Templates collection resource to create a DNFS based database Service Template.

The sample POST configuration is shown below:

Table 55-49 POST Request Configuration for Creating a Service Template for DNFS Based Database

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-49 (Cont.) POST Request Configuration for Creating a Service Template for DNFS Based Database

Feature	Description
Body	<pre> { "name" : "DB Clones", "description" : "This clones a database based on NFS.", "serviceType" : "DB", "serviceTemplateTypeId" : "81", "rscProvAssocOption" : ["byRscProvInst"], "resourceProvider" : { "lookupCharacteristics" : [{ "characteristics" : [{ "name" : "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE", "values" : ["1898CF93BD39C19BF032672271BC4B44"], "targetType" : { "targetType" : "oracle_cloud_zone", "targetTypeName" : "Database Pool", "parentTargetType" : "self_service_zone", "parentTargetTypeName" : "PaaS Infrastructure Zone" } }] }, "purposeId" : 1 } }, "payloads" : [{ "name" : "PROFILE_COMPONENT_URN", "value" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F: 0.1" }], "configurations" : [{ "name" : "STAGE_LOCATION", "value" : "/scratch/emga/backups/rman/" {"name" : "PROFILE_COMPONENT_URN", "value" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:1C14BB2B2E127E23E053C075B10AE31F: 0.1"} {"name": "SELECT_ORACLE_HOME_OPTION", "value": "SELECT_ORACLE_HOME_FROM_REQUEST"}, {"name" : "REF_TGT", "value" : "abc.example.com"} {"name" : "REF_HOST", "value" : "abc.example.com"} {"name" : "REF_ZONE", "value" : "Salt Lake City Zone"} {"name" : "zoneTargetName", "value" : "Salt Lake City Zone"} {"name" : "REF_POOL", "value" : "Databases Pool"} {"name" : "DATABASE_TYPE", "value" : "oracle_database"} {"name" : "COMMON_DB_SYS_PASSWORD", "value" : "welcome"} {"name" : "LISTENER_PORT", "value" : "1521"} {"name" : "PROFILE_VERSION", </pre>

Table 55-49 (Cont.) POST Request Configuration for Creating a Service Template for DNFS Based Database

Feature	Description
	<pre> "value" : "latest"} {"name" : "COMMON_DB_SID", "value" : "db"} {"name" : "TARGET_PROP_LIST", "values" : ["Contact:9980697299:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:null:false:false", "Comment:null:false:false", "Line of Business:null:false:false"]} {"name" : "USER_PRIVILEGES", "value" : "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE"} {"name" : "DNFS.DATA_FILE_LOCATION", "value" : "/scratch/emga/app/emga/oradata"} {"name" : "DNFS.REDO_FILE_LOCATION", "value" : "/scratch/emga/app/emga/fast_recovery_area"} {"name" : "DNFS.RECOVERY_FILE_LOCATION", "value" : "/scratch/emga/app/emga/fast_recovery_area"} {"name" : "DNFS.FRA_SIZE", "value" : "4038"} {"name" : "DNFS.USE_ARCHIVING", "value" : "YES"} {"name" : "DNFS.WORK_DIR_LOC", "value" : "/tmp/work"} {"name" : "DNFS.DB_ADMIN_PASSWORD_SAME", "value" : "Y"} {"name" : "DNFS.BACKUP_LOCATION", "value" : "/scratch/emga/backups/rman_image/"} {"name" : "DNFS.USE_OFA", "value" : "N"} {"name" : "COMMON_DOMAIN_NAME", "value" : "us.example.com" }] } </pre>

Note:

- To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

```

Pre or Post Standby Database Script,0.1,Pre or Post Standby
Database
Script,Ready,Directives,,Production,ORACLE,,oracle:defaultServic
e:em:provisioning:1:cmp:COMP_Directives:none:
01AB6F25F31B7671E0537850B10A9B85:0.1

```
- To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in [Cloud Resource](#).

Table 55-49 (Cont.) POST Request Configuration for Creating a Service Template for DNFS Based Database

Feature	Description
	<ul style="list-style-type: none"> To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"xxxx\" created successfully."
}
```

55.3.5.3.11 Creating a Service Template for Snap Clone Single Instance Database (with Archiving Enabled)

A POST operation is issued on Service Templates collection resource to create a Snap Clone single instance database (with archiving enabled) Service Template.

The sample POST configuration is shown below:

Table 55-50 POST Request Configuration for Creating a Service Template for Snap Clone Single Instance Database (with Archiving Enabled)

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-50 (Cont.) POST Request Configuration for Creating a Service Template for Snap Clone Single Instance Database (with Archiving Enabled)

Feature	Description
Body	<pre> { "name" : "Create Snap Database using Snapshots", "description" : "Creates Databases on SI hosts.", "serviceType" : "DB", "serviceTemplateTypeId" : "81", "rscProvAssocOption" : ["byRscProvInst"], "resourceProvider" : { "lookupCharacteristics" : [{ "characteristics" : [{ "name" : "ORACLE.SYSMAN.SSA.ORACLE_CLOUD_ZONE", "values" : ["503073C7912B1C65B66E240C433012A9"], "targetType" : { "targetType" : "oracle_cloud_zone", "targetTypeName" : "Database Pool", "parentTargetType" : "self_service_zone", "parentTargetTypeName" : "PaaS Infrastructure Zone" } }] }, "purposeId" : 1 }] }, "payloads" : [{ "name" : "PROFILE_COMPONENT_URN", "value" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:247BF4B378FF253FE053C075B10A794A: 0.1" }], "configurations" : [{ "name" : "STAGE_LOCATION", "value" : "/scratch/emga/backups/rman/" }, { "name" : "PROFILE_COMPONENT_URN", "value" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:247BF4B378FF253FE053C075B10A794A: 0.1" }, { "name" : "REF_TGT", "value" : "xyz.example.com" }, { "name" : "REF_HOST", "value" : "xyz.example.com" }, { "name" : "REF_ZONE", "value" : "Single Instances Zone" }, { "name" : "zoneTargetName", "value" : "Single Instances Zone" }, { "name" : "REF_POOL", "value" : "SI Databases Pool - Version 11_2_0_4" }, { "name" : "DATABASE_TYPE", "value" : "oracle_database" </pre>

Table 55-50 (Cont.) POST Request Configuration for Creating a Service Template for Snap Clone Single Instance Database (with Archiving Enabled)

Feature	Description
	<pre> }, { "name" : "COMMON_DB_SYS_PASSWORD", "value" : "welcome" }, { "name" : "LISTENER_PORT", "value" : "1521" }, { "name" : "PROFILE_VERSION", "value" : "latest" }, { "name" : "COMMON_DB_SID", "value" : "db" }, { "name" : "TARGET_PROP_LIST", "values" : ["Contact:9980697299:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:null:false:false", "Comment:null:false:false", "Line of Business:null:false:false"] }, { "name" : "USER_PRIVILEGES", "value" : "CREATE SESSION, ALTER SESSION, CREATE INDEXTYPE, CREATE ANY OPERATOR, CREATE ANY PROCEDURE" }, { "name" : "THIN_PROVISIONING:LISTENER_PORT", "value" : "1522" }, { "name" : "THIN_PROVISIONING:REDO_LOG_GROUP_COUNT", "value" : "2" }, { "name" : "THIN_PROVISIONING:TEMP_TABLESPACE_SIZE", "value" : "520" }, { "name" : "THIN_PROVISIONING:USE_ARCHIVING", "value" : "YES" }, { "name" : "THIN_PROVISIONING:MOUNT_POINT_LIST", "values" : ["/hkdb"] }, { "name" : "THIN_PROVISIONING:MOUNT_ADDL_SIZE_LIST", "values" : ["5.0"] }, { "name" : "THIN_PROVISIONING:REDO_LOG_FILE_TYPE", "value" : "Same as source" }, { "name" : "INIT_PARAMS", "values" : ["sga_target=1073741824", "pga_aggregate_target=1073741824"] }, { "name" : "COMMON_DOMAIN_NAME", "value" : "us.example.com" }] } </pre>

Note:

Table 55-50 (Cont.) POST Request Configuration for Creating a Service Template for Snap Clone Single Instance Database (with Archiving Enabled)

Feature	Description
	<ul style="list-style-type: none"> To get the software library ID of the "DBAAS_SSA_CUSTOM_PRE_SCRIPTS_URN" and "DBAAS_SSA_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID. Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1 To derive the REF_ZONE to be associated with the Service template, execute a GET request as shown in Cloud Resource. To derive the ID of the Software Pool that needs to be entered as "values" (under "lookupCharacteristics"), execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - <code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes</code> and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"xxxx\" created successfully."
}
```

55.3.5.3.12 Creating a Service Template for Snap Clone Single Instance Database (without Archiving Enabled)

A POST operation is issued on Service Templates collection resource to create a Snap Clone single instance database (without archiving enabled) Service Template.

All the configuration values for the REST API for Snap Clone without archiving would remain the same as in the REST API for Snap Clone with archiving, except for the THIN_PROVISIONING:USE_ARCHIVING parameter. Ensure that the configuration value for "name" : "THIN_PROVISIONING:USE_ARCHIVING" in the body is set to "value" : "No" in the [Table 55-50](#) for creating a Snap Clone single instance database (without Archiving enabled) Service template.

55.3.5.3.13 Creating a Service Template for a Schema

A POST operation is issued on Service Templates Collection resource to create a Schema Service Template. The configuration for POST to ServiceTemplates is as follows:

Table 55-51 POST Request Configuration for Creating a Service Template for a Schema

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-51 (Cont.) POST Request Configuration for Creating a Service Template for a Schema

Feature	Description
Body	<pre> { "name": "TestSchaasTemplate3", "serviceType": "SCHEMA", "serviceFamily": "DBAAS", "description": "This is a test schaaS service template 1", "poolIds": ["9D3187DE6B1115791D71D2827FB98558"], "roles": [{ "name": "SSA_USER_ROLE1" }], "serviceExecutableMeta": { "type": "CDP", "configurations": [{ "name": "ROLE_NAME", "value": "SampleRole" }, { "name": "MAX_NUMBER_OF_SCHEMAS", "value": "2" }, { "name": "ENFORCE_STORAGE_CONSTRAINT", "value": "NO_LIMIT" }, { "name": "AUTO_EXTEND_BLOCK_SIZE", "value": "1024" }, { "name": "REF_ZONE", "value": "ABC_ZONE" }, { "name": "REF_POOL", "value": "SCH_POOL" }, { "name": "REF_HOST", "value": "abc.mycompany.com" }, { "name": "REF_DB", "value": "simple.us.example.com" }, { "name": "CREATE_SCHEMA_OPTION", "value": "EMPTY_SCHEMAS" }, { "name": "SCHAAS_CUSTOM_PRE_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1" }, { "name": "SCHAAS_CUSTOM_POST_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1" }, { "name": "REMAP_TABLESPACE_LIST", "value": "", "values": ["TBSP1", "TBSP2", "TBSP3"] }, { "name": "REMAP_TABLESPACE_INIT_SIZE_LIST", "value": "", "values": ["TBSP1:0.1", "TBSP2:0.2", "TBSP3:0.3"] }, { "name": "REMAP_TABLESPACE_INCR_SIZE_LIST", "value": "", "values": ["TBSP1:0.1", "TBSP2:0.2", "TBSP3:0.3"] }, { "name": "REMAP_TABLESPACE_MAX_SIZE_LIST", "value": "", "values": ["TBSP1:50.0", "TBSP2:30", "TBSP3:20"] }, { "name": "CREATE_SCHEMA_OPTION", "value": "EMPTY_SCHEMAS" }, { "name": "WORKLOADS", "subconfigurations": [</pre>

Table 55-51 (Cont.) POST Request Configuration for Creating a Service Template for a Schema

Feature	Description
	<pre> { "name": "WORK_LOADS:1", "subconfigurations": [{ "name": "name", "value": "large " }, { "name": "description", "value": "large workload" }, { "name": "default", "value": "Y" }, { "name": "CPU", "value": "6" }, { "name": "Memory", "value": "4048" }, { "name": "Storage", "value": "2024" }] }] }] } } </pre> <p>Note: To get the software library ID of the "SCHAAS_CUSTOM_PRE_SCRIPTS_URN" and "SCHAAS_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID.</p> <pre> Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultService:em :provisioning:1:cmp:COMP_Directives:none: 01AB6F25F31B7671E0537850B10A9B85:0.1 </pre>
Request method	POST

A sample of the response received is shown below.

```

{
  "name": "TestSchaasTemplate3",
  "serviceFamily": "DBAAS",
  "serviceType": "SCHEMA",
  "type": "Service Template",
  "description": "This is a test schaaS service template 1",
  "id": "E87A364660A25B39E040F20A60510FDD",
  "pools": [
    {
      "name": "SCH_POOL",
      "id": "9D3187DE6B1115791D71D2827FB98558",
      "type": "schaas_pool",
      "zone": {
        "id": "2F1E72A95EC21F8F666451B5413FF99A",
        "name": "ABC_ZONE"
      }
    }
  ],
  "roles": [

```

```

    {
      "name": "SSA_USER_ROLE1",
      "description": null
    }
  ],
  "serviceExecutableMeta": {
    "type": "CDP",
    "configurations": [
      {
        "id": "targets",
        "name": "targets",
        "value": ""
      },
      {
        "id": "ssaRequestId",
        "name": "ssaRequestId",
        "value": ""
      },
      {
        "id": "ssaUser",
        "name": "ssaUser",
        "value": ""
      },
      {
        "id": "ssaTargetName",
        "name": "ssaTargetName",
        "value": ""
      },
      {
        "id": "ssaTargetType",
        "name": "ssaTargetType",
        "value": ""
      },
      {
        "id": "zoneTargetName",
        "name": "zoneTargetName",
        "value": ""
      },
      {
        "id": "zoneTargetType",
        "name": "zoneTargetType",
        "value": ""
      },
      {
        "id": "REQUEST_NAME",
        "name": "REQUEST_NAME",
        "value": ""
      },
      {
        "id": "SERV_TEMPLATE_GUID",
        "name": "SERV_TEMPLATE_GUID",
        "value": ""
      },
      {
        "id": "CREATE_SCHEMA_OPTION",
        "name": "Option for creating user schemas",
        "value": "EMPTY_SCHEMAS"
      },
      {
        "id": "MAX_NUMBER_OF_SCHEMAS",
        "name": "Maximum number of schemas permissible",

```

```

    "value": "2"
  },
  {
    "id": "DB_PROFILE_URN",
    "name": "Database Profile Component's URN",
    "value": ""
  },
  {
    "id": "REMAP_SCHEMA_LIST",
    "name": "Schema list",
    "value": "",
    "values": []
  },
  {
    "id": "MASTER_ACCOUNT",
    "name": "Master Account",
    "value": ""
  },
  {
    "id": "ROLE_NAME",
    "name": "Database Role Name",
    "value": "TestSchaasTemplate3_Oct_11_"
  },
  {
    "id": "SCHEMA_PRIVILEGES",
    "name": "Schema Privileges",
    "value": "",
    "values": [
      "CREATE TYPE",
      "CREATE SEQUENCE",
      "CREATE DIMENSION",
      "CREATE INDEXTYPE",
      "CREATE SESSION",
      "CREATE SYNONYM",
      "CREATE OPERATOR",
      "CREATE VIEW",
      "CREATE TABLE",
      "CREATE TRIGGER",
      "CREATE PROCEDURE"
    ]
  },
  {
    "id": "ENFORCE_STORAGE_CONSTRAINT",
    "name": "Enforces Storage Constraint",
    "value": "false"
  },
  {
    "id": "INITIAL_BLOCK_SIZE",
    "name": "Initial Storage Size",
    "value": ""
  },
  {
    "id": "AUTO_EXTEND_BLOCK_SIZE",
    "name": "Auto extend block size",
    "value": ""
  },
  {
    "id": "TABLESPACE_ENCRYPTION_ALGORITHM",
    "name": "Tablespace Encryption",
    "value": ""
  },
}

```

```

    {
      "id": "SHARED_STAGE_LOCATION",
      "name": "Staging Location",
      "value": ""
    },
    {
      "id": "WORKING_DIRECTORY",
      "name": "Working Directory",
      "value": ""
    },
    {
      "id": "SCHAAS_CUSTOM_PRE_SCRIPTS_URN",
      "name": "Pre-script",
      "value": ""
    },
    {
      "id": "SCHAAS_CUSTOM_POST_SCRIPTS_URN",
      "name": "Post-script",
      "value": ""
    },
    {
      "id": "SCHEMA_PASSWORD_LIST",
      "name": "Schema password list",
      "value": "",
      "values": []
    },
    {
      "id": "CUSTOM_USER_SELECTED_SCRIPT_URN",
      "name": "Custom Script URN",
      "value": "",
      "values": []
    },
    {
      "id": "DBSERVICE_NAME",
      "name": "Database Service Name",
      "value": ""
    }
  ]
},
"createdOn": null,
"createdBy": null,
"modifiedOn": null,
"modifiedBy": null,
"owner": "SYSMAN",
"etag": null,
"lastModified": null,
"canonicalLink": "https://abc.mycompany.com:11180/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/E87A364660A25B39E040F20A60510FDD",
"selfLink": "https://abc.mycompany.com:11180/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/E87A364660A25B39E040F20A60510FDD"
}

```

55.3.5.3.14 Creating a Service Template for a Pluggable Database

A POST operation is issued on ServiceTemplates Collection resource to create a Pluggable Database ServiceTemplate. The configuration for POST to ServiceTemplates is as follows:

Table 55-52 POST Request Configuration for Creating a Service Template for a Pluggable Database

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-52 (Cont.) POST Request Configuration for Creating a Service Template for a Pluggable Database

Feature	Description
Body	<pre> { "name": "TestPdbTemplate1", "serviceType": "PDB", "serviceFamily": "DBAAS", "description": "This is a test pluggable database service template 1", "poolIds": ["FF394120842D8C71CC92BE6A4D5A488E"], "roles": [{ "name": "SSA_USER_ROLE1" }], "serviceExecutableMeta": { "type": "CDP", "configurations": [{ "name": "TABLESPACE_ENCRYPTION_ALGORITHM", "subconfigurations": [{ "name": "name", "value": "NONE" }] }, { "name": "MAX_TABLESPACE_ALLOWED", "value": "2" }, { "name": "PDB_SID_PREFIX", "value": "mypdb" }, { "name": "ENFORCE_STORAGE_CONSTRAINT", "value": "NO_LIMIT" }, { "name": "AUTO_EXTEND_BLOCK_SIZE", "value": "1024" }, { "name": "REF_DATA_ZONE", "value": "PDB_Zone" }, { "name": "REF_DATA_TARGET", "value": "database" }, { "name": "REF_DATA_TARGET_TYPE", "value": "oracle_database" }, { "name": "REF_DATA_POOL", "value": "PDB_POOL" }, { "name": "REF_DATA_HOST", "value": "abc.mycompany.com" }, { "name": "SELECT_TARGET_OPTION", "value": "SELECT_TARGET_FROM_REQUEST" }, { "name": "CREATE_PDB_OPTION", "value": "EMPTY_PDB" }, { "name": "PDBAAS_CUSTOM_PRE_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1" }, { "name": "PDBAAS_CUSTOM_POST_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1" }, { "name": "PRIVILEGES", "value": "", "values": ["CREATE TYPE", "CREATE VIEW", "CREATE DIMENSION", "CREATE SESSION", "CREATE TRIGGER", "CREATE OPERATOR", "CREATE SYNONYM", "CREATE TABLE", "CREATE PROCEDURE", "CREATE INDEXTYPE", "CREATE SEQUENCE"] }, { "name": "ROLE_OPTION", "value": "CUSTOM_NEW_ROLE" }, { "name": "INIT_PARAMS", "subconfigurations": [{ "name": "INIT_PARAMS:1", </pre>

Table 55-52 (Cont.) POST Request Configuration for Creating a Service Template for a Pluggable Database

Feature	Description
	<pre> "value": "*.cursor_sharing=EXACT" }, { "name": "INIT_PARAMS:2", "value": "*.open_cursors=200" }] }, { "name": "WORKLOADS", "subconfigurations": [{ "name": "WORK_LOADS:1", "subconfigurations": [{ "name": "name", "value": "SmallPdb" }, { "name": "description", "value": "small workload" }, { "name": "default", "value": "N" }, { "name": "CPU", "value": "2" }, { "name": "Memory", "value": "2048" }, { "name": "Storage", "value": "1024" }, { "name": "Sessions", "value": "100" }] }] }] } } } } } </pre>

Note:

- To get the software library ID of the "PDBAAS_CUSTOM_PRE_SCRIPTS_URN" and "PDBAAS_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command `emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id`. The ID is provided at the end of the output. For example, in the output shown below, `oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1` is the ID.

```

Pre or Post Standby Database Script,0.1,Pre or Post Standby
Database
Script,Ready,Directives,,Production,ORACLE,,oracle:defaultServic
e:em:provisioning:1:cmp:COMP_Directives:none:
01AB6F25F31B7671E0537850B10A9B85:0.1

```
- To derive the REF_DATA_ZONE to be associated with the Service template, execute a GET request as shown in [Cloud Resource](#).
- To derive the ID of the Software Pool that needs to be entered as "poolIds", execute a GET request as shown in [Viewing Details of the Software Pools Resource](#).
- To derive the serviceTemplateTypeId value, perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes` and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.

Table 55-52 (Cont.) POST Request Configuration for Creating a Service Template for a Pluggable Database

Feature	Description
Request method	POST

 **Note:**

In the table above, the `SELECT_TARGET_OPTION` parameter defines if the SSA User has the option to select the Container Database (CDB) while requesting for a PDB. If the value for the parameter is set as `SELECT_TARGET_FROM_REQUEST`, then the SSA User has the option to choose the CDB. If no value is defined, or if the value is set to `SELECT_TARGET_AT_RUNTIME`, then the placement algorithm selects the CDB.

A sample of the response received is shown below.

```
{
  "name": "TestPdbTemplate1",
  "serviceFamily": "DBAAS",
  "serviceType": "PDB",
  "type": "Service Template",
  "description": "This is a test pluggable database service template 1",
  "id": "E8887DEEE424BEAEE040F20A605118CE",
  "pools": [
    {
      "name": "PDB_POOL",
      "id": "FF394120842D8C71CC92BE6A4D5A488E",
      "type": "pdbaas_pool",
      "zone": { "id": "B60C4DA1398F41BEBC862D5A10A0C713",
        "name": "PDB_Zone" }
    }
  ],
  "roles": [
    { "name": "SSA_USER_ROLE1", "description": null }
  ],
  "serviceExecutableMeta": {
    "type": "CDP",
    "configurations": [
      { "id": "CREATE_PDB_OPTION", "name": "Option for creating Pluggable Database", "value": "EMPTY_PDB" },
      { "id": "PROFILE_URN", "name": "Profile Component's URN", "value": "" },
      { "id": "MAX_TABLESPACE_ALLOWED", "name": "Maximum number of Tablespaces", "value": "2" },
      { "id": "ENFORCE_STORAGE_CONSTRAINT", "name": "Enforce Storage Constraint", "value": "false" },
      { "id": "TABLESPACE_ENCRYPTION_ALGORITHM", "name": "Tablespace Encryption", "value": "", "values": [ "NONE" ] },
      { "id": "TABLESPACE_SIZE", "name": "Tablespace Size", "value": "", "values": [] },
      { "id": "SHARED_STAGE_LOCATION", "name": "Staging Location", "value": "" },
      { "id": "WORKING_DIRECTORY", "name": "Working Directory", "value": "" },
      { "id": "PDBAAS_CUSTOM_PRE_SCRIPTS_URN", "name": "URN of the pre sql custom script", "value": "" },
      { "id": "PDBAAS_CUSTOM_POST_SCRIPTS_URN", "name": "URN of the post sql custom"
    ]
  }
}
```

```

script", "value": ""},
  { "id": "PDB_SID_PREFIX", "name": "Pluggable Database SID Prefix", "value": "mypdb"},
  { "id": "PDB_ADMIN_USER_NAME", "name": "Pluggable Database
Administrator", "value": ""},
  { "id": "PDB_ADMIN_PASSWORD", "name": "Pluggable Administrator Password"},
  { "id": "PDB_SERVICE_NAME_PREFIX", "name": "Pluggable Database Service Name
Prefix", "value": ""},
  { "id": "PDBSERVICE_NAME", "name": "Pluggable Database Service Name", "value": ""},
  { "id": "ROLE_OPTION", "name": "Role Option Custom New Role/ Existing
Roles", "value": "CUSTOM_NEW_ROLE"},
  { "id": "INIT_PARAMS", "name": "Initialization parameter values passed as
list", "value": "", "values": [{"*.open_cursors=200", "*.cursor_sharing=EXACT"}]},
  { "id": "CUSTOM_ROLE_NAME", "name": "Database Role
Name", "value": "PDBAAS_OCT_12_2013_02_13_AM"},
  { "id": "CUSTOM_ROLE_DESC", "name": "Database Role Description", "value": "New db role
to be assigned to pluggable database administrator."},
  { "id": "PRIVILEGES", "name": "Custom Role Privileges", "value": "", "values": ["CREATE
ANY SYNONYM", "CREATE ANY OPERATOR", "CREATE SESSION", "CREATE JOB", "CREATE ANY
TYPE", "CREATE INDEXTYPE", "SELECT ANY DICTIONARY", "CREATE ANY SEQUENCE", "CREATE
DIMENSION", "CREATE ANY DIRECTORY", "CREATE ANY INDEX", "CREATE ANY TABLE", "CREATE ANY
PROCEDURE", "ALTER SESSION", "CREATE ANY MATERIALIZED VIEW", "CREATE ANY
TRIGGER", "CREATE ANY VIEW"]},
  { "id": "ROLES", "name": "List of roles selected from reference
database", "value": "", "values": []}
  ]
},
"createdOn": null,
"createdBy": null,
"modifiedOn": null,
"modifiedBy": null,
"owner": "SYSMAN",
"etag": null,
"lastModified": null,
"canonicalLink": "https://abc.mycompany.com:11180/em/websvcs/restful/extws/
cloudservices/admin/cfw/v1/servicetemplates/E8887DEEE424BEAEE040F20A605118CE",
"selfLink": "https://abc.mycompany.com:11180/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/servicetemplates/E8887DEEE424BEAEE040F20A605118CE"
}

```

55.3.5.3.15 Creating a Service Template for RAC Pluggable Database Using an Empty Pluggable Database

A POST operation is issued on ServiceTemplates Collection resource to create a ServiceTemplate for a RAC Pluggable database using an empty Pluggable database. The configuration for POST to ServiceTemplates is as follows:

Table 55-53 POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using an Empty Pluggable Database

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-53 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using an Empty Pluggable Database

Feature	Description
Body	<pre> { "name": "Create RAC PDBs using empty PDB option", "description": "Creates PDBs on cluster.", "serviceType": "PDB", "serviceTemplateTypeId": "94", "rscProvAssocOption": ["byRscProvInst"], "roles": ["SSA_USER_ROLE"], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.SSA.PDBAAS_POOL", "values": ["DFB8F2A53429AF99EF2020C56E11FEE9"], "targetType": { "targetType": "pdbaas_pool", "targetTypeName": "Pluggable Database Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "PaaS Infrastructure Zone" } }], "purposeId": 1 }] }, "payloads": [{ "name": "DBDELETE_PRESCRIPT", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:246A484D511C1CFFE053C075B10AEF2D:0.1" }, { "name": "DBDELETE_POSTSCRIPT", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:246A484D51201CFFE053C075B10AEF2D:0.1" }], "characteristics": [{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT", "displayName": "Department", "value": "Development", "required": true, "editable": false, "visible": true }], </pre>

Table 55-53 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using an Empty Pluggable Database

Feature	Description
	<pre> { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION", "displayName": "Location", "values": "Bangalore", "required": false, "editable": true, "visible": true }], "configurations": [{ "name": "REF_DATA_ZONE", "value": "Single Instances Zone" }, { "name": "SELECT_TARGET_OPTION", "value": "SELECT_TARGET_FROM_REQUEST" }, { "name": "CUSTOM_ROLE_NAME", "value": "PDBAAS_NOV_13_2015_16_51_PM" }, { "name": "TARGET_PROP_LIST", "values": ["Site:null:false:false", "Contact:null:false:false", "Downtime Contact:null:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:Development:true:true", "Comment:This is for testing:false:false", "Line of Business:null:false:false"] }, { "name": "PDBAAS_CUSTOM_PRE_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:2469CA4C8C7B4E34E053C075B10A74AD:0.2" }, { "name": "WORKLOADS", "subvalues": [{ "name": "Small", "subvalues": [{ "name": "name", "value": "SmallPdb" }, { "name": "description", "value": "small workload" }] }] }] </pre>

Table 55-53 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using an Empty Pluggable Database

Feature	Description
	<pre> }, { "name": "default", "value": "N" }, { "name": "CPU", "value": "2" }, { "name": "Memory", "value": "2" }, { "name": "Storage", "value": "5" }, { "name": "Sessions", "value": "100" }] }] }, { "name": "PRIVILEGES", "type": "VECTOR", "description": "List of privileges of custom new role that will be applied on pluggable database administrator.", "displayName": "PRIVILEGES", "required": false, "secret": false, "values": ["CREATE SESSION", "ALTER SESSION", "CREATE DIMENSION", "CREATE INDEXTYPE", "CREATE ANY OPERATOR", "CREATE ANY PROCEDURE", "CREATE ANY SEQUENCE", "CREATE ANY INDEX", "CREATE JOB", "CREATE ANY MATERIALIZED VIEW", "CREATE ANY TABLE", "CREATE ANY TRIGGER", "CREATE ANY TYPE", "CREATE ANY VIEW", "CREATE ANY SYNONYM", "CREATE ANY DIRECTORY", "SELECT ANY DICTIONARY", "SELECT ANY TABLE"] } </pre>

Table 55-53 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using an Empty Pluggable Database

Feature	Description
	<pre> }, { "name": "REF_DATA_TARGET_TYPE", "value": "rac_database" }, { "name": "REF_DATA_ZONE", "value": "Clusters Zone - Oracle DB 12c" }, { "name": "REF_DATA_HOST", "value": "xyz.example.com" }, { "name": "REF_DATA_TARGET", "value": "cdfs" }, { "name": "REF_DATA_POOL", "value": "RAC Pluggable DBs" }, { "name": "PDBAAS_CUSTOM_POST_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:2469CA4C8C7F4E34E053C075B10A74AD:0.2" }, { "name": "SELECT_TARGET_OPTION", "value": "SELECT_TARGET_AT_RUNTIME" }, { "name": "MAX_TABLESPACE_ALLOWED", "value": "1" }, { "name": "ROLE_OPTION", "value": "CUSTOM_NEW_ROLE" }, { "name": "CREATE_PDB_OPTION", "value": "EMPTY_PDB" }, { "name": "INIT_PARAMS", "values": ["*.cursor_sharing=EXACT", "*.open_cursors=300"] }] } </pre>

Table 55-53 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using an Empty Pluggable Database

Feature	Description
	<p>Note:</p> <ul style="list-style-type: none"> To get the software library ID of the "PDBAAS_CUSTOM_PRE_SCRIPTS_URN" and "PDBAAS_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID. <pre>Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</pre> <ul style="list-style-type: none"> To derive the REF_DATA_ZONE to be associated with the Service template, execute a GET request as shown in Cloud Resource. To derive the ID of the Software Pool that needs to be entered as "poolIds", execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - <code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes</code> and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST



Note:

In the table above, the `SELECT_TARGET_OPTION` parameter defines if the SSA User has the option to select the Container Database (CDB) while requesting for a PDB. If the value for the parameter is set as `SELECT_TARGET_FROM_REQUEST`, then the SSA User has the option to choose the CDB. If no value is defined, or if the value is set to `SELECT_TARGET_AT_RUNTIME`, then the placement algorithm selects the CDB.

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"xxxxx\" created successfully."
}
```

55.3.5.3.16 Creating a Service Template for RAC Pluggable Database Using a Profile Pluggable Database

A POST operation is issued on ServiceTemplates Collection resource to create a ServiceTemplate for a RAC Pluggable database using a profile Pluggable database. The configuration for POST to ServiceTemplates is as follows:

Table 55-54 POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using a Profile Pluggable Database

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 55-54 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using a Profile Pluggable Database

Feature	Description
Body	<pre> { "name": "Create RAC PDBs using Profile PDB option", "description": "Creates PDBs on cluster.", "serviceType": "PDB", "serviceTemplateTypeId": "94", "rscProvAssocOption": ["byRscProvInst"], "roles": ["SSA_USER_ROLE"], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.SSA.PDBAAS_POOL", "values": ["DFB8F2A53429AF99EF2020C56E11FEE9"], "targetType": { "targetType": "pdbaas_pool", "targetTypeName": "Pluggable Database Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "PaaS Infrastructure Zone" } }], "purposeId": 1 }], "payloads": [{ "name": "DBDELETE_PRESCRIPT", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:246A484D511C1CFFE053C075B10AEF2D:0.1" }, { "name": "DBDELETE_POSTSCRIPT", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:246A484D51201CFFE053C075B10AEF2D:0.1" }], "characteristics": [{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_CONTACT", "displayName": "Contact", "values": [], "required": false, "editable": true, "visible": true }] } </pre>

Table 55-54 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using a Profile Pluggable Database

Feature	Description
	<pre> { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER", "displayName": "Cost Center", "values": [], "required": false, "editable": true, "visible": true }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT", "displayName": "Department", "values": [], "required": false, "editable": true, "visible": true }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DOWNTIME_CONTACT", "displayName": "Downtime Contact", "values": [], "required": false, "editable": true, "visible": true }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS", "displayName": "Lifecycle Status", "values": ["Development", "MissionCritical", "Production", "Stage", "Test"], "required": false, "editable": true, "visible": true }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS", "displayName": "Line of Business", "values": [], "required": false, "editable": true, "visible": true }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION", "displayName": "Location", "values": [], "required": false, "editable": true, "visible": true } </pre>

Table 55-54 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using a Profile Pluggable Database

Feature	Description
	<pre> }], "configurations": [{ "name": "REF_DATA_ZONE", "value": "Single Instances Zone" }, { "name": "SELECT_TARGET_OPTION" "value": "SELECT_TARGET_FROM_REQUEST" }, { "name": "TARGET_PROP_LIST", "values": ["Site:null:false:false", "Contact:null:false:false", "Downtime Contact:null:false:false", "Location:null:false:false", "LifeCycle Status:null:false:false", "Department:Development:true:true", "Comment:This is for testing:false:false", "Line of Business:null:false:false"] }, { "name": "PDBAAS_CUSTOM_PRE_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:2469CA4C8C7B4E34E053C075B10A74AD:0.2" }, { "name": "WORKLOADS", "subvalues": [{ "name": "Small", "subvalues": [{ "name": "name", "value": "SmallPdb" }, { "name": "description", "value": "small workload" }], }, { "name": "default", "value": "N" }, { "name": "CPU", "value": "2" }, { "name": "Memory", </pre>

Table 55-54 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using a Profile Pluggable Database

Feature	Description
	<pre> "value": "2" }, { "name": "Storage", "value": "5" }, { "name": "Sessions", "value": "100" }] }] }, { "name": "ROLE_OPTION", "value": "CUSTOM_NEW_ROLE" }, { "name": "CUSTOM_ROLE_NAME", "value": "PDBAAS_NOV_13_2015_16_51_PM" }, { "name": "CUSTOM_ROLE_DESC", "value": "New db role to be assigned to pluggable database administrator." }, { "name": "PRIVILEGES", "values": ["CREATE SESSION", "ALTER SESSION", "CREATE DIMENSION", "CREATE INDEXTYPE", "CREATE ANY OPERATOR", "CREATE ANY PROCEDURE", "CREATE ANY SEQUENCE", "CREATE ANY INDEX", "CREATE JOB", "CREATE ANY MATERIALIZED VIEW", "CREATE ANY TABLE", "CREATE ANY TRIGGER", "CREATE ANY TYPE", "CREATE ANY VIEW", "CREATE ANY SYNONYM", "CREATE ANY DIRECTORY", "SELECT ANY DICTIONARY", "SELECT ANY TABLE"] }, { "name": "REF_DATA_TARGET_TYPE", "value": "rac_database" </pre>

Table 55-54 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using a Profile Pluggable Database

Feature	Description
	<pre> }, { "name": "REF_DATA_ZONE", "value": "Clusters Zone - Oracle DB 12c" }, { "name": "REF_DATA_HOST", "value": "xyz.example.com" }, { "name": "REF_DATA_TARGET", "value": "cdbfs" }, { "name": "REF_DATA_POOL", "value": "RAC Pluggable DBs" }, { "name": "PDBAAS_CUSTOM_POST_SCRIPTS_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Directives:none:2469CA4C8C7F4E34E053C075B10A74AD:0.2" }, { "name": "SELECT_TARGET_OPTION", "value": "SELECT_TARGET_AT_RUNTIME" }, { "name": "MAX_TABLESPACE_ALLOWED", "value": "1" }, { "name": "CREATE_PDB_OPTION", "value": "PDB_FROM_PROFILE" }, { "name": "PROFILE_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:246C1E85296C29A1E053C075B10A7DFA: 0.1" }, { "name": "SHARED_STAGE_LOCATION", "value": "/u04/app/hhkaur/product/12.1.0/dbhome_2/rdbms/xml/ schema" }, { "name": "TABLESPACE_SIZE", "values": ["0.7715", "0.6152", "0.0586", "0.0049"] } </pre>

Table 55-54 (Cont.) POST Request Configuration for Creating a Service Template for RAC Pluggable Database Using a Profile Pluggable Database

Feature	Description
	<pre> }, { "name": "INIT_PARAMS", "values": ["*.cursor_sharing=EXACT", "*.open_cursors=300"] }, { "name": "PDB_SID_PREFIX", "value": "prp" }] } </pre>
	<p>Note:</p> <ul style="list-style-type: none"> To get the software library ID of the "PDBAAS_CUSTOM_PRE_SCRIPTS_URN" and "PDBAAS_CUSTOM_POST_SCRIPTS_URN" run the EM CLI command <code>emcli list_swlib_entities -name="<Pre or Post Standby Database Script>" -show_entity_rev_id</code>. The ID is provided at the end of the output. For example, in the output shown below, <code>oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:none:01AB6F25F31B7671E0537850B10A9B85:0.1</code> is the ID. <pre> Pre or Post Standby Database Script,0.1,Pre or Post Standby Database Script,Ready,Directives,,Production,ORACLE,,oracle:defaultServic e:em:provisioning:1:cmp:COMP_Directives:none: 01AB6F25F31B7671E0537850B10A9B85:0.1 </pre> <ul style="list-style-type: none"> To derive the REF_DATA_ZONE to be associated with the Service template, execute a GET request as shown in Cloud Resource. To derive the ID of the Software Pool that needs to be entered as "poolIds", execute a GET request as shown in Viewing Details of the Software Pools Resource. To derive the serviceTemplateTypeId value, perform a GET operation on the URI - <code>em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes</code> and locate "serviceType": "DB" in the JSON response. Note the serviceTemplateTypeId under "serviceType": "DB" and use the value in the POST body shown above.
Request method	POST

 **Note:**

In the table above, the `SELECT_TARGET_OPTION` parameter defines if the SSA User has the option to select the Container Database (CDB) while requesting for a PDB. If the value for the parameter is set as `SELECT_TARGET_FROM_REQUEST`, then the SSA User has the option to choose the CDB. If no value is defined, or if the value is set to `SELECT_TARGET_AT_RUNTIME`, then the placement algorithm selects the CDB.

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"xxxxx\" created successfully."
}
```

55.3.5.3.17 Deleting a Database / Schema / Pluggable Database Service Template

The DELETE request on the URI of the Service Template can be issued to delete a ServiceTemplate Instance. The configuration for deleting in ServiceTemplate is as follows:

Table 55-55 DELETE Request Configuration for Deleting a Database/Schema/ Pluggable Database Service Template

Feature	Description
URI	/em/websvcs/restful/extws/ cloudservices/admin/cfw/v1/ servicetemplates/E87A364660A25B39E040F20A60510FDD Note: For Database Service Templates the URI is em/websvcs/ restful/extws/cloudservices/admin/cfw/v2/servicetemplates/61
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
{
  "message": "Service Template \"E87A364660A25B39E040F20A60510FDD\" deleted successfully."
}
```

55.4 DB Onboarding on DBaaS Cloud REST API

The configuration for POST to DB Onboarding on DBaaS Cloud is as follows:

Table 55-56 POST Request Configuration for DB Onboarding on DBaaS Cloud

Feature	Description
URI	https:// <OMS_CONSOLE_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/zone/<zone-guid>
Request Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance +json Accept: application/ oracle.com.cloud.common.DbPlatformInstance +json
Request Method	Post
Payload	{ "DEST_TARGET_NAME": "<EM Target name of the DB Target to be managed via Self Service Portal>", "DEST_TARGET_TYPE": "<oracle_database rac_database>", "DB_SERVICE_NAME": "<Name of the new DB service that will be created for the DB Target>", "DEST_POOL_NAME": "<Destination Pool>", "DEST_POOL_TYPE": "oracle_cloud_zone", "DEST_DB_CRED": "<EM Named Credential for Target DB SYS user in the format CREDENTIAL_NAME:CREDENTIAL_OWNER>", "MASTER_USER_CREDS": "<EM Named Credential for DB Master Account user in the format CREDENTIAL_NAME:CREDENTIAL_OWNER. Master account user will be created in the DB >", "SSA_USER": "<Username of EM SSA user with EM_SSA_USER role privileges >", "operation": "DISCOVER" }

 **Note:**

- In case the target DB is in Dataguard Configuration, only primary DB will be discovered
- This is an administrator driven operation to be initiated by an EM administrator with EM_SSA_ADMINISTRATOR role privileges.
- To fetch Zone GUID, see [Viewing Details of the PaaS Zones Resource](#).

55.5 DB Relocation REST API

The configuration for POST for DB Relocation is as follows:

Table 55-57 POST Request Configuration for DB Relocation

Feature	Description
URI	https:// <OMS_CONSOLE_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/ dbplatforminstance/byrequest/<instance-id>
Request Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance +json Accept: application/ oracle.com.cloud.common.DbPlatformInstance +json
Request Method	Post

Table 55-57 (Cont.) POST Request Configuration for DB Relocation

Feature	Description
Payload	<pre>{ "SRC_TARGET_NAME": "<EM target name of the srouce DB>", "SRC_TARGET_TYPE": "<oracle_database rac_database>", "DEST_HOST_NAME": "<EM target name of the destination host>", "DEST_POOL_NAME": "<Destination Pool>", "SRC_DB_CRED": "<EM Named Credential for Target DB SYS user in the format CREDENTIAL_NAME:CREDENTIAL_OWNER>", "SELECT_ORACLE_HOME_OPTION": "RUNTIME", "DELETE_SRC_TARGET"="Y", "DEST_TARGET_NAME"="<New EM target name for the destination DB>", "DEST_DATABASE_AREA"="<absolute_path_to_d estination_datafiles_location>", "DEST_FAST_RECOVERY_AREA"="<absolute_path _to_destination_fast_recovery_area>", "operation": "RELOCATE", "registrationOnly": "false" }</pre> <p>JSON Payload Optional parameters:</p> <ul style="list-style-type: none"> • "SELECT_ORACLE_HOME_OPTION": "RUNTIME", to be provided if destination host in the destination pool is to be selected automatically • "DELETE_SRC_TARGET"="Y", to be provided if you want to delete the source DB and EM target for the source DB • "DEST_TARGET_NAME"="<New EM target name for the destination DB>" • "DEST_DATABASE_AREA"="<absolute_path_to_destination_datafiles_location>" • "DEST_FAST_RECOVERY_AREA"="<absolute_path_to_destination_fast_recovery_area>"

 **Note:**

- This functionality is not supported for Thin Clone Database(s).
- This is an administrator driven operation to be initiated by an EM administrator with EM_SSA_ADMINISTRATOR role privileges.
- To fetch the instance-id of target DB, use GET /em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?expanded=true.

55.6 PDB Onboarding on DBaaS Cloud REST API

The configuration for POST for PDB Onboarding on DBaaS cloud is as follows:

Table 55-58 POST Request Configuration for PDB Onboarding on DBaaS Cloud

Feature	Description
URI	https:// <OMS_CONSOLE_HOST>:<OMS_CONSOL E_PORT>/em/cloud/dbaas/zone/<zone-guid>
Request Headers	Authorization: basic basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.PluggableDbPlatfor mInstance+json Accept: application/ oracle.com.cloud.common.PluggableDbPlatfor mInstance+json
Request Method	Post
Payload	<pre>{ "DEST_PDB_NAME": "<EM Target name of the Pluggable Database>", "DEST_CDB_TARGET_NAME": "<EM Target name of the destination Container Database>", "DEST_CDB_TARGET_TYPE": "<oracle_database rac_database>", "PDBSERVICE_NAME": "<Name of the service to be created for the target Pluggable Database>", "DEST_CDB_POOL_NAME": "<Destination Pluggable Database Pool name>", "DEST_CDB_CRED": "<EM Named Credential for Target Container Database SYS user in the format CREDENTIAL_NAME:CREDENTIAL_OWNER>", "MASTER_USER_CREDS": "<EM Named Credential for Master Account user to be created in Target Pluggable Database in the format CREDENTIAL_NAME:CREDENTIAL_OWNER>", "PDBAAS_SSA_USER": "<Username of EM SSA user with EM_SSA_USER role privileges>", "operation": "DISCOVER" }</pre>

 **Note:**

- This is an administrator driven operation to be initiated by an EM administrator with EM_SSA_ADMINISTRATOR role privileges.
- To fetch Zone GUID, see [Viewing Details of the PaaS Zones Resource](#).

55.7 PDB Relocation REST API

The configuration for POST for PDB Relocation is as follows:

Table 55-59 POST Request Configuration for PDB Relocation

Feature	Description
URI	https:// <OMS_CONSOLE_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/ pluggabledbplatforminstance /byrequest/ <instance-id>
Request Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json Accept: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json
Request Method	Post

Table 55-59 (Cont.) POST Request Configuration for PDB Relocation

Feature	Description
Payload	<pre data-bbox="878 338 1372 1123"> { "SRC_PDB_TARGET_NAME": "<EM Target name of the PDB to be relocated>", "DEST_CDB_TARGET_NAME": "<EM Target name of the destination Target Container DB>", "DEST_CDB_TARGET_TYPE": "<oracle_database rac_database>", "USE_SAME_STORAGE_LOCATION": "Y", "STORAGE_LOCATION" = "<Storage location for destination PDB>", "DEST_WORK_DIR" = "<absolute path to temporary work directory at destination>", "SELECT_TARGET_OPTION=RUNTIME<needed if destination CDB needs to be selected automatically>", "DEST_CDB_POOL_NAME" = "<Destination Pluggable Database Pool name needed only when SELECT_TARGET_OPTION parameter is specified>", "USE_SAME_STORAGE_LOCATION=Y<needed in case PDB relocation is to be performed without moving PDB datafiles, target PDB datafile(s) storage location must also be visible to destination Container DB>", "operation": "RELOCATE", "registrationOnly": "false" } </pre> <p data-bbox="878 1150 1271 1178">JSON Payload Optional parameters:</p> <ul data-bbox="878 1186 1372 1694" style="list-style-type: none"> • STORAGE_LOCATION=<Storage location for destination PDB> • DEST_WORK_DIR=<absolute path to temporary work directory at destination> • SELECT_TARGET_OPTION=RUNTIME, needed if destination CDB needs to be selected automatically. • DEST_CDB_POOL_NAME, Destination Pluggable Database Pool name needed only when SELECT_TARGET_OPTION parameter is specified". • USE_SAME_STORAGE_LOCATION=Y, needed in case PDB relocation is to be performed without moving PDB datafiles, target PDB datafile(s) storage location must also be visible to destination Container DB.

 **Note:**

- This is an administrator driven operation to be initiated by an EM administrator with EM_SSA_ADMINISTRATOR role privileges.
- To fetch the instance-id of target PDB, use GET `/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?expanded=true`.

55.8 PDB Upgrade REST API

You can upgrade the PDB on REST API as follows:

Table 55-60 Upgrading the PDB on REST API

Feature	Description
URI	<code>/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/<request_id></code>
Request Headers	Authorization Basic XXXXXXXXXXXXXXXXXXXXXXXXXXXX Content-Type application/ oracle.com.cloud.common.PluggableDbPlatfor mInstance+json
Request Method	Post
Payload	<pre>{ "operation" : "UPGRADE_PDB", "destinationCdb" : "<EM Target Name of destination CDB>", #Optional "useSameStorageLocation": "true", #Optional, to be used only with destinationCdb "workload": "<EM Workload name from the successor service template>", "update_schedule" : "" }</pre>

 **Note:**

- Successor PDB Pool and successor Service Template must be configured before initiating the upgrade.
- This is an administrator driven operation to be initiated by an EM administrator with EM_SSA_ADMINISTRATOR role privileges.
- To fetch the instance-id of target PDB, use GET `/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?expanded=true`
- For more information, see [PDB Fleet Maintenance: Upgrading PDB](#).

56

Database as a Service SSA User REST APIs

This chapter describes the resource models of Database as a Service (DBaaS) REST APIs for SSA user, and their responses.

The REST APIs for the SSA user are classified based on the database type. The first section in this chapter provides a summary of all the REST APIs in this chapter whereas the following sections cover the REST APIs based on the database type. The sections in this chapter are as follows:

- [Summary of Database as a Service SSA User REST APIs](#)
- [Database as a Service](#)
 - [DB Zone](#)
 - [DB Platform Template](#)
 - [DB Platform Instance](#)
- [Schema as a Service](#)
 - [Schema Platform Template](#)
 - [Schema Platform Instance](#)
- [Pluggable Database as a Service](#)
 - [Pluggable DB Platform Template](#)
 - [Pluggable DB Platform Instance](#)

56.1 Summary of Database as a Service SSA User REST APIs

The table below shows a summary of all the DBaaS SSA user REST APIs covered in this chapter.

Table 56-1 Summary of DBaaS SSA User REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
Cloud	Not applicable	<ul style="list-style-type: none"> Viewing Details of All the Cloud Resources Filtering Output for Specific Resource Attributes 	Not supported	Not supported	Not supported
Service family type	Not applicable	Viewing Details of the Service Family Type Resource	Not supported	Not supported	Not supported
Service instance type	Not applicable	Viewing Details of the Service Instance Type Resource	Not supported	Not supported	Not supported
Service request	Not applicable	Viewing Details of a Service Requests Resource	Not applicable	Not applicable	Not applicable

Table 56-1 (Cont.) Summary of DBaaS SSA User REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
Database zone	Table 56-2	Viewing Details of the DB Zone	<ul style="list-style-type: none"> Creating a Database by Passing a Request on the DB Zone Creating a Schema by Passing a Request on the DB Zone Creating a Pluggable Database by Passing a Request on the DB Zone 	Not supported	Not supported
Database platform template	Table 56-3	Viewing Details of the DB Platform Template Resource	Creating a Database by Passing a Request on the DB Platform Template	Not supported	Not supported
Database platform instance	Table 56-4	Viewing the Database Creation Details	<ul style="list-style-type: none"> Updating a Database Lifecycle operations on a Database Instance Lifecycle operations on a Snap clone Database Instance 	Not supported	Deleting a Database Instance

Table 56-1 (Cont.) Summary of DBaaS SSA User REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
Schema platform template	Table 56-29	Viewing Details of the Schema Platform Template Resource	Creating a Schema by Passing a Request on the Schema Platform Template	Not supported	Not supported
Schema platform instance	Table 56-30	Viewing Details of the Schema Service Creation	Object Missing	Not supported	Deleting a Schema Service
Pluggable database platform template	Table 56-42	Viewing Details of the Pluggable Db Platform Template Resource	Creating a Pluggable Database by Passing a Request on the Pluggable DB Platform Template	Not supported	Not supported
Pluggable database platform instance	Table 56-43	Viewing Details of the Pluggable Database Creation	Lifecycle operations on a Pluggable Database Instance	Not supported	Deleting a Pluggable Database Instance

 **Note:**

In the table above, "supported" indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

56.2 Database as a Service

This section describes the resource model for Database as a Service (DBaaS) REST APIs, and the REST request or response interactions.

This section contains the following topics:

- [Database as a Service Resource Model](#)
- [Supported Operations for Database as a Service Resources](#)
- [Database as a Service REST API Examples](#)

Note:

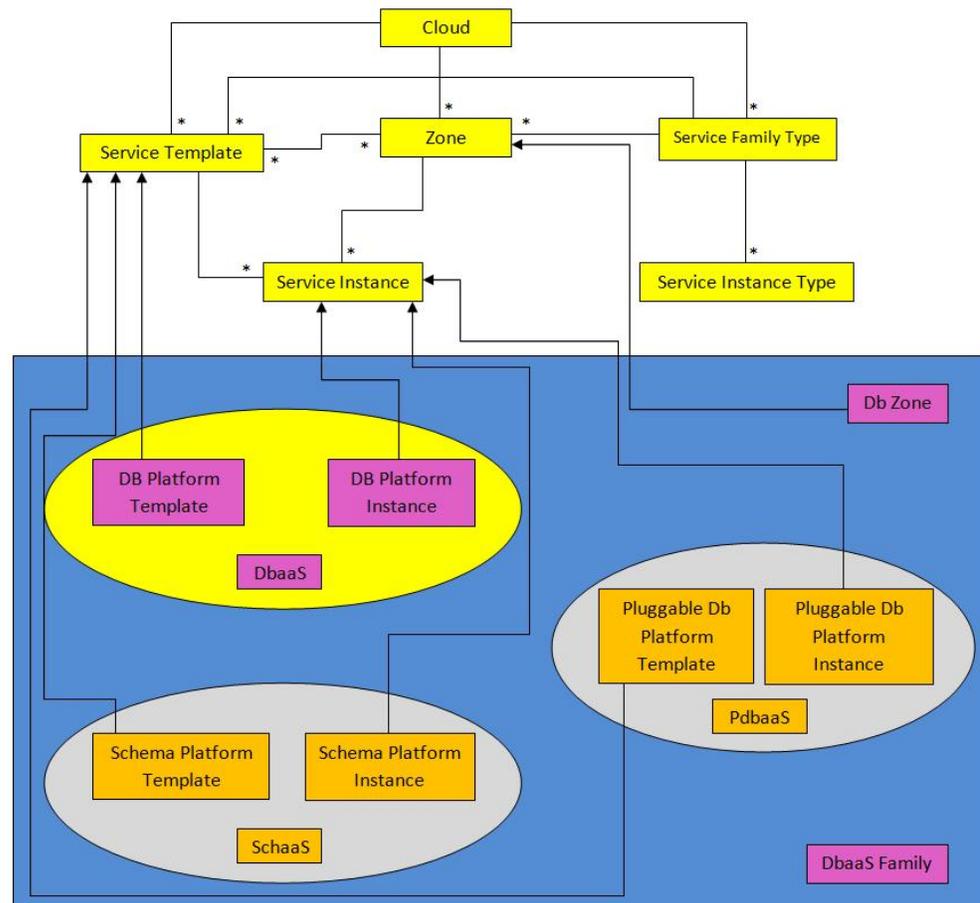
DBaaS REST APIs are only supported by the Oracle Cloud Application plug-in versions:

- 12.1.0.4.0 with patch # 16085618
- 12.1.0.5.0 and higher

56.2.1 Database as a Service Resource Model

Cloud resources are organized by common service entities and specific services (for example, Database as a Service) provide resources by extending these common service entities. [Figure 56-1](#) shows the DBaaS resource model:

Figure 56-1 Database as a Service Resource Model



The following sections describe the resources that are supported by the Database as a Service family type and provide examples of supported operations.

The resource models are:

- [DB Zone](#)
- [DB Platform Template](#)
- [DB Platform Instance](#)

56.2.1.1 DB Zone

DB Zone extends `application/oracle.com.cloud.common.Zone`. This resource represents the view of a PaaS Infrastructure Zone that supports DBaaS resources. DB Zone has the media type `application/oracle.com.cloud.common.DbZone+json`, and the URI format is `/em/cloud/dbaas/zone/<zone id>`.

The following table describes the DB Zone data model.

Table 56-2 DB Zone Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the Zone definition to this user.	1
name	String	Name of the Zone. SHALL be a UNICODE string to support different languages.	1
description	String	Human readable description of the Zone. SHALL be a UNICODE string to support different languages.	0..1
resource_state	ResourceState	The resource state of the resource.	1
service_family_type	String	The name of the service family type that this zone is associated with. It is "dbaas" for this.	1
templates	Collection <ServiceTemplate>	Collection of the service templates that this zone supports and can be deployed into. Currently, DBPlatformTemplate is the only supported type.	1
service_instances	Collection <ServiceInstance>	Collection of the service instances that are created in this zone.	1
media_type	String	The media type of the resource.	1
type	String	The type of the zone which is "self_service_zone" by default.	1
context_id	String	Zone GUID	1
canonicalLink	URI	Can be used to perform cloud interactions like GET and POST.	1
default_db_size_name	String	Selected default database size.	1
db_sizes	List<Object>	List of available database sizes.	1

56.2.1.2 DB Platform Template

The DB Platform Template extends the Service Template resource. This resource represents service templates created for creating databases. The databases may be created using profiles which are created using database templates, rman backups,

and SnapClone. It is permissible to accept the Service Template media type on an instance of DB Platform Template. It is a preconfigured deployable service that realizes a DB Platform Instance resource. DB Platform Template has the media type `application/oracle.com.cloud.common.DbPlatformTemplate+json`, and the URI format is `/em/cloud/dbaas/dbplatformtemplate/<template id>`.

The following table describes the DB Platform Template data model.

Table 56-3 DB Platform Template Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the template.	1
description	String	A brief description given to the template	0..1
created	Timestamp	Date and time, in ISO 8601 format, when the template was created/last modified.	1
zones	Collection <DbZone>	List of all zones on which this service template is published	1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
service_family_type	String	Denotes the type of Service Template. For example, "dbaas".	1
service_instances	Collection <DBPlatformInstance>	All service instances created based on this DBPlatformTemplate.	1
media_type	String	The media type of the service template that this type represents.	1
db_type	String	Type of the Database when provisioned. It can have one of the two values: "oracle_database" and "rac_database".	1
instance_configurable_params	String[]	List of parameters required to provision a DbPlatformInstance from this template. Username, Password, SID and Service name in this case.	1
deployment_params	List<Object>	Description of the parameters which are required while creating a service instance.	1
type	String	The type of the service template which is "dbaas" by default.	1
subtype	String	The sub type of the instance created based on this template. It has a value "db" in this case.	1
node_count		Number of Nodes. Implicit 1 for SI DB and explicit count for the RAC Db types.	0..1
db_version	String	Version of the database which can be created using this template.	0..1
context_id	URI	The unique id of the template.	1

Table 56-3 (Cont.) DB Platform Template Data Model

Field	Type	Description	Occurs
canonicalLink	URI	Can be used to perform cloud interactions like GET and POST.	1
sid_option	String	Option for the ssa user to specify database SID while requesting DB. This field can have either of the following values: <ul style="list-style-type: none"> 'ssauser' - SSA user needs to specify SID 'prefix' - SSA user need not to specify SID 	1
standby_enabled	String	Indicates whether standby is enabled in the template.	1
standbydbs	List<Object>	List of standby database configurations.	1
standby_protection_mode	String	Indicates the protection mode of the standby database.	1
db_sizes	List<Object>	List of available database sizes.	1
default_db_size_name	String	Selected default database size.	1

56.2.1.3 DB Platform Instance

The DB Platform Instance extends the Service Instance resource. It is linked to an Oracle Database Instance or Cluster Database target in Enterprise Manager Cloud Control. DB Platform Instance has the media type `application/oracle.com.cloud.common.DbPlatformInstance+json`, and the URI format is `/em/cloud/dbaas/dbplatforminstance/byrequest/<request id>`.

The following table describes the DB Platform Instance Data Model.

Table 56-4 DB Platform Instance Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the instance. [POST]	1
destination_zone	Zone	The Zone to which the instance is deployed. [POST]	1
media_type	String	Indicates the additional media type that clients can use to perform a GET.	1
available_space	Float	Available space for this database instance.	0..1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1

Table 56-4 (Cont.) DB Platform Instance Data Model

Field	Type	Description	Occurs
based_on	DbPlatform Template	The db platform template on which this instance is published.	1
connect_string	String	Connect String required to establish a connection to this database instance.	0..1
created	String	Time of creation.	1
target_type	String	Indicates the type of the database: "oracle_database" for Single Instance database and "rac_database" for RAC database.	1
status	String	Status of the Database instance.	1
db_version	String	Version of the Database.	0..1
last_backup	Timestamp	Time at which the last backup of this database was taken.	0..1
load	Float	Current average active sessions of this instance.	0..1
master_username	String	Name of the master user of this database.	1
total_sessions	Integer	Total number of sessions for this database	0..1
total_sga^	Float	Total SGA for this database.	0..1
up_time^	Integer	Total number of hours since when this database is up.	1
context_id	String	The request id of this instance.	1
canonicalLink	URI	Can be used to perform cloud interactions like GET and DELETE for this instance.	1
instances	List<Object >	List all the node level details of the database instance (exists only when the type is "rac_database").	0..1
measurable_attributes	List<Object >	List of all the attributes with their units which can be measured.	1
total_memory*^	String	Total memory used by the instance (node).	0..1
active_sessions*	Float	Current average active sessions for this instance (node).	0..1
cpu_utilization*^	Percentage	CPU utilization of this instance (node).	0..1
db_time*^	Float	Database time of this instance (node).	0..1
cpu_count*^	Integer	Number of CPU cores on the host on which the instance (node) is deployed.	0..1
allocated_sessions*	Integer	Number of sessions currently allocated.	0..1
name*	String	Name of the node (exists as a field in the list of "instances" field).	0..1
standby_databases	List<Object >	List of standby databases configured for this instance.	1
standby_database_configured	String	Indicates if standby database is configured for this service instance.	1

 **Note:**

* In case of database instance type "oracle_database", the above fields exist as it is in the DBPlatformInstance Data model. In case of type "rac_database", these fields exist as part of "instances" field and occur for each node of the cluster database.

^ - These attributes can be measured in units and so are represented as Json Objects (like a map) having "name" (as the name of the attribute), "value" (as the value of the attribute) and "units" (as the unit of the attribute). Each such field is a list element of "measurable_attributes" field (which exists at instance level for oracle_database and at RAC node level in case of rac_database).

56.2.2 Supported Operations for Database as a Service Resources

The following table lists all the operations that are supported on the various Database as a Service resources.

Table 56-5 Supported Operations for DBaaS Resources

Resource	GET	POST	PUT	DELETE
Cloud	Yes	No	No	No
Service Family Type	Yes	No	No	No
DB Zone	Yes	Yes	No	No
DB Platform Template [Service Template]	Yes	Yes	No	No
DB Platform Instance [Service Instance]	Yes	Yes	No	Yes

56.2.3 Database as a Service REST API Examples

The following sections provide examples of interaction with Enterprise Manager Cloud Control with Cloud Application plug-in 12.1.0.4 and higher. The following examples are covered:

- [Viewing Details of All the Cloud Resources](#)
- [Filtering Output for Specific Resource Attributes](#)
- [Viewing Details of the Service Family Type Resource](#)
- [Viewing Details of the Service Instance Type Resource](#)
- [Viewing Details of a Service Requests Resource](#)
- [Viewing Details of the DB Zone](#)
- [Viewing Details of the DB Platform Template Resource](#)
- [Creating a Database Instance](#)
 - [Creating a Database by Passing a Request on the DB Zone](#)

- Creating a Database by Passing a Request on the DB Platform Template
- Viewing the Database Creation Details
- Updating a Database
- Deleting a Database Instance
- Lifecycle operations on a Database Instance
 - Shutting down a Database
 - Starting up a Database
 - Scheduling a Backup of the Database
 - Restoring a Database from a Backup
 - Adding a Standby Database
 - Removing a Standby Database
 - Refreshing a Database
- Lifecycle operations on a Snap clone Database Instance
 - Creating a Snapshot
 - Restoring from a Snapshot List
 - Deleting a Snapshot

56.2.3.1 Viewing Details of All the Cloud Resources

Use the top level `/em/cloud` to introspect the Cloud resource. The operation explained herein lists all the resources accessible to the user.

Table 56-6 GET Request Configuration for Viewing Details of All the Cloud Resources

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the Cloud resource is shown below.

```
{
  "uri": "/em/cloud",
  "name": "Oracle Cloud by Enterprise Manager",
  "description": "This represents the Cloud resource of the Oracle Enterprise
Manager Cloud Management solution",
  "resource_state": {
    "state": "READY"
  },
  "media_type": "application/oracle.com.cloud.common.Cloud+json",
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud",
  "zones": {
    "media_type": "application/oracle.com.cloud.common.Zone+json",
    "total": "4",
```

```

"elements": [
  {
    "uri": "/em/cloud/jaas/zone/9708491651C090AB4B847C2F3CD177DE",
    "name": "SLC00ECXY_ZONE",
    "media_type": "application/oracle.com.cloud.jaas.Zone+json",
    "service_family_type": "jaas",
    "type": "jaas",
    "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/jaas/zone/9708491651C090AB4B847C2F3CD177DE"
  },
  {
    "uri": "/em/cloud/jaas/zone/B329742A13BE0D63703BF0C0E4F98FB9",
    "name": "SLC01NBV_ZONE",
    "media_type": "application/oracle.com.cloud.jaas.Zone+json",
    "service_family_type": "jaas",
    "type": "jaas",
    "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/jaas/zone/B329742A13BE0D63703BF0C0E4F98FB9"
  },
  {
    "uri": "/em/cloud/dbaas/zone/9708491651C090AB4B847C2F3CD177DE",
    "name": "SLC00ECXY_ZONE",
    "description": "",
    "media_type": "application/oracle.com.cloud.common.DbZone+json",
    "service_family_type": "dbaas",
    "type": "self_service_zone",
    "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/zone/9708491651C090AB4B847C2F3CD177DE"
  },
  {
    "uri": "/em/cloud/dbaas/zone/B329742A13BE0D63703BF0C0E4F98FB9",
    "name": "SLC01NBV_ZONE",
    "description": "SLC01NBV_ZONE",
    "media_type": "application/oracle.com.cloud.common.DbZone+json",
    "service_family_type": "dbaas",
    "type": "self_service_zone",
    "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/zone/B329742A13BE0D63703BF0C0E4F98FB9"
  }
]
},
"service_templates": {
  "media_type": "application/oracle.com.cloud.common.ServiceTemplate+json",
  "total": "2",
  "elements": [
    {
      "uri": "/em/cloud/dbaas/dbplatformtemplate/DEC94FE6D49DAA21E040F20A60511D14",
      "name": "SLC01NBV_SNAPCLONE_ST",
      "description": "",
      "media_type": "application/oracle.com.cloud.common.DbPlatformTemplate+json",
      "service_family_type": "dbaas",
      "type": "dbaas",
      "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/dbplatformtemplate/DEC94FE6D49DAA21E040F20A60511D14"
    },
    {
      "uri": "/em/cloud/dbaas/dbplatformtemplate/DECCA0E18357F28DE040F20A60514D49",
      "name": "SLC00ECXY_DBCA_ST",
      "description": "",
      "media_type": "application/oracle.com.cloud.common.DbPlatformTemplate+json",
      "service_family_type": "dbaas",
    }
  ]
}

```

```

        "type": "dbaas",
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/dbplatformtemplate/DECCA0E18357F28DE040F20A60514D49"
    }
}
},
"service_family_types": {
    "media_type": "application/oracle.com.cloud.common.ServiceFamilyType+json",
    "total": "4",
    "elements": [
        {
            "uri": "/em/cloud/service_family_type/jaas",
            "name": "jaas",
            "media_type": "application/oracle.com.cloud.common.ServiceFamilyType+json",
            "type": "jaas",
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/service_family_type/jaas"
        },
        {
            "uri": "/em/cloud/service_family_type/dbaas",
            "name": "dbaas",
            "media_type": "application/oracle.com.cloud.common.ServiceFamilyType+json",
            "type": "dbaas",
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/service_family_type/dbaas"
        },
        {
            "uri": "/em/cloud/service_family_type/opc",
            "name": "opc",
            "media_type": "application/oracle.com.cloud.common.ServiceFamilyType+json",
            "type": "opc",
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/service_family_type/opc"
        },
        {
            "uri": "/em/cloud/service_family_type/iaas",
            "name": "iaas",
            "media_type": "application/oracle.com.cloud.iaas.IaasServiceFamilyType+json",
            "type": "iaas",
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/service_family_type/iaas"
        }
    ]
},
"service_requests": {
    "media_type": "application/oracle.com.cloud.common.Request+json",
    "total": "1",
    "elements": [
        {
            "uri": "/em/cloud/request/DEC87CE5B1DA175DE040F20A605150F8",
            "name": "SLC01NBV_DBCA_ST - Mon Jun 10 00:20:08 PDT 2013_CREATE_20_25",
            "media_type": "application/oracle.com.cloud.common.Request+json",
            "status": "SUCCESS",
            "lifecycle_type": "CREATE",
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/request/DEC87CE5B1DA175DE040F20A605150F8"
        }
    ]
}
}
}

```

 **Note:**

Even though the Accept type was not specified, the Web service still unambiguously returns the cloud resource as the "/em/cloud" address uniquely identifies the cloud as the default resource to be returned.

56.2.3.2 Filtering Output for Specific Resource Attributes

The following description indicates the interaction with the cloud resource for identifying specific attributes (service family type in this case):

Table 56-7 GET Request Configuration for Filtering Specific Resource Attributes

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud?service_family_types,name
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "Oracle Cloud by Enterprise Manager",
  "service_family_types": {
    "media_type": "application/oracle.com.cloud.common.ServiceFamilyType+json",
    "total": "4",
    "elements": [
      {
        "uri": "/em/cloud/service_family_type/jaas",
        "name": "jaas",
        "media_type": "application/oracle.com.cloud.common.ServiceFamilyType+json",
        "type": "jaas",
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/service_family_type/jaas"
      },
      {
        "uri": "/em/cloud/service_family_type/dbaas",
        "name": "dbaas",
        "media_type": "application/oracle.com.cloud.common.ServiceFamilyType+json",
        "type": "dbaas",
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/service_family_type/dbaas"
      },
      {
        "uri": "/em/cloud/service_family_type/opc",
        "name": "opc",
        "media_type": "application/oracle.com.cloud.common.ServiceFamilyType+json",
        "type": "opc",
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/service_family_type/opc"
      }
    ]
  }
}
```

```

    {
      "uri": "/em/cloud/service_family_type/iaas",
      "name": "iaas",
      "media_type": "application/oracle.com.cloud.iaas.IaaSServiceFamilyType+json",
      "type": "iaas",
      "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/service_family_type/iaas"
    }
  ]
}

```

This feature, where only selective attributes are gathered and returned to the client, is supported on all the common resources.

56.2.3.3 Viewing Details of the Service Family Type Resource

The GET operation on the Service Family Type resource lists all the DBaaS resources accessible to a user. The configuration for the Service Family Type resource is as follows:

Table 56-8 GET Request Configuration for Viewing Details of the Service Family Type Resource

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/service_family_types/dbaas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```

X-specification-version: 10001
Content-Type: application/oracle.com.cloud.common.ServiceFamilyType+json;
charset=ISO-8859-1
{
  "uri": "/em/cloud/service_family_type/dbaas",
  "name": "dbaas",
  "resource_state": {
    "state": "READY"
  },
  "media_type": "application/oracle.com.cloud.common.ServiceFamilyType+json",
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
service_family_type/dbaas",
  "type": "dbaas",
  "service_templates": {
    "media_type": "application/oracle.com.cloud.common.ServiceTemplate+json",
    "total": "2",
    "elements": [
      {
        "uri": "/em/cloud/dbaas/dbplatformtemplate/DEC94FE6D49DAA21E040F20A60511D14",
        "name": "SLC01NBV_SNAPCLONE_ST",
        "description": "",
        "media_type": "application/oracle.com.cloud.common.DbPlatformTemplate+json",
        "service_family_type": "dbaas",

```

```
        "type": "dbaas",
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/dbplatformtemplate/DEC94FE6D49DAA21E040F20A60511D14"
    },
    {
        "uri": "/em/cloud/dbaas/dbplatformtemplate/DECCA0E18357F28DE040F20A60514D49",
        "name": "SLC00ECXY_DBCA_ST",
        "description": "",
        "media_type": "application/oracle.com.cloud.common.DbPlatformTemplate+json",
        "service_family_type": "dbaas",
        "type": "dbaas",
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/dbplatformtemplate/DECCA0E18357F28DE040F20A60514D49"
    }
]
},
"zones": {
    "media_type": "application/oracle.com.cloud.common.Zone+json",
    "total": "2",
    "elements": [
        {
            "uri": "/em/cloud/dbaas/zone/9708491651C090AB4B847C2F3CD177DE",
            "name": "SLC00ECXY_ZONE",
            "description": "",
            "media_type": "application/oracle.com.cloud.common.DbZone+json",
            "service_family_type": "dbaas",
            "type": "self_service_zone",
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/zone/9708491651C090AB4B847C2F3CD177DE"
        },
        {
            "uri": "/em/cloud/dbaas/zone/B329742A13BE0D63703BF0C0E4F98FB9",
            "name": "SLC01NBV_ZONE",
            "description": "SLC01NBV_ZONE",
            "media_type": "application/oracle.com.cloud.common.DbZone+json",
            "service_family_type": "dbaas",
            "type": "self_service_zone",
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/zone/B329742A13BE0D63703BF0C0E4F98FB9"
        }
    ]
},
"instance_types": {
    "media_type": "application/oracle.com.cloud.common.InstanceType+json",
    "total": "1",
    "elements": [
        {
            "uri": "/em/cloud/instance_type/dbPlatformInstance%40dbaas",
            "name": "dbPlatformInstance",
            "description": "Db Instance",
            "media_type": "application/oracle.com.cloud.common.InstanceType+json",
            "instance_media_type": "application/
oracle.com.cloud.common.DbPlatformInstance+json",
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/instance_type/dbPlatformInstance%40dbaas"
        }
    ]
},
"service_requests": {
    "media_type": "application/oracle.com.cloud.common.Request+json",
    "total": "1",
```

```

    "elements": [
      {
        "uri": "/em/cloud/request/DEC87CE5B1DA175DE040F20A605150F8",
        "name": "SLC01NBV_DBCA_ST - Mon Jun 10 00:20:08 PDT 2013_CREATE_20_25",
        "media_type": "application/oracle.com.cloud.common.Request+json",
        "status": "SUCCESS",
        "lifecycle_type": "CREATE",
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/request/DEC87CE5B1DA175DE040F20A605150F8"
      }
    ]
  }
}

```

The media type `application/oracle.com.cloud.common.ServiceFamilyType+json` is returned automatically as the most detailed resource.

56.2.3.4 Viewing Details of the Service Instance Type Resource

A GET request on a Service Instance Type resource list all the supported services that are provided by a particular service family type.

Table 56-9 GET Request Configuration for Viewing Details of the Service Instance Type Resource

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/instance_type/dbPlatformInstance%40dbaas</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/instance_type/dbPlatformInstance%40dbaas" ,
  "name" : "dbPlatformInstance" ,
  "description" : "Db Instance" ,
  "media_type" : "application/oracle.com.cloud.common.InstanceType+json" ,
  "instance_media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" , ,
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/instance_type/dbPlatformInstance%40dbaas"
}

```

56.2.3.5 Viewing Details of a Service Requests Resource

A GET request on a Service Requests resource lists the details of a service request.

Table 56-10 GET Request Configuration for Viewing Details of a Service Request Resource

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/<request_id>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "id": "21",
  "name": "Request a RAC One Database_CREATE_43_47#21",
  "status": "SUCCESS",
  "serviceType": "DB",
  "serviceFamily": "DBAAS",
  "actionName": "Create Database",
  "startDate": "2015-07-21T17:13:47Z",
  "createdOn": "2015-07-21T17:13:47Z",
  "createdBy": "SYSMAN",
  "owner": "SYSMAN",
  "canonicalLink":
  {
    "href": "https://blr.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/21"
  },
  "description": "Create Database for \"Request a RAC One Database\".",
  "executionLogs": "https://blr.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/21/logs"
}
```

56.2.3.6 Viewing Details of the DB Zone

A GET request on a zone lists all the resources available in the zone. The DB zone resource configuration is as follows:

Table 56-11 GET Request Configuration for Viewing Details of the DB Zone

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/zone/82CF1C28FA20A183C99D138FF8065F19
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/zone/B49F86387B81DAED9A3D672D722CF29D" ,
```

```

"name" : "RAC SSAZONE" ,
"description" : "SSA Zone with RAC Nodes" ,
"resource_state" : {
  "state" : "READY"
} ,
"context_id" : "B49F86387B81DAED9A3D672D722CF29D" ,
"media_type" : "application/oracle.com.cloud.common.DbZone+json" ,
"service_family_type" : "dbaas" ,
"canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/zone/B49F86387B81DAED9A3D672D722CF29D" ,
"type" : "self_service_zone" ,
"service_instances" : {
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "total" : "1" ,
  "elements" :
  [
    {
      "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/1" ,
      "name" : "db000000.mycompany.com" ,
      "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance
+json" ,
      "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/dbaas/dbplatforminstance/byrequest/1" ,
      "type" : "rac_database"
    }
  ]
} ,
"templates" : {
  "media_type" : "application/oracle.com.cloud.common.DbPlatformTemplate+json" ,
  "total" : "1" ,
  "elements" :
  [
    {
      "uri" : "/em/cloud/dbaas/dbplatformtemplate/
DE039DAC33FFEA6FE040E80A687848A6" ,
      "name" : "12101_RACFileSystem_ServiceTemplate" ,
      "description" : "12101 RAC FileSystem Service Template" ,
      "media_type" : "application/oracle.com.cloud.common.DbPlatformTemplate
+json" ,
      "service_family_type" : "dbaas" ,
      "type" : "dbaas" ,
      "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/dbaas/dbplatformtemplate/DE039DAC33FFEA6FE040E80A687848A6"
    }
  ]
}
}

```

56.2.3.7 Viewing Details of the DB Platform Template Resource

A GET request on the DB Platform Template resource provides details of a DB Service Template.

As shown in previous examples, the elements in the collection shown all have `media_type` as an attribute to clearly indicate what its resource type is.

Table 56-12 GET Request Configuration for Viewing Details of the DB Platform Template Resource

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatformtemplate/CC3BBB665A6BC6FFE040F00AEF252456
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/dbplatformtemplate/F985CAE9AB916591E043A4BBF00A235D" ,
  "name" : "Platinum - Star Hotel Application on 2-node RAC Database with Multiple Standbys" ,
  "description" : "Provisions Star Hotel Application on 2-node 11.2.0.4 RAC Database with RAC & SI Standbys" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformTemplate+json" ,
  "service_family_type" : "dbaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/dbaas/dbplatformtemplate/F985CAE9AB916591E043A4BBF00A235D" ,
  "type" : "dbaas" ,
  "created" : "2014-05-16T13:57:22+0000" ,
  "zones" : {
    "media_type" : "application/oracle.com.cloud.common.DbZone+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/dbaas/zone/F985A268D9175B9FE043A4BBF00A3573" ,
        "name" : "Salt Lake City DC" ,
        "description" : "" ,
        "context_id" : "F985A268D9175B9FE043A4BBF00A3573" ,
        "media_type" : "application/oracle.com.cloud.common.DbZone+json" ,
        "service_family_type" : "dbaas" ,
        "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/dbaas/zone/F985A268D9175B9FE043A4BBF00A3573" ,
        "type" : "self_service_zone"
        "clusters_for_placement" :
        [
          {
            "clusterName" : "cluster1" ,
            "hostsInCluster" :
            [
              "abc.mycompany.com" ,
              "def.mycompany.com" ,
              "ghi.mycompany.com"
            ]
          } ,
          {
            "clusterName" : "cluster2" ,
            "hostsInCluster" :
            [
```

```

        "xyz.mycompany.com" ,
        "pqr.mycompany.com"
    ]
}
]
}
]
},
"service_instances" : {
    "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
    "total" : "1" ,
    "elements" :
    [
        {
            "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/1" ,
            "name" : "xxyy.example.com" ,
            "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance
+json" ,
            "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/dbaas/dbplatforminstance/byrequest/1" ,
            "target_type" : "rac_database"
        }
    ]
} ,
"deployment_params" :
[
    {
        "name" : "username" ,
        "description" : "Master account Username" ,
        "type" : "STRING" ,
        "require" : "true" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "password" ,
        "description" : "Password for the Master account" ,
        "type" : "STRING" ,
        "require" : "true" ,
        "sensitive" : "true"
    } ,
    {
        "name" : "database_sid" ,
        "description" : "Database SID. Required only if sid_option is ssauser." ,
        "type" : "STRING" ,
        "require" : "true" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "service_name" ,
        "description" : "Database Service Name" ,
        "type" : "STRING" ,
        "require" : "true" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "database_host_name" ,
        "description" : "Name of the host(s) to be chosen for creating the database
instance. For RAC database instance, multiple host names can be provided as comma
separated values." ,
        "type" : "STRING" ,
        "require" : "false" ,

```

```

        "sensitive" : "false"
    } ,
    {
        "name" : "standbydbs" ,
        "description" : "List of the standby databases. Required only if standby
database is enabled and required" ,
        "type" : "LIST" ,
        "defaultValue" :
        [
            {
                "name" : "standbydb_name" ,
                "description" : "Name of the standby database, specified in the
standbydbs list" ,
                "type" : "STRING" ,
                "require" : "true" ,
                "sensitive" : "false"
            } ,
            {
                "name" : "standbydb_sid" ,
                "description" : "SID of the standby database" ,
                "type" : "STRING" ,
                "require" : "true" ,
                "sensitive" : "false"
            }
        ] ,
        "require" : "false" ,
        "sensitive" : "false"
    }
}
{
    "name" : "db_size_name" ,
    "description" : "DB Size name to be associated with the request" ,
    "type" : "STRING" ,
    "require" : "false" ,
    "sensitive" : "false"
} ,
] ,
"subtype" : "db" ,
"db_type" : "rac_database" ,
"node_count" : "2" ,
"sid_option" : "ssauser" ,
"standbydbs" :
[
    {
        "standbydb_name" : "Near DR" ,
        "standbydb_type" : "rac_database"
    } ,
    {
        "standbydb_name" : "Far DR" ,
        "standbydb_type" : "oracle_database"
    }
] ,
"standby_enabled" : "true" ,
"placement_option" : "SELECT_ORACLE_HOME_FROM_REQUEST" ,
"standby_protection_mode" : "MAXIMIZE AVAILABILITY" ,
"instance_configurable_params" : {
    "username" : "" ,
    "password" : "" ,
    "database_sid" : "" ,
    "service_name" : ""
}
}

```

```
"db_sizes" :
  [
    {
      "name" : "Large" ,
      "description" : "Large size database" ,
      "attributes" :
      [
        {
          "name" : "CPU" ,
          "value" : "0" ,
          "units" : "cores"
        } ,
        {
          "name" : "Memory" ,
          "value" : "8" ,
          "units" : "GB"
        } ,
        {
          "name" : "Storage" ,
          "value" : "500" ,
          "units" : "GB"
        }
      ]
    } ,
    {
      "name" : "Medium" ,
      "description" : "Medium size database" ,
      "attributes" :
      [
        {
          "name" : "CPU" ,
          "value" : "4" ,
          "units" : "cores"
        } ,
        {
          "name" : "Memory" ,
          "value" : "6" ,
          "units" : "GB"
        } ,
        {
          "name" : "Storage" ,
          "value" : "100" ,
          "units" : "GB"
        }
      ]
    } ,
    {
      "name" : "Small" ,
      "description" : "Small size database" ,
      "attributes" :
      [
        {
          "name" : "CPU" ,
          "value" : "2" ,
          "units" : "cores"
        } ,
        {
          "name" : "Memory" ,
          "value" : "4" ,
          "units" : "GB"
        }
      ]
    }
  ]
```

```

    {
      "name" : "Storage" ,
      "value" : "50" ,
      "units" : "GB"
    }
  ]
}
] ,
"default_db_size_name" : "Small" ,
}

```

**Note:**

In the sample output shown above, the GET on the service template configured for a single instance database shows `hosts_for_placement` parameter instead of `clusters_for_placement`.

56.2.3.8 Creating a Database Instance

This section describes how to create a service instance using Cloud resources. As DB is a service instance in the service family type `dbaas`, you need to identify the zone of the same family type to create the database. There are two approaches to creating a database:

1. By issuing a POST request on the DB Zone on which the database is to reside.
2. By issuing a POST request on the DB Platform Template of which the database is to be based on.

Note the attributes in the submitted body for the POST. The pattern is the same for other service instance creations. Since the intention is clear, the `zone` attribute is not required while performing POST on the DB Zone. Similarly, the `based_on` attribute is not needed when performing POST on the DB Platform Template.

The two approaches to create a database are described in the following sections:

- [Creating a Database by Passing a Request on the DB Zone](#)
- [Creating a Database by Passing a Request on the DB Platform Template](#)

56.2.3.8.1 Creating a Database by Passing a Request on the DB Zone

The configuration for performing POST to the Db Zone is as follows:

Table 56-13 POST Request Configuration for Creating a Database by Passing a Request on the DB Zone

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/zone/82CF1C28FA20A183C99D138FF8065F19</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.DbPlatformInstance+json Accept: application/oracle.com.cloud.common.DbPlatformInstance+json

Table 56-13 (Cont.) POST Request Configuration for Creating a Database by Passing a Request on the DB Zone

Feature	Description
Body	<pre> { "based_on": "/em/cloud/dbaas/dbplatformtemplate/4107", "name": "SI_12C_WEB8MSWIN1252_AL16UTF16_8192_LRG_001", "description": "", "start_date": "2013-08-02T14:20:00ZAsia/Calcutta", "end_date": "2013-08-02T17:20:00ZAsia/Calcutta", "standby_required" : "true", "params": { "username": "maoracle", "password": "maoracle" , "database_sid" : "dngdb05h" , "service_name" : "dngdb05h_svc", "common_domain_name" : "us.oracle.com", "standbydbs": [{ "standbydb_name": "standby", "standbydb_sid": "dngdb06h" "standbydb_domain_name": "us.oracle.com" }] } } </pre>
Request method	POST

 **Note:**

In the body above `start_date` indicates the time, time zone and date when the request is scheduled to create the database and `end_date` indicates when the database should be deleted. These parameters are optional.

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/21" ,
  "name" : "Test_create_intance" ,
  "resource_state" : {
    "state" : "INITIATED"
    "messages" :
    [
      {
        "date" : "2014-11-25T09:52:49+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/22",
        "text" : "Delete Request ID is : 22"
      }
    ]
  }
} ,

```

```

    "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
    "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/22" ,
    "status" : "SCHEDULED"
}

```

56.2.3.8.2 Creating a Database by Passing a Request on the DB Platform Template

The configuration for performing POST to the DbPlatformTemplate is as follows:

Table 56-14 POST Request Configuration for Creating a Database by Passing a Request on the DB Platform Template

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatformtemplate/CC3BBB665A6BC6FFE040F00AEF252456
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.DbPlatformInstance+json Accept: application/oracle.com.cloud.common.DbPlatformInstance+json
Body	<pre> { "zone": "/em/cloud/dbaas/zone/ 82CF1C28FA20A183C99D138FF8065F19", "name": "<Request name>", "description": "<Request Description>", "standby_required" : "true", "params": { "username": "Master Account username for the DB", "password": "Password for the Master Account on the DB", "database_sid" : "Database SID" , "service_name" : "Name of the additional service to be created", "database_host_name": "abc.mycompany.com,def.mycompany.com" " db_size_name": "Medium", "standbydbs": [{ "standbydb_name": "STBY2", "standbydb_sid": "stio62" }] "database_profile_version": "RMAN_06_27_2014_14_18_PM" } } </pre>
Request method	POST

 **Note:**

- database_host_name parameter is mandatory if the service template is configured for custom placement.
- The value for the database_host_name parameter should be a host present in the same zone.
- For a SI database provide only one host name. For a RAC database the number of hosts provided should be equal to the number of nodes in the node_count, within the same zone that is specified, and in a single cluster.

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/22" ,
  "name" : "Test_create_intance" ,
  "resource_state" : {
    "state" : "INITIATED"
  } ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/23" ,
  "status" : "SCHEDULED"
}
```

The response shown above is the same as the previous version. If the zone is not specified, then it is not possible for the web service to determine where the DB should be deployed.

56.2.3.9 Viewing the Database Creation Details

After the POST is performed for the database creation, you can perform the GET operation on the resource identified by the return URI to keep track of the status.

Table 56-15 GET Request Configuration for Viewing the Database Creation Details

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/ oracle.com.cloud.common.DbPlatformInstance+json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "/em/cloud/dbaas/dbplatforminstance/byrequest/22",
```

```

"name": "Test_create_intance_CREATE_55_42",
"description": "Create Database for test.",
"resource_state":
{
  "state": "CREATING"
},
"context_id": "22",
"media_type": "application/oracle.com.cloud.common.DbPlatformInstance+json",
"status": "IN_PROGRESS",
"created": "2013-06-07 23:09:04" ,
"canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/dbplatforminstance/byrequest/22"
}

```

Note that the `resource_state` attribute shows `CREATING` state to indicate that the database is being created. If the GET operation is performed after the database is created, the response displays the database resource in `READY` state, as shown below:

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/22" ,
  "name" : "db000000.mycompany.com" ,
  "resource_state" : {
    "state" : "READY"
    "messages" :
    [
      {
        "date" : "2014-11-25T09:52:49+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/22",
        "text" : "Delete Request ID is : 22"
      }
    ]
  } ,
  "context_id" : "22" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/22" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-03 02:23:04" ,
  "based_on" : "/em/cloud/dbaas/dbplatforminstance/
E300FBE134EAB347E040F10A58535F16" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)
(HOST=cluster_name)(PORT=1521)))
(CONNECT_DATA=(SERVICE_NAME=db000000.mycompany.com)))" ,
  "target_type" : "rac_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/B49F86387B81DAED9A3D672D722CF29D" ,
  "total_sessions" : "165" ,
  "last_backup" : "null" ,
  "master_username" : "InstanceUser1" ,
  "db_version" : "12.1.0.1.0" ,
  "measurable_attributes" :
  [
    {
      "name" : "up_time" ,
      "value" : "0" ,
      "units" : "Hours"
    } ,
    {
      "name" : "total_sga" ,
      "value" : "4778.555" ,
      "units" : "MB"
    }
  ]
}

```

```
{
  "name" : "available_space" ,
  "value" : "699.813" ,
  "units" : "MB"
}
] ,
"instances" :
[
  {
    "name" : "db000000.mycompany.com_db00000001" ,
    "average_active_sessions" : ".031" ,
    "allocated_sessions" : "70" ,
    "measurable_attributes" :
    [
      {
        "name" : "cpu_utilization" ,
        "value" : "0.199" ,
        "units" : "%"
      } ,
      {
        "name" : "total_memory" ,
        "value" : "2723.867" ,
        "units" : "MB"
      } ,
      {
        "name" : "db_time" ,
        "value" : "3.103" ,
        "units" : "CentiSeconds Per Second"
      } ,
      {
        "name" : "cpu_count" ,
        "value" : "6" ,
        "units" : "Cores"
      }
    ]
  } ,
  {
    "name" : "db000000.mycompany.com_db00000002" ,
    "average_active_sessions" : ".007" ,
    "allocated_sessions" : "69" ,
    "measurable_attributes" :
    [
      {
        "name" : "cpu_utilization" ,
        "value" : "0.049" ,
        "units" : "%"
      } ,
      {
        "name" : "total_memory" ,
        "value" : "2705.378" ,
        "units" : "MB"
      } ,
      {
        "name" : "db_time" ,
        "value" : ".663" ,
        "units" : "CentiSeconds Per Second"
      } ,
      {
        "name" : "cpu_count" ,
        "value" : "6" ,
        "units" : "Cores"
      }
    ]
  }
]
```

```

    }
  ],
  "standby_databases" :
  [
    {
      "Target Name" : "xyxy.example.com" ,
      "Target Type" : "oracle_database" ,
      "Open Mode" : "MOUNTED"
    } ,
    {
      "Target Name" : "xxxy.example.com" ,
      "Target Type" : "rac_database" ,
      "Open Mode" : "READ ONLY"
    }
  ] ,
  "standby_database_configured" : "true"
]
}

```

The output in case of a single instance database (type:oracle_database) is as below:

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/81" ,
  "name" : "sidb0001.host1.mycompany.com" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "81" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/81" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-05 18:06:52" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E33736E8238CE06BE040F20A54666216" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=
host1.mycompany.com)(PORT=1521)))(CONNECT_DATA=(SID=sidb0001)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/E33720BF45C45E24E040F20A54666214" ,
  "total_sessions" : "43" ,
  "last_backup" : "null" ,
  "master_username" : "InstanceUser1" ,
  "db_version" : "11.2.0.1.0" ,
  "average_active_sessions" : ".118" ,
  "allocated_sessions" : "42" ,
  "measurable_attributes" :
  [
    {
      "name" : "up_time" ,
      "value" : "0" ,
      "units" : "Hours"
    } ,
    {
      "name" : "total_sga" ,
      "value" : "398.203" ,
      "units" : "MB"
    } ,
    {
      "name" : "available_space" ,
      "value" : "982.063" ,

```

```

        "units" : "MB"
      } ,
      {
        "name" : "cpu_utilization" ,
        "value" : "11.206" ,
        "units" : "%"
      } ,
      {
        "name" : "total_memory" ,
        "value" : "533.485" ,
        "units" : "MB"
      } ,
      {
        "name" : "db_time" ,
        "value" : "11.822" ,
        "units" : "CentiSeconds Per Second"
      } ,
      {
        "name" : "cpu_count" ,
        "value" : "1" ,
        "units" : "Cores"
      }
    ] ,
    "standby_databases" :
    [
      {
        "Target Name" : "xyxy.example.com" ,
        "Target Type" : "oracle_database" ,
        "Open Mode" : "MOUNTED"
      }
    ] ,
    "standby_database_configured" : "true"
  }
}

```

56.2.3.10 Updating a Database

A database which is associated to an older version of the image associated to the software pool, can be updated to the latest version (latest version of the Oracle home). To do so, execute the POST REST API shown below.

Note:

The database can be updated only to the latest version.

Table 56-16 POST Request Configuration for Updating a Database

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/21</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance+jsonAccept: application/oracle.com.cloud.common.DbPlatformInstance+json

Table 56-16 (Cont.) POST Request Configuration for Updating a Database

Feature	Description
Body	<pre>{ "operation" : "UPDATE_DATABASE", }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "uri": "/em/cloud/dbaas/dbplatforminstance/byrequest/341",
  "name": "rac1.example.com",
  "resource_state": {
    "state": "INITIATED",
    "messages": [
      {
        "uri": "/em/cloud/dbaas/dbplatforminstance/byrequest/381",
        "text": "Successfully submitted ADD_STANDBY operation on service instance.
Request id - 381.",
        "date": "2015-04-23T09:51:59+0000"
      }
    ]
  },
  "context_id": "341",
  "media_type": "application/oracle.com.cloud.common.DbPlatformInstance+json",
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/341",
  "status": "RUNNING",
  "created": "2015-04-23 12:40:20.0",
  "based_on": "/em/cloud/dbaas/dbplatformtemplate/144D175E0DC07A7BE0535978B10AB9F1",
  "connect_string": "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)
(HOST=slc00eczed-r)(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=.us.example.com)))",
  "target_type": "rac_database",
  "destination_zone": "/em/cloud/dbaas/zone/715C91005BF1195AA6BFBC70654415E7",
  "total_sessions": "null",
  "last_backup": "null",
  "master_username": "ssouser1",
  "db_version": "null",
  "measurable_attributes": [
    {
      "name": "up_time",
      "value": "null",
      "units": "Hours"
    },
    {
      "name": "total_sga",
      "value": "null",
      "units": "MB"
    },
    {
      "name": "available_space",
      "value": "null",
      "units": "MB"
    }
  ],
  "instances": [
```

```

{
  "name": "rac1.example.com_rac1nd2_1",
  "average_active_sessions": "null",
  "allocated_sessions": "null",
  "measurable_attributes": [
    {
      "name": "cpu_utilization",
      "value": "null",
      "units": "%"
    },
    {
      "name": "total_memory",
      "value": "null",
      "units": "MB"
    },
    {
      "name": "db_time",
      "value": "null",
      "units": "CentiSeconds Per Second"
    },
    {
      "name": "cpu_count",
      "value": "null",
      "units": "Cores"
    }
  ]
}
],
"standby_databases": [],
"standby_database_configured": "false"
}

```

56.2.3.11 Deleting a Database Instance

The DELETE operation on the URI of the resource can be run to delete a DB Service Instance. The configuration values for the DELETE operation are:

Table 56-17 DELETE Request Configuration for Deleting a Database Instance

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/ oracle.com.cloud.common.DbPlatformInstance+json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/22" ,
  "name" : "db000000.mycompany.com" ,
  "resource_state" : {
    "state" : "DESTROYING" ,
    "messages" :
    [

```

```

    {
      "text" : "Submit 'DELETE' operation on 'application/
oracle.com.cloud.common.DbPlatformInstance+json' 'db000000.mycompany.com'. The
process has job id '41' " ,
      "date" : "2013-06-07T23:16:20+0000"
    }
  ]
},
"context_id" : "22" ,
"media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
"canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/22" ,
"type" : "rac_database"
}

```

After a few minutes, the GET operation on the database URI will result in the following interaction:

Table 56-18 GET Request Configuration for Viewing the Database Creation Details

Feature	Description
URI	/em/cloud/dbaas/dbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

The web service responds with the following details:

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/23" ,
  "name" : "sidb0001.host1.mycompany.com" ,
  "resource_state" : {
    "state" : "DESTROYING"
  } ,
  "context_id" : "23" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/23" ,
  "status" : "RUNNING" ,
  "created" : "2013-06-09 07:56:57" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
DEB2BDE2F773E356E040E50AD2E56BE9" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)
(HOST=host1.mycompany.com)(PORT=1521)))(CONNECT_DATA=(SID=sidb0001)))" ,
  "type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/DEB2E2920C20D2E1E040E50AD2E56BEF" ,
  "up_time" : "0" ,
  "load" : "0.156456056384199" ,
  "total_sessions" : "46" ,
  "total_sga" : "398.203125" ,
  "available_space" : "0.19097900390625" ,
  "last_backup" : "null" ,
  "master_username" : "InstanceUser1" ,
  "db_version" : "11.2.0.1.0" ,
  "active_sessions" : ".156" ,
  "cpu_utilization" : "5.35" ,
  "db_time" : "15.646" ,

```

```

"cpu_count" : "1" ,
"allocated_sessions" : "39" ,
"total_memory" : "524.384 MB"
}

```

The database `status` indicates `DELETED` after the database is deleted.

56.2.3.12 Lifecycle operations on a Database Instance

The POST request on the URI of the resource can be issued to perform an operation on a database.

You can perform the following operations using a POST request:

- [Shutting down a Database](#)
- [Starting up a Database](#)
- [Scheduling a Backup of the Database](#)
- [Restoring a Database from a Backup](#)
- [Adding a Standby Database](#)
- [Removing a Standby Database](#)
- [Refreshing a Database](#)

56.2.3.12.1 Shutting down a Database

The configurations for the POST on a `DbPlatformInstance` is as follows:

Table 56-19 POST Request Configuration for Shutting Down a Database

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance+json Accept: application/ oracle.com.cloud.common.DbPlatformInstance+json
Body	<pre> { "operation" : "SHUTDOWN" } </pre>
Request method	POST

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.xyxy.example.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :

```

```

    [
      {
        "date" : "2013-08-27T07:12:30+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/127" ,
        "text" : "Successfully submitted SHUTDOWN operation on service instance.
Request id - 127."
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "62" ,
  "last_backup" : "null" ,
  "master_username" : "test" ,
  "db_version" : "11.2.0.2.0" ,
  "average_active_sessions" : ".01" ,
  "allocated_sessions" : "50" ,
  "measurable_attributes" :
  [
    {
      "name" : "up_time" ,
      "value" : "19" ,
      "units" : "Hours"
    } ,
    {
      "name" : "total_sga" ,
      "value" : "398.203" ,
      "units" : "MB"
    } ,
    {
      "name" : "available_space" ,
      "value" : "537.172" ,
      "units" : "MB"
    } ,
    {
      "name" : "cpu_utilization" ,
      "value" : "0.506" ,
      "units" : "%"
    } ,
    {
      "name" : "total_memory" ,
      "value" : "604.652" ,
      "units" : "MB"
    } ,
    {
      "name" : "db_time" ,
      "value" : "1.041" ,
      "units" : "CentiSeconds Per Second"
    } ,
    {
      "name" : "cpu_count" ,

```

```

        "value" : "2" ,
        "units" : "Cores"
    }
}
}

```

56.2.3.12.2 Starting up a Database

The configurations for the POST on a DbPlatformInstance is as follows:

Table 56-20 POST Request Configuration for Starting a Database

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud//dbaas/dbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance+json Accept: application/ oracle.com.cloud.common.DbPlatformInstance+json
Body	{ "operation" : "STARTUP" }
Request method	POST

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.xyxy.example.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:16:52+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/128" ,
        "text" : "Successfully submitted STARTUP operation on service instance.
Request id - 128."
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "STOPPED" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "null" ,

```

```

"last_backup" : "null" ,
"master_username" : "test" ,
"db_version" : "null" ,
"average_active_sessions" : "null" ,
"allocated_sessions" : "null" ,
"measurable_attributes" :
[
  {
    "name" : "up_time" ,
    "value" : "null" ,
    "units" : "Hours"
  } ,
  {
    "name" : "total_sga" ,
    "value" : "null" ,
    "units" : "MB"
  } ,
  {
    "name" : "available_space" ,
    "value" : "null" ,
    "units" : "MB"
  } ,
  {
    "name" : "cpu_utilization" ,
    "value" : "null" ,
    "units" : "%"
  } ,
  {
    "name" : "total_memory" ,
    "value" : "null" ,
    "units" : "MB"
  } ,
  {
    "name" : "db_time" ,
    "value" : "null" ,
    "units" : "CentiSeconds Per Second"
  } ,
  {
    "name" : "cpu_count" ,
    "value" : "null" ,
    "units" : "Cores"
  }
]
}

```

56.2.3.12.3 Scheduling a Backup of the Database

For scheduling a backup of the database the user has to provide the time at which backups needs to be scheduled. This should be in the YYYY-MM-DDTHH:MM:SSZFullTimeZonename format.

For example, to schedule in PST time you should enter 2013-08-27T12:34:45ZAmerica/Los_Angeles. The time zone portion is optional. If you do not want to provide the time zone, then enter 2013-08-27T12:34:45Z.

If a POST request to schedule a backup has already been issued, the subsequent POST request to schedule the backup will reschedule the backup time as per the latest POST request.

The configurations for the POST on a DbPlatformInstance is as follows:

Table 56-21 POST Request Configuration for Scheduling a Backup of the Database

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance+json Accept: application/ oracle.com.cloud.common.DbPlatformInstance+json
Body	{ "operation" : "BACKUP", "backup_schedule" : "2013-08-27T12:34:45ZAsia/Calcutta" }
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.xyxy.example.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:17:56+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/129" ,
        "text" : "Successfully submitted BACKUP operation on service instance.
Request id - 129."
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)
(HOST=xyxy.example.com)(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "0" ,
  "last_backup" : "null" ,
  "master_username" : "test" ,
  "db_version" : "11.2.0.2.0" ,
  "average_active_sessions" : "null" ,
  "allocated_sessions" : "46" ,
  "measurable_attributes" :
  [
    {

```

```

        "name" : "up_time" ,
        "value" : "0" ,
        "units" : "Hours"
    } ,
    {
        "name" : "total_sga" ,
        "value" : "398.203" ,
        "units" : "MB"
    } ,
    {
        "name" : "available_space" ,
        "value" : "537.172" ,
        "units" : "MB"
    } ,
    {
        "name" : "cpu_utilization" ,
        "value" : "null" ,
        "units" : "%"
    } ,
    {
        "name" : "total_memory" ,
        "value" : "575.043" ,
        "units" : "MB"
    } ,
    {
        "name" : "db_time" ,
        "value" : "null" ,
        "units" : "CentiSeconds Per Second"
    } ,
    {
        "name" : "cpu_count" ,
        "value" : "2" ,
        "units" : "Cores"
    }
}
]
}

```

After the backup is completed, the GET operation yields the response shown below.

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.xyxy.example.com" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=slc01lxj.us.example.com)(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "64" ,
  "last_backup" : "2013-08-27 07:24:04.0" ,
  "master_username" : "test" ,
  "db_version" : "11.2.0.2.0" ,

```

```

"average_active_sessions" : ".027" ,
"allocated_sessions" : "50" ,
"measurable_attributes" :
[
  {
    "name" : "up_time" ,
    "value" : "0" ,
    "units" : "Hours"
  } ,
  {
    "name" : "total_sga" ,
    "value" : "398.203" ,
    "units" : "MB"
  } ,
  {
    "name" : "available_space" ,
    "value" : "537.172" ,
    "units" : "MB"
  } ,
  {
    "name" : "cpu_utilization" ,
    "value" : "0.496" ,
    "units" : "%"
  } ,
  {
    "name" : "total_memory" ,
    "value" : "578.12" ,
    "units" : "MB"
  } ,
  {
    "name" : "db_time" ,
    "value" : "2.736" ,
    "units" : "CentiSeconds Per Second"
  } ,
  {
    "name" : "cpu_count" ,
    "value" : "2" ,
    "units" : "Cores"
  }
] ,
"RMAN_backup_list" :
[
  {
    "Key" : "1" ,
    "Tag" : "ORA$OEM_LEVEL_0" ,
    "Completed Time" : "Aug 27, 2013 12:24:02 AM" ,
    "Contents" : "SPFILE,CONTROLFILE" ,
    "Status" : "AVAILABLE"
  }
]
}

```

56.2.3.12.4 Restoring a Database from a Backup

To restore a database from a backup, the user has to provide the point-in-time when the database is to be restored. The time mentioned should be in the `YYYY-MM-DDTHH:MM:SSZFullTimeZonename` format.

For example, to schedule in PST time you should enter 2013-08-27T12:34:45ZAmerica/Los_Angeles. Time zone is optional. If you do not want to provide the time zone, enter 2013-08-27T12:34:45Z.

The restore time is based on the backups available. Refer to `RMAN_backup_list` section in the output of the GET request.

The configurations for the POST on a `DbPlatformInstance` is as follows:

Table 56-22 POST Request Configuration for Restoring Database from a Backup

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance+json Accept: application/ oracle.com.cloud.common.DbPlatformInstance+json
Body	<pre>{ "operation" : "RESTORE", "restore_date" : "2013-08-27T12:34:45Z" }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.xyxy.example.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:17:56+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/129" ,
        "text" : "Successfully submitted RESTORE operation on service instance.
Request id - 130."
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "0" ,
```

```

"last_backup" : "null" ,
"master_username" : "test" ,
"db_version" : "11.2.0.2.0" ,
"average_active_sessions" : "null" ,
"allocated_sessions" : "46" ,
"measurable_attributes" :
[
  {
    "name" : "up_time" ,
    "value" : "0" ,
    "units" : "Hours"
  } ,
  {
    "name" : "total_sga" ,
    "value" : "398.203" ,
    "units" : "MB"
  } ,
  {
    "name" : "available_space" ,
    "value" : "537.172" ,
    "units" : "MB"
  } ,
  {
    "name" : "cpu_utilization" ,
    "value" : "null" ,
    "units" : "%"
  } ,
  {
    "name" : "total_memory" ,
    "value" : "575.043" ,
    "units" : "MB"
  } ,
  {
    "name" : "db_time" ,
    "value" : "null" ,
    "units" : "CentiSeconds Per Second"
  } ,
  {
    "name" : "cpu_count" ,
    "value" : "2" ,
    "units" : "Cores"
  }
]
}

```

56.2.3.12.5 Adding a Standby Database

To add standby databases, input the standby databases which are configured in the service template. If the SID option in the service template is set as “Specified by user at request time”, then provide the SID value.

The configurations for the POST on a DbPlatformInstance is as follows:

Table 56-23 POST Request Configuration for Adding a Standby Database

Feature	Description
URI	<a href="https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7">https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7

Table 56-23 (Cont.) POST Request Configuration for Adding a Standby Database

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance+json Accept: application/ oracle.com.cloud.common.DbPlatformInstance+json
Body	<pre>{ "operation" : "ADD_STANDBY", "standbydbs": [{ "standbydb_name": "STBY1", "standbydb_sid": "stiq41" }] }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.abc.mycompany.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
      [
        {
          "date" : "2013-08-27T07:17:56+0000" ,
          "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/129" ,
          "text" : "Successfully submitted ADD_STANDBY operation on service
instance. Request id - 130."
        }
      ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "0" ,
  "last_backup" : "null" ,
  "master_username" : "test" ,
  "db_version" : "11.2.0.2.0" ,
  "average_active_sessions" : "null" ,
  "allocated_sessions" : "46" ,
```

```

"measurable_attributes" :
[
  {
    "name" : "up_time" ,
    "value" : "0" ,
    "units" : "Hours"
  } ,
  {
    "name" : "total_sga" ,
    "value" : "398.203" ,
    "units" : "MB"
  } ,
  {
    "name" : "available_space" ,
    "value" : "537.172" ,
    "units" : "MB"
  } ,
  {
    "name" : "cpu_utilization" ,
    "value" : "null" ,
    "units" : "%"
  } ,
  {
    "name" : "total_memory" ,
    "value" : "575.043" ,
    "units" : "MB"
  } ,
  {
    "name" : "db_time" ,
    "value" : "null" ,
    "units" : "CentiSeconds Per Second"
  } ,
  {
    "name" : "cpu_count" ,
    "value" : "2" ,
    "units" : "Cores"
  }
]
}

```

56.2.3.12.6 Removing a Standby Database

To delete standby databases, input the standby databases which are created.

The configurations for the POST on a DbPlatformInstance is as follows:

Table 56-24 POST Request Configuration for Adding a Standby Database

Feature	Description
URI	<a href="https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7">https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance+json Accept: application/ oracle.com.cloud.common.DbPlatformInstance+json

Table 56-24 (Cont.) POST Request Configuration for Adding a Standby Database

Feature	Description
Body	<pre>{ "operation" : "DELETE_STANDBY", "standbydbs": [{ "standbydb_name": "xyxy.example.com", "standbydb_type": "oracle_database" }] }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.abc.mycompany.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:17:56+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/129" ,
        "text" : "Successfully submitted DELETE_STANDBY operation on service
instance. Request id - 130."
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "0" ,
  "last_backup" : "null" ,
  "master_username" : "test" ,
  "db_version" : "11.2.0.2.0" ,
  "average_active_sessions" : "null" ,
  "allocated_sessions" : "46" ,
  "measurable_attributes" :
  [
    {
      "name" : "up_time" ,
      "value" : "0" ,
      "units" : "Hours"
    }
  ]
}
```

```

    } ,
    {
      "name" : "total_sga" ,
      "value" : "398.203" ,
      "units" : "MB"
    } ,
    {
      "name" : "available_space" ,
      "value" : "537.172" ,
      "units" : "MB"
    } ,
    {
      "name" : "cpu_utilization" ,
      "value" : "null" ,
      "units" : "%"
    } ,
    {
      "name" : "total_memory" ,
      "value" : "575.043" ,
      "units" : "MB"
    } ,
    {
      "name" : "db_time" ,
      "value" : "null" ,
      "units" : "CentiSeconds Per Second"
    } ,
    {
      "name" : "cpu_count" ,
      "value" : "2" ,
      "units" : "Cores"
    }
  ]
}

```

56.2.3.12.7 Refreshing a Database

The database can be refreshed to a new version of the profile by providing the name of the profile version.

The configurations for the POST on a DbPlatformInstance is as follows:

Table 56-25 POST Request Configuration for Adding a Standby Database

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.DbPlatformInstance+json Accept: application/ oracle.com.cloud.common.DbPlatformInstance+json
Body	<pre> { "operation" : "REFRESH_DATABASE", "database_profile_version": "RMAN_06_27_2014_13_18_PM" } </pre>

Table 56-25 (Cont.) POST Request Configuration for Adding a Standby Database

Feature	Description
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.abc.mycompany.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:17:56+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/129" ,
        "text" : "Successfully submitted REFRESH_DATABASE operation on service
instance. Request id - 130."
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "0" ,
  "last_backup" : "null" ,
  "master_username" : "test" ,
  "db_version" : "11.2.0.2.0" ,
  "average_active_sessions" : "null" ,
  "allocated_sessions" : "46" ,
  "measurable_attributes" :
  [
    {
      "name" : "up_time" ,
      "value" : "0" ,
      "units" : "Hours"
    } ,
    {
      "name" : "total_sga" ,
      "value" : "398.203" ,
      "units" : "MB"
    } ,
    {
      "name" : "available_space" ,
      "value" : "537.172" ,
      "units" : "MB"
    }
  ]
}
```

```

    {
      "name" : "cpu_utilization" ,
      "value" : "null" ,
      "units" : "%"
    } ,
    {
      "name" : "total_memory" ,
      "value" : "575.043" ,
      "units" : "MB"
    } ,
    {
      "name" : "db_time" ,
      "value" : "null" ,
      "units" : "CentiSeconds Per Second"
    } ,
    {
      "name" : "cpu_count" ,
      "value" : "2" ,
      "units" : "Cores"
    }
  ]
}

```

56.2.3.13 Lifecycle operations on a Snap clone Database Instance

The POST request on the URI of the resource can be run to perform an operation on a database. The following operations can be performed by using POST.

- [Creating a Snapshot](#)
- [Restoring from a Snapshot List](#)
- [Deleting a Snapshot](#)

56.2.3.13.1 Creating a Snapshot

The configurations for the POST on a DbPlatformInstance is as follows:

Table 56-26 POST Request Configuration for Creating a Snapshot

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.DbPlatformInstance+json Accept: application/oracle.com.cloud.common.DbPlatformInstance+json
Body	<pre> { "operation" : "CREATE_PROFILE", "snapshot_name" : "test_API_export", "snapshot_desc" : "testing export option from APIs" } </pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.xyxy.example.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:17:56+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/129" ,
        "text" : "Successfully submitted CREATE_PROFILE operation on service
instance. Request id - 130."
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "0" ,
  "last_backup" : "null" ,
  "master_username" : "test" ,
  "db_version" : "11.2.0.2.0" ,
  "average_active_sessions" : "null" ,
  "allocated_sessions" : "46" ,
  "measurable_attributes" :
  [
    {
      "name" : "up_time" ,
      "value" : "0" ,
      "units" : "Hours"
    } ,
    {
      "name" : "total_sga" ,
      "value" : "398.203" ,
      "units" : "MB"
    } ,
    {
      "name" : "available_space" ,
      "value" : "537.172" ,
      "units" : "MB"
    } ,
    {
      "name" : "cpu_utilization" ,
      "value" : "null" ,
      "units" : "%"
    } ,
    {
      "name" : "total_memory" ,
      "value" : "575.043" ,
      "units" : "MB"
    }
  ]
}
```

```

    } ,
    {
      "name" : "db_time" ,
      "value" : "null" ,
      "units" : "CentiSeconds Per Second"
    } ,
    {
      "name" : "cpu_count" ,
      "value" : "2" ,
      "units" : "Cores"
    }
  ]
}

```

After the snapshot is created, the response of a GET operations yields the result shown below.

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.xyxy.example.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:17:56+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/143" ,
        "text" : "Successfully submitted CREATE_PROFILE operation on service
instance. Request id - 143."
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "0" ,
  "last_backup" : "null" ,
  "master_username" : "test" ,
  "db_version" : "11.2.0.2.0" ,
  "average_active_sessions" : "null" ,
  "allocated_sessions" : "46" ,
  "measurable_attributes" :
  [
    {
      "name" : "up_time" ,
      "value" : "0" ,
      "units" : "Hours"
    } ,
    {
      "name" : "total_sga" ,
      "value" : "398.203" ,
      "units" : "MB"
    }
  ]
}

```

```

    } ,
    {
      "name" : "available_space" ,
      "value" : "537.172" ,
      "units" : "MB"
    } ,
    {
      "name" : "cpu_utilization" ,
      "value" : "null" ,
      "units" : "%"
    } ,
    {
      "name" : "total_memory" ,
      "value" : "575.043" ,
      "units" : "MB"
    } ,
    {
      "name" : "db_time" ,
      "value" : "null" ,
      "units" : "CentiSeconds Per Second"
    } ,
    {
      "name" : "cpu_count" ,
      "value" : "2" ,
      "units" : "Cores"
    }
  ]
  "snapclone_profile_list" :
  [
    {
      "Name" : "test_API_export" ,
      "Description" : "testing export option from APIs" ,
      "URN" : "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:E4E9E7EE230BF965E040F20A60517256:0.1" ,
      "Submission Guid" : "DD269BBA774E0159E040F20A60513010" ,
      "Creation Date" : "Mon Aug 20 05:54:03 PDT 2013" ,
      "Status" : "Ready"
    }
  ]
}

```

56.2.3.13.2 Restoring from a Snapshot List

The configurations for the POST on a DbPlatformInstance is as follows:

Table 56-27 POST Request Configuration for Restoring from a Snapshot List

Feature	Description
URI	<a href="https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7">https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.DbPlatformInstance+json Accept: application/oracle.com.cloud.common.DbPlatformInstance+json

Table 56-27 (Cont.) POST Request Configuration for Restoring from a Snapshot List

Feature	Description
Body	<pre>{ "operation" : "RESTORE_PROFILE", "snapshot_urn" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:DECAD7B3145E6808E040F20A605130A2:0 .1" }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.xyxy.example.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:17:56+0000" ,
        "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/144" ,
        "text" : "Successfully submitted RESTORE_PROFILE operation on service
instance. Request id - 144."
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 05:09:13" ,
  "based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
  "target_type" : "oracle_database" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "total_sessions" : "0" ,
  "last_backup" : "null" ,
  "master_username" : "test" ,
  "db_version" : "11.2.0.2.0" ,
  "average_active_sessions" : "null" ,
  "allocated_sessions" : "46" ,
  "measurable_attributes" :
  [
    {
      "name" : "up_time" ,
      "value" : "0" ,
      "units" : "Hours"
    } ,
    {
      "name" : "total_sga" ,
      "value" : "398.203" ,
      "units" : "MB"
    }
  ]
}
```

```

    } ,
    {
      "name" : "available_space" ,
      "value" : "537.172" ,
      "units" : "MB"
    } ,
    {
      "name" : "cpu_utilization" ,
      "value" : "null" ,
      "units" : "%"
    } ,
    {
      "name" : "total_memory" ,
      "value" : "575.043" ,
      "units" : "MB"
    } ,
    {
      "name" : "db_time" ,
      "value" : "null" ,
      "units" : "CentiSeconds Per Second"
    } ,
    {
      "name" : "cpu_count" ,
      "value" : "2" ,
      "units" : "Cores"
    }
  ]
}

```

56.2.3.13.3 Deleting a Snapshot

The configurations for the POST on a DbPlatformInstance is as follows:

Table 56-28 POST Request Configuration for Restoring from a Snapshot List

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbplatforminstance/byrequest/7</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.DbPlatformInstance+json Accept: application/oracle.com.cloud.common.DbPlatformInstance+json
Body	<pre> { "operation" : " DELETE_PROFILE", "snapshot_urn" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:DECAD7B3145E6808E040F20A605130A2:0 .1" } </pre>
Request method	POST

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/101" ,
  "name" : "dbc00000.xyxy.example.com" ,
  "resource_state" : {
    "state" : "INITIATED" ,

```

```
"messages" :
[
  {
    "date" : "2013-08-27T07:17:56+0000" ,
    "uri" : "/em/cloud/dbaas/dbplatforminstance/byrequest/148" ,
    "text" : "Successfully submitted DELETE_PROFILE operation on service
instance. Request id - 148."
  }
]
,
"context_id" : "101" ,
"media_type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
"canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/dbplatforminstance/byrequest/101" ,
"status" : "RUNNING" ,
"created" : "2013-08-26 05:09:13" ,
"based_on" : "/em/cloud/dbaas/dbplatformtemplate/
E4D9626BC260F517E040F20A605152CD" ,
"connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SID=dbc00000)))" ,
"target_type" : "oracle_database" ,
"destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
"total_sessions" : "0" ,
"last_backup" : "null" ,
"master_username" : "test" ,
"db_version" : "11.2.0.2.0" ,
"average_active_sessions" : "null" ,
"allocated_sessions" : "46" ,
"measurable_attributes" :
[
  {
    "name" : "up_time" ,
    "value" : "0" ,
    "units" : "Hours"
  } ,
  {
    "name" : "total_sga" ,
    "value" : "398.203" ,
    "units" : "MB"
  } ,
  {
    "name" : "available_space" ,
    "value" : "537.172" ,
    "units" : "MB"
  } ,
  {
    "name" : "cpu_utilization" ,
    "value" : "null" ,
    "units" : "%"
  } ,
  {
    "name" : "total_memory" ,
    "value" : "575.043" ,
    "units" : "MB"
  } ,
  {
    "name" : "db_time" ,
    "value" : "null" ,
    "units" : "CentiSeconds Per Second"
  } ,
  {
```

```
        "name" : "cpu_count" ,  
        "value" : "2" ,  
        "units" : "Cores"  
    }  
]  
}
```

56.3 Schema as a Service

This section describes the resource model for Schema as a Service (Schaas) REST API and the REST request/response interactions.



Note:

Schaas REST APIs are only supported by the Oracle Cloud Application plug-in version 12.1.0.6.0 and higher

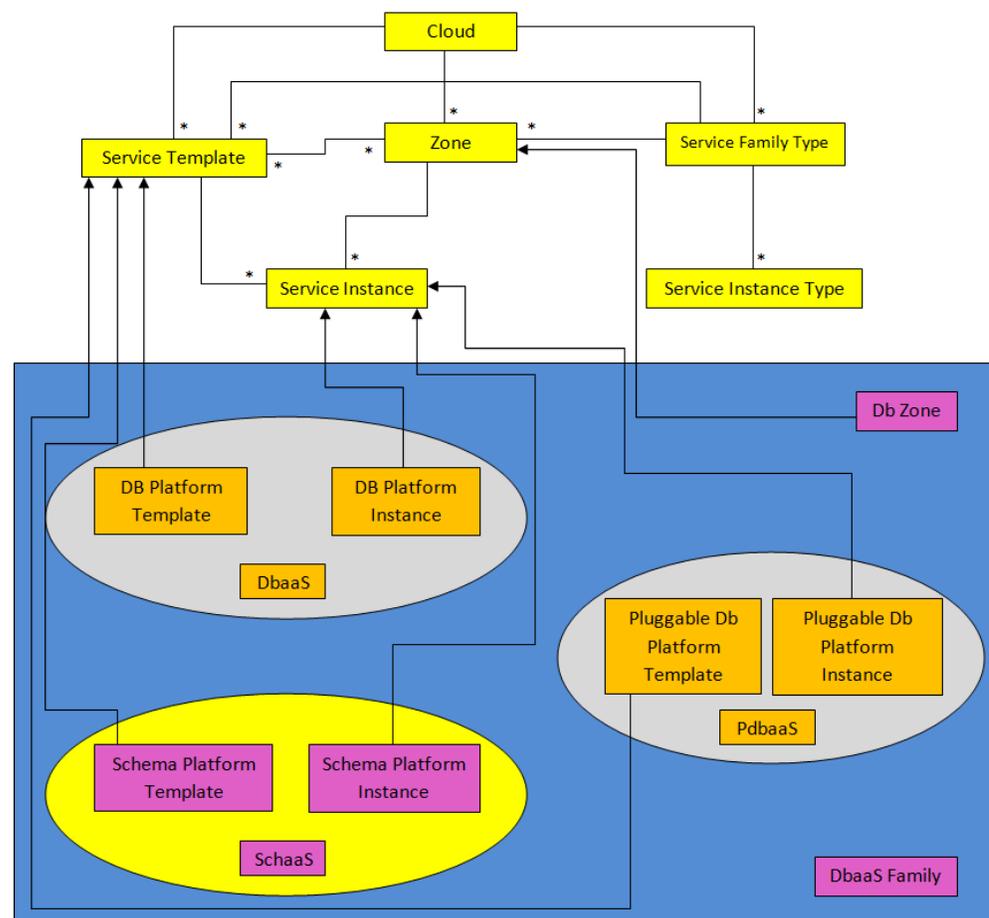
This section contains the following topics:

- [Schema as a Service Resource Model](#)
- [Supported Operations for Schema as a Service Resources](#)
- [Schema as a Service REST API Examples](#)

56.3.1 Schema as a Service Resource Model

Cloud resources are organized by common service entities, and specific services (for example, Schema as a Service) provide resources by extending these common service entities. The figure below shows the SchaaS resource model.

Figure 56-2 Schema as a Service Resource Model



The following sections describe the resources that are supported by the Schema as a Service REST APIs and provide examples of supported operations. Schema as a Service uses the same Cloud, Service Family, and DB Zone resources as described in [Database as a Service Resource Model](#).

. The following resource models are described:

- [Schema Platform Template](#)
- [Schema Platform Instance](#)

56.3.1.1 Schema Platform Template

The Schema Platform Template extends the Service Template resource. It represents the service template created for Schema Service creation. It can be a template for creating a schema service using profile based schemas (schema with data) or for creating a schemas service containing empty schemas.

It is permissible to accept the Service Template media type on an instance of Schema Platform Template. It is a preconfigured deployable service that realizes a Schema Platform Instance resource. Schema Platform Template has the media type

application/oracle.com.cloud.common.SchemaPlatformTemplate and URI format /em/cloud/dbaas/schemaplatformtemplate/<template id>.

The following table describes the Schema Platform Template Data Model.

Table 56-29 Schema Platform Template Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the template.	1
description	String	A brief description given to the template.	0..1
created	Timestamp	Date and time, in ISO 8601 format, when the template was created/last modified.	1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
zones	Collection <DbZone>	List of all zones configured for this template.	0..1
service_instances	Collection <SchemaPlatformInstance>	All service instances created based on this SchemaPlatformTemplate.	0..1
media_type	String	The media type of the service template that this type represents.	1
params	Object	List of parameters required to provision a Schema Platform Instance from this template.	1
deployment_params	List<Object>	Description of the parameters which are required while creating a service instance.	1
type	String	The type of the service template which is "dbaas" by default.	1
subtype	String	The sub type of the instance created based on this template. It has a value "schema" in this case.	1
template_type	String	Type of this template based on how the template got created. It can have any of two values : "EMPTY_SCHEMAS" or "SCHEMAS_FROM_PROFILE".	1
max_number_of_schemas	Integer	Maximum number of schemas that can be created in a single instance request. This field exists only if template_type is "EMPTY_SCHEMAS".	0..1
workloads	List<Object>	List all the workloads defined for this template and list the attributes for each one of them.	0..1
canonicalLink	URI	Can be used to perform cloud interactions like GET and POST.	1
tablespace_list	List<Object>	List of tablespaces in schema.	1

56.3.1.2 Schema Platform Instance

The Schema Platform Instance extends the Service Instance resource. It is linked to Oracle Database Service target in Enterprise Manager Cloud Control. Schema Platform Instance has the media type `application/oracle.com.cloud.common.SchemaPlatformInstance` and URI `/em/cloud/dbaas/schemaplatforminstance/byrequest/<request id>`.

The following table describes the Schema Platform Instance data model:

Table 56-30 Schema Platform Instance Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the database service[POST]	1
destination_zone	Zone	The Zone to which the database service is deployed [POST]	1
created	Timestamp	Date and time, in ISO 8601 format, when the template was created/last modified.	1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
based_on	SchemaPlatformTemplate	The schema platform template on which this database service is published.	1
media_type	String	Indicates the additional media type that clients can use to perform a GET.	1
canonicalLink	URI	Can be used to perform cloud interactions like GET and POST.	1
type	String	Type of the database service. It has the default value "oracle_dbsvc".	1
connect_string	String	Connect String required to establish a connection to this database service.	0..1
status	String	Status of the database service.	1
db_version	String	Version of the database on which this service is running.	0..1
context_id	String	The request id of this database service.	1

56.3.2 Supported Operations for Schema as a Service Resources

The following table lists all the operations that are supported on the various Schema as a Service resources.

Table 56-31 Supported Operations

Resource	Operations (GET, POST, PUT, and DELETE)	POST	PUT	DELETE
Cloud	Yes	No	No	No
Service Family Type	Yes	No	No	No
DB Zone	Yes	Yes	No	No
Schema Platform Template [Service Template]	Yes	Yes	No	No
Schema Platform Instance [Service Instance]	Yes	Yes	No	Yes

56.3.3 Schema as a Service REST API Examples

The following sections provide examples of interaction with Enterprise Manager Cloud Control with Cloud Application plug-in 12.1.0.6 and higher. The examples for GET on cloud, GET on dbaas family type and GET on Db Zone are covered in the DbaaS REST APIs section. The following examples are covered:

- [Viewing Details of the Schema Platform Template Resource](#)
- [Creating a Schema Service](#)
 - [Creating a Schema by Passing a Request on the DB Zone](#)
 - [Creating a Schema by Passing a Request on the Schema Platform Template](#)
- [Viewing Details of the Schema Service Creation](#)
- [Deleting a Schema Service](#)
- [Object Missing](#)
 - [Exporting a Schema](#)
 - [Restoring a Schema from Exported Schema Dumps](#)
 - [Deleting the Exported Schema Dumps](#)
 - [Changing Schema Passwords](#)

56.3.3.1 Viewing Details of the Schema Platform Template Resource

A GET request on the Schema Platform Template resource provides the details of the resource.

Table 56-32 GET Request Configuration for Viewing Details of the Schema Platform Template Resource

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/schemaplatfromtemplate/DE3F8D882F132F45E040F00AAA2330C5</code>

Table 56-32 (Cont.) GET Request Configuration for Viewing Details of the Schema Platform Template Resource

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "max_number_of_schemas" : "" ,
  "media_type" : "application/oracle.com.cloud.common.SchemaPlatformTemplate+json" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "tablespace_list" :
  [
    "DUMPTBSP1" ,
    "DUMPTBSP2"
  ] ,
  "params" : {
    "schema" :
    [
      {
        "username" : "" ,
        "password" : "" ,
        "original_name" : "SCHEMA_USER_1"
      } ,
      {
        "username" : "" ,
        "password" : "" ,
        "original_name" : "SCHEMA_USER_2"
      }
    ] ,
    "service_name_prefix" : "" ,
    "workload_name" : "" ,
    "tablespaces" :
    [
      {
        "old_tablespace_name" : "DUMPTBSP1" ,
        "new_tablespace_name" : ""
      } ,
      {
        "old_tablespace_name" : "DUMPTBSP2" ,
        "new_tablespace_name" : ""
      }
    ]
  } ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/dbaas/schemaplatformtemplate/FADFFB8A434244F1E043797EF00A63AE" ,
  "template_type" : "SCHEMAS_FROM_PROFILE" ,
  "type" : "dbaas" ,
  "zones" : {
    "total" : "1" ,
    "media_type" : "application/oracle.com.cloud.common.DbZone+json" ,
    "elements" :

```

```

    [
      {
        "media_type" : "application/oracle.com.cloud.common.DbZone+json" ,
        "context_id" : "2348838861AFF7BC02912C402605D49F" ,
        "description" : "SSA Zone with SI Nodes" ,
        "service_family_type" : "dbaas" ,
        "name" : "SI SSAZONE" ,
        "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/dbaas/zone/2348838861AFF7BC02912C402605D49F" ,
        "type" : "self_service_zone" ,
        "uri" : "/em/cloud/dbaas/zone/2348838861AFF7BC02912C402605D49F"
      }
    ]
  } ,
  "uri" : "/em/cloud/dbaas/schemaplatformtemplate/FADFFB8A434244F1E043797EF00A63AE" ,
  "service_instances" : {
    "total" : "1" ,
    "media_type" : "application/oracle.com.cloud.common.SchemaPlatformInstance
+json" ,
    "elements" :
    [
      {
        "media_type" : "application/
oracle.com.cloud.common.SchemaPlatformInstance+json" ,
        "name" : "SIFSDifftbspc" ,
        "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/dbaas/schemaplatforminstance/byrequest/1" ,
        "target_type" : "oracle_dbsvc" ,
        "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/1"
      }
    ]
  } ,
  "created" : "2014-06-02T19:38:04+0000" ,
  "description" : "11204 SIDB FileSystem Schema Service Template - Import Schema -
Different TableSpace for Each Schema" ,
  "name" : "11204_SIFS_SCHEMATEMPLATE_IMPORTSCHEMA_DIFFTBSPC" ,
  "subtype" : "schema" ,
  "workloads" :
  [
    {
      "description" : "LARGE" ,
      "name" : "LARGE" ,
      "attributes" :
      [
        {
          "name" : "CPU" ,
          "value" : "1" ,
          "units" : "cores"
        } ,
        {
          "name" : "Memory" ,
          "value" : "1" ,
          "units" : "GB"
        } ,
        {
          "name" : "Storage" ,
          "value" : "10" ,
          "units" : "GB"
        }
      ]
    }
  ]
} ,

```

```
{
  "description" : "MEDIUM" ,
  "name" : "MEDIUM" ,
  "attributes" :
  [
    {
      "name" : "CPU" ,
      "value" : "0.5" ,
      "units" : "cores"
    } ,
    {
      "name" : "Memory" ,
      "value" : "0.5" ,
      "units" : "GB"
    } ,
    {
      "name" : "Storage" ,
      "value" : "5" ,
      "units" : "GB"
    }
  ]
} ,
{
  "description" : "SMALL" ,
  "name" : "SMALL" ,
  "attributes" :
  [
    {
      "name" : "CPU" ,
      "value" : "0.3" ,
      "units" : "cores"
    } ,
    {
      "name" : "Memory" ,
      "value" : "0.3" ,
      "units" : "GB"
    } ,
    {
      "name" : "Storage" ,
      "value" : "3" ,
      "units" : "GB"
    }
  ]
}
] ,
"schema_list" :
[
  "SCHEMA_USER_1" ,
  "SCHEMA_USER_2"
] ,
"deployment_params" :
[
  {
    "description" : "Master account schema. Not Required for the
SCHEMAS_FROM_PROFILE Schema templates" ,
    "name" : "masterAccount" ,
    "require" : "false" ,
    "type" : "STRING" ,
    "sensitive" : "false"
  } ,
  {
```

```
"description" : "Prefix for the service name instances" ,
"name" : "service_name_prefix" ,
"require" : "true" ,
"type" : "STRING" ,
"sensitive" : "false"
} ,
{
"description" : "WorkLoad name to be associated with the request" ,
"name" : "workload_name" ,
"require" : "true" ,
"type" : "STRING" ,
"sensitive" : "false"
} ,
{
"description" : "Common password for all schema users." ,
"name" : "common_password" ,
"require" : "false" ,
"type" : "STRING" ,
"sensitive" : "true"
} ,
{
"description" : "List of schema to be created" ,
"name" : "schema" ,
"require" : "true" ,
"defaultValue" :
[
{
"description" : "New schema name" ,
"name" : "username" ,
"require" : "true" ,
"type" : "STRING" ,
"sensitive" : "false"
} ,
{
"description" : "Original schema name. Required only for the
SCHEMAS_FROM_PROFILE Schema templates" ,
"name" : "original_name" ,
"require" : "false" ,
"type" : "STRING" ,
"sensitive" : "false"
} ,
{
"description" : "Password for the schema. Required only if
common_password is not specified." ,
"name" : "password" ,
"require" : "false" ,
"type" : "STRING" ,
"sensitive" : "true"
}
] ,
"type" : "LIST" ,
"sensitive" : "false"
} ,
{
"description" : "List of tablespaces remap. Required only for the
SCHEMAS_FROM_PROFILE Schema templates." ,
"name" : "tablespaces" ,
"require" : "false" ,
"defaultValue" :
[
{
```

```

        "description" : "New tablespace name." ,
        "name" : "new_tablespace_name" ,
        "require" : "true" ,
        "type" : "STRING" ,
        "sensitive" : "false"
    } ,
    {
        "description" : "Original tablespace name." ,
        "name" : "old_tablespace_name" ,
        "require" : "true" ,
        "type" : "STRING" ,
        "sensitive" : "false"
    }
] ,
"type" : "LIST" ,
"sensitive" : "false"
}
}
}

```

56.3.3.2 Creating a Schema Service

This section describes how to create a database service using the Cloud resources. As Database service is also a service instance in the service family type `dbaas`, you need to identify the zone of the same family type in which to create the database service. There are two approaches to creating a database service:

- By passing a POST request on the DB Zone on which DB service is to be created
- By passing a POST request on the Schema Platform Template resource of which the database service is to be based on

Note the attributes in the submitted body for the POST. The pattern is the same for other service instance creations. Since the intention is clear, the `zone` attribute is not required while performing the POST operation to the Db Zone. Similarly, the `based_on` attribute is not needed when performing the POST operation to the SchemaPlatformTemplate.

The following operations are described in this section:

- [Creating a Schema by Passing a Request on the DB Zone](#)
- [Creating a Schema by Passing a Request on the Schema Platform Template](#)

56.3.3.2.1 Creating a Schema by Passing a Request on the DB Zone

The configuration for performing POST to DB Zone is as follows:

Table 56-33 POST Request Configuration for Creating a Schema by Passing a Request on the DB Zone

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/zone/82CF1C28FA20A183C99D138FF8065F19</code>

Table 56-33 (Cont.) POST Request Configuration for Creating a Schema by Passing a Request on the DB Zone

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.SchemaPlatformInstance+json Accept: application/oracle.com.cloud.common.SchemaPlatformInstance+json
Body for a profile based schema template for multiple schemas	<pre> { "name" : "TestService0" , "start_date": "2013-08-02T14:20:00Asia/Calcutta", "end_date": "2013-08-02T17:20:00Asia/Calcutta", "params" : { "schema" : [{ "username" : "Schema_User11_01" , "password" : "Schema_User1" , "tablespace_name" : "tbsp01" } , { "username" : "Schema_User11_02" , "password" : "Schema_User1" , "tablespace_name" : "tbsp02" } , { "username" : "Schema_User11_03" , "password" : "Schema_User1" , "tablespace_name" : "tbsp03" } , { "username" : "Schema_User11_04" , "password" : "Schema_User1" , "tablespace_name" : "tbsp04" }] , "workload_name" : "default_workload" , "service_name" : "TestService0" , "masterAccount" : "Schema_User11_01" } , "based_on" : "/em/cloud/dbaas/schemaplatformtemplate/ DE3F8D882F132F45E040F00AAA2330C5" } </pre>

Table 56-33 (Cont.) POST Request Configuration for Creating a Schema by Passing a Request on the DB Zone

Feature	Description
Body for a profile based schema template for a single schema	<pre> { "name" : "TestService0" , "start_date": "2013-08-02T14:20:00ZAsia/Calcutta", "end_date": "2013-08-02T17:20:00ZAsia/Calcutta", "params" : { "schema" : [{ "username" : "Schema_User11_01" , "password" : "Schema_User1" , "tablespace_name" : "tbsp01" } , "workload_name" : "default_workload" , "service_name" : "TestService0" , "masterAccount" : "Schema_User11_01"] , "based_on" : "/em/cloud/dbaas/schemaplatformtemplate/ DE3F8D882F132F45E040F00AAA2330C5" } </pre>
Request method	POST

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/22" ,
  "name" : "TestRequest" ,
  "resource_state" : {
    "state" : "INITIATED"
  } ,
  "messages" :
    [
      {
        "date" : "2014-11-25T09:52:49+0000" ,
        "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/22",
        "text" : "Delete Request ID is : 22"
      }
    ]
  ,
  "media_type" : "application/oracle.com.cloud.common.SchemaPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/schemaplatforminstance/byrequest/22" ,
  "status" : "SCHEDULED"
}

```

56.3.3.2.2 Creating a Schema by Passing a Request on the Schema Platform Template

The configurations for performing POST to the Schema Platform Template is as follows:

Table 56-34 POST Request Configuration for Creating a Schema by Passing a Request on the Schema Platform Template

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/schemaplatformtemplate/CC3BBB665A6BC6FFE040F00AEF252456</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.SchemaPlatformInstance+json Accept: application/oracle.com.cloud.common.SchemaPlatformInstance+json
Body	<pre> { "based_on" : "/em/cloud/dbaas/schemaplatformtemplate/ FADFFB8A434244F1E043797EF00A63AE" , "name" : "Test Service" , "params" : { "schema" : [{ "username" : "Schaas_API_User_1" , "original_name" : "SCHEMA_USER_1" , "password" : "sunset1" } , { "username" : "Schaas_API_User_2" , "original_name" : "SCHEMA_USER_2" , "password" : "sunset1" }] , "workload_name" : "SMALL" , "service_name" : "TestService" , "masterAccount" : "Schema_User11_01" , "tablespaces" : [{ "old_tablespace_name" : "DUMPTBSP2" , "new_tablespace_name" : "tablespace2" } , { "old_tablespace_name" : "DUMPTBSP1" , "new_tablespace_name" : "tablespace1" }] } "zone": "/em/cloud/dbaas/zone/9A71CBEABCA367D0D425697DC39B3AF9 } </pre>
Request method	POST

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/23" ,
  "name" : "TestRequest" ,
  "resource_state" : {
    "state" : "INITIATED"
  } ,
}

```

```

"media_type" : "application/oracle.com.cloud.common.SchemaPlatformInstance+json" ,
"canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/schemaplatforminstance/byrequest/23" ,
"status" : "SCHEDULED"
}

```

The response shown above is the same as the previous version. If the zone is not specified, then it is not possible for the web service to determine where the database service should be deployed.

56.3.3.3 Viewing Details of the Schema Service Creation

After the database service creation has been performed by performing the POST operation, you can perform the GET operation to get the resource identified by the return URI to keep track of the status.

Table 56-35 GET Request Configuration for Viewing Details of the Schema Service Creation

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/schemaplatforminstance/byrequest/22</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/ oracle.com.cloud.common.SchemaPlatformInstance+json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "uri": "/em/cloud/dbaas/schemaplatforminstance/byrequest/22",
  "name": "TestRequest_CREATE_55_42",
  "description": "Create Service for test.",
  "resource_state":
  {
    "state": "CREATING"
  },
  "context_id": "22",
  "media_type": "application/oracle.com.cloud.common.SchemaPlatformInstance+json",
  "status": "IN_PROGRESS",
  "created": "2013-06-07 23:09:04" ,
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/schemaplatforminstance/byrequest/22"
}

```

Note that the `resource_state` attribute shows `CREATING` to indicate that the database service is being created. After the database service is created, the GET operation returns the database service resource with `READY` state, as shown below:

```

{
  "uri": "/em/cloud/dbaas/schemaplatforminstance/byrequest/22",
  "name": "Service_1_35E576F22E97E",
  "resource_state": {
    "state": "READY"
  }
}

```

```

    "messages" :
    [
      {
        "date" : "2014-11-25T09:52:49+0000" ,
        "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/22",
        "text" : "Delete Request ID is : 22"
      }
    ]
  },
  "context_id": "22",
  "media_type": "application/oracle.com.cloud.common.SchemaPlatformInstance+json",
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/dbaas/schemaplatforminstance/byrequest/22",
  "status": "RUNNING",
  "created": "2013-06-10 02:45:32",
  "based_on": "/em/cloud/dbaas/schemaplatforminstance/
DECA1100F797EF10E040F00AFBB123E7",
  "target_type": "oracle_dbsvc",
  "connect_string": "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)
(HOST=abc.mycompany.com)(PORT=1521)))
(CONNECT_DATA=(SERVICE_NAME=Service_1_35E576F22E97E.mycompany.com)))",
  "destination_zone": "/em/cloud/dbaas/zone/34C1FC23A7503E1CC9C490C9670635F9",
  "db_version": "11.2.0.3.0"
}

```

56.3.3.4 Deleting a Schema Service

The DELETE request can be issued on the URI of the resource to delete a database service. The configuration for the DELETE request is as follows:

Table 56-36 DELETE Request Configuration for Deleting a Schema Service

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/schemaplatforminstance/byrequest/22
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/ oracle.com.cloud.common.SchemaPlatformInstance+json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/22" ,
  "name" : "Service_1_35E576F22E97E" ,
  "resource_state" : {
    "state" : "DESTROYING" ,
    "messages" :
    [
      {
        "text" : "Submit 'DELETE' operation on 'application/
oracle.com.cloud.common.SchemaPlatformInstance+json' 'Service_1_35E576F22E97E'. The
process has job id '41'" ,
        "date" : "2013-06-07T23:16:20+0000"
      }
    ]
  }
}

```

```

    ]
  },
  "context_id" : "22" ,
  "media_type" : "application/oracle.com.cloud.common.SchemaPlatformInstance +json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/schemaplatforminstance/byrequest/22" ,
  "type" : "oracle_dbsvc"
}

```

After some time, a GET request on the database service URI results in the following interaction:

Table 56-37 GET Request Configuration for Viewing the Status of the Schema Service

Feature	Description
URI	/em/cloud/dbaas/schemaplatforminstance/byrequest/22
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "uri": "/em/cloud/dbaas/schemaplatforminstance/byrequest/22",
  "name": "Service_1_35E576F22E97E",
  "resource_state": {
    "state": "DESTROYING"
  },
  "context_id": "2",
  "media_type": "application/oracle.com.cloud.common.SchemaPlatformInstance+json",
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/schemaplatforminstance/byrequest/2",
  "status": "RUNNING",
  "created": "2013-06-10 02:45:32",
  "based_on": "/em/cloud/dbaas/schemaplatforminstance/
DECA1100F797EF10E040F00AFBB123E7",
  "type": "oracle_dbsvc",
  "connect_string": "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)
(HOST=host1.mycompany.com)(PORT=1521)))
(CONNECT_DATA=(SERVICE_NAME=Service_1_35E576F22E97E.mycompany.com)))",
  "destination_zone": "/em/cloud/dbaas/zone/34C1FC23A7503E1CC9C490C9670635F9",
  "db_version": "11.2.0.3.0"
}

```

The status of the database service shows `DELETED` after the schema service is deleted.

56.3.3.5 Object Missing

This object is not available in the repository.

56.3.3.5.1 Exporting a Schema

For exporting schema, the user can optionally provide the date at which the export should be taken. The date and time should be in the YYYY-MM-DDTHH:MM:SSZFullTimeZonename format.

For example to schedule in PST time user should enter 2013-08-27T12:34:45ZAmerica/Los_Angeles.

However, the time zone is optional. If you do not want to provide the time zone, then enter: 2013-08-27T12:34:45Z.

The configurations for the POST on a SchemaPlatformInstance is described below:

Table 56-38 POST Request Configuration for Exporting a Schema

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/schemaplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.SchemaPlatformInstance +json Accept: application/ oracle.com.cloud.common.SchemaPlatformInstance+json
Body	{ "operation" : "EXPORT", "profile_name" : "test_API_export", "profile_desc" : "testing export option from APIs", "export_schedule" : "2013-07-31T02:10:45ZAsia/ Calcutta" }
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/123" ,
  "name" : "Service_8E958EC718B11" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:34:43+0000" ,
        "text" : "Successfully submitted EXPORT operation on schema instance.
Request id - 130." ,
        "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/130"
      }
    ]
  } ,
  "context_id" : "123" ,
  "media_type" : "application/oracle.com.cloud.common.SchemaPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/schemaplatforminstance/byrequest/123" ,
  "target_type" : "oracle_dbsvc"
}
```

After the export operation is completed, a GET operation on schema service yields below output

```
{
  "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/123" ,
  "name" : "Service_8E958EC718B11" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "123" ,
  "media_type" : "application/oracle.com.cloud.common.SchemaPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/schemaplatforminstance/byrequest/123" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 23:49:30" ,
  "based_on" : "/em/cloud/dbaas/schemaplatformtemplate/
E4D9626BC252F517E040F20A605152CD" ,
  "target_type" : "oracle_dbsvc" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=Service_8E958EC718B11.us.example.com)))" ,
  "destination_zone" : "/em/cloud/dbaas/zone/675B859C36772FB7856771B1D57F79F8" ,
  "schema_list" :
  [
    {
      "service_name_prefix" : "" ,
      "workload_name" : "" ,
      "schema" :
      [
        {
          "username" : "" ,
          "original_name" : "schema200" ,
          "password" : ""
        }
      ]
    }
  ] ,
  "db_version" : "11.2.0.2.0" ,
  "export_dump_list" :
  [
    {
      "name" : "test_API_export" ,
      "description" : "testing export option from APIs" ,
      "URN" : "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_DbProfile:E4E9E7EE230BF965E040F20A60517256:0.1" ,
      "status" : "Ready"
    }
  ]
}
```

56.3.3.5.2 Restoring a Schema from Exported Schema Dumps

The restore schema from dump activity is based on the available export dumps. Refer to `export_dump_list` section in the output of the GET request to view the URN of the dump.

The configurations for the POST on a SchemaPlatformInstance are described below:

Table 56-39 POST Request Configuration for Restoring a Schema from the Exported Schema Dumps

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/schemaplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.SchemaPlatformInstance +json Accept: application/oracle.com.cloud.common.SchemaPlatformInstance+json
Body	{ "operation" : "IMPORT", "profile_urn" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:DECB2AAA09CCD711E040F20A60514F92:0 .1" }
Request method	POST

A sample of the response from the above interaction is shown below.

```
{
  "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/123" ,
  "name" : "Service_8E958EC718B11" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:34:43+0000" ,
        "text" : "Successfully submitted IMPORT operation on schema instance.
Request id - 132." ,
        "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/132"
      }
    ]
  } ,
  "context_id" : "123" ,
  "media_type" : "application/oracle.com.cloud.common.SchemaPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/schemaplatforminstance/byrequest/123" ,
  "target_type" : "oracle_dbsvc"
}
```

56.3.3.5.3 Deleting the Exported Schema Dumps

Deleting the export dump depends on the available export dumps. Refer to `export_dump_list` section in the output of the GET request to view the URN of the dump.

The configuration for the POST on a SchemaPlatformInstance is as follows:

Table 56-40 POST Request Configuration for Deleting the Exported Schema Dumps

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/schemaplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.SchemaPlatformInstance +json Accept: application/ oracle.com.cloud.common.SchemaPlatformInstance+json
Body	{ "operation" : "DELETE_EXPORT", "profile_urn" : "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile:DECB2AAA09CCD711E040F2 0A60514F92:0.1" }
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/123" ,
  "name" : "Service_8E958EC718B11" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:34:43+0000" ,
        "text" : "Successfully submitted DELETE_EXPORT operation on schema
instance. Request id - 135." ,
        "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/135"
      }
    ]
  } ,
  "context_id" : "123" ,
  "media_type" : "application/oracle.com.cloud.common.SchemaPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/schemaplatforminstance/byrequest/123" ,
  "target_type" : "oracle_dbsvc"
}
```

56.3.3.5.4 Changing Schema Passwords

The configuration for the POST on a SchemaPlatformInstance is as follows:

Table 56-41 POST Request Configuration for Changing the Schema Passwords

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/schemaplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.SchemaPlatformInstance +json Accept: application/oracle.com.cloud.common.SchemaPlatformInstance+json
Body	<pre>{ "operation" : "CHANGE_PWD", "schema_name" : "schema1", "new_password" : "welcome" }</pre>
Request method	POST

A sample of the response from the above interaction is shown below.

```
{
  "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/123" ,
  "name" : "Service_8E958EC718B11" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:34:43+0000" ,
        "text" : "Successfully submitted CHANGE_PWD operation on schema
instance. Request id - 136." ,
        "uri" : "/em/cloud/dbaas/schemaplatforminstance/byrequest/136"
      }
    ]
  } ,
  "context_id" : "123" ,
  "media_type" : "application/oracle.com.cloud.common.SchemaPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/schemaplatforminstance/byrequest/123" ,
  "target_type" : "oracle_dbsvc"
}
```

56.4 Pluggable Database as a Service

This section describes the resource model for Pluggable Database as a Service (PdbaaS) REST API and the REST request/response interactions.

Note:

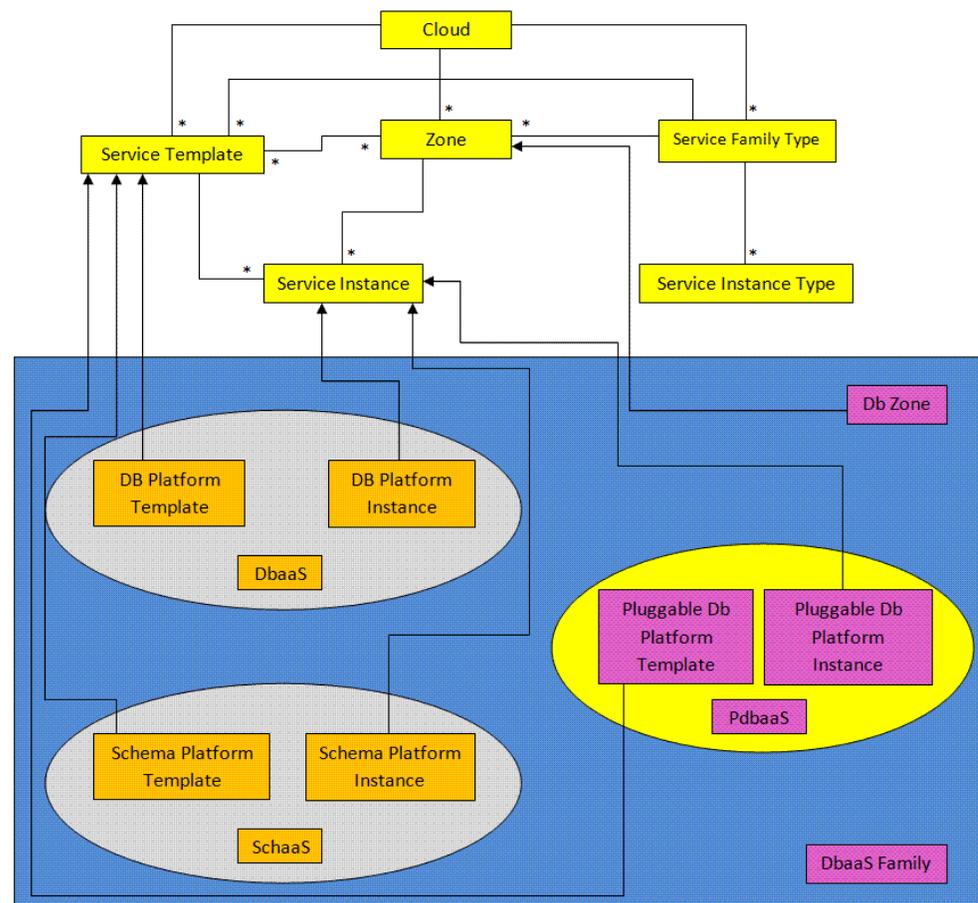
PdbaaS REST APIs are only supported by the Oracle Cloud Application plug-in version 12.1.0.7.0 and above.

- [Pluggable Database as a Service Resource Model](#)
- [Supported Operations for Pluggable Database Resources](#)
- [Pluggable Database as a Service REST API Examples](#)

56.4.1 Pluggable Database as a Service Resource Model

Cloud resources are organized by common service entities, and specific services (for example, Pluggable Database as a Service) provide resources by extending these common service entities. The figure below shows the PdbaaS resource model.

Figure 56-3 Pluggable Database as a Service Resource Model



The following sections describe the resources that are supported by the Pluggable Database as a Service REST APIs and provide examples of supported operations. Pluggable Database as a Service uses the same Cloud, Service Family, and DB Zone resources as described in [Database as a Service Resource Model](#).

The following resource models are described in this section:

- [Pluggable DB Platform Template](#)
- [Pluggable DB Platform Instance](#)

56.4.1.1 Pluggable DB Platform Template

The Pluggable Db Platform Template extends the Service Template resource. It represents the service template created for Pluggable Database creation. It can be a template for creating a pluggable database using profile based pluggable database (pdb with data) or for creating an empty pluggable database. It is permissible to accept the ServiceTemplate media type on an instance of Pluggable Db Platform Template. It is a preconfigured deployable service that realizes a Pluggable Db Platform Instance resource. Pluggable Db Platform Template has the media type `application/oracle.com.cloud.common.PluggableDbPlatformTemplate+json` and URI format `/em/cloud/dbaas/pluggabledbplatformtemplate/<template id>`.

The following table describes the Schema Platform Template Data Model.

Table 56-42 Pluggable DB Platform Template Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the template.	1
description	String	A brief description given to the template.	0..1
created	Timestamp	Date and time, in ISO 8601 format, when the template was created/last modified.	1
zones	Collection <DbZone>	List of all zones configured for this template.	0..1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
service_instances	Collection <SchemaPlatformInstance>	All service instances created based on this SchemaPlatformTemplate.	0..1
media_type	String	The media type of the service template that this type represents.	1
params	Object	List of parameters required to provision a Schema Platform Instance from this template.	1
deployment_params	List<Object>	Description of the parameters which are required while creating a service instance.	1
type	String	The type of the service template which is "dbaas" by default.	1
subtype	String	The sub type of the instance created based on this template. It has a value "schema" in this case.	1
template_type	String	Type of this template based on how the template got created. It can have any of two values : "EMPTY_SCHEMAS" or "SCHEMAS_FROM_PROFILE".	1
workloads	List<Object>	List all the workloads defined for this template and list the attributes for each one of them.	0..1

Table 56-42 (Cont.) Pluggable DB Platform Template Data Model

Field	Type	Description	Occurs
canonicalLink	URI	Can be used to perform cloud interactions like GET and POST.	1
number_of_tablespaces	String	Number of tablespaces.	1

56.4.1.2 Pluggable DB Platform Instance

The Pluggable Db Platform Instance extends the Service Instance resource. It is linked to Pluggable Database target in Enterprise Manager Cloud Control. Pluggable Db Platform Instance has the media type `application/oracle.com.cloud.common.PluggableDbPlatformInstance+json` and URI format `/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/<request id>`.

The following table describes the Schema Platform Instance Data Model:

Table 56-43 Pluggable DB Platform Instance Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given given to the pluggable database	1
destination_zone	Zone	The Zone to which the pluggable database is deployed	1
media_type	String	Indicates the additional media type that clients can use to perform a GET.	1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
based_on	PluggableDbPlatformTemplate	The pluggable db platform template on which this database service is published.	1
connect_string	String	Connect String required to establish a connection to this database service.	0..1
created	Timestamp	Date and time, in ISO 8601 format, when the template was created/last modified.	1
target_type	String	Target type of this service instance. It has the default value <code>oracle_pdb</code>	1
status	String	Status of the pluggable database.	1
db_version	String	Version of the database on which pluggable db is running.	0..1
context_id	String	The request id of this pluggable database.	1

Table 56-43 (Cont.) Pluggable DB Platform Instance Data Model

Field	Type	Description	Occurs
canonicalLink	URI	Can be used to perform cloud interactions like GET and DELETE.	1

56.4.2 Supported Operations for Pluggable Database Resources

The following table lists all the operations that are supported on the various Pluggable Database as Service resources.

Table 56-44 Supported Operations

Resource	GET	POST	PUT	DELETE
Cloud	Yes	No	No	No
Service Family Type	Yes	No	No	No
DB Zone	Yes	Yes	No	No
PluggableDb Platform Template [Service Template]	Yes	Yes	No	No
PluggableDb Platform Instance [Service Instance]	Yes	Yes	No	Yes

56.4.3 Pluggable Database as a Service REST API Examples

The following sections provide examples of interaction with Enterprise Manager Cloud Control with Cloud Application plug-in 12.1.0.7 and higher. The examples for GET on cloud, GET on dbaas family type and GET on Db Zone are covered in the DbaaS REST APIs section. The following examples are covered:

- [Viewing Details of the Pluggable Db Platform Template Resource](#)
- [Creating a Pluggable Database](#)
 - [Creating a Pluggable Database by Passing a Request on the DB Zone](#)
 - [Creating a Pluggable Database by Passing a Request on the Pluggable DB Platform Template](#)
- [Viewing Details of the Pluggable Database Creation](#)
- [Deleting a Pluggable Database Instance](#)
- [Lifecycle operations on a Pluggable Database Instance](#)
 - [Shutting Down a Pluggable Database](#)
 - [Starting up a Pluggable Database](#)
 - [Scheduling a Backup for a Pluggable Database](#)
 - [Restoring a Pluggable Database from a Backup](#)

56.4.3.1 Viewing Details of the Pluggable Db Platform Template Resource

A GET request on a Pluggable Db Platform Template provides the details about a Pluggable DB service template.

Table 56-45 GET Request Configuration for Viewing Details of the Pluggable DB Platform Template Resource

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/pluggabledbplatformtemplate/E32F474628FCCE5AE040E50ACA84603A
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "/em/cloud/dbaas/pluggabledbplatformtemplate/
E32F474628FCCE5AE040E50ACA84603A",
  "name": "Sample PDB template",
  "description": "Sample PDB template",
  "resource_state": {
    "state": "READY"
  },
  "media_type": "application/oracle.com.cloud.common.PluggableDbPlatformTemplate
+json",
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/pluggabledbplatformtemplate/E32F474628FCCE5AE040E50ACA84603A",
  "type": "dbaas",
  "created": "2013-08-05T07:34:10+0000",
  "zones": {
    "media_type": "application/oracle.com.cloud.common.DbZone+json",
    "total": "1",
    "elements": [
      {
        "uri": "/em/cloud/dbaas/zone/76663B316DCB26E6836822224C7881E3",
        "name": "Ssa_zone1",
        "description": "Ssa_zone1",
        "context_id": "76663B316DCB26E6836822224C7881E3",
        "media_type": "application/oracle.com.cloud.common.DbZone+json",
        "service_family_type": "dbaas",
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/zone/76663B316DCB26E6836822224C7881E3",
        "type": "self_service_zone"
        "target_nodes_for_placement":
          [
            "xyz.mycompany.com"
          ]
      }
    ]
  },
  "service_instances": {
    "media_type": "application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json",
    "total": "1",
    "elements": [
```

```

        {
          "media_type" : "application/
oracle.com.cloud.common.PluggableDbPlatformInstance+json" ,
          "name" : "database_MYPDB_000" ,
          "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7" ,
          "target_type" : "oracle_pdb" ,
          "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7"
        }
      ]
    },
    "number_of_tablespaces" : "1" ,
    "deployment_params": [
      {
        "description" : "Name of the additional service created as part of the pdb
service request" ,
        "name" : "service_name" ,
        "require" : "true" ,
        "type" : "STRING" ,
        "sensitive" : "false"
      } ,
      {
        "name": "workload_name",
        "description": "WorkLoad name to be associated with the request",
        "type": "STRING",
        "require": "true",
        "sensitive": "false"
      } ,
      {
        "name": "username",
        "description": "Pluggable database admin username",
        "type": "STRING",
        "require": "true",
        "sensitive": "false"
      } ,
      {
        "name": "password",
        "description": "Pluggable database admin user password",
        "type": "STRING",
        "require": "true",
        "sensitive": "true"
      } ,
      {
        "name" : "target_nodes_for_placement" ,
        "description" : "List of available Container Database(s) to be chosen for
creating the Pluggable database instance." ,
        "type" : "STRING" ,
        "require" : "false" ,
        "sensitive" : "false"
      } ,
      {
        "description" : "Name of Pluggable database" ,
        "name" : "pdb_name" ,
        "require" : "true" ,
        "type" : "STRING" ,
        "sensitive" : "false"
      } ,
      {
        "description" : "List of tablespace names. Required only for EMPTY_PDB
templates" ,
        "name" : "tablespaces" ,

```

```

        "require" : "false" ,
        "type" : "LIST" ,
        "sensitive" : "false"
    },
    {
        "name": "target_name",
        "description": "Target cdb name to be chosen for installing the pdb",
        "type": "STRING",
        "require": "false",
        "sensitive": "true"
    },
],
"subtype": "pdb",
"template_type": "PDB_FROM_PROFILE",
"workloads": [
    {
        "name": "w1",
        "description": "null",
        "attributes": [
            {
                "name": "CPU",
                "value": "1",
                "units": "cores"
            },
            {
                "name": "Memory",
                "value": "1",
                "units": "GB"
            },
            {
                "name": "Storage",
                "value": "1",
                "units": "GB"
            }
        ]
    }
]
}
"params": {
    "workload_name": "",
    "placement_option" : "SELECT_TARGET_FROM_REQUEST" ,
    "username": "",
    "password": "",
    "pdb_name" : "" ,
    "service_name" : "" ,
    "tablespaces" :
        [
        ]
    }
}
}

```

56.4.3.2 Creating a Pluggable Database

This section describes how to create a pluggable database using the Cloud resources.

As Pluggable Database is also a service instance in the service family type "dbaas", you need to identify the zone of the same family type in which to create the pluggable database. There are two approaches to create a pluggable database:

- [Creating a Pluggable Database by Passing a Request on the DB Zone](#)

- [Creating a Pluggable Database by Passing a Request on the Pluggable DB Platform Template](#)

Note the attributes in the submitted body for the POST. The pattern is the same for other service instance creations. Because the intention is clear, the "zone" attribute is not required while POSTing to the Db Zone. Similarly, the "based_on" attribute is not needed when POSTing to the PluggableDbPlatformTemplate.

56.4.3.2.1 Creating a Pluggable Database by Passing a Request on the DB Zone

The following shows the configuration for POSTing to Db Zone:

Table 56-46 POST Request Configuration for Creating a Pluggable Database by Passing a Request on the DB Zone

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/zone/82CF1C28FA20A183C99D138FF8065F19
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.PluggableDbPlatformInstance+json Accept: application/oracle.com.cloud.common.PluggableDbPlatformInstance+json
Body	<pre>{ "based_on" : "/em/cloud/dbaas/pluggabledbplatformtemplate/ FADF7229EB960330E043E176F00ADE61" , "name" : "Test Service" , "start_date": "2013-08-02T14:20:00ZAsia/Calcutta", "end_date": "2013-08-02T17:20:00ZAsia/Calcutta", "params" : { "username" : "Pdbaas_API_User" , "pdb_name" : "pdb_lrgemg880" , "workload_name" : "Small" , "service_name" : "TestService" , "password" : "welcome1" , "tablespaces" : ["tbsp1"] } "target_name " : "test_cdb" }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "uri": "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/31",
  "name": "Test Service",
  "resource_state": {
    "state": "INITIATED"
  }
  "messages" :
  [
    {

```

```

        "date" : "2014-11-25T09:52:49+0000" ,
        "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/
22",
        "text" : "Delete Request ID is : 22"
    }
}
},
"media_type": "application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json",
"canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/pluggabledbplatforminstance/byrequest/31",
"status": "SCHEDULED"
}

```

56.4.3.2.2 Creating a Pluggable Database by Passing a Request on the Pluggable DB Platform Template

The following describes the configurations for POSTing to the PluggableDbPlatformTemplate:

Table 56-47 POST Request Configuration for Creating a Pluggable Database by Passing a Request on the Pluggable DB Platform Template

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/dbaas/pluggabledbplatformtemplate/CC3BBB665A6BC6FFE040F00AEF252456
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.PluggableDbPlatformInstance+json Accept: application/oracle.com.cloud.common.PluggableDbPlatformInstance+json
Body	<pre> { "zone": "/em/cloud/dbaas/zone/E125CDA8B810BB2F8ECE9867AFC25903", "name" : "Request for an Empty PDB BA", "end_date": "2015-11-20T17:20:00ZAsia/Calcutta", "params" : { "username" : "TestUser", "password" : "welcome1", "workload_name": "SmallPdb", "pdb_name" : "BoAPDB", "service_name" : "BoAPDB_Service" , "tablespaces" : ["pdb_tbs1", "pdb_tbs2"] }, "instance_target_properties": [{ "name": "Department", "value": "Development" }, { "name": "Comment", "value": "BofA testing" }] } </pre>
Request method	POST

 **Note:**

The `target_name` property is a mandatory property if the custom placement option (`SELECT_TARGET_OPTION`) is set to `"SELECT_TARGET_FROM_REQUEST"` in the PDB service template. Also, the CDB name provided should be available in the chosen zone.

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/122" ,
  "name" : "Request for an Empty PDB BofA" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/123" ,
        "text" : "Delete Request ID is : 123" ,
        "date" : "2015-11-19T10:41:38+0000"
      }
    ]
  } ,
  "media_type" : "application/oracle.com.cloud.common.PluggableDbPlatformInstance+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/122" ,
  "status" : "SCHEDULED"
}
```

56.4.3.3 Viewing Details of the Pluggable Database Creation

A GET request on a Pluggable DB Platform Instance provides the status and other information about the resource.

Table 56-48 GET Request Configuration for Viewing Details of the Pluggable Database Creation

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/31</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/31" ,
  "name" : "Test Service_CREATE_11_53" ,
```

```

"description": "Create Database for \"Test Service\".",
"resource_state":
{
  "state": "CREATING"
},
"context_id": "31",
"media_type": "application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json",
"status": "IN_PROGRESS",
"created": "2013-06-07 23:09:04" ,
"canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/dbaas/pluggabledbplatforminstance/byrequest/31"
}

```

Note that the `resource_state` attribute shows `CREATING` state which indicates that the pluggable database is being created. After the pluggable database is created, the `GET` operation returns the pluggable database resource with `READY` state, as shown below:

```

{
  "destination_zone" : "/em/cloud/dbaas/zone/9A71CBEABCA367D0D425697DC39B3AF9" ,
  "media_type" : "application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json" ,
  "db_version" : "12.1.0.1.0" ,
  "resource_state" : {
    "state" : "READY"
    "messages" :
    [
      {
        "date" : "2014-11-25T09:52:49+0000" ,
        "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/
22",
        "text" : "Delete Request ID is : 22"
      }
    ]
  } ,
  "status" : "RUNNING" ,
  "based_on" : "/em/cloud/dbaas/pluggabledbplatformtemplate/
E33799E249513428E040F50A994210F5" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/pluggabledbplatforminstance/byrequest/31" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=MYPDB_000)(INSTANCE_NAME=t105kfv)(UR=A)
(SERVER=DEDICATED)))" ,
  "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/31" ,
  "context_id" : "31" ,
  "created" : "2013-08-05 17:30:30" ,
  "name" : "database_MYPDB_000" ,
  "target_type" : "oracle_pdb"
}

```

56.4.3.4 Deleting a Pluggable Database Instance

The `DELETE` request on the URI of the resource can be issued to delete a pluggable database. For example, the following `DELETE` request is issued:

Table 56-49 DELETE Request Configuration for Deleting a Pluggable Database Instance

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
{
  "media_type" : "application/oracle.com.cloud.common.PluggableDbPlatformInstance+json" ,
  "context_id" : "7" ,
  "resource_state" : {
    "state" : "DESTROYING" ,
    "messages" :
    [
      {
        "text" : "Submit 'DELETE' operation on 'application/oracle.com.cloud.common.PluggableDbPlatformInstance+json' 'database_MYPDB_000'. The process has job id '24'" ,
        "date" : "2013-08-05T17:35:56+0000"
      }
    ]
  } ,
  "name" : "database_MYPDB_000" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7" ,
  "target_type" : "oracle_pdb" ,
  "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7"
}
```

After some time, the GET request on the database service URI will result in the following interaction:

Table 56-50 GET Request Configuration for Viewing Status of the DELETE Request

Feature	Description
URI	/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/22
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "destination_zone" : "/em/cloud/dbaas/zone/9A71CBEABCA367D0D425697DC39B3AF9" ,
```

```

    "media_type" : "application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json" ,
    "db_version" : "12.1.0.1.0" ,
    "resource_state" : {
        "state" : "READY"
    } ,
    "status" : "DESTROYING" ,
    "based_on" : "/em/cloud/dbaas/pluggabledbplatformtemplate/
E33799E249513428E040F50A994210F5" ,
    "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/pluggabledbplatforminstance/byrequest/7" ,
    "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=MYPDB_000)(INSTANCE_NAME=t105kfv)(UR=A)
(SERVER=DEDICATED)))" ,
    "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7" ,
    "context_id" : "7" ,
    "created" : "2013-08-05 17:30:30" ,
    "name" : "database_MYPDB_000" ,
    "target_type" : "oracle_pdb"
}

```

Note that the status of the pluggable database will be "DELETED" once the pluggable database instance is deleted.

56.4.3.5 Lifecycle operations on a Pluggable Database Instance

The POST request on the URI of the resource can be issued to perform an operation on a pluggable database.

You can perform the following tasks using POST request:

- [Shutting Down a Pluggable Database](#)
- [Starting up a Pluggable Database](#)
- [Scheduling a Backup for a Pluggable Database](#)
- [Restoring a Pluggable Database from a Backup](#)

56.4.3.5.1 Shutting Down a Pluggable Database

The following describes the configurations for the POST on a PluggableDbPlatformInstance:

Table 56-51 POST Request Configuration for Shutting Down a Pluggable Database

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json Accept: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json

Table 56-51 (Cont.) POST Request Configuration for Shutting Down a Pluggable Database

Feature	Description
Body	<pre>{ "operation" : "SHUTDOWN" }</pre>
Request method	POST

A sample of the response received is from the above interaction is shown below.

```
{
  "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/81" ,
  "name" : "database_PDBSERVICE_000" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T06:56:25+0000" ,
        "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/124" ,
        "text" : "Successfully submitted SHUTDOWN operation on service instance.
Request id - 124."
      }
    ]
  } ,
  "context_id" : "81" ,
  "media_type" : "application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/pluggabledbplatforminstance/byrequest/81" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 04:19:14" ,
  "based_on" : "/em/cloud/dbaas/pluggabledbplatformtemplate/
E49AA1BAC2DBA0ECE040F20A60517942" ,
  "target_type" : "oracle_pdb" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST= host1)
(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=PDB_000)(INSTANCE_NAME=tbugt)(UR=A)
(SERVER=DEDICATED)))" ,
  "destination_zone" : "/em/cloud/dbaas/zone/0129A72DB32D4199B59ABFA64085EAB3" ,
  "db_version" : "12.1.0.1.0"
}
```

56.4.3.5.2 Starting up a Pluggable Database

Table 56-52 POST Request Configuration for Shutting Down a Pluggable Database

Feature	Description
URI	<a href="https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7">https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7

Table 56-52 (Cont.) POST Request Configuration for Shutting Down a Pluggable Database

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json Accept: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json
Body	{ "operation" : "STARTUP" }
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/81" ,
  "name" : "database_PDBSERVICE_000" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T06:58:58+0000" ,
        "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/125" ,
        "text" : "Successfully submitted STARTUP operation on service instance.
Request id - 125."
      }
    ]
  } ,
  "context_id" : "81" ,
  "media_type" : "application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/pluggabledbplatforminstance/byrequest/81" ,
  "status" : "STOPPED" ,
  "created" : "2013-08-26 04:19:14" ,
  "based_on" : "/em/cloud/dbaas/pluggabledbplatformtemplate/
E49AA1BAC2DBA0ECE040F20A60517942" ,
  "target_type" : "oracle_pdb" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST= host1)
(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=PDB_000)(INSTANCE_NAME=tbugt)(UR=A)
(SERVER=DEDICATED)))" ,
  "destination_zone" : "/em/cloud/dbaas/zone/0129A72DB32D4199B59ABFA64085EAB3" ,
  "db_version" : "12.1.0.1.0"
}
```

56.4.3.5.3 Scheduling a Backup for a Pluggable Database

The following describes the configurations for the POST on a PluggableDbPlatformInstance:

For scheduling backup user has to provide the time at which backups needs to scheduled. This should in format of YYYY-MM-DDTHH:MM:SSZFullTimeZonename.

For example to schedule in PST time user should give 2013-08-27T12:34:45ZAmerica/Los_Angeles

However timezone part is optional. If you do not want to provide it, you can do as follows: 2013-08-27T12:34:45Z

Table 56-53 POST Request Configuration for Scheduling a Backup for a Pluggable Database

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json Accept: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json
Body	{ "operation" : "BACKUP", "backup_schedule" : "2013-08-27T12:34:45ZAsia/Calcutta" }
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/81" ,
  "name" : "database_PDBSERVICE_000" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:01:15+0000" ,
        "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/126" ,
        "text" : "Successfully submitted BACKUP operation on service instance.
Request id - 126."
      }
    ]
  } ,
  "context_id" : "81" ,
  "media_type" : "application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/pluggabledbplatforminstance/byrequest/81" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 04:19:14" ,
  "based_on" : "/em/cloud/dbaas/pluggabledbplatformtemplate/
E49AA1BAC2DBA0ECE040F20A60517942" ,
  "target_type" : "oracle_pdb" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=PDB_000)(INSTANCE_NAME=tbugt)(UR=A)
(SERVER=DEDICATED)))" ,
```

```

"destination_zone" : "/em/cloud/dbaas/zone/0129A72DB32D4199B59ABFA64085EAB3" ,
"db_version" : "12.1.0.1.0"
"RMAN_backup_list" :
[
  {
    "Key" : "1" ,
    "Tag" : "ORA$OEM_LEVEL_0" ,
    "Completed Time" : "Aug 27, 2013 12:24:02 AM" ,
    "Contents" : "SPFILE,CONTROLFILE" ,
    "Status" : "AVAILABLE"
  }
]
}

```

56.4.3.5.4 Restoring a Pluggable Database from a Backup

The following describes the configurations for the POST on a PluggableDbPlatformInstance:

For restoring from backup ,the user has to provide the point-in-time to which database is to be restored. This should in format of YYYY-MM-DDTHH:MM:SSZFullTimeZonename.

For example to schedule in PST time user should give 2013-08-27T12:34:45ZAmerica/Los_Angeles

However timezone part is optional. If you do not want to provide it, you can do as follows: 2013-08-27T12:34:45Z

The restore time is based on backups available, please refer to RMAN_backup_list section in the output of GET request

Table 56-54 POST Request Configuration for Restoring a Pluggable Database from a Backup

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/7
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json Accept: application/ oracle.com.cloud.common.PluggableDbPlatformInstance+json
Body	{ "operation" : "RESTORE", "restore_date" : "2013-08-27T12:34:45Z" }
Request method	POST

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/81" ,
  "name" : "database_PDBSERVICE_000" ,
  "resource_state" : {

```

```
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2013-08-27T07:01:15+0000" ,
        "uri" : "/em/cloud/dbaas/pluggabledbplatforminstance/byrequest/146" ,
        "text" : "Successfully submitted RESTORE operation on service instance.
Request id - 146."
      }
    ]
  } ,
  "context_id" : "81" ,
  "media_type" : "application/oracle.com.cloud.common.PluggableDbPlatformInstance
+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
dbaas/pluggabledbplatforminstance/byrequest/81" ,
  "status" : "RUNNING" ,
  "created" : "2013-08-26 04:20:14" ,
  "based_on" : "/em/cloud/dbaas/pluggabledbplatformtemplate/
E49AA1BAC2DBA0ECE040F20A60517942" ,
  "target_type" : "oracle_pdb" ,
  "connect_string" : "(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=host1)
(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=PDB_000)(INSTANCE_NAME=tbugt)(UR=A)
(SERVER=DEDICATED)))" ,
  "destination_zone" : "/em/cloud/dbaas/zone/0129A72DB32D4199B59ABFA64085EAB3" ,
  "db_version" : "12.1.0.1.0"
}
```

57

DBaaS REST APIs and EM CLI Verbs Based Use Cases

This chapter describes the procedure for different DBaaS use cases supported in this release.

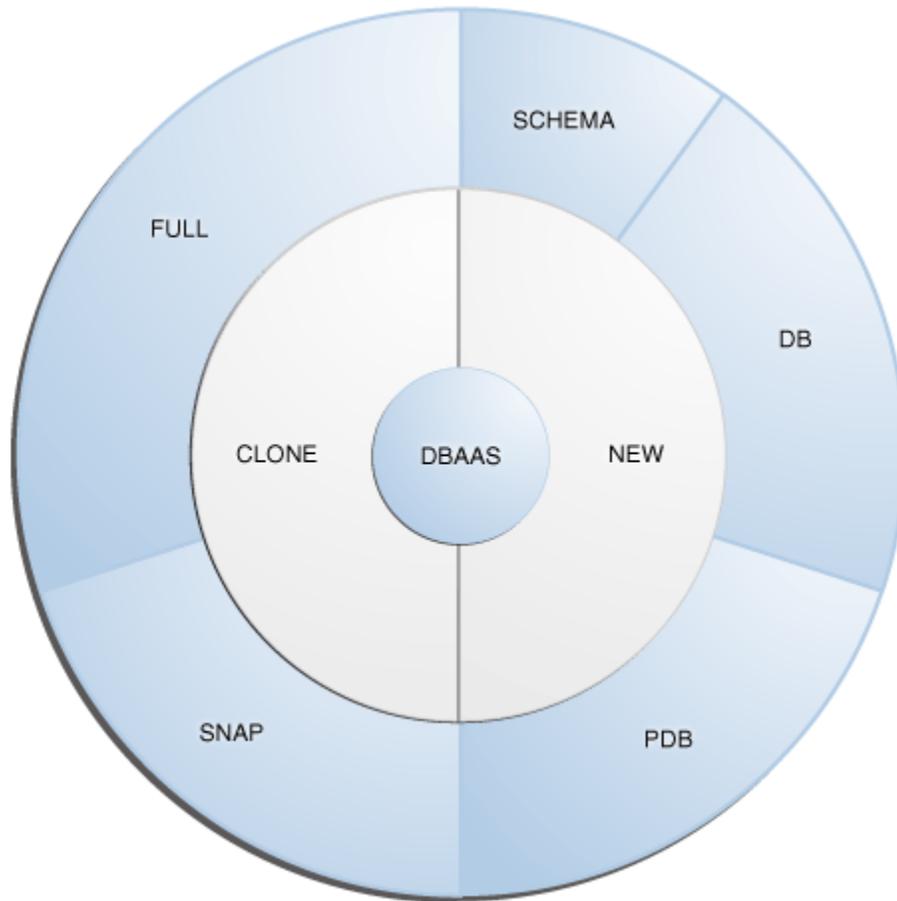
It contains the following sections:

- [Getting Started with DBaaS With REST APIs and EM CLI Verbs](#)
- [Creating Databases Using Database Template With REST APIs and EM CLI Verbs](#)
- [Creating Empty Schemas and Schemas Based on Profile With REST APIs and EM CLI Verbs](#)
- [Creating Empty PDBs and PDBs Based on Profile With REST APIs and EM CLI Verbs](#)
- [Migrating/Transferring Data from One Database to Another](#)
- [Creating Databases Using Snap Clone With REST APIs and EM CLI Verbs](#)
- [Creating Full Database Clones Using RMAN With REST APIs and EM CLI Verbs](#)
- [Configuring Custom Database Placement Option Using REST APIs](#)
- [Service Catalog of Database as a Service](#)

57.1 Getting Started with DBaaS With REST APIs and EM CLI Verbs

The following figure provides an overview of the different flavors of Enterprise Manager DBaaS.

Figure 57-1 DBaaS Use Cases



This table lists the DBaaS use cases that are supported in this release and lists the different methods (EMCLI, and REST API) that can be used to run these use cases.

Table 57-1 DBaaS Use Cases

Service Type	Service Offering	See
New	Creating databases using a database template.	Creating Databases Using Database Template With REST APIs and EM CLI Verbs
New	Schema: <ul style="list-style-type: none"> • Creating an empty schema • Creating a schema based on profile 	Creating Empty Schemas and Schemas Based on Profile With REST APIs and EM CLI Verbs
New	Pluggable Database: <ul style="list-style-type: none"> • Creating an empty pluggable database • Creating a pluggable database based on profile 	Creating Empty PDBs and PDBs Based on Profile With REST APIs and EM CLI Verbs

Table 57-1 (Cont.) DBaaS Use Cases

Service Type	Service Offering	See
	Migrating or transferring data from one database to another.	Migrating/Transferring Data from One Database to Another
Snap Clone	<ul style="list-style-type: none"> • Software Solution: <ul style="list-style-type: none"> – Sun ZFS – Clone DB • Hardware Solution: <ul style="list-style-type: none"> – ZFS file system – NetApp – EMC 	Creating Databases Using Snap Clone With REST APIs and EM CLI Verbs
Clone	Full Clone: <ul style="list-style-type: none"> • Cloning databases using RMAN backup • Cloning databases using RMAN duplicate 	Creating Full Database Clones Using RMAN With REST APIs and EM CLI Verbs
New DBaaS setup	Multi-Datacenter DBaaS setup	Multi-Datacenter DBaaS Setup

57.2 Creating Databases Using Database Template With REST APIs and EM CLI Verbs

The DBCA template supports both structure plus data and structure only types. This database provisioning profile is created from the production or source database registered with Enterprise Manager. It supports both structure plus data and structure only types. This option is recommended if the database size being created is less than 50 GB.

The table below shows the list of tasks that are involved in creating a database using the database template based profile.

You can create single instance and cluster databases using database template based profiles.

 **Note:**

In the table below, wherever REST APIs are not available for any steps EM CLI verbs are provided, and vice-versa.

Table 57-2 Creating Databases Using Database Template with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started	See Getting Started

Table 57-2 (Cont.) Creating Databases Using Database Template with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
2	Create resource providers. <ul style="list-style-type: none"> Create one or more PaaS Infrastructure Zones. Create one or more database pools. 	See: <ul style="list-style-type: none"> Creating a PaaS Zone Creating a Database Pool 	See: <ul style="list-style-type: none"> PaaS Zone EM CLI Verbs Software Pool EM CLI Verbs
6	Create a DBCA template based database provisioning profile.	See Creating Provisioning Profiles using EM CLI	See Creating Provisioning Profiles using EM CLI
4	Create the request settings.	See Creating Database Request Settings	See Database Request Settings EM CLI Verbs
5	Define quotas for each self service user.	See Creating DBaaS Quota for a Role	See Database Quota EM CLI Verbs
7	Create a service template based on the profile you have created.	See Service Templates and Service Template REST API Examples	See Service Template EM CLI Verbs
8	Configure the Chargeback Service.	See Performing UI Equivalent Chargeback Operations	See Performing UI Equivalent Chargeback Operations
9	While deploying a database, select the service template (associated with the database template based profile) you have created.	See Creating a Database Instance	See Creating a Database Instance

57.2.1 Creating Standby Databases With REST APIs and EM CLI Verbs

A data guard configuration consists of one primary database and one or more standby databases. The databases in a Data Guard configuration are connected by Oracle Net and may be dispersed geographically. There are no restrictions on where the databases are located, provided they can communicate with each other.

Oracle Data Guard ensures high availability, data protection, and disaster recovery for enterprise data. It provides a comprehensive set of services that create, maintain, manage, and monitor one or more standby databases to enable production Oracle databases to survive disasters and data corruptions. Oracle Data Guard maintains these standby databases as copies of the production database. If the production database becomes unavailable due to a planned or an unplanned outage, the Oracle Data Guard can switch any standby database to the production role, minimizing the downtime associated with the outage.

The production database, also referred to as the primary database can be either a single-instance Oracle database or an Oracle Real Application Clusters (RAC) database. A standby database is a transaction-wise consistent copy of the primary database. Using a backup copy of the primary database, you can create one or more standby databases and incorporate them in a Data Guard configuration. Using

Enterprise Manager Database as a Service, users with the `EM_SSA_ADMINISTRATOR` role can setup the DBaaS Cloud with single instance of RAC standby databases.

 **Note:**

In the table below, wherever REST APIs are not available for any steps EM CLI verbs are provided, and vice-versa.

Table 57-3 Creating Standby Databases with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started	See Getting Started
2	Set up one or more PaaS Infrastructure Zones.	See Creating a PaaS Zone	See PaaS Zone EM CLI Verbs
3	Define a database pool for provisioning standby databases.	See Creating a Database Pool	See Software Pool EM CLI Verbs
4	Configure the request settings.	See Creating Database Request Settings	See Database Request Settings EM CLI Verbs
5	Define quotas for each self service user.	See Creating DBaaS Quota for a Role	See Database Quota EM CLI Verbs
6	Create either of the following types of profiles: <ul style="list-style-type: none"> • DBCA template based database provisioning profile. • RMAN Backup based database provisioning profile. 	See Creating Provisioning Profiles using EM CLI	See Creating Provisioning Profiles using EM CLI
7	Create a service template based on the profile you have created.	See Service Templates and Service Template REST API Examples	See Service Template EM CLI Verbs
8	Configure the Chargeback Service.	See Performing UI Equivalent Chargeback Operations	See Performing UI Equivalent Chargeback Operations
9	While deploying a database, select the service template (associated with the DBCA template based profile) you have created. Additionally, you can also specify the standby database information while requesting the database.	See Creating a Database Instance	See Creating a Database Instance

57.3 Creating Empty Schemas and Schemas Based on Profile With REST APIs and EM CLI Verbs

The data content of a database provisioning profile is compiled from an export dump. You can choose to export Schema objects (structure only) or the Schema with data (structure and data).

The table below shows the list of tasks that are involved in creating an empty schema or a schema based on profile.



Note:

In the table below, wherever REST APIs are not available for any steps EM CLI verbs are provided, and vice-versa.

Table 57-4 Creating Schemas with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started	See Getting Started
2	Set up one or more PaaS Infrastructure Zones.	See Creating a PaaS Zone	See PaaS Zone EM CLI Verbs
3	Define a database pool for schema as a service.	See Creating a Schema Pool	See Software Pool EM CLI Verbs
4	Configure the request settings.	See Creating Database Request Settings	See Database Request Settings EM CLI Verbs
5	Define quotas for each self service user.	See Creating DBaaS Quota for a Role	See Database Quota EM CLI Verbs
6	Create a database provisioning profile. This step is optional and is required if you are importing schemas from a profile.	See Creating Provisioning Profiles using EM CLI	See Creating Provisioning Profiles using EM CLI
7	Create a service template based on: <ul style="list-style-type: none"> User Defined Schema: In this case, the service template is created with an empty schema. Schema from a Profile: In this case, you can import schemas from a database provisioning profile. You can select this option for applications with data such as eBusiness applications. 	See Creating a Service Template for a Schema	See Service Template EM CLI Verbs

Table 57-4 (Cont.) Creating Schemas with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
8	Configure the Chargeback Service.	See Performing UI Equivalent Chargeback Operations	See Performing UI Equivalent Chargeback Operations
9	Create the schema based on the service template.	See Creating a Schema Service	See Creating a Schema Service

57.4 Creating Empty PDBs and PDBs Based on Profile With REST APIs and EM CLI Verbs

An Oracle Database can contain a portable collection of schemas, schema objects, and non-schema objects, that appear to an Oracle Net client as a separate database. This self-contained collection is called a pluggable database (PDB). A multi-tenant container database (CDB) is a database that includes one or more PDBs. Oracle Database 12c Release 1 (12.1) and later versions allow you to create many PDBs within a single CDB.

Note:

In the table below, wherever REST APIs are not available for any steps EM CLI verbs are provided, and vice-versa.

Table 57-5 Creating Pluggable Databases with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started	See Getting Started
2	Set up one or more PaaS Infrastructure Zones.	See Creating a PaaS Zone	See PaaS Zone EM CLI Verbs
3	Create a database pool for PDB as a service.	See Creating a Pluggable Database Pool	See Software Pool EM CLI Verbs
4	Configure the request settings.	See Creating Database Request Settings	See Database Request Settings EM CLI Verbs
5	Define quotas for each self service user.	See Creating DBaaS Quota for a Role	See Database Quota EM CLI Verbs
6	Create a database provisioning profile. This step is optional and is not required if you are creating an empty pluggable database.	See Creating Provisioning Profiles using EM CLI	See Creating Provisioning Profiles using EM CLI

Table 57-5 (Cont.) Creating Pluggable Databases with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
7	Create a service template. A service template can contain: <ul style="list-style-type: none"> • Empty Pluggable Database: In this case, the service template is created with an empty schema. • Pluggable Database from a Profile: In this case, you can import schemas from a database provisioning profile. You can select this option for applications with data such as eBusiness applications. 	See Creating a Service Template for a Pluggable Database	See Service Template EM CLI Verbs
8	Configure the Chargeback Service.	See Performing UI Equivalent Chargeback Operations	See Performing UI Equivalent Chargeback Operations
9	While deploying a database, select the service template that you have created.	See Creating a Pluggable Database	See Creating a Pluggable Database

57.5 Migrating/Transferring Data from One Database to Another

To migrate data from one database to another using EM CLI verbs, follow the steps below:

1. Enter the EM CLI verb `emcli describe_dbprofile_input -data_mode=EXPORT`. The output provides all profile creation input variables.

Note:

Export is supported only for database whereas import is supported for both database and PDBs. This indicates that the source should always be a database and the destination can be either a database or a PDB.

2. Use the input variables to create a properties file with values for all the variables.
3. Export data from the source database by creating a database profile. To do so, enter the verb `emcli create_dbprofile - input_file=data:<properties file name along with path>`.

**Note:**

Use the properties file created in the previous step for this verb.

For the verb details see [Creating Provisioning Profiles using EM CLI](#).

4. Enter the verb to transfer data: `emcli data_transfer -input_file=data:/u01/files/data_trans.props`.

For the verb and properties file details see [Transferring Data Between Databases](#).

5. Enter the verb to import data in to the destination database: `emcli dbimport -input_file=data:/u01/files/dbimport.props`.

For the verb and properties file details see [Importing Data from Export Dumps to a Database](#).

57.6 Creating Databases Using Snap Clone With REST APIs and EM CLI Verbs

Snap Clone is a Self-Service-Application (SSA) way of creating fast and space-saver clones of huge databases. Clones of the production database are often required for test and development purposes, and it is difficult and time consuming to create these clones, especially if the databases are huge.

Enterprise Manager offers Snap Clone as a way to address this issue, so that thin clones can be created from production databases by using the copy on write technology available in some storage systems. This means that these clones take up little space initially (about 2 GB of writable space required for a thin clone of a multi-terabyte database), and will grow as inserts, updates and deletes are performed. Enterprise Manager offers two solutions with snap clone:

- **Hardware Solution:** Vendor specific hardware solution which supports NetApps, Oracle Sun ZFS storage appliance, EMC VMAX, and VNX.
- **Software Solution:** Storage agnostic software solution that supports all NAS and SAN storage devices. This is supported through use of the ZFS file system, and the CloneDB feature.

The main features of snap clone are:

- **Self Service Driven Approach:** Empowers the self service user to clone databases as required on an ad-hoc basis.
- **Rapid Cloning:** Databases can be cloned in minutes and not in days or weeks.
- **Space Efficient:** This features allows users to significantly reduce the storage footprint.

This section contains the following sub-sections:

- [Creating a Snap Clone Using a Profile With REST APIs and EM CLI Verbs](#)
- [Creating a Snap Clone Using Live Database With REST APIs and EM CLI Verbs](#)
- [Continuous Sync](#)

57.6.1 Creating a Snap Clone Using a Profile With REST APIs and EM CLI Verbs

This table below lists the steps involved in creating a snap clone using a snapshot or an RMAN Image profile.

 **Note:**

In the table below, wherever REST APIs are not available for any steps EM CLI verbs are provided, and vice-versa.

Table 57-6 Creating a Snap Clone Database Using a Profile with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
1	Follow the steps in the Getting Started section to enable Snap Clone.	See Getting Started	See Getting Started
2	Register storage servers. <ul style="list-style-type: none"> NetApp and Sun ZFS Storage Server Solaris File System (ZFS) EMC Storage Server 	<ul style="list-style-type: none"> Registering a NetApp or a Sun ZFS Storage Server Registering a Solaris File System (ZFS) Storage Server Registering an EMC Storage Server 	<ul style="list-style-type: none"> Registering a NetApp or a Sun ZFS Storage Server Registering a Solaris File System (ZFS) Storage Server Registering an EMC Storage Server
3	Set up one or more PaaS Infrastructure Zones.	See Creating a PaaS Zone	See PaaS Zone EM CLI Verbs
4	Create a database pool.	See Creating a Database Pool	See Software Pool EM CLI Verbs
5	Configure the request settings.	See Creating Database Request Settings	See Database Request Settings EM CLI Verbs
6	Define quotas for each self service user.	See Creating DBaaS Quota for a Role	See Database Quota EM CLI Verbs
7	Set up the Test Master Database and enable snap clone.	See Enabling the Test Master for Snap Clone	See Enabling the Test Master for Snap Clone

Table 57-6 (Cont.) Creating a Snap Clone Database Using a Profile with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
8	Depending on the snap clone solution you are using, do either of the following: <ul style="list-style-type: none"> Hardware Solution: Create a snap clone based profile. Software Solution: Create an RMAN Image profile. Create a database provisioning profile using a snap clone.	<ul style="list-style-type: none"> Hardware Solution: See Creating a Database Provisioning Profile Using Snapshots Software Solution: See Creating Provisioning Profiles using EM CLI 	<ul style="list-style-type: none"> Hardware Solution: See Creating a Database Provisioning Profile Using Snapshots Software Solution: See Creating Provisioning Profiles using EM CLI
9	Create a service template based on the profile you have created.	<ul style="list-style-type: none"> Hardware Solution: See Creating Service Template Using Snap Clone Profile Software Solution: See Service Templates and Service Template REST API Examples 	<ul style="list-style-type: none"> Hardware Solution: See Creating Service Template Using Snap Clone Profile Software Solution: See Service Template EM CLI Verbs
10	Configure the Chargeback Service. (this step is optional)	See Performing UI Equivalent Chargeback Operations	See Performing UI Equivalent Chargeback Operations
11	While deploying a database, select the service template you have created.	See Creating a Database Instance	See Creating a Database Instance

57.6.2 Creating a Snap Clone Using Live Database With REST APIs and EM CLI Verbs

This table below lists the steps involved in creating a snap clone using a live standby database.

Note:

In the table below, wherever REST APIs are not available for any steps EM CLI verbs are provided, and vice-versa.

Table 57-7 Creating Snap Clone Using Live Database With REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
1	Follow the steps in the Getting Started section to enable Snap Clone.	See Getting Started .	See Getting Started .

Table 57-7 (Cont.) Creating Snap Clone Using Live Database With REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
2	Register storage servers. <ul style="list-style-type: none"> NetApp and Sun ZFS Storage Server Solaris File System (ZFS) EMC Storage Server 	See: <ul style="list-style-type: none"> Registering a NetApp or a Sun ZFS Storage Server Registering a Solaris File System (ZFS) Storage Server Registering an EMC Storage Server 	See: <ul style="list-style-type: none"> Registering a NetApp or a Sun ZFS Storage Server Registering a Solaris File System (ZFS) Storage Server Registering an EMC Storage Server
3	Set up one or more PaaS Infrastructure Zones.	See Creating a PaaS Zone	See PaaS Zone EM CLI Verbs
4	Create a database pool.	See Creating a Database Pool	See Software Pool EM CLI Verbs
5	Configure the request settings.	See Creating Database Request Settings	See Database Request Settings EM CLI Verbs
6	Define quotas for each self service user.	See Creating DBaaS Quota for a Role	See Database Quota EM CLI Verbs
7	Set up the Test Master Database using a live standby database.	See Using a Physical Standby Database as a Test Master	See Using a Physical Standby Database as a Test Master
9	Create a service template.	See Service Templates and Service Template REST API Examples	See Service Template EM CLI Verbs
10	Configure the Chargeback Service. (this step is optional)	See Performing UI Equivalent Chargeback Operations	See Performing UI Equivalent Chargeback Operations
11	While deploying a database, select the service template you have created.	See Creating a Database Instance	See Creating a Database Instance

57.6.3 Continuous Sync

A continuous sync setup has a production database and a Test master database which is on a filer (NAS storage). The Test master is an RMAN image backup of the data files and is scheduled to run a backup of the production database at regular intervals. Thereby the Test master database gets continuous/live data from the production database.

To set up a continuous sync database setup, follow the steps below:

Table 57-8 Creating a Continuous Sync Setup Using EM CLI Verbs

Step	Task	EM CLI Verb
1	Add an existing standby database. Currently, this task can be accomplished only via the UI screen.	Not available

Table 57-8 (Cont.) Creating a Continuous Sync Setup Using EM CLI Verbs

Step	Task	EM CLI Verb
2	Create a new Test master from a standby database.	Creating a Database Profile Using EM CLI Verbs
3	Create a clone.	Creating a Database Clone Using EM CLI Verbs
4	Promote the clone as the Test master. Currently, this task can be accomplished only via the UI screen.	Not available

57.7 Creating Full Database Clones Using RMAN With REST APIs and EM CLI Verbs

There are two ways of cloning full databases using RMAN. They are:

- [Creating a Full Database Clone Using RMAN Backup](#)
- [Creating a Full Database Clone Using RMAN Duplication \(Live Cloning\)](#)
- [Discrete Sync](#)

57.7.1 Creating a Full Database Clone Using RMAN Backup

Database backups created by RMAN (Recovery Manager) are stored as image copies or backup sets. You can create profiles using these backups and use these profiles to create full database clones.

 **Note:**

In the table below, wherever REST APIs are not available for any steps EM CLI verbs are provided, and vice-versa.

Table 57-9 Cloning Databases Using RMAN Backup Profile with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started	See Getting Started
2	Set up one or more PaaS Infrastructure Zones.	See Creating a PaaS Zone	See PaaS Zone EM CLI Verbs
3	Create a database pool.	See Creating a Database Pool	See Software Pool EM CLI Verbs
4	Configure the request settings.	See Creating Database Request Settings	See Database Request Settings EM CLI Verbs

Table 57-9 (Cont.) Cloning Databases Using RMAN Backup Profile with REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
5	Define quotas for each self service user.	See Creating DBaaS Quota for a Role	See Database Quota EM CLI Verbs
6	Create one of the following database provisioning profiles: <ul style="list-style-type: none"> RMAN Backup Existing RMAN Backup 	See Creating Provisioning Profiles using EM CLI	See Creating Provisioning Profiles using EM CLI
7	Set up the Test Master database.	See Enabling the Test Master for Snap Clone	See Enabling the Test Master for Snap Clone
8	Create a service template based on the profile you have created.	See Service Templates and Service Template REST API Examples	See Service Template EM CLI Verbs
9	Configure the Chargeback Service.	See Performing UI Equivalent Chargeback Operations	See Performing UI Equivalent Chargeback Operations
10	While deploying a database, select the service template you have created.	See Creating a Database Instance	See Creating a Database Instance

57.7.2 Creating a Full Database Clone Using RMAN Duplication (Live Cloning)

Database backups created by RMAN (Recovery Manager) are stored as image copies or backup sets. You can create profiles using these backups and use these profiles to create full database clones.

Note:

In the table below, wherever REST APIs are not available for any steps EM CLI verbs are provided, and vice-versa.

Table 57-10 Creating a Full Database Clone Using RMAN Backup With REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
1	Follow the steps in the Getting Started section to enable DBaaS.	See Getting Started	See Getting Started
2	Set up one or more PaaS Infrastructure Zones.	See Creating a PaaS Zone	See PaaS Zone EM CLI Verbs
3	Create a database pool.	See Creating a Database Pool	See Software Pool EM CLI Verbs

Table 57-10 (Cont.) Creating a Full Database Clone Using RMAN Backup With REST APIs and EM CLI Verbs

Step	Task	REST APIs	EM CLI Verbs
4	Create the test master by using a live standby database.	See Using a Physical Standby Database as a Test Master	See Using a Physical Standby Database as a Test Master
5	Configure the request settings.	See Creating Database Request Settings	See Database Request Settings EM CLI Verbs
6	Define quotas for each self service user.	See Creating DBaaS Quota for a Role	See Database Quota EM CLI Verbs
7	Create a service template based on the test master.	See Service Templates and Service Template REST API Examples	See Service Template EM CLI Verbs
8	Configure the Chargeback Service.	See Performing UI Equivalent Chargeback Operations	See Performing UI Equivalent Chargeback Operations
9	While deploying a database, select the service template you have created.	See Creating a Database Instance	See Creating a Database Instance

57.7.3 Discrete Sync

A discrete sync setup has a production database which is not available for direct cloning operations and thereby with no standby database. The administrator schedules periodic backups on the production database and uses the backups to create the Test master database.

To set up a discrete sync database setup, follow the steps below:

Table 57-11 Creating a Discrete Sync Setup Using EM CLI Verbs

Step	Task	EM CLI Verb
1	Create a Test master database.	Creating a Database Clone Using EM CLI Verbs
2	Create a full backup.	Creating a Database Profile Using EM CLI Verbs
3	Create a thin backup.	Creating a Database Profile Using EM CLI Verbs
4	Create a clone.	Creating a Database Clone Using EM CLI Verbs
5	Refresh Test master or clones.	Refreshing a Database Using EM CLI Verbs

57.8 Configuring Custom Database Placement Option Using REST APIs

This section describes the custom database placement feature using REST APIs. See the following sections for further details:

- [Custom Database Placement Option for Databases Using REST APIs](#)
- [Custom Database Placement Option for Pluggable Databases Using REST APIs](#)

57.8.1 Custom Database Placement Option for Databases Using REST APIs

With the custom database placement option, an SSA user has the option of choosing the host on which the database instance is created. This option has to be enabled in the service template by the SSA Administrator while creating the service template. The `SELECT_ORACLE_HOME_OPTION` parameter in the JSON body of the service template defines if the SSA User has the option to select the host while requesting for a database instance. If `SELECT_ORACLE_HOME_OPTION` is set with the value `"SELECT_ORACLE_HOME_FROM_REQUEST"` the SSA User has the option to choose the database host while requesting the database. If the parameter is not defined, or if the value for the parameter is not set, or if the value is set to `"SELECT_ORACLE_HOME_AT_RUNTIME"`, then the SSA User will not have the option of choosing the database host and the database instance will be created on the host selected by the placement algorithm during the execution of the request.

After the option is set in the service template, the SSA User can perform a GET operation on the service template URI to view the available hosts. The `"hosts_for_placement"` parameter (in the case of a SI database), and `"clusters_for_placement"` and `"hostsInCluster"` parameters (in case of a RAC database) provide the details of the available hosts to the SSA User. The SSA User is then required to define the host name for placing the database in the `"database_host_name"` parameter in the POST operation for requesting a database instance.

The `"database_host_name"` parameter is a mandatory parameter if the custom placement option is set in the service template. Note that multiple values for `database_host_name` request parameter can be provided as comma separated values. For a RAC database request, the number of hosts specified in this parameter should match with the number of nodes configured in the service template, and all of the hosts provided should belong to the same cluster and should be present in the selected zone.

57.8.2 Custom Database Placement Option for Pluggable Databases Using REST APIs

With the custom database placement option, an SSA user has the option of choosing the Container Database (CDB) on which the Pluggable Database (PDB) instance is created. This option has to be enabled in the service template by the SSA Administrator while creating the service template.

The `SELECT_TARGET_OPTION` parameter in the JSON body of the PDB service template defines if the SSA User has the option to select the host while requesting for a database instance. If `SELECT_ORACLE_HOME_OPTION` is set with the value `"SELECT_TARGET_FROM_REQUEST"` the SSA User has the option to choose the CDB while requesting the database. If the parameter is not defined, or if the value for the parameter is not set, or if the value is set to `"SELECT_TARGET_AT_RUNTIME"`, then the SSA User will not have the option of choosing the CDB and the PDB instance will be created on the CDB selected by the placement algorithm during the execution of the request.

After the option is set in the PDB service template, the SSA User can perform a GET operation on the service template URI to view the available CDBs. The `"target_nodes_for_placement"` parameter provides the details of the available CDBs to the SSA User. The SSA User is then required to define the CDB target name for placing the PDB in the `"target_name"` parameter in the POST operation for requesting a PDB instance.

The `"target_name"` parameter is a mandatory parameter if the custom placement option is set in the service template. The CDB target name specified in this parameter should be present in the selected zone.

57.9 Service Catalog of Database as a Service

Service catalog is a collection of pre-approved database configurations available to selected consumers for on demand, self service provisioning. It enforces consistency and automation, and helps reduce the database management overhead.

Service catalog offers:

- Self-service provisioning which provides IT agility
- Enterprise-wide service catalog which provides standardization and compliance
- Database cloning using snap clone which saves time and storage space
- Metering, chargeback and quota which ensures service governance
- Performance and lifecycle management which guarantees service levels
- Patching, upgrading and configuration automation which lowers operational costs

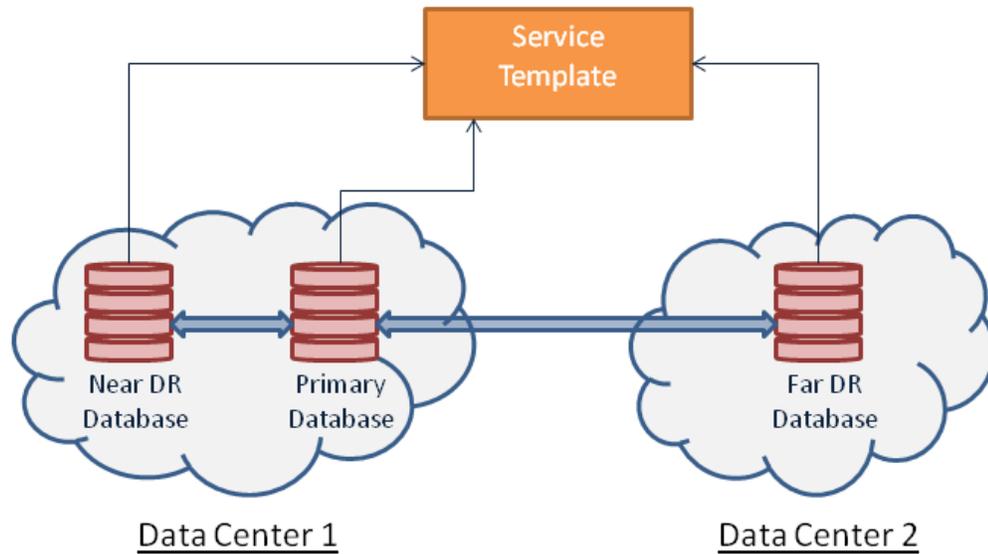
For more information on service catalog watch the video at - https://apex.oracle.com/pls/apex/f?p=44785:24:0::::P24_CONTENT_ID,P24_PREV_PAGE:9590,1.

The following section explains the REST APIs required for setting up a sample multi-datacenter DBaaS.

57.9.1 Multi-Datacenter DBaaS Setup

Multi-datacenter DBaaS setup is the best possible structure of DBaaS configuration in an enterprise with multiple data centers where all aspects related to data safety, recovery and backup are considered at the highest levels.

Figure 57-2 Multi-Datacenter DBaaS Setup



Multi-datacenter DBaaS setup requires creating a Primary RAC software pool and two Standby software pools. Of the two standby software pools, the near disaster recovery (DR) pool is a RAC software pool and the other, which is the far DR is a single instance software pool. After the software pools are created, the service template is created to establish the relation between the software pools. This setup is offered as a Multi-datacenter DBaaS setup to the SSA user.

The topics covered under this section are:

- [Administrator Steps for Creating the Multi-Datacenter DBaaS Setup](#)
- [SSA User REST API Request for Using the Multi-Datacenter DBaaS Setup](#)

57.9.1.1 Administrator Steps for Creating the Multi-Datacenter DBaaS Setup

This section explains the steps to setup the Multi-datacenter DBaaS using REST APIs. For the EM CLI verb equivalent of the REST APIs run the `emcli invoke_ws` command for each of the REST APIs in the steps below. For details on `emcli invoke_ws` command, refer to [EM CLI Verbs for Database as a Service Administrator](#).

Follow the steps below to setup the Multi-datacenter DBaaS:

1. Create a PaaS zone for the data center with the single instance software pool (Far DR).

To create a PaaS zone, issue the REST API request given below.

Table 57-12 Request Configuration to Create a PaaS Zone

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/paaszones/</code>

Table 57-12 (Cont.) Request Configuration to Create a PaaS Zone

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "name": "DATACENTER_2", "description": "This is a TestZone", "credential": "NCAIME", "memberType": "host", "members": ["www.example.com"], "constraint": [{ "name": "MAX_CPU_UTILIZATION", "value": "85" }, { "name": "MAX_MEMORY_ALLOCATION", "value": "95" }], "roles": ["SSACOREROLE1", "SSACOREROLE2"], }</pre>
Request method	POST

2. Create a standby single instance software pool in `DATACENTER_2`.

To create a standby single instance software pool, issue the REST API request given below.

Table 57-13 Configuration to Create a Standby Single Instance Software Pool

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 57-13 (Cont.) Configuration to Create a Standby Single Instance Software Pool

Feature	Description
Body	<pre>{ "name": "DB_POOL2", "poolTargetType": "oracle_cloud_zone", "description": "Database Pool of Oracle Homes", "paasZone": "DATACENTER_2", "members": ["OraDb11g_home1_2_example.com"], "serviceFamily": "DBAAS", "serviceType": "DBAAS", "constraints": {"items": [{"name": "MAX_INSTANCES", "value": "10"}]}, "filters": {"items": [{"name": "CONFIGURATION", "value": "oracle_database"}, {"name": "VERSION", "value": "11.2.0.4.0"}, {"name": "PLATFORM", "value": "226"}] }, "properties": {"items": [{"name": "host_credential_guid", "value": "FF7A82CE961672E6E0437850B10ABF4E"}] } }</pre>
Request method	POST

3. Create a PaaS zone for the data center with the primary database and the standby RAC database (Near DR).

To create a PaaS zone, issue the REST API request given below.

Table 57-14 Request Configuration to Create a PaaS Zone

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/paaszones/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 57-14 (Cont.) Request Configuration to Create a PaaS Zone

Feature	Description
Body	<pre>{ "name": "DATACENTER_1", "description": "This is a TestZone", "credential": "NCAIME", "memberType": "host", "members": ["www.example.com"], "constraint": [{ "name": "MAX_CPU_UTILIZATION", "value": "85" }, { "name": "MAX_MEMORY_ALLOCATION", "value": "95" }], "roles": ["SSACOREROLE1", "SSACOREROLE2"], }</pre>
Request method	POST

4. Create a standby RAC software pool in `DATACENTER_1`.

To create a standby RAC software pool, issue the REST API request shown below.

Table 57-15 Configuration to Create a Standby RAC Software Pool

Feature	Description
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 57-15 (Cont.) Configuration to Create a Standby RAC Software Pool

Feature	Description
Body	<pre>{ "name": "DB_POOL3", "poolTargetType": "oracle_cloud_zone", "description": "Database Pool of Oracle Homes", "paasZone": "DATACENTER_1", "members": ["OraDb11g_home2_11_www.example.com", "OraDb11g_home2_1 1_www.example.com"], "serviceFamily": "DBAAS", "serviceType": "DBAAS", "constraints": {"items": [{"name": "MAX_INSTANCES", "value": "10"}]}, "filters": {"items": [{"name": "CONFIGURATION", "value": "rac_database"}, {"name": "VERSION", "value": "11.2.0.4.0"}, {"name": "PLATFORM", "value": "226"}] }, "properties": {"items": [{"name": "host_credential_guid", "value": "FF7A82CE961672E6E0437850B10ABF4E"}] } }</pre>
Request method	POST

5. Create a primary RAC software pool in DATACENTER_1.

To create a primary RAC software pool, issue the REST API request shown below.

Table 57-16 Configuration to Create a Primary RAC Software Pool

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 57-16 (Cont.) Configuration to Create a Primary RAC Software Pool

Feature	Description
Body	<pre>{ "name": "DB_POOL1", "poolTargetType": "oracle_cloud_zone", "description": "Database Pool of Oracle Homes", "paasZone": "DATACENTER_1", "members": ["OraDb11g_home1_2_www.example.com", "OraDb11g_home1_2_ www.example.com"], "serviceFamily": "DBAAS", "serviceType": "DBAAS", "constraints": {"items": [{"name": "MAX_INSTANCES", "value": "10"}]}, "filters": {"items": [{"name": "CONFIGURATION", "value": "rac_database"}, {"name": "VERSION", "value": "11.2.0.4.0"}, {"name": "PLATFORM", "value": "226"}] }, "properties": {"items": [{"name": "host_credential_guid", "value": "FF7A82CE961672E6E0437850B10ABF4E"}, {"name": "standby_pools", "value": "DB_POOL2 DB_POOL3"}] } }</pre>
Request method	POST

6. Create DBaaS Request Settings for a user role.

To create DBaaS request settings, issue the REST API request shown below.

Table 57-17 Configuration to Create DBaaS Request Settings

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/requestsetttings
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json Accept: application/ oracle.com.cloud.common.DbaasRequestSettings+json
Body	<pre>{ "future_reservation_length" : "2 Months", "maximum_archive_duration" : "10 Weeks", "default_retirement_period" : "No Reservation" }</pre>

Table 57-17 (Cont.) Configuration to Create DBaaS Request Settings

Feature	Description
Request method	POST

7. Create Quota for a user role.

To create quota, issue the REST API request shown below.

Table 57-18 Configuration to Create a Quota

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/quota
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json Accept: application/oracle.com.cloud.common.DbaasRequestSettings+json
Body	{ "role_name" : "DBAAS_ROLE", "databases" : "10", "schema_services" : "21", "pluggable_databases" : "22", "storage" : "99", "memory" : "99" }
Request method	POST

8. Create a Profile to capture the source database information for provisioning. Refer to [EM CLI Verbs for Database as a Service Administrator](#) .

9. Create a database service template.

To create a database service template, issue the REST API request shown below.

Table 57-19 Configuration to Create a Database Service Template

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 57-19 (Cont.) Configuration to Create a Database Service Template

Feature	Description
Body	<pre> { "name": "TestDbTemplate1", "serviceType": "DB", "serviceFamily": "DBAAS", "description": "This is a test database standby service template 1", "poolIds": ["00829096124B0CC3E0537850B10A9E88"], "serviceExecutableMeta": { "type": "CDP", "configurations": [{ "name": "PROFILE_COMPONENT_URN", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_DbProfile: 0008FDF6A8BD706BE0537850B10A5E7A:0.1" }, { "name": "DATABASE_TYPE", "value": "rac_database" }, { "name": "COMMON_DB_SYSTEM_PASSWORD", "value": "welcome" }, { "name": "COMMON_DB_DBSNMP_PASSWORD", "value": "welcome" }, { "name": "COMMON_DB_SYS_PASSWORD", "value": "welcome" }, { "name": "DB_ADMIN_PASSWORD_SAME", "value": "true" }, { "name": "INSTANCE_COUNT", "value": "2" }, { "name": "SID_OPTION", "value": "ssauser" } }, { "name": "COMMON_DB_SID", "value": "mydb1" }, { "name": "COMMON_DOMAIN_NAME", "value": "www.example.com" }, { "name": "LISTENER_PORT", "value": "1521" }, { "name": "STAGE_LOCATION", "value": "/ scratch" }, { "name": "REF_ZONE", "value": "DATACENTER_1" }, { "name": "REF_POOL", "value": "DB_POOL1" }, { "name": "REF_HOST", "value": "www.example.com" }, { "name": "REF_TGT", "value": "www.example.com" }, { "name": "DBCA_TEMPLATE:DB_STORAGE_TYPE", "value": "ASM" }, { "name": "DBCA_TEMPLATE:DATA_FILE_LOCATION", "value": "D ATA" }, { "name": "DBCA_TEMPLATE:REC_STORAGE_TYPE_SAME_AS_DB_FI LES", "value": "Y" }, { "name": "DBCA_TEMPLATE:ARCHIVE_LOG_MODE", "value": "Y" }, { "name": "DBCA_TEMPLATE:FLASH_RECOVERY_AREA_SIZE", "value": "5000" }, { "name": "DBCA_TEMPLATE:RECOVERY_FILE_LOCATION", "value </pre>

Table 57-19 (Cont.) Configuration to Create a Database Service Template

Feature	Description
	<pre> ": "RECO" }, { "name": "DBCA_TEMPLATE:REDO_FILE_LOCATION", "value": "RECO" }, { "name": "INIT_PARAMS", "subconfigurations": [{ "name": "INIT_PARAMS:1", "value": "sga_target=1073741824" }, { "name": "INIT_PARAMS:2", "value": "pga_aggregate_target=1073741824" }] }, { "name": "STANDBY_REQUIRED", "value": "true" }, { "name": "STANDBY_REQUIRED_LOCK", "value": "false" }, { "name": "STANDBY_WORK_DIR", "value": "/tmp" }, { "name": "PRIMARY_PROTECTION_MODE", "value": "MAXIMIZE AVAILABILITY" }, { "name": "DBAAS_SSA_STANDBY_CUSTOM_PRE_SCRIPTS_URN", "v alue": "" }, { "name": "DBAAS_SSA_STANDBY_CUSTOM_POST_SCRIPTS_URN", " value": "" }, { "name": "STANDBY_DB_DETAILS", "value": "", "values": ["pool=DB_POOL3;databaseSIDPrefix=;databaseType=rac_dat abase;standbyConfigName=Near DR;redoMode=SYNC;realtimeQuery=true;databaseRACInstanc eCount=2;databaseDelay=30;databaseUniqueName=;standbyS torageType=FS;standbyStorageLocation=;standbyFRAType=F S;standbyFRALocation=;standbyFRASize=;standbyLsnrPort= ;domainName=us.example.com", "pool=DB_POOL2;databaseSIDPrefix=;databaseType=oracle_ database;standbyConfigName=Far DR;redoMode=ASYNC;realtimeQuery=false;databaseRACInsta nceCount=2;databaseDelay=60;databaseUniqueName=;standb yStorageType=FS;standbyStorageLocation=;standbyFRAType =FS;standbyFRALocation=;standbyFRASize=;standbyLsnrPor t=;domainName=us.example.com"] } } } </pre>
Request method	POST

The platinum DBaaS setup is ready to be administered.

57.9.1.2 SSA User REST API Request for Using the Multi-Datacenter DBaaS Setup

To request a multi-datacenter DBaaS setup with a near DR and a far DR, issue the REST API request shown below.

Table 57-20 Configuration to Create a Database with Two Standby Databases

Feature	Description
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/cloud/dbaas/zone/82CF1C28FA20A183C99D138FF8065F19
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.DbPlatformInstance+json Accept: application/oracle.com.cloud.common.DbPlatformInstance+json
Body	<pre>{ "based_on": "/em/cloud/dbaas/dbplatformtemplate/CC3BBB665A6BC6FFE040F00AEF252456", "name": "Platinum1", "description": "Create Database with 1 Standby RAC database & 1 Standby SI database", "start_date": "2014-08-13T14:20:00ZAsia/Calcutta", "end_date": "2014-08-13T17:20:00ZAsia/Calcutta", "params": { "username": "Master Account username for the DB", "password": "Master Account Password for the DB", "database_sid": "platinum1", "service_name": "Name of the additional service to be created", "standbydbs": [{ "standbydb_name": "Near DR", "standbydb_sid": "NR1" }, { "standbydb_name": "Far DR", "standbydb_sid": "FR1" }] } }</pre>
Request method	POST

SSA Administration REST APIs

This chapter provides details of the Cloud REST APIs and Service Template REST APIs for SSA Administration functions.

REST APIs for PaasZone management, and SoftwarePool management, along with other REST APIs used to fetch the REST API catalog, REST API output, and metadata and expansion of a resource are described in this chapter.

This chapter also provides details on the Enterprise Manager Command Line Interface (EMCLI) verbs for PaaS Infrastructure Zone, Software Pool, and Service Template operations for Enterprise Manager Self Service Applications Admin users. The EMCLI enables you to access Enterprise Manager Cloud Control functionality from text-based consoles (shells and command windows) for a variety of operating systems.

Note:

For the SSA Plug-in release 12.1.0.9, a new framework is introduced for the REST APIs which is referred to as the v2 framework. The new framework consists of a different approach and signatures, as a result of which the REST APIs also differ when compared to the earlier framework. The earlier framework (v1) is deprecated and users are suggested to move to the v2 REST APIs and EM CLI verbs.

Unique EM CLI verbs for v2 are restricted to those actions which do not have an REST API equivalent. For every REST API in the v2 framework, an equivalent EM CLI verb in the form of `emcli invoke_ws` exists. For details see [EM CLI Verbs for SSA Operations for V2](#).

In v2, REST APIs for the Self Service Portal application are generally used by the SSA users. These REST APIs are generally in the `.../ssa/...` format. For example, `/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/`. REST APIs for administrative functions (i.e., `.../admin/...` format) are REST APIs that configure the SSA Portal setup, such as creating zones, templates, etc., which are generally performed by Cloud or SSA Administrators. The Admin REST APIs are covered in this chapter.

This chapter covers the following sections:

- [Summary of SSA Administration REST APIs for V2](#)
- [Summary of SSA Administration REST APIs for V1](#)
- [Catalog APIs for V1 and V2](#)
- [Resource Provider for V2](#)
 - [Resource Providers - Collection Resource for V2](#)
 - [Resource Provider - Singular Resource for V2](#)
- [Service Templates - Collection Resource for V2](#)

- [Service Types for V2](#)
- [Service Requests for V2](#)
- [Service Instances for V2](#)
- [Request Settings for V2](#)
- [VM Adapters for V2](#)
- [SSA Admin Resources for V1](#)
- [PaasZones for V1](#)
- [PaasZone for V1](#)
- [SoftwarePools for V1](#)
- [SoftwarePool for V1](#)
- [Composite Resource Attributes for V1](#)
 - [ValueDescriptor for V1](#)
 - [ValueEntity for V1](#)
 - [EntityValueHolder for V1](#)
 - [PoolEntityCapacity for V1](#)
 - [ResourceTypeCapacity for V1](#)
- [Service Template Management for V1](#)
 - [Service Templates for V1](#)
 - [Service Template for V1](#)
 - [ServiceTemplateUpdate for V1](#)
 - [ServiceExecutableMetaEntity for V1](#)
 - [Template Configuration Parameters for V1](#)
 - [PayloadDescriptor for V1](#)
 - [ServiceTemplate Metadata for V1](#)
 - [PayloadMetaData for V1](#)
 - [ServiceTemplate MetaData for V1](#)
- [EM CLI Verbs for Self Service Applications](#)
 - [EM CLI Verbs for SSA Operations for V2](#)
 - [EM CLI Verbs for SSA Operations for V1](#)

58.1 Summary of SSA Administration REST APIs for V2

The table below shows a summary of all the User preference and Request scheduling REST APIs covered in this chapter for the v2 framework.

Table 58-1 Summary of SSA Administration REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Catalog API	Table 58-3	<ul style="list-style-type: none"> • Viewing the High Level Catalog APIs for V1 and V2 • Viewing the V2 Catalog APIs • Viewing the V2 Catalog User APIs • Viewing the V2 Catalog Admin APIs 	Not supported	Not supported	Not supported

Table 58-1 (Cont.) Summary of SSA Administration REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Resource Provider	Table 58-10	<ul style="list-style-type: none"> Viewing all the Resource Providers Viewing all the Types of Resource Providers Viewing the Resource Provider Type Metadata Viewing the Metadata for Creating a PaaS Infrastructure Zone Viewing the Metadata for Creating a Schema Pool Viewing Details of the Resource Provider Viewing Configuration of a Resource Provider Viewing Metric of a Resource Provider 	<ul style="list-style-type: none"> Creating a Resource Provider Creating a PaaS Infrastructure Zone Resource Provider Creating a Database Schema Pool Creating an Adapter Instance Filtering Resource Provider Targets Provisioning a Resource via a Sample Adapter Viewing the Metadata Required to Provision a Resource Provider 	Updating a Resource Provider	<ul style="list-style-type: none"> Deleting a Resource Provider De-provisioning a Resource

Table 58-1 (Cont.) Summary of SSA Administration REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Service Templates	Table 58-36	<ul style="list-style-type: none"> • Viewing all the Service Templates • Viewing all the Service Template Types • Viewing the Metadata Required for Creating a Service Template • Viewing the Resource Provider Characteristics Required for Creating a Service Template • Viewing Configurations Required for Creating a Service Template • Viewing Details of a Specific Service Template • Viewing Configuration Details of a Specific Service Template 	Creating a Service Template	Updating a Service Template	Deleting a Service Template

Table 58-1 (Cont.) Summary of SSA Administration REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Service Types	Table 58-57	Viewing Details of the Service Types	Not available	Not available	Not available
Service Requests	Table 58-59	<ul style="list-style-type: none"> Viewing Details of all the Service Requests Viewing Details of a Service Request 	Not supported	Rescheduling a Service Request	<ul style="list-style-type: none"> Cancelling a Service Request Deleting a List of Service Requests
Service Instances	Table 58-67	<ul style="list-style-type: none"> Viewing Details of all the Service Instances Viewing Details of a Service Instance 	Not supported	<ul style="list-style-type: none"> Starting a Service Instance Stopping a Service Instance Deleting a Service Instance Starting a list of Service Instances Stopping a list of Service Instances Deleting a list of Service Instances 	Not supported

Table 58-1 (Cont.) Summary of SSA Administration REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Request Settings	Table 58-77	<ul style="list-style-type: none"> Viewing Details of the Global Request Settings Viewing Details of the Global Request Settings for a Collection of Roles Viewing Details of Global Request Settings for a Specific Role Viewing Details of the Request Settings for a Service Family Viewing Details of the Service Family Settings by Roles Viewing Details of the Service Family Request Settings for a Specific Role Viewing Details of the Request Settings for a 	<ul style="list-style-type: none"> Creating Global Request Settings for a Role Creating Service Family Settings for a Role Creating Service Type Settings for Roles 	<ul style="list-style-type: none"> Updating the Global Request Settings Updating Global Request Settings for a Specific Role Updating the Request Settings for a Service Family Updating the Service Family Request Settings for a Specific Role Updating the Request Settings for a Service Type Updating the Service Type Request Settings for a Specific Role 	<ul style="list-style-type: none"> Deleting Global Request Settings for a Specific Role Deleting Service Family Request Settings for a Specific Role Deleting Service Type Request Settings for a Specific Role

Table 58-1 (Cont.) Summary of SSA Administration REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
		<ul style="list-style-type: none"> Service Type Viewing Details of the Service Type Settings by Roles Viewing Details of the Service Type Request Settings for a Specific Role 			
VM Adapters	Table 58-100	<ul style="list-style-type: none"> Viewing Details of All the Registered VM Adapters Viewing Details of a Specific Registered VM Adapter Viewing Details of the Staging Servers 	Creating a Staging Server	Not supported	Not supported

 **Note:**

In the table above, "supported" indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

58.2 Summary of SSA Administration REST APIs for V1

The table below shows a summary of all the User preference and Request scheduling REST APIs covered in this chapter for the v2 framework.

Table 58-2 Summary of SSA Administration REST APIs for V1

Resource	Data Model	GET	POST	PUT	DELETE
Catalog API	Table 58-3	<ul style="list-style-type: none"> Viewing the V1 Catalog APIs Viewing the V1 Catalog APIs for SSA Portal 	Not supported	Not supported	Not supported
API Entry Point Resource	Table 58-106	Viewing Details of the REST API Entry Point Resources	Not supported	Not supported	Not supported
PaaS Zones	Table 58-108	<ul style="list-style-type: none"> Viewing PaaS Zones Metadata Listing PaaS Zones 	Not supported	Not supported	Not supported
PaaS Zone	Table 58-112	<ul style="list-style-type: none"> Viewing Details of the PaasZone Viewing the Expanded form of a PaasZone 	Creating a PaaS Zone	Updating a PaaS Zone	Deleting a PaaS Zone
Software Pools	Table 58-119	<ul style="list-style-type: none"> Viewing Details of the Software Pools Filtering Output based on Search Query Parameters 	Not supported	Not supported	Not supported

Table 58-2 (Cont.) Summary of SSA Administration REST APIs for V1

Resource	Data Model	GET	POST	PUT	DELETE
Software Pool	Table 58-123	<ul style="list-style-type: none"> Viewing Details of the Software Pool Expands Query Parameter 	Creating a Software Pool	Updating a Software Pool	Deleting a Software Pool
Software Pool Metadata	Table 58-129	Retrieving Software Pool Metadata REST API Example	Not supported	Not supported	Not supported
Software Pool Filtered Targets	Table 58-131	Retrieving Available Filtered Targets - REST API Example	Not supported	Not supported	Not supported
Software Pool Capacity	Table 58-133	Retrieving Software Pool Capacity	Not supported	Not supported	Not supported
Composite Resource Attributes	Composite Resource Attributes for V1	Not supported	Not supported	Not supported	Not supported
Service Templates	Table 58-140	Viewing Metadata of a Service Template	Creating Configuration Values for Service Templates	Not supported	Not supported
Service Template	Table 58-143	Viewing Details of a Service Template	Creating Service Templates	Updating a Service Template	Deleting a Service Template



Note:

In the table above, "supported" indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

58.3 Catalog APIs for V1 and V2

Catalog APIs provide an overview of all the REST APIs existing in the cfw plugin. All of these are GET REST APIs which contain description and information about each REST API.

The REST APIs have been broadly categorized into v1 and v2 REST APIs. The v1 REST APIs refer to the existing v1 catalog REST API. The v2 REST API provides a summarized overview on both SSA user and Administrator REST APIs.

Table 58-3 Cfw API Catalog Collection Data Model

Field	Type	Description	Occurs
name	String	Display name of this collection resource.	1
type	String	Type of collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1
count	Integer	Number of elements returned.	1
items	Collection <CfwRestAPIC atalog>	List of Cfw API catalog resources. In case no instance exist, the <code>items</code> field will be empty.	1
totalResults	Integer	Total number of Cfw API catalog resources.	1
canonicalLink	URI	A GET request against this URI refreshes the client representation of this resource.	1

58.3.1 CFW API Catalog REST API Examples

This sections describes the REST APIs for the Cfw API catalog resource. The following operations are described in this section:

- [Viewing the High Level Catalog APIs for V1 and V2](#)
- [Viewing the V1 Catalog APIs](#)
- [Viewing the V2 Catalog APIs](#)
- [Viewing the V1 Catalog APIs for SSA Portal](#)
- [Viewing the V2 Catalog User APIs](#)
- [Viewing the V2 Catalog Admin APIs](#)

58.3.1.1 Viewing the High Level Catalog APIs for V1 and V2

The GET request configuration to view the high level catalog APIs is shown below.

Table 58-4 GET Request Configuration for Viewing High Level Catalog APIs

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/cfw/API
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
{
  "items":[
    {
      "href":"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/cfw/API/v1",
      "description":"API Summary for version V1"
    },
    {
      "href":"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/cfw/API/v2",
      "description":"API Summary for version V2"
    }
  ],
  "totalResults":2
}
```

58.3.1.2 Viewing the V1 Catalog APIs

The GET request configuration to view the v1 catalog APIs is shown below.

Table 58-5 GET Request Configuration for Viewing V1 Catalog APIs

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/cfw/API/v1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
{
  "items":[
    {
      "href":"cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/API",
      "description":"APIs for Self Service Application for version V1",
      "type":"SSA"
    },
    {
      "href":"cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/API",
      "description":"APIs for Administrative functions for version V1",
      "type":"Admin"
    }
  ],
  "goBack":"cloudcompany.com/em/websvcs/restful/extws/cloudservices/cfw/API",
  "totalResults":2
}
```

58.3.1.3 Viewing the V2 Catalog APIs

The GET request configuration to view the v2 catalog APIs is shown below.

Table 58-6 GET Request Configuration for Viewing V2 Catalog APIs

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/API/v2
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
{
  "items": [{
    "href": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/API",
    "description": "APIs for Self Service Application for version V2",
    "type": "SSA"
  },
  {
    "href": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/API",
    "description": "APIs for administrative functions for version V2",
    "type": "Admin"
  }
  ],
  "goBack": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/cfw/API",
  "totalResults": 2
}
```

58.3.1.4 Viewing the V1 Catalog APIs for SSA Portal

The GET request configuration to view the v1 catalog APIs for SSA portal is shown below.

Table 58-7 GET Request Configuration for Viewing V1 Catalog APIs for SSA Portal

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/API/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
{
  "v1": {
    "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1",
  }
}
```

```

"serviceRequests": "https://cloudcompany.com/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v1
/servicerequests",
"userPreferences": "https://cloudcompany.com/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v1
/mypreferences"
}
}

```

58.3.1.5 Viewing the V2 Catalog User APIs

The v2 endpoint provides further refined overview of v2 side user REST APIs grouped according to entities. For example, all the Service instance related REST APIs are listed together for `entity=serviceinstances`.

REST APIs with variable inputs, are marked with attribute "templated" and curly brackets.

The GET request configuration to view the v2 catalog user APIs is shown below.

Table 58-8 GET Request Configuration for Viewing V2 Catalog User APIs

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/user/ssa/v2/API
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "items": [
    {
      "totalResults": 5,
      "resource": "services",
      "APIs": [
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
            services",
          "method": "GET",
          "description": "Get all the service offerings"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
            services",
          "method": "POST",
          "description": "Create a service"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
            services/{
            id}",

```

```
"method": "GET",
"templated": true,
"description": "Get details of a service"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
services/{
id}/metadata",
  "method": "GET",
  "templated": true,
  "description": "Get the metadata for a service"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
services/{
id}/metrics",
  "method": "PUT",
  "templated": true,
  "description": "Get the metrics for a service"
}
],
},
{
  "totalResults": 11,
  "resource": "userpreferences",
  "APIs": [
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences",
      "method": "GET"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/general",
      "method": "GET",
      "description": "Get the general user preferences"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/general/metadata",
      "method": "GET",
      "description": "Get the metadata for general user preferences"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/services",
      "method": "GET",
      "description": "Get the service user preferences"
    },
    {
      "href":
```

```
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/services/{service-family}",
"method": "GET",
"templated": true,
"description": "Get the user preferences for a service family"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/services/{service-family}/metadata",
"method": "GET",
"templated": true,
"description": "Get the metadata for user preference at family level"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/services/{service-family}/{service-type}",
"method": "GET",
"templated": true,
"description": "Get the user preferences for a service type"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/services/{service-family}/{service-type}/metadata",
"method": "GET",
"templated": true,
"description": "Get the metadata for user preference at service type level"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/general",
"method": "PUT",
"description": "Update general user preference"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userpreferences/services/{service-family}",
"method": "PUT",
"templated": true,
"description": "Update family level user preferences"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/services/{service-family}/{service-type}",
"method": "PUT",
"templated": true,
"description": "Update service type level user preferences"
}
]
},
```

```
{
  "totalResults": 4,
  "resource": "servicerequests",
  "APIs": [
    {
      "href":
        "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
        servicereq
        uests",
      "method": "GET",
      "description": "Get service requests"
    },
    {
      "href":
        "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
        servicereq
        uests/{id}",
      "method": "PUT",
      "templated": true,
      "description": "Reschedule the request"
    },
    {
      "href":
        "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
        servicereq
        uests/{id}",
      "method": "GET",
      "templated": true,
      "description": "Get the details of request"
    },
    {
      "href":
        "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
        servicereq
        uests/{id}",
      "method": "DELETE",
      "templated": true,
      "description": "Delete the request"
    }
  ],
  "totalResults": 5,
  "resource": "serviceinstances",
  "APIs": [
    {
      "href":
        "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
        serviceins
        tances",
      "method": "GET",
      "description": "Get the service instances"
    },
    {
      "href":
        "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
        serviceins
        tances/{id}",
      "method": "GET",
      "templated": true,
      "description": "Get details of a service instance"
    }
  ]
}
```

```

},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
serviceins
tances/{id}/actions",
  "method": "GET",
  "templated": true,
  "description": "Get actions for a service instance"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
serviceins
tances/{id}/actions/{action-id}",
  "method": "GET",
  "templated": true,
  "description": "Get metadata details of action"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
serviceins
tances/{id}/actions/{action-id}",
  "method": "PUT",
  "templated": true,
  "description": "Perform the action on the service instance"
}
]
},
"goBack": "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/
API",
"totalResults": 4
}

```

58.3.1.6 Viewing the V2 Catalog Admin APIs

The v2 endpoint provides further refined overview of v2 side admin REST APIs grouped according to entities. For example, all the Service instance related REST APIs are listed together for `entity=serviceinstances`.

REST APIs with variable inputs, are marked with attribute "templated" and curly brackets.

The GET request configuration to view the v2 catalog admin APIs is shown below.

Table 58-9 GET Request Configuration for Viewing V2 Catalog Admin APIs

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/API
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "items": [
    {
      "totalResults": 6,
      "resource": "resourceproviders",
      "APIs": [
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            resource
            providers",
          "method": "GET",
          "description": "Get all the resource providers"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            resource
            providers",
          "method": "POST",
          "description": "Create/Add a resource provider"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            resource
            providers/{id}",
          "method": "GET",
          "templated": true,
          "description": "Get details of a resource provider"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            resource
            providers/{id}",
          "method": "DELETE",
          "templated": true,
          "description": "Delete/Remove a resource provider"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            resource
            providers/{id}",
          "method": "PUT",
          "templated": true,
          "description": "Edit a resource provider"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            resource
            providers/{id}/metrics",
          "method": "GET",
          "templated": true,
          "description": "Get metrics for a resource provider"
        }
      ]
    }
  ]
}
```

```
    },
    {
      "totalResults": 3,
      "resource": "servicetemplates",
      "APIs": [
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            servicet
            emplates",
          "method": "GET",
          "description": "Get all service templates"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            servicet
            emplates",
          "method": "POST",
          "description": "Create a service template"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            servicet
            emplates/{id}",
          "method": "PUT",
          "templated": true,
          "description": "Edit a service template"
        }
      ]
    },
    {
      "totalResults": 4,
      "resource": "settings",
      "APIs": [
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            settings
            /general",
          "method": "GET",
          "description": "Get all general settings"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            settings
            /general",
          "method": "PUT",
          "description": "Update general settings"
        },
        {
          "href":
            "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
            settings
            /service/{service-type}",
          "method": "GET",
          "templated": true,
          "description": "Get all settings for a service type"
        }
      ],
    }
  ],
}
```

```
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
  settings
  /service/{service-type}",
  "method": "PUT",
  "templated": true,
  "description": "Update settings for a service type"
}
],
{
  "totalResults": 5,
  "resource": "instancesizes",
  "APIs": [
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      instance
      sizes",
      "method": "GET",
      "description": "Get all instance sizes"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      instance
      sizes/service/{service-type}",
      "method": "GET",
      "templated": true,
      "description": "Get all instance sizes for a service type"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      instance
      sizes/service/{service-type}/metadata",
      "method": "GET",
      "templated": true,
      "description": "Get metada for instance sizes for a service type"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      instance
      sizes/service/{service-type}/{instance-name}",
      "method": "GET",
      "templated": true,
      "description": "Get details of an instance size"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      instance
      sizes/service/{service-type}/{instance-name}",
      "method": "PUT",
      "templated": true
    }
  ]
},
{
```

```
"totalResults": 5,
"resource": "servicerequests",
"APIs": [
  {
    "href":
    "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
    servicerequests",
    "method": "GET",
    "description": "Get all requests"
  },
  {
    "href":
    "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
    servicerequests/{id}",
    "method": "PUT",
    "templated": true,
    "description": "Reschedule a request"
  },
  {
    "href":
    "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
    servicerequests/{id}",
    "method": "GET",
    "templated": true,
    "description": "Get details of a request"
  },
  {
    "href":
    "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
    servicerequests/{id}",
    "method": "DELETE",
    "templated": true,
    "description": "Delete a request"
  },
  {
    "href":
    "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
    servicerequests",
    "method": "DELETE",
    "description": "Delete bulk requests"
  }
],
"totalResults": 12,
"resource": "serviceinstances",
"APIs": [
  {
    "href":
    "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
    serviceinstances",
    "method": "GET",
    "description": "Get all service instances"
  },
  {
```

```
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/{id}",
"method": "GET",
"templated": true,
"description": "Get details of a service instance"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/{id}/actions",
"method": "GET",
"templated": true,
"description": "Get all the actions on a service instance"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/{id}/actions/{action-id}",
"method": "GET",
"templated": true,
"description": "Get the details of action"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/{id}/actions/{action-id}",
"method": "PUT",
"templated": true,
"description": "Perform the action on the service instance"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/{id}/start",
"method": "PUT",
"templated": true,
"description": "Start the service instance"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/{id}/stop",
"method": "PUT",
"templated": true,
"description": "Stop the service instance"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/{id}/delete",
"method": "PUT",
"templated": true,
"description": "Delete the service instance"
```

```

},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances",
  "method": "DELETE",
  "description": "Delete service instances"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/start",
  "method": "PUT",
  "description": "Start multiple service instances"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/stop",
  "method": "PUT",
  "description": "Stop multiple service instances"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicei
nstances/delete",
  "method": "PUT",
  "description": "Delete multiple service instances"
}
]
}
],
"goBack": "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/
API",
"totalResults": 6
}

```

58.4 Resource Provider for V2

A Resource Provider provides the grouping of resources for easier administration and management.

A resource provider is a composite target that represents the type of resources required to provision a service instance of a service type. For example, a Database service type needs oracle_home targets in its resource provider and a schema service type needs oracle_database, and oracle_rac targets in its resource provider.

58.4.1 Resource Providers - Collection Resource for V2

Resource Providers is a collection resource representing a Cloud Administrator's view of all the accessible Resource Provider resources. The following table describes the Resource Providers data model.

Table 58-10 Resource Providers Data Model

Field	Type	Description	Occurs
name	String	Display name of this collection resource.	1
type	String	Type of collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1
count	Integer	Number of elements returned.	1
items	Collection <ResourceProvider>	List of Resource Provider resources. In case no instance exist, the items field will be empty.	1
totalCount	Integer	Total number of Resource Provider resources.	1
canonicalLink	URI	A GET request against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent to the containing elements.	1

58.4.2 Resource Provider - Singular Resource for V2

A Resource Provider cloud resource represents an instance of a Resource provider. The following table describes the Resource Provider data model.

Table 58-11 Resource Provider Data Model

Field	Type	Description	Occurs
name	String	A human readable name given to the Resource Provider. This field is non-editable.	1
displayName	String	Display name for the Resource Provider.	0..1
guid	String	Unique GUID of the Resource Provider that identifies the resource.	1
description	String	A brief description of the resource.	0..1
targetType	String	Target type of the Resource Provider to be created. Example: "cfw_samplexaas_rsrc_provider" for sample xaas Resource Provider.	1
Members		Members of Resource Provider. These must be added as EM targets in advance.	1
credentials	Collection<ResourceProviderCredential>	Credentials associated with the Resource Provider.	1

Table 58-11 (Cont.) Resource Provider Data Model

Field	Type	Description	Occurs
placement Constraints	Collection<EntityValueHolder>	Placement constraints for a Resource Provider that allows the cloud administrator to set a maximum ceilings for resource utilization.	0..1
characteristics	Collection<EntityValueHolder>	Characteristics associated with the Resource Provider.	1
canonical Link	URI	A GET against this URI refreshes the client representation of this resource.	1

58.4.3 Supported Methods for Resource Provider Resource

The table below lists the supported methods for the Resource Provider singular resource.

Table 58-12 Supported Methods for Resource Provider

Request Method	Canonical Link	Description
GET	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders	Returns list of Resource Providers.
GET	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/types	Returns Resource Provider types.
POST	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders	Creates an instance of Resource Provider.
POST	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/filteredtargets	Returns filtered targets. See, Table 58-13 and Table 58-14 .
GET	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/types/{resourceprovidertype}	Returns the Resource Provider type metadata. See, Table 58-15
GET	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}	Returns details of the specified Resource Provider. See, Table 58-16 and Table 58-17 .
PUT	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}	Updates the specified Resource Provider.
DELETE	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}	Deletes the specified Resource Provider.

Table 58-12 (Cont.) Supported Methods for Resource Provider

Request Method	Canonical Link	Description
GET	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}/configuration	Returns the Resource Provider's saved configuration.
GET	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}/metrics	Returns the metric of the specified Resource Provider.
POST	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}/members	Provisions resources.
DELETE	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}/members	De-provisions resources.
POST	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}/members/metadata	Returns the provisioning metadata required to provision resources.

The table below shows the filtered targets request data model supported for the POST request on the URI - /em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/filteredtargets in the v2 framework.

Table 58-13 Filtered Targets Request Data Model

Field	Type	Description	Occur
type	String	Type of resource provider.	1
membertargetType	String	Target type of the member.	0..1
parentResourceProviderId	String	Type of parent resource provider.	0..1

The table below shows the filtered targets response data model supported for the POST request on the URI - /em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/filteredtargets in the v2 framework.

Table 58-14 Filtered Targets Response Data Model

Field	Type	Description
membertargetType	String	Target type of the member.
List<String>	String	List of targets.

The table below shows the resource provider metadata data model supported for the GET request on the URI - `/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/types/{resourceprovidertype}` in the v2 framework.

Table 58-15 Resource Provider Metadata Data Model

Field	Type	Description
type	String	Type of Resource provider.
memberTargetTypes	List<String>	List of member target types.
parentResourceProviderType	String	Parent resource provider type.
isInfrastructureProvider	Boolean	If infrastructure provider exists.
placementPolicyName	String	Indicates the placement policy.
credentials	List<Credential>	Indicates the credentials.
placementConstraints	List<CfwSimpleValueEntity>	Indicates the placement constraints.
characteristics	List<CfwSimpleValueEntity>	Indicates the characteristics.

The table below shows the credentials data model supported for the GET request on the URI - `/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}` in the v2 framework.

Table 58-16 Credential Data Model

Field	Type	Description
name	String	Name of credential.
value	String	Type of credential.

The table below shows the CFW simple value entity data model supported for the GET request on the URI - `/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}` in the v2 framework.

Table 58-17 CFW Simple Value Entity Data Model

Field	Type	Description
name	String	Name.
value	List<String>	List of strings.

58.4.4 Resource Provider REST API Examples

This section describes the operations on the Resource Provider. The following operations are covered in this section:

- [Viewing all the Resource Providers](#)
- [Viewing all the Types of Resource Providers](#)
- [Creating a Resource Provider](#)
- [Creating a PaaS Infrastructure Zone Resource Provider](#)

- [Creating a Database Schema Pool](#)
- [Creating an Adapter Instance](#)
- [Filtering Resource Provider Targets](#)
- [Viewing the Resource Provider Type Metadata](#)
- [Viewing the Metadata for Creating a PaaS Infrastructure Zone](#)
- [Viewing the Metadata for Creating a Schema Pool](#)
- [Viewing Details of the Resource Provider](#)
- [Updating a Resource Provider](#)
- [Deleting a Resource Provider](#)
- [Viewing Configuration of a Resource Provider](#)
- [Viewing Metric of a Resource Provider](#)
- [Provisioning a Resource via a Sample Adapter](#)
- [De-provisioning a Resource](#)
- [Viewing the Metadata Required to Provision a Resource Provider](#)

58.4.4.1 Viewing all the Resource Providers

A GET operation is issued to view all the Resource Providers.

Table 58-18 GET Request Configuration for Viewing all the Resource Providers

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "Resource Providers",
  "type": "Resource Provider",
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      resourceproviders/"
  },
  "cfwItems": [
    {
      "id": "1",
      "name": "MyPaasZone",
      "type": "self_service_zone",
      "guid": "AC3D1D12E0A0AB1B28C377ED691E9E98",
      "canonicalLink": {
        "href":
          "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/"
      }
    }
  ]
}
```

```
resourceproviders/1"
}
},
{
  "id": "2",
  "name": "MyXaaSProvider",
  "type": "cfw_samplexaas_rsrc_provider",
  "guid": "20CC7F446482F477BED8336489852A4B",
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
resourceproviders/2"
  }
},
{
  "id": "3",
  "name": "MyXaaSPool",
  "type": "cfw_samplexaas_rsrc_pool",
  "guid": "FEF39B5F2A0C518283F7A5E781EE8C8B",
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
resourceproviders/3"
  }
},
{
  "id": "4",
  "name": "MyWebLogicProvider",
  "type": "mwaas_zone",
  "guid": "425AA08582AD7AE95D52C24662867315",
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
resourceproviders/4"
  }
},
{
  "id": "21",
  "name": "MySchemaPool",
  "type": "schaas_pool",
  "guid": "446AD900E64F525149A3B1D79E0037AC",
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
resourceproviders/21"
  }
}
},
"totalResults": 5
}
```

58.4.4.2 Viewing all the Types of Resource Providers

A GET operation is issued to view all the Types of Resource Providers.

Table 58-19 GET Request Configuration for Viewing all the Types of Resource Providers

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/types
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name" : "Resource Provider Types",
  "canonicalLink" : {
    "href" :
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
    resourceproviders/types"
  },
  "cfwItems" : [ {
    "type" : "cfw_samplexaas_rsrc_pool",
    "displayName" : "CFW XaaS Test Rsrc Pool",
    "canonicalLink" : {
      "href" :
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      resourceproviders/type
      s/cfw_samplexaas_rsrc_pool"
    }
  }, {
    "type" : "cfw_samplexaas_rsrc_provider",
    "displayName" : "CFW XaaS Test Rsrc Provider",
    "canonicalLink" : {
      "href" :
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      resourceproviders/type
      s/cfw_samplexaas_rsrc_provider"
    }
  }, {
    "type" : "cfw_samplexaas_rsrcprov_no_member",
    "displayName" : "CFW XaaS Test Rsrc With No Member",
    "canonicalLink" : {
      "href" :
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      resourceproviders/type
      s/cfw_samplexaas_rsrcprov_no_member"
    }
  }, {
    "type" : "mwaas_zone",
    "displayName" : "Middleware Pool",
    "canonicalLink" : {
      "href" :
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      resourceproviders/type
```

```

s/mwaas_zone"
}
}, {
"type" : "oracle_cloud_zone",
"displayName" : "Database Pool",
"canonicalLink" : {
"href" :
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
resourceproviders/type
s/oracle_cloud_zone"
}
}, {
"type" : "oracle_nimbula_site",
"displayName" : "Oracle Nimbula Site",
"canonicalLink" : {
"href" :
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
resourceproviders/type
5.6 67
s/oracle_nimbula_site"
}
}, {
"type" : "pdbaas_pool",
"displayName" : "Pluggable Database Pool",
"canonicalLink" : {
"href" :
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
resourceproviders/type
s/pdbaas_pool"
}
}, {
"type" : "schaas_pool",
"displayName" : "Schema Pool",
"canonicalLink" : {
"href" :
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
resourceproviders/type
s/schaas_pool"
}
}, {
"type" : "self_service_zone",
"displayName" : "PaaS Infrastructure Zone",
"canonicalLink" : {
"href" :
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
resourceproviders/type
s/self_service_zone"
}
} ],
"totalResults" : 0
}

```

58.4.4.3 Creating a Resource Provider

The table below shows the POST configuration to create a Resource Provider.

Table 58-20 POST Request Configuration for Creating a Resource Provider

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "name": "My Xaas Provider_200", "characteristics": [{ "name": "example.sysman.cfw.samplexaas.storagetype", "value": ["file", "db"] }], "memberTargetType": "cfw_samplexaas_rsrc", "members": ["Sample7"], "placementConstraints": [{ "name": "NUMBER_OF_SERVICE_INSTANCES", "value": "20" }], "type": "cfw_samplexaas_rsrc_provider", "useExistingTarget": false, "memberConstraints": [{ "name": "ORACLE.SYSMAN.CFW.LOCATION", "values": ["us-east"] }, { "name": "ORACLE.SYSMAN.SAMPLEXAAS.STORAGETYPE", "values": ["file"] }] }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "message": "Resource Provider with name \"My Xaas Provider_200\" and type \"cfw_samplexaas_rsrc_provider\" created successfully.",
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
```

```
resourceproviders/24"
}
}
```

58.4.4.4 Creating a PaaS Infrastructure Zone Resource Provider

The table below shows the POST configuration to create a PaaS Infrastructure zone Resource Provider.

Table 58-21 POST Request Configuration for Creating a PaaS Infrastructure Zone Resource Provider

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "useExistingTarget" :false, "name" : "MyPaasZone02", "type" : "self_service_zone", "memberTargetType" : "host", "members": ["myhost1.idc.oracle.com"], "credentials": [{ "name": "normal_credential_guid", "value": "VGSINGH" }], "placementConstraints": [{ "name": "MAX_CPU_UTILIZATION", "value": ["80"] }, { "name": "MAX_MEMORY_ALLOCATION", "value": ["80"] }], "memberConstraints": [] }
Request method	POST

A sample of the response received is shown below.

```
{ "message" : "ResourceProvider with name \"MyPaasZone02\" and type  
\"self_service_zone\" created successfully.",  
"canonicalLink" : { "href" : "https://cloudcompany.com/em/websvcs/restful/extws/  
cloudservices/admin/cfw/v2/resourceproviders/41" } }
```

58.4.4.5 Creating a Database Schema Pool

The table below shows the POST configuration to create a Database Schema Pool.

Table 58-22 POST Request Configuration for Creating a Database Schema Pool

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/ restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 58-22 (Cont.) POST Request Configuration for Creating a Database Schema Pool

Feature	Specification
Body	<pre>{ "name" : "MyDBSchemaPool", "useExistingTarget" : false, "type" : "schaas_pool", "description" : "MyDatabaseSchemaPool", "memberTargetType" : "oracle_database", "members" : ["Oemrep_Database"], "parentResourceProviderId" : "1", "credentials" : [{ "name" : "host_credential_guid", "value" : "VGSINGH" }], "placementConstraints" : [{ "name" : "MAX_SERVICES", "value" : ["100"] }, { "name" : "MAX_CPU_USAGE", "value" : ["0"] }, { "name" : "MAX_MEMORY_USAGE", "value" : ["0"] }, { "name" : "USE_WORKLOAD", "value" : ["false"] }, { "name" : "ENFORCE_CPU", "value" : ["false"] }], "memberConstraints" : [{ "name" : "ORACLE.SYSMAN.SSA.CONFIGURATION", "value" : ["oracle_database"] }, { "name" : "ORACLE.SYSMAN.CFW.PLATFORM", "value" : ["226"] }, { "name" : "ORACLE.SYSMAN.CFW.VERSION", "value" : ["11.2.0.3.0"] }], "characteristics" : [{ "name" : "ORACLE.SYSMAN.CFW.ORCL_GTP_CONTACT", "value" : ["admin@cloudcompany.com"] }, { "name" : "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER", "value" : ["GTB"] }, { "name" : "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT", "value" : ["ST"] }, { "name" : "ORACLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS", "value" : ["Development"] }, { "name" : "ORACLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS", "value" : ["LOB"] }, { "name" : "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION", "value" : ["EAST"] }, { "name" : "ORACLE.SYSMAN.CFW.ORCL_GTP_SITE", "value" : ["LOCAL"] }] }</pre>
Request method	POST

A sample of the response received is shown below.

```
{ "message" : "ResourceProvider with name \"MyDBSchemaPool\" and type \"schaas_pool
\" created successfully.",
  "canonicalLink" : { "href" : "https://cloudcompany.com/em/websvcs/restful/extws/
cloudservices/admin/cfw/v2/resourceproviders/61" } }
```

58.4.4.6 Creating an Adapter Instance

The table below shows the POST configuration to create a sample Adapter Instance.

Table 58-23 POST Request Configuration for Creating an Adapter Instance

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "name" : "MySmplVMAdapter_0409123048", "type" : "iaas_adapter", "placementConstraints" : [{ "name" : "MAX_VM_INSTANCES", "value" : "10" }], "vmadapter" : { "name" : "SAMPLEADAPTER", "paaszone" : "MyPaasZone", "connection" : { "endpoints" : [{ "purpose" : "login_url", "url" : "/login_url/ example", "username" : "ssa_user", "password" : "ssa_passwd", "domain" : "domain", "custom" : [{ "name" : "CloudType", "value" : "CloudTypeVal" }, { "name" : "custom_param1", "value" : "custom_param1Val" }] }] }, "virtualizationContainers" : [{ "name" : "Zone" }] }, "useproxies" : ["testnm"], "stagingsservers" : { "location" : "script/location", "credentialGuid" : "25D30ADD427484310DBC8CF6211A383B" } } }</pre>
Request method	POST

A sample of the response received is shown below.

```
{ "message" : "ResourceProvider with name \"MySmplVMAdapter_0409123047\" and type
\"iaas_adapter\" created successfully.",
  "canonicalLink" : { "href" : "https://cloudcompany.com/em/websvcs/restful/extws/
cloudservices/admin/cfw/v2/resourceproviders/63" } }
```

58.4.4.7 Filtering Resource Provider Targets

A POST operation is issued on Resource Providers collection resource to filter Resource Provider targets in the system.

Table 58-24 POST Request Configuration for Filtering Resource Provider Targets

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/filteredtargets
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "type": "self_service_zone", "memberTargetType": "cfw_samplexaas_rsrc" }</pre>

Table 58-24 (Cont.) POST Request Configuration for Filtering Resource Provider Targets

Feature	Specification
Request method	POST

A sample of the response received is shown below.

```
{
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      resourceproviders/filter/targets"
  },
  "targets": [
    "Sample10",
    "Sample1",
    "Sample3",
    "Sample2",
    "Sample5",
    "Sample4",
    "Sample7",
    "Sample6",
    "Sample9",
    "Sample8"
  ],
  "memberTargetType": "cfw_samplexaas_rsrc"
}
```

58.4.4.8 Viewing the Resource Provider Type Metadata

A GET operation is issued to view the Resource Provider type metadata.

Table 58-25 GET Request Configuration for Viewing the Resource Provider Type Metadata

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/types/{resourceprovidertype}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "type" : "mwaas_zone",
  "memberTargetTypes" : [ "host" ],
  "parentResourceProviderType" : "self_service_zone",
  "placementPolicyName" : "First_Pick",
  "placementConstraints" : [ {
```

```

"name" : "MAX_INSTANCES",
"displayName" : "Maximum Number of WebLogic Servers (per host)",
"description" : "Maximum Number of WebLogic Servers (per host)",
"valueType" : "INTEGER",
"operator" : "eq"
} ],
"characteristics" : [ {
"name" : "EXAMPLE.SYSMAN.EMAS.MWC.WLAAS.BASEINSTALLDIR",
"displayName" : "Middleware Home Base Directory",
"description" : "All Oracle Homes would be created from this Base Install
Directory.",
"isComposite" : false,
"possibleValues" : [ ],
"isMandatory" : false,
"isUnique" : false
}, {
"name" : "EXAMPLE.SYSMAN.CFW.ORCL_GTP_CONTACT",
"displayName" : "Contact",
"description" : null,
"isComposite" : false,
"possibleValues" : [ ],
"isMandatory" : false,
"isUnique" : true
}, {
"name" : "EXAMPLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER",
"displayName" : "Cost Center",
"description" : null,
"isComposite" : false,
"possibleValues" : [ ],
"isMandatory" : false,
"isUnique" : true
}, {
"name" : "EXAMPLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT",
"displayName" : "Department",
"description" : null,
"isComposite" : false,
"possibleValues" : [ ],
"isMandatory" : false,
"isUnique" : true
}, {
"name" : "EXAMPLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS",
"displayName" : "Lifecycle Status",
"description" : null,
"isComposite" : false,
"possibleValues" : [ "Development", "MissionCritical", "Production", "Stage",
"Test" ],
5.15 76
"isMandatory" : false,
"isUnique" : true
}, {
"name" : "EXAMPLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS",
"displayName" : "Line of Business",
"description" : null,
"isComposite" : false,
"possibleValues" : [ ],
"isMandatory" : false,
"isUnique" : true
}, {
"name" : "EXAMPLE.SYSMAN.CFW.ORCL_GTP_LOCATION",
"displayName" : "Location",
"description" : null,

```

```

"isComposite" : false,
"possibleValues" : [ ],
"isMandatory" : false,
"isUnique" : true
}, {
"name" : "EXAMPLE.SYSMAN.EMAS.MWC.WLAAS.ASHAREDHOME",
"displayName" : "Shared Oracle Home",
"description" : "When set to Yes, all Hosts in this MW Pool would use this Shared
Home even if
other Oracle Homes present on these Hosts. Otherwise, Oracle Home on each Host will
be used.",
"isComposite" : false,
"possibleValues" : [ "0", "1" ],
"isMandatory" : false,
"isUnique" : false
}, {
"name" : "EXAMPLE.SYSMAN.EMAS.MWAAS_ZONE",
"displayName" : "oracle.sysman.emas.mwaas_zone",
"description" : null,
"isComposite" : false,
"possibleValues" : [ ],
"isMandatory" : true,
"isUnique" : true
} ],
"memberConstraints" : [ {
"name" : "EXAMPLE.SYSMAN.EMAS.MWC.WLAAS.PLATFORM",
"displayName" : "Operating System and Platform",
"description" : null,
"isComposite" : false,
"possibleValues" : [ "197", "59", "212", "209", "46", "226", "912", "208", "233",
"23", "267" ]
} ]
}

```

58.4.4.9 Viewing the Metadata for Creating a PaaS Infrastructure Zone

A GET operation is issued to view the metadata for creating a PaaS Infrastructure Zone.

Table 58-26 GET Request Configuration for Viewing the Metadata for Creating a PaaS Infrastructure Zone

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/self_service_zone
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{ "type": "self_service_zone",
"memberTargetTypes": [ "host" ],
"placementConstraints": [
{ "name": "MAX_MEMORY_ALLOCATION",

```

```

    "displayName": "MaximumMemoryAllocation(%)",
    "description": "MaximumMemoryAllocation constraint per host in a paas
infrastructure zone",
    "valueType": "INTEGER",
    "operator": "eq" },
  { "name": "MAX_CPU_UTILIZATION",
    "displayName": "MaximumCPUUtilization(%)",
    "description": "MaximumCPU utilization(%) constraint for a physical resource
provider",
    "valueType": "INTEGER",
    "operator": "eq" } ],
"characteristics": [ { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_CONTACT",
"displayName": "Contact",
"description": null,
"isComposite": false,
"possibleValues": [],
"isUnique": true,
"isMandatory": false },
{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER",
"displayName": "CostCenter",
"description": null,
"isComposite": false,
"possibleValues": [],
"isUnique": true,
"isMandatory": false },
{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT",
"displayName": "Department",
"description": null,
"isComposite": false,
"possibleValues": [],
"isUnique": true,
"isMandatory": false },
{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS",
"displayName": "LifecycleStatus",
"description": null,
"isComposite": false,
"possibleValues": [ "Development", "MissionCritical",
"Production", "Stage", "Test" ],
"isUnique": true,
"isMandatory": false },
{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS",
"displayName": "Line ofBusiness",
"description": null,
"isComposite": false,
"possibleValues": [],
"isUnique": true,
"isMandatory": false },
{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION",
"displayName": "Location",
"description": null,
"isComposite": false,
"possibleValues": [],
"isUnique": true,
"isMandatory": false },
{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_SITE",
"displayName": "Site",
"description": null,
"isComposite": false,
"possibleValues": [],
"isUnique": true,
"isMandatory": false },

```

```

{ "name": "ORACLE.SYSMAN.CFW.SELF_SERVICE_ZONE",
  "displayName": "oracle.sysman.cfw.self_service_zone",
  "description": null,
  "isComposite": false,
  "possibleValues": [],
  "isUnique": true,
  "isMandatory": true } ],
"credentials": [ { "name": "normal_credential_guid",
  "displayName": "Host credentials",
  "description": "HostCredentials to be used for provisioning in
thisPaaSInfrastructureZone.The credentials provided should be of global credential
type (valid across the members in the zone) and owned by the current user",
  "authenticatingTargetType":
  "host", "isMandatory": true } ],
"memberConstraints": []}

```

58.4.4.10 Viewing the Metadata for Creating a Schema Pool

A GET operation is issued to view the metadata for creating a Schema Pool.

Table 58-27 GET Request Configuration for Viewing the Metadata for Creating a Schema Pool

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/schaas_pool
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{ "type": "schaas_pool",
  "memberTargetTypes": [ "oracle_database", "rac_database" ],
  "parentResourceProviderType": "self_service_zone",
  "placementPolicyName": "First_Pick",
  "placementConstraints": [ { "name": "ENFORCE_CPU", "displayName":
"EnableResourceManager forCPU", "description": "Whether to enable resource manager
which can be used to createConsumerGroups.", "valueType": "BOOLEAN", "operator":
"eq" },
  { "name": "MAX_CPU_USAGE", "displayName": "MaximumCPU allocation (%)",
"description": "Defines the maximum limit of theCPU permissible for each database,
beyond which a service request can not be placed.", "valueType": "INTEGER",
"operator": "eq" },
  { "name": "USE_WORKLOAD", "displayName": "Associate workload with the request",
"description": "Whether to associate workload with the request which represents the
expectedCPU, memory and storage requirements for each service.", "valueType":
"BOOLEAN", "operator": "eq" },
  { "name": "MAX_SERVICES", "displayName": "MaximumNumber of database services",
"description": "Maximum number of services per database.", "valueType": "INTEGER",
"operator": "eq" },
  { "name": "MAX_MEMORY_USAGE", "displayName": "Maximum memory allocation (%)",
"description": "Memory represents the summation ofSystemGlobalArea (SGA) allocated
for each database.", "valueType": "INTEGER", "operator": "eq" } ],
  "characteristics": [ { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_CONTACT", "displayName":

```

```

"Contact", "description": null, "isComposite": false, "possibleValues": [],
"isUnique": true, "isMandatory": false },
  { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER", "displayName": "CostCenter",
"description": null, "isComposite": false, "possibleValues": [], "isUnique": true,
"isMandatory": false },
  { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT", "displayName": "Department",
"description": null, "isComposite": false, "possibleValues": [], "isUnique": true,
"isMandatory": false },
  { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS", "displayName":
"LifecycleStatus", "description": null, "isComposite": false, "possibleValues":
[ "Development", "MissionCritical", "Production", "Stage", "Test" ], "isUnique":
true, "isMandatory": false },
  { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS", "displayName": "Line
ofBusiness", "description": null, "isComposite": false, "possibleValues": [],
"isUnique": true, "isMandatory": false },
  { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION", "displayName": "Location",
"description": null, "isComposite": false, "possibleValues": [], "isUnique": true,
"isMandatory": false },
  { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_SITE", "displayName": "Site", "description":
null, "isComposite": false, "possibleValues": [], "isUnique": true, "isMandatory":
false },
  { "name": "ORACLE.SYSMAN.SSA.SCHAAS_POOL", "displayName":
"oracle.sysman.ssa.schaas_pool", "description": null, "isComposite": false,
"possibleValues": [], "isUnique": true, "isMandatory": true } ],
  "credentials": [ { "name": "gi_credential_guid", "displayName":
"GridInfrastructureCredentials", "description": "GridInfrastructure credentials are
optional.", "authenticatingTargetType": "host", "isMandatory": false },
  { "name": "database_credential_guid", "displayName": "DatabaseCredentials",
"description": "The database credentials that will be used for performing database
operations like schema creation.The database credentials requiresYSDBA privileges.",
"authenticatingTargetType": "oracle_database", "isMandatory": false },
  { "name": "host_credential_guid", "displayName": "HostCredentials", "description":
"Host credentials to be specified that will be used to perform instance creation
operations.", "authenticatingTargetType": "host", "isMandatory": true } ],
  "memberConstraints": [ { "name": "ORACLE.SYSMAN.SSA.CONFIGURATION", "displayName":
"DatabaseConfiguration", "description": "DatabaseConfiguration of the resource
provider member.", "isComposite": false, "possibleValues": [ "rac_database",
"oracle_database" ] },
  { "name": "ORACLE.SYSMAN.CFW.PLATFORM", "displayName": "Platform", "description":
"Platform", "isComposite": false, "possibleValues": [ "197", "59", "212", "209",
"46", "226", "912", "208", "233", "23", "267" ] },
  { "name": "ORACLE.SYSMAN.CFW.VERSION", "displayName": "Version", "description":
"Version", "isComposite": false, "possibleValues": [ "10.2.0.1.0", "10.2.0.2.0",
"10.2.0.3.0", "10.2.0.4.0", "10.2.0.5.0", "11.1.0.6.0", "11.1.0.7.0", "11.2.0.1.0",
"11.2.0.2.0", "11.2.0.3.0", "11.2.0.4.0", "12.1.0.1.0", "12.1.0.2.0" ] } ] } }

```

58.4.4.11 Viewing Details of the Resource Provider

A GET operation is issued to view details of the Resource Provider.

Table 58-28 GET Request Configuration for Viewing Details of the Resource Provider

Feature	Specification
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}</code>

Table 58-28 (Cont.) GET Request Configuration for Viewing Details of the Resource Provider

Feature	Specification
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "My Xaas Provider_001",
  "type": "cfw_samplexaas_rsrc_provider",
  "memberTargetType": "cfw_samplexaas_rsrc",
  "members": [
    "Sample2"
  ],
  "credentials": [],
  "placementConstraints": [
    {
      "name": "NUMBER_OF_SERVICE_INSTANCES",
      "value": [
        "20"
      ]
    },
    {
      "name": "TEST_CONSTRAINT_WITH_STRING_VALUE",
      "value": [
        "\"string_value\""
      ]
    }
  ],
  "memberConstraints": [],
  "characteristics": [
    {
      "name": "ORACLE.SYSMAN.SXAAS.CFW_SAMPLEXAAS_RSRC_PROVIDER",
      "value": [
        "C277DA7F0CB329507172B4C44E0A6DF9"
      ]
    }
  ],
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/22"
  }
}
```

58.4.4.12 Updating a Resource Provider

A PUT operation is issued on a Resource Provider resource to update an existing instance of Resource Provider in the system.

Table 58-29 PUT Request Configuration for Updating a Resource Provider

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "placementConstraints": [{"name": " NUMBER_OF_SERVICE_INSTANCES ", "value": "70"}], }
Request method	PUT

A sample of the response received is shown below.

```
Status 200 OK
{
  message: "Resource Provider with ID "121" updated successfully."
}
```

58.4.4.13 Deleting a Resource Provider

The DELETE request configuration is shown in the table below.

Table 58-30 DELETE Request Configuration for Deleting a Resource Provider

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
Status 200 OK
{
  "message": "Resource Provider with ID \"21\" deleted successfully."
}
```

58.4.4.14 Viewing Configuration of a Resource Provider

The GET request configuration to view the configuration of a resource provider is shown below.

Table 58-31 GET Request Configuration for Viewing Configuration of a Resource Provider

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/4/configurations
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "hosts" : {
    "configurations" : [ {
      "name" : "vm_networks",
      "type" : "VECTOR",
      "description" : "Network.",
      "displayName" : "vm_networks",
      "values" : [ ],
      "required" : false,
      "secret" : false
    }, {
      "name" : "platform",
      "type" : "STRING",
      "value" : "",
      "displayName" : "platform",
      "required" : false,
      "secret" : false
    }, {
      "name" : "hostPrefix",
      "type" : "STRING",
      "description" : "Host Name Prefix.",
      "value" : "rest_",
      "displayName" : "Host Name Prefix",
      "required" : false,
      "secret" : false
    }, {
      "name" : "postInstallScript",
      "type" : "STRING",
      "value" : "",
      "displayName" : "postInstallScript",
      "required" : false,
      "secret" : false
    }, {
      "name" : "cluster_storages",
      "type" : "VECTOR",
      "description" : "Cluster Storage.",
      "displayName" : "cluster_storages",
      "values" : [ ],
      "required" : false,
      "secret" : false
    }, {
      "name" : "agent_base",
```

```

    "type" : "STRING",
    "description" : "Agent Install Base Directory Location",
    "value" : "bsl",
    "displayName" : "Installation Base Directory",
    "required" : false,
    "secret" : false
  }, {
    "name" : "cluster_networks",
    "type" : "VECTOR",
    "description" : "Cluster Network",
    "displayName" : "cluster_networks",
    "values" : [ ],
    "required" : false,
    "secret" : false
  }, {
    "name" : "resourceProviderId",
    "type" : "STRING",
    "value" : "1",
    "displayName" : "resourceProviderId",
    "required" : false,
    "secret" : false
  }, {
    "name" : "postInstallScriptOnOMS",
    "type" : "STRING",
    "value" : "",
    "displayName" : "postInstallScriptOnOMS",
    "required" : false,
    "secret" : false
  }, {
    "name" : "agent_install_creds",
    "type" : "STRING",
    "description" : "Agent Port",
    "value" : "15513B9C0C6E4EB9E053CE74B10A171B",
    "displayName" : "Named Credential",
    "required" : false,
    "secret" : false
  }, {
    "name" : "priv_delegation_setting",
    "type" : "STRING",
    "value" : "/usr/bin/sudo -u %RUNAS% %COMMAND%",
    "displayName" : "priv_delegation_setting",
    "required" : false,
    "secret" : false
  }, {
    "name" : "vm_instance_sizes",
    "type" : "VECTOR",
    "description" : "Instance Size.",
    "displayName" : "vm_instance_sizes",
    "values" : [ "EXTRA_LARGE" ],
    "required" : false,
    "secret" : false
  }, {
    "name" : "agent_port",
    "type" : "STRING",
    "description" : "Agent Port",
    "value" : "3872",
    "displayName" : "Port",
    "required" : false,
    "secret" : false
  }, {
    "name" : "preInstallScript",

```

```

    "type" : "STRING",
    "value" : "",
    "displayName" : "preInstallScript",
    "required" : false,
    "secret" : false
  }, {
    "name" : "custom_params",
    "type" : "VECTOR",
    "description" : "Custom parameters for VM configuration.",
    "displayName" : "custom_params",
    "values" : [ ],
    "required" : false,
    "secret" : false
  }, {
    "name" : "vm_server_templates",
    "type" : "VECTOR",
    "description" : "Server Template.",
    "displayName" : "vm_server_templates",
    "values" : [ "paas-tmpl" ],
    "required" : false,
    "secret" : false
  }, {
    "name" : "preInstallScriptOnOMS",
    "type" : "STRING",
    "value" : "",
    "displayName" : "preInstallScriptOnOMS",
    "required" : false,
    "secret" : false
  }, {
    "name" : "numberOfHost",
    "type" : "STRING",
    "description" : "Number Of Host",
    "value" : "3",
    "displayName" : "Number Of Host",
    "required" : false,
    "secret" : false
  }, {
    "name" : "vm_storages",
    "type" : "VECTOR",
    "description" : "Storage.",
    "displayName" : "vm_storages",
    "values" : [ ],
    "required" : false,
    "secret" : false
  }, {
    "name" : "runPreInstallScriptAsRoot",
    "type" : "STRING",
    "value" : "",
    "displayName" : "runPreInstallScriptAsRoot",
    "required" : false,
    "secret" : false
  }, {
    "name" : "runPostInstallScriptAsRoot",
    "type" : "STRING",
    "value" : "",
    "displayName" : "runPostInstallScriptAsRoot",
    "required" : false,
    "secret" : false
  } ]
},
"swprovisioning" : {

```

```

    "configurations" : [ {
      "name" : "resourceProviderId",
      "type" : "STRING",
      "value" : "1",
      "displayName" : "resourceProviderId",
      "required" : false,
      "secret" : false
    } ]
  }
}

```

58.4.4.15 Viewing Metric of a Resource Provider

The GET request configuration to view the metric of a resource provider is shown below.

Table 58-32 GET Request Configuration for Viewing Metric of a Resource Provider

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/21/metrics
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

Status 200 OK
{
  count: "0"
  hasMore: "false"
  limit: "0"
  offset: "0"
  totalResults: "0"
  metricColumns: [6]
  0: {
    name: "services"
  }-
  1: {
    name: "sample"
  }-
  2: {
    name: "memory"
  }-
  3: {
    name: "storageStatus"
  }-
  4: {
    name: "cpu"
  }-
  5: {
    name: "storage"
  }-
}

```

58.4.4.16 Provisioning a Resource via a Sample Adapter

The table below shows the POST configuration to provision a resource.

Table 58-33 POST Request Configuration for Provisioning a Resource via a Sample Adapter

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}/members
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "saveOnly" : false, "setDefault" : true, "hosts" : { "templateGuid" : "13462942A66F0B2DE053CE74B10AFCC2", "configurations" : [{ "name" : "hostPrefix", "value" : "rest_" }, { "name" : "numberOfHost", "value" : "5" }, { "name" : "agent_install_creds", "value" : "131EFD3114423E7AE053CE74B10A5A76" }, { "name" : "agent_base", "value" : "bs1" }, { "name" : "priv_delegation_setting", "value" : "/usr/bin/sudo -u %RUNAS% %COMMAND%" }, { "name" : "agent_port", "value" : "3872" }, { "name" : "priv_delegation_setting_template_name", "value" : "" }, { "name" : "network_purpose_vm", "subvalues" : [{ "name" : "Public", "value" : "192.168.1.0/24" }] }, { "name" : "storage_purpose_cluster", "subvalues" : [{ "name" : "Shared", "value" : "smisko_0" }] }, { "name" : "storage_purpose_vm", "subvalues" : [{ "name" : "Dedicated", "value" : "smisko_0" }] }, { "name" : "network_purpose_cluster", "subvalues" : [{ "name" : "ClusterPrivate", "value" : "192.168.1.0/24" }, { "name" : "ClusterPublic", "value" : "192.168.1.0/24" }] }, { "name" : "vm_instance_sizes", "values" : ["EXTRA_LARGE"] }, { "name" : "vm_server_templates", "values" : ["paas- tpl"] }] }, "swprovisioning" : { "configurations" : [{ "name" : "param01", "value" : "param_01_val" }, { "name" : "param01", "value" : "param_02_val" }] } }</pre>
Request method	POST

A sample of the response received is shown below.

```
{ "status" : "SCHEDULED", "details" : "134821EBDA7472BFE053CE74B10A11B8" }
```

58.4.4.17 De-provisioning a Resource

The DELETE request configuration for de-provisioning a resource is shown in the table below.

Table 58-34 DELETE Request Configuration for De-provisioning a Resource

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/{resourceproviderid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "members": ["rest_-bf51c965-fff0-400c-a982-2c71b2afb150", "rest_-13ce4c70-e1b4-4bd9-8b43-6952d619e674"] }
Request method	DELETE

A sample of the response received is shown below.

```
{ "details": "133C8EC6EAC86122E053CE74B10A4DEF", "status": "SCHEDULED" }
```

58.4.4.18 Viewing the Metadata Required to Provision a Resource Provider

The POST request configuration to view the metadata required to provision a resource provider is shown below.

Table 58-35 POST Request Configuration for Viewing the Metadata Required to Provision a Resource Provider

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/4/members/metadata
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "hosts" : { "templateGuid" : "1552104D74F47F29E053CE74B10A08D9" } }
Request method	POST

A sample of the response received is shown below.

```
{
  "hosts" : {
    "templateGuid" : "1552104D74F47F29E053CE74B10A08D9",
    "configurations" : [ {
      "name" : "platform",
      "type" : "STRING",
      "value" : "",
      "displayName" : "platform",
```

```

    "required" : false,
    "secret" : false
  }, {
    "name" : "hostPrefix",
    "type" : "STRING",
    "description" : "Host Name Prefix.",
    "value" : "MySmplAdptr0505013358",
    "displayName" : "Host Name Prefix",
    "required" : false,
    "secret" : false
  }, {
    "name" : "network_purpose_vm",
    "type" : "VECTOR",
    "description" : "Purpose Network Instance",
    "displayName" : "network_purpose_vm",
    "required" : false,
    "secret" : false,
    "possibleValues" : [ {
      "value" : "192.168.1.0/25",
      "displayName" : "192.168.1.0/25"
    }, {
      "value" : "192.168.1.0/24",
      "displayName" : "192.168.1.0/24"
    }, {
      "value" : "192.168.1.0/26",
      "displayName" : "192.168.1.0/26"
    }, {
      "value" : "192.168.1.0/27",
      "displayName" : "192.168.1.0/27"
    } ],
    "subvalues" : [ {
      "name" : "Public",
      "type" : "STRING",
      "displayName" : "Public",
      "required" : true,
      "secret" : false
    } ]
  }, {
    "name" : "postInstallScript",
    "type" : "STRING",
    "value" : "",
    "displayName" : "postInstallScript",
    "required" : false,
    "secret" : false
  }, {
    "name" : "storage_purpose_cluster",
    "type" : "VECTOR",
    "description" : "Purpose Storage Cluster",
    "displayName" : "storage_purpose_cluster",
    "required" : false,
    "secret" : false,
    "possibleValues" : [ {
      "value" : "smisko_3",
      "displayName" : "smisko_3"
    }, {
      "value" : "smisko_2",
      "displayName" : "smisko_2"
    }, {
      "value" : "smisko_1",
      "displayName" : "smisko_1"
    } ], {

```

```

        "value" : "smisko_0",
        "displayName" : "smisko_0"
    } ],
    "subvalues" : [ ]
}, {
    "name" : "network_purpose_cluster",
    "type" : "VECTOR",
    "description" : "Purpose Network Cluster",
    "displayName" : "network_purpose_cluster",
    "required" : false,
    "secret" : false,
    "possibleValues" : [ {
        "value" : "192.168.1.0/25",
        "displayName" : "192.168.1.0/25"
    }, {
        "value" : "192.168.1.0/24",
        "displayName" : "192.168.1.0/24"
    }, {
        "value" : "192.168.1.0/26",
        "displayName" : "192.168.1.0/26"
    }, {
        "value" : "192.168.1.0/27",
        "displayName" : "192.168.1.0/27"
    } ],
    "subvalues" : [ ]
}, {
    "name" : "agent_base",
    "type" : "STRING",
    "description" : "Agent Install Base Directory Location",
    "value" : "/scratch/oracle/",
    "displayName" : "Installation Base Directory",
    "required" : false,
    "secret" : false
}, {
    "name" : "resourceProviderId",
    "type" : "STRING",
    "value" : "1",
    "displayName" : "resourceProviderId",
    "required" : false,
    "secret" : false
}, {
    "name" : "postInstallScriptOnOMS",
    "type" : "STRING",
    "value" : "",
    "displayName" : "postInstallScriptOnOMS",
    "required" : false,
    "secret" : false
}, {
    "name" : "agent_install_creds",
    "type" : "STRING",
    "description" : "Agent Port",
    "value" : "15513B9C0C6E4EB9E053CE74B10A171B",
    "displayName" : "Named Credential",
    "required" : false,
    "secret" : false
}, {
    "name" : "storage_purpose_vm",
    "type" : "VECTOR",
    "description" : "Purpose Storage Instance",
    "displayName" : "storage_purpose_vm",
    "required" : false,

```

```

"secret" : false,
"possibleValues" : [ {
  "value" : "smisko_3",
  "displayName" : "smisko_3"
}, {
  "value" : "smisko_2",
  "displayName" : "smisko_2"
}, {
  "value" : "smisko_1",
  "displayName" : "smisko_1"
}, {
  "value" : "smisko_0",
  "displayName" : "smisko_0"
} ],
"subvalues" : [ {
  "name" : "Dedicated",
  "type" : "STRING",
  "displayName" : "Dedicated",
  "required" : true,
  "secret" : false
} ]
}, {
  "name" : "priv_delegation_setting",
  "type" : "STRING",
  "value" : "/usr/bin/sudo -u %RUNAS% %COMMAND%",
  "displayName" : "priv_delegation_setting",
  "required" : false,
  "secret" : false
}, {
  "name" : "vm_instance_sizes",
  "type" : "VECTOR",
  "description" : "Instance Size.",
  "displayName" : "vm_instance_sizes",
  "values" : [ "EXTRA_LARGE", "TINY", "SMALL" ],
  "required" : false,
  "secret" : false,
  "possibleValues" : [ {
    "value" : "TINY",
    "displayName" : "TINY"
  }, {
    "value" : "EXTRA_LARGE",
    "displayName" : "EXTRA_LARGE"
  }, {
    "value" : "SMALL",
    "displayName" : "SMALL"
  } ]
}, {
  "name" : "agent_port",
  "type" : "STRING",
  "description" : "Agent Port",
  "value" : "3872",
  "displayName" : "Port",
  "required" : false,
  "secret" : false
}, {
  "name" : "preInstallScript",
  "type" : "STRING",
  "value" : "",
  "displayName" : "preInstallScript",
  "required" : false,
  "secret" : false

```

```

    }, {
      "name" : "vm_server_templates",
      "type" : "VECTOR",
      "description" : "Server Template.",
      "displayName" : "vm_server_templates",
      "values" : [ "paas-tmpl", "paas-tmpl2" ],
      "required" : false,
      "secret" : false,
      "possibleValues" : [ {
        "value" : "paas-tmpl",
        "displayName" : "paas-tmpl"
      }, {
        "value" : "paas-tmpl2",
        "displayName" : "paas-tmpl2"
      } ]
    }, {
      "name" : "preInstallScriptOnOMS",
      "type" : "STRING",
      "value" : "",
      "displayName" : "preInstallScriptOnOMS",
      "required" : false,
      "secret" : false
    }, {
      "name" : "numberOfHost",
      "type" : "STRING",
      "description" : "Number Of Host",
      "value" : "",
      "displayName" : "Number Of Host",
      "required" : false,
      "secret" : false
    }, {
      "name" : "runPreInstallScriptAsRoot",
      "type" : "STRING",
      "value" : "",
      "displayName" : "runPreInstallScriptAsRoot",
      "required" : false,
      "secret" : false
    }, {
      "name" : "runPostInstallScriptAsRoot",
      "type" : "STRING",
      "value" : "",
      "displayName" : "runPostInstallScriptAsRoot",
      "required" : false,
      "secret" : false
    } ]
  },
  "swprovisioning" : {
    "configurations" : [ ]
  }
}

```

58.5 Service Templates - Collection Resource for V2

Service Templates is a collection resource representing an SSA administrator's view of all the accessible Service Template resources. The following table describes the Service Template data model.

Table 58-36 Service Templates Collection Resource Data Model

Field	Type	Description	Occurs
name	String	Display name of the collection resource.	1
type	String	Indicates the type of the collection resource.	0..1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1
count	Integer	Number of elements returned.	1
items	Collection <ServiceTemplate>	List of Service Template resources. In case no instances exist, <code>items</code> field is empty.	1
totalCount	Integer	Total number of Service Template resources.	1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent of the containing elements.	1

58.5.1 Supported Operations

The table below shows the supported operations for Service Templates.

Table 58-37 Supported Methods for Service Templates

Request Method	Canonical Link	Description
GET	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates	Returns list of Service Templates.
GET	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates/ templatetypes	Returns Service Template types. See Table 58-38 .
POST	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates/ metadata	Returns metadata required for creation of a Service Template. See: <ul style="list-style-type: none"> • Table 58-39 • Table 58-40 • Table 58-41 • Table 58-42 • Table 58-43

Table 58-37 (Cont.) Supported Methods for Service Templates

Request Method	Canonical Link	Description
POST	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates/ resourceproviders	Returns Resource Provider characteristics required for creation of a Service Template. See Table 58-44 and Table 58-45 .
POST	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates/ configurations	Returns configurations required for creation of a Service Template. See Table 58-46 .
POST	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates	Creates a Service Template.
PUT	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates/ {servicetemplateid}	Updates the Service Template.
GET	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates/ {servicetemplateid}	Returns details of specified Service Template.
GET	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates/ {servicetemplateid}/ configurations	Returns configuration details of the specified Service Template.
DELETE	https:// <OMS_HOST>:<OMS_CONS OLE_PORT>/em/websvcs/ restful/extws/cloudservices/ admin/cfw/v2/servicetemplates/ {servicetemplateid}	Deletes the specified Service Template.

The table below shows the SRVC template type data model supported for the GET request on the URI - /em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes in the v2 framework.

Table 58-38 SRVC Template Type Data Model

Field	Type	Description
serviceTemplateTypeId	String	Id of service template type.
serviceType	String	Name of service type.
name	String	Name of service template type.
displayName	String	Display name of service template type

The table below shows the SRVC template metadata request data model supported for the POST request on the URI - /em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/metadata in the v2 framework.

Table 58-39 SRVC Template Metadata Request Data Model

Field	Type	Description	Occurs
serviceTemplateTypeId	String	Id of service template type.	1
serviceType	String	Name of service type.	1

The table below shows the SRVC template metadata response data model supported for the POST request on the URI - /em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/metadata in the v2 framework.

Table 58-40 SRVC Template Metadata Response Data Model

Field	Type	Description
serviceTemplateTypeId	String	Id of service template type.
rscProvAssocOption	List<String>	Resource provider association.
payloads	List<Payload>	Payloads of service template.
selectedExecutableName	CfwValueDescriptor	Service template type details.
characteristics	List<Characteristic>	List of characteristics of service template.

The table below shows the payload data model supported for the POST request on the URI - https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/metadata in the v2 framework.

Table 58-41 Payload Data Model

Field	Type	Description
name	String	Name of payload.
value	List<String>	List of values.
required	Boolean	Is required or not.

The table below shows the characteristic data model supported for the POST request on the URI - https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/metadata in the v2 framework.

Table 58-42 Characteristic Data Model

Field	Type	Description
name	String	Name of characteristic.
displayName	String	Display name of characteristic.
values	List<String>	List of values.
required	Boolean	Is required or not.
editable	Boolean	Is editable or not.
visible	Boolean	Is visible or not.
targetType	TargetType	If characteristic is Target Characteristic, this field contains target type details.

The table below shows the target type data model supported for the POST request on the URI - /em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/metadata in the v2 framework.

Table 58-43 Target Type Data Model

Field	Type	Description
targetType	String	Target Type.
targetTypeName	String	Name of target type.
parentTargetType	String	Parent target type.
parentTargetTypeName	String	Name of parent target type.

The table below shows the SvcTemplateRscPrvdrRequest data model supported for the POST request on the URI - https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/resourceproviders in the v2 framework.

Table 58-44 SvcTemplateRscPrvdrRequest Data Model

Field	Type	Description	Occurs
serviceTemplateTypeId	String	Id of Service template type.	1
serviceType	String	Name of service type.	1
rscProvAssocOption	List<String>	Resource provider association.	1
payloads	List<Payload>>	Payloads of service template.	0..1
characteristics	List<Characteristic>>	Characteristics of service template.	0..1

The table below shows the SvcTemplateRscPrvdr response data model supported for the POST request on the URI - https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/resourceproviders in the v2 framework.

Table 58-45 SrvcTemplateRscPrvdr Response Data Model

Field	Type	Description
lookupCharacteristics	List<SrvcTemplatePurp ose>	List of purpose characteritics.

The table below shows the SrvcTemplateConfigRequest data model supported for the POST request on the URI - `https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/configurations` in the v2 framework.

Table 58-46 SrvcTemplateConfigRequest Data Model

Field	Type	Description	Occurs
serviceTemplateTypeId	String	Id of Service template type.	1
serviceType	String	Name of service type.	1
rscProvAssocOption	List<String>	Resource provider association.	1
payloads	List<Payload>>	Payloads of service template.	0..1
characteristics	List<Characteristic> >	Characteristics of service template.	0..1
resourceProvider	SrvcTemplateRscpr vdr	Resource provider.	1

58.5.2 Service Templates REST API Examples for V2

This section describes the REST API operations supported on the Service Templates resource. The following operations are explained:

- [Viewing all the Service Templates](#)
- [Viewing all the Service Template Types](#)
- [Viewing the Metadata Required for Creating a Service Template](#)
- [Viewing the Resource Provider Characteristics Required for Creating a Service Template](#)
- [Viewing Configurations Required for Creating a Service Template](#)
- [Creating a Service Template](#)
- [Updating a Service Template](#)
- [Viewing Details of a Specific Service Template](#)
- [Viewing Configuration Details of a Specific Service Template](#)
- [Deleting a Service Template](#)

58.5.2.1 Viewing all the Service Templates

A GET operation is issued to view all the Service Templates.

Table 58-47 GET Request Configuration for Viewing all the Service Templates

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "Service Templates",
  "type": "Service Template",
  "totalResults": 3,
  "cfwItems": [
    {
      "id": "1",
      "name": "Orchestration",
      "guid": "06F28ABA2E0178CBE053CE74B10AAC2D",
      "canonicalLink": {
        "href":
          "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
          servicetemplates/1"
      },
      "description": "Create a set of Oracle VM instances with customized configuration
        for multitier
        applications"
    },
    {
      "id": "2",
      "name": "Simple Orchestration",
      "guid": "06F28ABA2E0478CBE053CE74B10AAC2D",
      "canonicalLink": {
        "href":
          "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
          servicetemplates/2"
      },
      "description": "Create one or more Oracle VM instances with default configuration
        and minimum
        inputs"
    },
    {
      "id": "3",
      "name": "VM Instance",
      "guid": "06F28ABA2E0778CBE053CE74B10AAC2D",
      "canonicalLink": {
        "href":
          "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
          servicetemplates/3"
      },
      "description": "Create an Oracle VM Instance"
    }
  ],
  "canonicalLink": {
```

```

"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicetemplates/"
},
"selfLink": {
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicetemplates/"
}
}

```

58.5.2.2 Viewing all the Service Template Types

A GET operation is issued to view all the Service Template types.

Table 58-48 GET Request Configuration for Viewing all the Service Template Types

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

[
{
"name": "SCHEMA",
"displayname": "Schaas Create Executable",
"serviceType": "SCHEMA",
"serviceTemplateTypeId": "61"
},
{
"name": "MW_SOAAAS_CREATE_INSTANCE",
"displayname": "SOAaaS Orchestration",
"serviceType": "SOA_SERVICE",
"serviceTemplateTypeId": "24"
},
{
"name": "MW_WLAAS_EXECUTABLE_CREATE",
"displayname": "WebLogic Service - Physical",
"serviceType": "WLAAS",
"serviceTemplateTypeId": "28"
},
{
"name": "MW_OSBAAS_CREATE_INSTANCE",
"displayname": "OSBaaS Orchestration",
"serviceType": "OSB_SERVICE",
"serviceTemplateTypeId": "21"
},
{
"name": "DB",
"displayname": "DbaaS Create Executable",

```

```

"serviceType": "DB",
"serviceTemplateTypeId": "41"
},
{
"name": "PDB",
"displayName": "PdbaaS Create Executable",
"serviceType": "PDB",
"serviceTemplateTypeId": "54"
},
{
"name": "ORACLE_NIMBULA_CREATE_SIMPLE_ORCHESTRATION_EXECUTABLE",
"displayName": "Simple Orchestration Custom Service Template",
"serviceType": "ORACLE_NIMBULA_ORCHESTRATION_SERVICE",
"serviceTemplateTypeId": "3"
},
{
"name": "ORACLE_NIMBULA_CREATE_ORCHESTRATION_EXECUTABLE",
"displayName": "Orchestration Custom Service Template",
"serviceType": "ORACLE_NIMBULA_ORCHESTRATION_SERVICE",
"serviceTemplateTypeId": "1"
},
{
"name": "ORACLE_NIMBULA_CREATE_VIRTUAL_MACHINE_EXECUTABLE",
"displayName": "ORACLE_NIMBULA_CREATE_VIRTUAL_MACHINE_EXECUTABLE",
"serviceType": "ORACLE_NIMBULA_VIRTUAL_MACHINE_SERVICE",
"serviceTemplateTypeId": "11"
}
}
]

```

58.5.2.3 Viewing the Metadata Required for Creating a Service Template

A POST operation is issued to view the metadata required for creating a Service Template.

Table 58-49 POST Request Configuration for Viewing the Metadata Required for Creating a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/metadata
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "serviceType": "WLAAS", "serviceTemplateTypeId": "28" }
Request method	POST

A sample of the response received is shown below.

```

{
"serviceType": "WLAAS",
"serviceTemplateTypeId": "28",
"rscProvAssocOption": [

```

```

"byRscLookupChars"
],
"selectedExecutableName": {
"name": "MW_WLAAS_EXECUTABLE_CREATE",
"type": "STRING",
"value": "MwaaS_Setup_Domain_Deploy_App",
"defaultValue": "MwaaS_Setup_Domain_Deploy_App",
"required": true,
"secret": false
},
"payloads": [
{
"name": "DEFAULT_PAYLOAD",
"value": "<user_input>",
"required": true
}
],
"characteristics": [
{
"name": "EXAMPLE.SYSMAN.EMAS.MWC.WLAAS.ENABLEHA",
"displayName": "Distribute WebLogic Servers on Available Hosts?",
"values": [
"No",
"Yes"
],
"required": false,
"visible": true,
"editable": true
},
{
"name": "EXAMPLE.SYSMAN.EMAS.MWC.WLAAS.ENABLELBR",
"displayName": "Enable Load Balancer?",
"values": [
"No",
"Yes"
],
"required": false,
"visible": true,
"editable": true
},
{
"name": "EXAMPLE.SYSMAN.EMAS.MWC.WLAAS.EXPOSEADMINURLS",
"displayName": "Expose WebLogic Admin Console and Fusion Middleware Control to SSA
User?",
"values": [
"No",
"Yes"
],
"required": false,
"visible": true,
"editable": true
}
]
}

```

58.5.2.4 Viewing the Resource Provider Characteristics Required for Creating a Service Template

A POST operation is issued to view the Resource Provider characteristics required for creating a Service Template.

Table 58-50 POST Request Configuration for Viewing the Resource Provider Characteristics Required for Creating a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "serviceType": "WLAAS", "serviceTemplateTypeId": "28", "rscProvAssocOption": ["byRscLookupChars"], "payloads": [{ "name": "DEFAULT_PAYLOAD", "value": "test" }], "characteristics": [{ "name": "EXAMPLE.SYSMAN.EMAS.MWC.WLAAS.ENABLEHA", "value": "Yes" }, { "name": "EXAMPLE.SYSMAN.EMAS.MWC.WLAAS.ENABLELBR", "value": "Yes" }, { "name": "EXAMPLE.SYSMAN.EMAS.MWC.WLAAS.EXPOSEADMINURLS", "value": "Yes" }] }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "lookupCharacteristics": [
    {
      "characteristics": [
        {
          "name": "EXAMPLE.SYSMAN.EMAS.MWAAS_ZONE",
          "displayName": "example.sysman.emas.mwaas_zone",
          "targetType": {
            "targetType": "mwaas_zone",
            "parentTargetType": "self_service_zone",
            "targetTypeName": "Middleware Pool",
            "parentTargetTypeName": "PaaS Infrastructure Zone"
          }
        }
      ]
    }
  ],
}
```

```
"purposeId": 1
}
]
}
```

58.5.2.5 Viewing Configurations Required for Creating a Service Template

A POST operation is issued to view the configurations required for creating a Service Template.

Table 58-51 POST Request Configuration for Viewing Configurations Required for Creating a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/configurations
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 58-51 (Cont.) POST Request Configuration for Viewing Configurations Required for Creating a Service Template

Feature	Specification
Body	<pre> { "serviceType": "WLAAS", "serviceTemplateTypeId": "28", "rscProvAssocOption": ["byRscLookupChars"], "payloads": [{ "name": "DEFAULT_PAYLOAD", "value": "test" }], "characteristics": [{ "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.ENABLEHA", "value": "Yes" }, { "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.ENABLELBR", "value": "Yes" }, { "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.EXPOSEADMINURLS", "value": "Yes" }], "resourceprovider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.EMAS.MWAAS_ZONE", "value": "425AA08582AD7AE95D52C24662867315" }] }] }, "purposeId": 1 } </pre>
Request method	POST

A sample of the response received is shown below.

```

[
  {
    "name": "agentInstallUserPwd",
    "type": "STRING",
    "description": "Agent Install User Password to override",
    "required": false,
    "secret": true
  },
  {

```

```
"name": "hostForResourceProvisioningScript",
"type": "STRING",
"description": "Resource management script will be executed on this host.",
"required": false,
"secret": false
},
{
"name": "portRangeStart",
"type": "STRING",
"description": "Lower Bound for choosing Free Ports",
"required": false,
"secret": false
},
{
"name": "wlsUserPassword",
"type": "STRING",
"description": "Password for the WebLogic Server",
"required": false,
"secret": true
},
{
"name": "rootPwd",
"type": "STRING",
"description": "Root Password to override",
"required": false,
"secret": true
},
{
"name": "wlsUserName",
"type": "STRING",
"description": "Username for the WebLogic Server",
"required": false,
"secret": false
},
{
"name": "wlsUserPassword2",
"type": "STRING",
"description": "Re-enter Password for the WebLogic Server",
"required": false,
"secret": true
},
{
"name": "namedHostCredForVirtualFlow",
"type": "STRING",
"description": "Enter name of the host credential to use for provisioning
operations",
"required": false,
"secret": false
},
{
"name": "startupArguments",
"type": "STRING",
"description": "Enter memory and java arguments to start the server. Example: -
Xms1280m -
Xmx1280m -XX:PermSize=128m -XX:MaxPermSize=256m -
Dweblogic.security.SSL.ignoreHostnameVerification=true",
"required": false,
"secret": false
},
{
"name": "namedCredforHostList",
```

```
"type": "STRING",
"description": "This will be used for the above hosts",
"required": false,
"secret": false
},
{
"name": "serviceName",
"type": "STRING",
"description": "Service Instance Name",
"required": true,
"secret": true
},
{
"name": "cpuUsagePerInstance",
"type": "STRING",
"description": "CPU required by each additional instance in percentage",
"required": false,
"secret": false
},
{
"name": "portRangeEnd",
"type": "STRING",
"description": "Upper Bound for choosing Free Ports",
"required": false,
"secret": false
},
{
"name": "memoryUsagePerInstance",
"type": "STRING",
"description": "Memory required by each additional instance in GB",
"required": false,
"secret": false
},
{
"name": "hostListForScripts",
"type": "STRING",
"description": "Use ',' to separate multiple target hosts",
"required": false,
"secret": false
},
{
"name": "topology",
"type": "STRING",
"description": "For physical provisioning it is auto populated based on the profile
selected. For virtual provisioning it is defaulted to 'Single Cluster'. Please
change based on the
actual topology of the assembly. ",
"required": false,
"secret": false
},
{
"name": "namedCredforRsrcProvHost",
"type": "STRING",
"description": "Enter the EM Named Credentials to be used for the above host in the
\"Host
for Executing Resource Management Script\" field.",
"required": false,
"secret": false
},
{
"name": "isScriptExecuteOnAdminServer",
```

```
"type": "STRING",
"description": "Choose 'Yes' to execute scripts on Admin Server host besides the
hosts
entered above",
"required": false,
"secret": false
}
]
```

58.5.2.6 Creating a Service Template

A POST operation is issued to create a Service template.

Table 58-52 POST Request Configuration for Creating a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 58-52 (Cont.) POST Request Configuration for Creating a Service Template

Feature	Specification
Body	<pre> { "name": "SampleXaas Template", "description": "Xaas template", "serviceType": "CFW_SAMPLEXAAS_SERVICE", "serviceTemplateTypeId": "82", "rscProvAssocOption": ["byRscLookupChars"], "roles": ["SSA01", "SSA02", "SSA03", "SSA04", "SSA05"], "characteristics": [{ "name": "ORACLE.SYSMAN.SAMPLEXAAS.SAMPLEINSTANCETYPE", "values": ["Cfw_Xaas_DB_Service"] }, { "name": "ORACLE.SYSMAN.SAMPLEXAAS.STORAGE_OP_BW", "values": ["10"] }], "resourceproviders": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.SAMPLEXAAS.STORAGETYPE", "displayName": "storage_type", "value": "db" }] }], "purposeId": 1 } }, "configurations": [{ "name": "service_instance_name", "value": "xaas_inst_name" }, { "name": "service_type", "value": "CFW_SAMPLEXAAS_SERVICE" }] </pre>

Table 58-52 (Cont.) POST Request Configuration for Creating a Service Template

Feature	Specification
	<pre> 4.22 48 "name": "service_param2", "value": "p2" }, { "name": "service_param1", "value": "p1" }, { "name": "storage_type", "value": "file" }] } </pre>
Request method	POST

A sample of the response received is shown below.

```

Status 200 OK
{"message": "Service template with id \"0780653DF4C64F83E053CE74B10ABD91\" created successfully."
}

```

58.5.2.7 Updating a Service Template

A PUT operation is issued to update a Service template.

Table 58-53 PUT Request Configuration for Updating a Service Template

Feature	Specification
URI	<pre> https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/ restful/extws/cloudservices/admin/cfw/v2/servicetemplates/ {servicetemplateid} </pre>
Request headers	<pre> Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json </pre>

Table 58-53 (Cont.) PUT Request Configuration for Updating a Service Template

Feature	Specification
Body	<pre> { "displayName": "updatedDisplayName", "description": "updated via API", "rolesToAdd": ["SSA04", "SSA05", "SSA06",], "rolesToRemove": ["SSA01", "SSA02", "SSA03",], "configurations": [{ "name": "service_instance_name", "value": "inst_name_\${tstamp}" }, { "name": "service_type", "value": "CFW_SAMPLEXAAS_SERVICE" }, { "name": "service_param2", "value": "sp2_up" }, { "name": "service_param1", "value": "sp1_up" }, { "name": "storage_type", "value": "file_up" }] } </pre>
Request method	PUT

A sample of the response received is shown below.

```

Status 200 OK
{
  "message": " Service template with id "1" updated successfully."
}

```

58.5.2.8 Viewing Details of a Specific Service Template

A GET operation is issued to view details of a specific Service Template.

Table 58-54 GET Request Configuration for Viewing Details of a Specific Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/{servicetemplateid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "id": "63",
  "guid": "0780653DF4C94F83E053CE74B10ABD91",
  "name": "SampleXaaS Template",
  "displayName": "SampleXaaS Template",
  "description": "XaaS template",
  "serviceType": "CFW_SAMPLEXAAS_SERVICE",
  "serviceTemplateTypeId": "82",
  "createdOn": "2014-11-10T16:52:18Z",
  "createdBy": "SYSMAN",
  "modifiedOn": "2014-11-10T16:52:18Z",
  "owner": "SYSMAN",
  "lastModified": "2014-11-10T16:52:18Z",
  "characteristics": [
    {
      "name": "EXAMPLE.SYSMAN.CFW.ORCL_GTP_CONTACT",
      "displayName": "Contact",
      "values": [],
      "required": false,
      "visible": false,
      "editable": true
    },
    {
      "name": "EXAMPLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER",
      "displayName": "Cost Center",
      "values": [],
      "required": false,
      "visible": false,
      "editable": true
    },
    {
      "name": "EXAMPLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT",
      "displayName": "Department",
      "values": [],
      "required": false,
      "visible": false,
      "editable": true
    },
    {
      "name": "EXAMPLE.SYSMAN.SAMPLEXAAS.SAMPLEINSTANCETYPE",
      "displayName": "Instance Type",
      "values": [
```

```
"Cfw_Xaas_DB_Service"
],
"required": true,
"visible": true,
"editable": false
},
{
"name": "EXAMPLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS",
"displayName": "Lifecycle Status",
"values": [
"Development",
"MissionCritical",
"Production",
"Stage",
"Test"
],
"required": false,
"visible": false,
"editable": true
},
{
"name": "EXAMPLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS",
"displayName": "Line of Business",
"values": [],
"required": false,
"visible": false,
"editable": true
},
{
"name": "EXAMPLE.SYSMAN.CFW.ORCL_GTP_LOCATION",
"displayName": "Location",
"values": [],
"required": false,
"visible": false,
"editable": true
},
{
"name": "EXAMPLE.SYSMAN.SAMPLEXAAS.STORAGE_OP_BW",
"displayName": "Operation Bandwidth",
"values": [
"10"
],
"required": false,
"visible": true,
"editable": true
},
"resourceProvider": {
"lookupCharacteristics": [
{
"characteristics": [
{
"name": "EXAMPLE.SYSMAN.SAMPLEXAAS.STORAGETYPE",
"displayName": "storage_type",
"values": [
"db"
]
}
]
},
],
"purposeId": 1
}
```

```

]
},
"configurations": [
{
"name": "service_instance_name",
"type": "STRING",
"description": "Specify Instance Name",
"value": "xaas_inst_name",
"required": true,
"secret": false
},
{
"name": "service_type",
"type": "STRING",
"description": "Specify Service type",
"value": "CFW_SAMPLEXAAS_SERVICE",
"required": true,
"secret": false
},
{
"name": "service_param2",
"type": "STRING",
"description": "Service param 2",
"value": "p2",
"required": false,
"secret": false
},
{
"name": "service_param1",
"type": "STRING",
"description": "Service param 1",
"value": "p1",
"required": false,
"secret": false
},
{
"name": "storage_type",
"type": "STRING",
"description": "Specify Storage type",
"value": "file",
"required": true,
"secret": false
}
],
"canonicalLink": {
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicetemplates/63"
},
"selfLink": {
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicetemplates/63"
}
}

```

58.5.2.9 Viewing Configuration Details of a Specific Service Template

A GET operation is issued to view the configuration details of a specific Service Template.

Table 58-55 GET Request Configuration for Viewing Configuration Details of a Specific Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/{servicetemplateid}/configurations
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
[
  {
    "name": "service_instance_name",
    "type": "STRING",
    "description": "Specify Instance Name",
    "value": "xaas_inst_name",
    "required": true,
    "secret": false
  },
  {
    "name": "service_type",
    "type": "STRING",
    "description": "Specify Service type",
    "value": "CFW_SAMPLEXAAS_SERVICE",
    "required": true,
    "secret": false
  },
  {
    "name": "service_param2",
    "type": "STRING",
    "description": "Service param 2",
    "value": "p2",
    "required": false,
    "secret": false
  },
  {
    "name": "service_param1",
    "type": "STRING",
    "description": "Service param 1",
    "value": "p1",
    "required": false,
    "secret": false
  },
  {
    "name": "WorkLoads",
    "type": "VECTOR",
    "description": "WorkLoad Values",
    "required": false,
    "secret": false,
    "subvalues": [
      {
        "name": "Small",
```

```

"type": "VECTOR",
"description": "Configuration Values for Small WorkLoad",
"required": false,
"secret": false,
"subvalues": [
{
"name": "DEPL_SIZE_IS_DEFAULT_KEY",
"type": "STRING",
"value": "Y",
"required": false,
"secret": false
},
{
"name": "CPU",
"type": "STRING",
"value": "60",
"required": false,
"secret": false
},
{
"name": "MEMORY",
"type": "STRING",
"value": "4048",
"required": false,
"secret": false
},
{
"name": "STORAGE",
"type": "STRING",
"value": "500",
"required": false,
"secret": false
},
{
"name": "XAAS_TEST",
"type": "STRING",
"value": "NONE",
"required": false,
"secret": false
}
]
},
{
"name": "Medium",
"type": "VECTOR",
"description": "Configuration Values for Medium WorkLoad",
"required": false,
"secret": false,
"subvalues": [
{
"name": "DEPL_SIZE_IS_DEFAULT_KEY",
"type": "STRING",
"value": "N",
"required": false,
"secret": false
},
{
"name": "CPU",
"type": "STRING",
"value": "80",
"required": false,

```

```
"secret": false
},
{
  "name": "MEMORY",
  "type": "STRING",
  "value": "8088",
  "required": false,
  "secret": false
},
{
  "name": "STORAGE",
  "type": "STRING",
  "value": "750",
  "required": false,
  "secret": false
}
]
},
{
  "name": "Large",
  "type": "VECTOR",
  "description": "Configuration Values for Large WorkLoad",
  "required": false,
  "secret": false,
  "subvalues": [
    {
      "name": "DEPL_SIZE_IS_DEFAULT_KEY",
      "type": "STRING",
      "value": "Y",
      "required": false,
      "secret": false
    },
    {
      "name": "CPU",
      "type": "STRING",
      "value": "60",
      "required": false,
      "secret": false
    },
    {
      "name": "MEMORY",
      "type": "STRING",
      "value": "40448",
      "required": false,
      "secret": false
    },
    {
      "name": "STORAGE",
      "type": "STRING",
      "value": "500",
      "required": false,
      "secret": false
    }
  ]
}
],
},
{
  "name": "storage_type",
  "type": "STRING",
  "description": "Specify Storage type",
```

```

"value": "file",
"required": true,
"secret": false
}
]

```

58.5.2.10 Deleting a Service Template

The DELETE request configuration is shown in the table below.

Table 58-56 DELETE Request Configuration for Deleting a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/{servicetemplateid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```

{
"message": "Service template with id \"62\" deleted successfully."
}

```

58.5.3 Creating a Service Template in V2

This section provides the procedure to create a Service Template using REST APIs.

Follow the steps below to create a Service Template:

1. Identify the Service Template type.

Perform a GET operation on the URI - `https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes/`. See, [Viewing all the Service Template Types](#).

The GET operation returns the list of Service Template types available to the Administrator. Note down the `serviceType` and `serviceTemplateTypeId` fields of the required Service Template.

2. Obtain the metadata for the selected Service Template type.

Perform a POST operation on the URI - `https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/metadata`, using the `serviceType` and `serviceTemplateTypeId` fields from the previous step. See, [Viewing the Metadata Required for Creating a Service Template](#).

The POST operation returns a response containing information regarding service template characteristics and payloads. Note these fields as they are required to be set with values in the next step.

3. Obtain the resource provider characteristics for the selected Service Template type.

Perform a POST operation on the URI - `https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/resourceproviders`, by providing values for the metadata fields. See, [Viewing the Resource Provider Characteristics Required for Creating a Service Template](#).

The POST operation returns a response with `resourceProvider` look up characteristics. Note the details.

4. Obtain configuration details for the selected Service Template type.

Perform a POST operation on the URI - `https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/configurations`, by providing a payload with values for all the fields collected so far. See, [Viewing Configurations Required for Creating a Service Template](#).

The POST operation returns a response with a list of configurations for the Service Template. Note the details.

5. Create the Service Template.

Perform a POST operation on the URI - `https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates`, by providing a payload with values for all the fields collected so far. See, [Creating a Service Template](#).

The POST operation creates a Service Template with the configured values.

58.6 Service Types for V2

This section describes the Service Types for the v2 framework.

Table 58-57 Service Types Resource Data Model

Field	Type	Description	Occurs
name	String	Display name of the collection resource.	1
type	String	Type of the collection resource.	1
totalResults	Integer	Total count of items.	1
cfwItems	List<ServiceType>	List of Service type.	
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent of the containing elements.	1

58.6.1 Service Types REST API Examples for V2

This sections describes the REST APIs for the Service Types resource.

58.6.1.1 Viewing Details of the Service Types

The GET request configuration to view details of the Service Types resource.

Table 58-58 GET Request Configuration for Viewing Details of the Service Types

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetypes
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "Service Types",
  "type": "Service Types Collection",
  "totalResults": 3,
  "cfwItems": [
    {
      "name": "CFW_SAMPLEXAAS_REMOTESEVER_SERVICE",
      "displayName": "Cfw Sample RemoteServer XaaS",
      "serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY",
      "targetTypes": [
        "Cfw_Xaas_DB_Service"
      ]
    },
    {
      "name": "CFW_SAMPLEXAAS_SERVICE",
      "displayName": "Cfw Sample XaaS",
      "serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY",
      "targetTypes": [
        "Cfw_Xaas_DB_Service",
        "cfw_xaas_storage_service"
      ]
    },
    {
      "name": "CFW_SAMPLEXAAS_SERVICE_FOR_NOMEM",
      "displayName": "Cfw Sample XaaS - Other Service",
      "serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY",
      "targetTypes": [
        "Cfw_Xaas_DB_Service_for_nomem"
      ]
    }
  ],
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetypes"
  },
  "selfLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetypes"
  }
}
```

58.7 Service Requests for V2

This section describes the Service requests for the v2 framework.

Table 58-59 Requests Collection Resource Data Model

Field	Type	Description	Occurs
name	String	Display name of the collection resource.	1
type	String	Type of the collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1
count	Integer	Number of elements returned.	1
cfwItems	Collection <Request>	List of Request resources. In case no requests exist, then items are empty.	1
totalResults	Integer	Total number of Requests.	1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent of the containing elements.	1

58.7.1 Supported Operations

The table below provides the operations supported on the Service request resource.

Table 58-60 Supported Methods for Service Request

Request Method	Canonical Link	Description
GET	https:// <OMS_HOST>:<OMS_CONSO LE_PORT>/em/websvcs/restful/ extws/cloudservices/ admin/cfw/v2/servicerequests	Returns list of all Service Requests.
GET	https:// <OMS_HOST>:<OMS_CONSO LE_PORT>/em/websvcs/restful/ extws/cloudservices/ admin/cfw/v2/servicerequests/ {servicerequestis}	Returns details of a specified Service Request.
PUT	https:// <OMS_HOST>:<OMS_CONSO LE_PORT>/em/websvcs/restful/ extws/cloudservices/ admin/cfw/v2/servicerequests/ {servicerequestid}	Reschedules the specified Service Request.

Table 58-60 (Cont.) Supported Methods for Service Request

Request Method	Canonical Link	Description
PUT	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicerequests	Cleans a collection of requests.
DELETE	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicerequests/{servicerequestid}	Cancels the specified Service Request.
DELETE	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicerequests	Deletes a list of Service Requests.

58.7.2 Service Requests REST API Examples for V2

This section describes the REST APIs for the Service requests resource. The following operations are explained:

- [Viewing Details of all the Service Requests](#)
- [Viewing Details of a Service Request](#)
- [Rescheduling a Service Request](#)
- [Clearing a Collection of Service Requests](#)
- [Cancelling a Service Request](#)
- [Deleting a List of Service Requests](#)

58.7.2.1 Viewing Details of all the Service Requests

A GET operation is issued to view details of all the Service requests.

Table 58-61 GET Request Configuration for Viewing Details of All the Service Requests

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicerequests
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
{
  name: "Service Requests"
  type: "Service Request"
  hasMore: false
  count: 1
  cfwItems: [
    {
      name: "Request1_21-Dec-13 17:37:34"
      id: 27
      startDate: "2013-12-22T01:37:34'Z'PDT"
      status: "SCHEDULED"
      canonicalLink:
        "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
        servicereques
        ts/27"
    } ]
  totalCount: 1
  canonicalLink: {
    href:
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      servicereques
      ts"
  }
  selfLink: {
    ref:
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
      servicereques
      ts"
  }
}
```

58.7.2.2 Viewing Details of a Service Request

A GET operation is issued to view details of a Service request.

Table 58-62 GET Request Configuration for Viewing Details of a Service Request

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicerequests/27
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
{
  id: "27"
  name: "Request1_21-Dec-13 17:37:34"
  startDate: "2013-12-22T01:37:34'Z'PDT"
  status: "SUCCESS"
  serviceFamily: "CFW_SAMPLEXAAS_SERVICEFAMILY"
```

```

canonicalLink:
{
href:
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
servicereques
ts/27"
}
}

```

58.7.2.3 Rescheduling a Service Request

A PUT operation is issued to reschedule a Service request.

Table 58-63 PUT Request Configuration for Rescheduling a Service Request

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicerequests/27
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "startDate": "2014-01-19T08:06:39ZPDT" }
Request method	PUT

A sample of the response received is shown below.

```

Status 200 OK
{
"message": "Request 27 rescheduled successfully"
}

```

58.7.2.4 Clearing a Collection of Service Requests

A PUT operation is issued to clear a collection of Service requests.

Table 58-64 PUT Request Configuration for Clearing a Collection of Service Requests

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicerequests/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "action": "cleanup", "ids": ["22,23"] }

Table 58-64 (Cont.) PUT Request Configuration for Clearing a Collection of Service Requests

Feature	Specification
Request method	PUT

58.7.2.5 Cancelling a Service Request

A DELETE operation is issued to cancel a Service request.

Table 58-65 DELETE Request Configuration for Cancelling a Service Request

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicerequests/27
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
Status 200 OK
{
  "message": "Request 27 cancelled successfully"
}
```

58.7.2.6 Deleting a List of Service Requests

A DELETE operation is issued to clear a list of Service requests.

Table 58-66 DELETE Request Configuration for Clearing Service Requests

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicerequests
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "ids": ["2", "4"] }
Request method	DELETE

A sample of the response received is shown below.

```

{
  "message": "[\"Request 32 deleted successfully\", \"Request 31 deleted successfully\",
  \"Request
  30 deleted successfully\"]"
}

```

58.8 Service Instances for V2

Service instance is a collection resource representing a user's view of all the accessible service instances.

The table below depicts the Service instance data model.

Table 58-67 Service Instances Data Model

Field	Type	Description	Occurs
name	String	Display name of the collection resource.	1
type	String	Type of the collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1
count	Integer	Number of elements returned.	1
cfwItems	Collection <ServiceInsta nces>	List of Service instance resources. In case no Service instances exists, then the items are empty.	1
totalResults	Integer	Total number of Service instances.	1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent of the containing elements.	1

58.8.1 Supported Operations

The table below provides the operations supported on the Service Instance resource.

Table 58-68 Supported Methods for Service Instance

Request Method	Canonical Link	Description
GET	https:// <OMS_HOST>:<OMS_CONSO LE_PORT>/em/websvcs/restful/ extws/cloudservices/ admin/cfw/v2/serviceinstances	Returns all the Service Instances.
GET	https:// <OMS_HOST>:<OMS_CONSO LE_PORT>/em/websvcs/restful/ extws/cloudservices/ admin/cfw/v2/serviceinstances/ {serviceinstanceid}	Returns details of the specified Service Instance.

Table 58-68 (Cont.) Supported Methods for Service Instance

Request Method	Canonical Link	Description
PUT	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/{instanceguid}/start	Starts the specified Service Instance.
PUT	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/{instanceguid}/stop	Stops the specified Service Instance.
PUT	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/{instanceguid}/delete	Deletes the specified Service Instance.
PUT	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/start	Starts the list of Service Instances.
PUT	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/stop	Stops the list of Service Instances.
PUT	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/delete	Deletes the list of Service Instances.

58.8.2 Service Instance REST API Examples for V2

This sections describes the REST APIs for the Service instance resource. The following operations are explained:

- [Viewing Details of all the Service Instances](#)
- [Viewing Details of a Service Instance](#)
- [Starting a Service Instance](#)
- [Stopping a Service Instance](#)
- [Deleting a Service Instance](#)
- [Starting a list of Service Instances](#)
- [Stopping a list of Service Instances](#)
- [Deleting a list of Service Instances](#)

58.8.2.1 Viewing Details of all the Service Instances

A GET operation is issued to view details of all the Service instances.

Table 58-69 GET Request Configuration for Viewing Details of All the Service Instances

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  selfLink:
  {
    href: "em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances"
  }
  CfwItems: [1]
  0: {
    guid: "92EB43C3F773F3DF3973C1005C54DC43"
    status: "SUCCESS"
    serviceType: "CFW_SAMPLEXAAS_SERVICE"
    serviceFamily: "CFW_SAMPLEXAAS_SERVICEFAMILY"
    name: "dfgdfddd"
    canonicalLink: {
      href:
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/92EB43C3F773F3DF3973C1005C54DC43"
      rel: "Canonical"
    }
    templated: false
  }
  hasMore: false
  totalResults: 9
}
```

58.8.2.2 Viewing Details of a Service Instance

A GET operation is issued to view details of a Service instance.

Table 58-70 GET Request Configuration for Viewing Details of a Service Instance

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/92EB43C3F773F3DF3973C1005C54DC43

Table 58-70 (Cont.) GET Request Configuration for Viewing Details of a Service Instance

Feature	Specification
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
{
  guid: "92EB43C3F773F3DF3973C1005C54DC43"
  serviceType: "CFW_SAMPLEXAAS_SERVICE"
  serviceFamily: "CFW_SAMPLEXAAS_SERVICEFAMILY"
  name: "dfgdfddd"
  canonicalLink: {
    href:
      "em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/92EB43C3F773
      F3DF3973C1005C54DC43"
  }
}
```

58.8.2.3 Starting a Service Instance

A PUT operation is issued to start a Service instance.

Table 58-71 PUT Request Configuration for Starting a Service Instance

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/ restful/extws/cloudservices/admin/cfw/v2/serviceinstances/ {instanceguid}/start
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	PUT

A sample of the response received is shown below.

```
[
  "Request submitted with Request ID : 43"
]
```

58.8.2.4 Stopping a Service Instance

A PUT operation is issued to stop a Service instance.

Table 58-72 PUT Request Configuration for Stopping a Service Instance

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/{instanceguid}/stop
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	PUT

A sample of the response received is shown below.

```
[
  "Request submitted with Request ID : 44"
]
```

58.8.2.5 Deleting a Service Instance

A PUT operation is issued to delete a Service instance.

Table 58-73 PUT Request Configuration for Deleting a Service Instance

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/{instanceguid}/delete
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	PUT

A sample of the response received is shown below.

```
[
  "Request submitted with Request ID : 45"
]
```

58.8.2.6 Starting a list of Service Instances

A PUT operation is issued to start a list of Service instances.

Table 58-74 PUT Request Configuration for Starting a list of Service Instances

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/start
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 58-74 (Cont.) PUT Request Configuration for Starting a list of Service Instances

Feature	Specification
Body	<pre>{ "ids": ["20E46B615DC70027F76A86FEDAC06D17", "8EAF6A882337F154A1B6D890AF00999B", "637B0CE930E36BE5EFFF306BE3E57EFA"] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
[
  "Request submitted with Request ID : 34",
  "Request submitted with Request ID : 35",
  "Request submitted with Request ID : 36"
]
```

58.8.2.7 Stopping a list of Service Instances

A PUT operation is issued to stop a list of Service instances.

Table 58-75 PUT Request Configuration for Stopping a list of Service Instances

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/stop
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "ids": ["20E46B615DC70027F76A86FEDAC06D17", "8EAF6A882337F154A1B6D890AF00999B", "637B0CE930E36BE5EFFF306BE3E57EFA"] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
[
  "Request submitted with Request ID : 37",
  "Request submitted with Request ID : 38",
  "Request submitted with Request ID : 39"
]
```

58.8.2.8 Deleting a list of Service Instances

A PUT operation is issued to delete a list of Service instances.

Table 58-76 PUT Request Configuration for Deleting a Service Instance

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/serviceinstances/delete
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "ids": ["20E46B615DC70027F76A86FEDAC06D17", "8EAF6A882337F154A1B6D890AF00999B", "637B0CE930E36BE5EFFF306BE3E57EFA"] }
Request method	PUT

A sample of the response received is shown below.

```
[
  "Request submitted with Request ID : 40",
  "Request submitted with Request ID : 41",
  "Request submitted with Request ID : 42"
]
```

58.9 Request Settings for V2

Settings are to be applied by an SSA administrator, and can be used for request processing. Settings are categorized as follows:

- Global settings - These are the general settings that are applicable across all service types.
- Service family settings - These settings are specific to a service family.
- Service type settings - These settings are specific to a service type.

58.9.1 Request Settings Data Model

The table below shows the Request Settings data model.

Table 58-77 Request Settings Data Model

Field	Type	Description	Occurs
requestSettings	RequestSettings	Request settings applicable across all service types.	1
swLibDefaultLocation	String	Default location for the software library.	1

Table 58-77 (Cont.) Request Settings Data Model

Field	Type	Description	Occurs
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent of the containing elements.	1

58.9.2 Request Settings Composite Attribute Data Model

The table below shows the Request settings composite attribute data model.

Table 58-78 Request Settings Composite Attribute Data Model

Field	Type	Description	Occurs
futureReservationPolicy	RequestPolicy	The number of days, when a Self Service user can schedule a request in advance.	1
requestDurationPolicy	RequestPolicy	The maximum duration of time (in days) during which a Self Service user can retain a service instance.	1
RequestArchivePolicy	RequestPolicy	The duration of time (in days) after which the "Completed", Self Service create requests will be purged from the repository.	1

58.9.3 Request Settings REST API Examples for V2

This sections describes the REST APIs for the Request settings resource. The following operations are explained:

- [Viewing Details of the Global Request Settings](#)
- [Updating the Global Request Settings](#)
- [Viewing Details of the Global Request Settings for a Collection of Roles](#)
- [Creating Global Request Settings for a Role](#)
- [Viewing Details of Global Request Settings for a Specific Role](#)
- [Updating Global Request Settings for a Specific Role](#)
- [Deleting Global Request Settings for a Specific Role](#)
- [Viewing Details of the Request Settings for a Service Family](#)
- [Updating the Request Settings for a Service Family](#)
- [Viewing Details of the Service Family Settings by Roles](#)
- [Creating Service Family Settings for a Role](#)
- [Viewing Details of the Service Family Request Settings for a Specific Role](#)
- [Updating the Service Family Request Settings for a Specific Role](#)
- [Deleting Service Family Request Settings for a Specific Role](#)

- [Viewing Details of the Request Settings for a Service Type](#)
- [Updating the Request Settings for a Service Type](#)
- [Viewing Details of the Service Type Settings by Roles](#)
- [Creating Service Type Settings for Roles](#)
- [Viewing Details of the Service Type Request Settings for a Specific Role](#)
- [Updating the Service Type Request Settings for a Specific Role](#)
- [Deleting Service Type Request Settings for a Specific Role](#)

58.9.3.1 Viewing Details of the Global Request Settings

A GET operation is issued to view details of the Global request settings resource.

Table 58-79 GET Request Configuration for Viewing Details of the Global Request Settings Resource

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/global
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "requestSettings": [
    {
      "description": "This setting controls how far a user can make a request",
      "displayName": "Future Reservation Length",
      "name": "FUTURE_RESERVATION_LENGTH",
      "restrictionPolicy": "No Restriction"
    },
    {
      "description": "This setting controls the maximum duration for which a user can make a request",
      "displayName": "Request duration Length",
      "name": "REQUEST_DURATION_LENGTH",
      "restrictionPolicy": "No Restriction"
    },
    {
      "description": "This setting controls the maximum duration after which archived requests will be automatically deleted by the system",
      "displayName": "Request Archive Retention Length",
      "name": "REQUEST_ARCHIVE_RETENTION_LENGTH",
      "restrictionPolicy": "No Restriction"
    },
    {
      "description": "Sharing enabled/disabled",
      "name": "SERVICE_INSTANCE_USER_SHARE_ALLOWED",

```

```

"value": "false"
},
{
"description": "Sharing enabled/disabled",
"name": "SERVICE_INSTANCE_ROLE_SHARE_ALLOWED",
"value": "false"
}
]
}

```

58.9.3.2 Updating the Global Request Settings

A PUT operation is issued to update the Global request settings resource.

Table 58-80 PUT Request Configuration for Updating the Global Request Settings Resource

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/global
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "name": "FUTURE_RESERVATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Weeks", "value": "4" } </pre>
Request method	PUT

A sample of the response received is shown below.

```

{
"message": "\"Global\" settings updated successfully."
}

```

58.9.3.3 Viewing Details of the Global Request Settings for a Collection of Roles

A GET operation is issued to view details of the Global request settings for a collection of roles.

Table 58-81 GET Request Configuration for Viewing Details of the Global Request Settings for a Collection of Roles

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/global/roles

Table 58-81 (Cont.) GET Request Configuration for Viewing Details of the Global Request Settings for a Collection of Roles

Feature	Specification
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "items": [
    {
      "href":
        "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/
        requestsettings/
        global/roles/SSA01",
      "name": "SSA01"
    },
    {
      "href":
        "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/
        requestsettings/
        global/roles/SSA05",
      "name": "SSA05"
    }
  ],
  "totalResults": 2
}
```

58.9.3.4 Creating Global Request Settings for a Role

A POST operation is issued to create Global request settings for a role.

Table 58-82 POST Request Configuration for Creating Global Request Settings for a Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/ restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/ global/roles
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 58-82 (Cont.) POST Request Configuration for Creating Global Request Settings for a Role

Feature	Specification
Body	<pre>{ "SERVICE_INSTANCE_USER_SHARE_ALLOWED": { "value": "true" }, "requestSettings": [{ "name": "REQUEST_DURATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Weeks", "value": "4" }, { "name": "REQUEST_ARCHIVE_RETENTION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Hours", "value": "23" }, { "name": "FUTURE_RESERVATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Days", "value": "21" }], "role": "TVMCFW_R1" }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "message": "\"Global role \" settings created successfully."
}
```

58.9.3.5 Viewing Details of Global Request Settings for a Specific Role

A GET operation is issued to view details of Global request settings for a specific role.

Table 58-83 GET Request Configuration for Viewing Details of Global Request Settings for a Specific Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/global/roles/{role}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None

Table 58-83 (Cont.) GET Request Configuration for Viewing Details of Global Request Settings for a Specific Role

Feature	Specification
Request method	GET

A sample of the response received is shown below.

```
{
  "requestSettings": [
    {
      "description": "This setting controls how far a user can make a request",
      "displayName": "Future Reservation Length",
      "name": "FUTURE_RESERVATION_LENGTH",
      "restrictionPolicy": "Restricted",
      "role": "TVMCFW_R1",
      "unitOfMeasurement": "Days",
      "value": "21"
    },
    {
      "description": "This setting controls the maximum duration for which a user can make
a
request",
      "displayName": "Request duration Length",
      "name": "REQUEST_DURATION_LENGTH",
      "restrictionPolicy": "Restricted",
      "role": "TVMCFW_R1",
      "unitOfMeasurement": "Weeks",
      "value": "4"
    },
    {
      "description": "This setting controls the maximum duration after which archived
requests
will be automatically deleted by the system",
      "displayName": "Request Archive Retention Length",
      "name": "REQUEST_ARCHIVE_RETENTION_LENGTH",
      "restrictionPolicy": "Restricted",
      "role": "TVMCFW_R1",
      "unitOfMeasurement": "Hours",
      "value": "23"
    },
    {
      "description": "Sharing enabled/disabled",
      "name": "SERVICE_INSTANCE_USER_SHARE_ALLOWED",
      "value": "true"
    },
    {
      "description": "Sharing enabled/disabled",
      "name": "SERVICE_INSTANCE_ROLE_SHARE_ALLOWED",
      "value": "true"
    }
  ]
}
```

58.9.3.6 Updating Global Request Settings for a Specific Role

A PUT operation is issued to update the Global request settings for a specific role.

Table 58-84 PUT Request Configuration for Updating Global Request Settings for a Specific Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/global/roles/{role}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "name": "FUTURE_RESERVATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Years", "value": "75" }
Request method	PUT

A sample of the response received is shown below.

```
{
  "message": "\"Global role \" settings updated successfully."
}
```

58.9.3.7 Deleting Global Request Settings for a Specific Role

A DELETE operation is issued to delete Global request settings for a specific role.

Table 58-85 DELETE Request Configuration for Deleting Global Request Settings for a Specific Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/global/roles/{role}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
{
  "message": "\"Global role \" settings deleted successfully."
}
```

58.9.3.8 Viewing Details of the Request Settings for a Service Family

A GET operation is issued to view details of the Request Settings for a service family.

Table 58-86 GET Request Configuration for Viewing Details of the Request Settings for a Service Family

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicefamily/{servicefamily}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "requestSettings": [
    {
      "description": "This setting controls how far a user can make a request",
      "displayName": "Future Reservation Length",
      "family": "cfw_samplexaas_servicefamily",
      "name": "FUTURE_RESERVATION_LENGTH",
      "restrictionPolicy": "Restricted",
      "unitOfMeasurement": "Days",
      "value": "25"
    },
    {
      "description": "This setting controls if there is a restriction on the maximum
      duration
      for which requests can be made",
      "displayName": "Request Duration Restricted",
      "family": "cfw_samplexaas_servicefamily",
      "name": "REQUEST_DURATION_LENGTH",
      "restrictionPolicy": "No Restriction"
    },
    {
      "description": "This setting controls if there is a restriction on the maximum
      duration
      after which archived requests will be automatically deleted by the system",
      "displayName": "Request Archive Retention Restricted",
      "family": "cfw_samplexaas_servicefamily",
      "name": "REQUEST_ARCHIVE_RETENTION_LENGTH",
      "restrictionPolicy": "No Restriction"
    },
    {
      "displayName": "Service Instance Sharing With Users Restricted",
      "family": "cfw_samplexaas_servicefamily",
      "name": "SERVICE_INSTANCE_USER_SHARE_ALLOWED",
      "value": "false"
    },
    {
      "displayName": "Service Instance Sharing With Roles Restricted",
      "family": "cfw_samplexaas_servicefamily",
      "name": "SERVICE_INSTANCE_ROLE_SHARE_ALLOWED",
      "value": "false"
    }
  ]
}
```

```
]
}
```

58.9.3.9 Updating the Request Settings for a Service Family

A PUT operation is issued to update the Request Settings for a Service family.

Table 58-87 PUT Request Configuration for Updating the Request Settings for a Service Family

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicefamily/{servicefamily}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "name": "FUTURE_RESERVATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Weeks", "value": "4" }
Request method	PUT

A sample of the response received is shown below.

```
{
  "message": "\"Family \" settings updated successfully."
}
```

58.9.3.10 Viewing Details of the Service Family Settings by Roles

A GET operation is issued to view details of the Service family settings by roles.

Table 58-88 GET Request Configuration for Viewing Details of the Service Family Settings by Roles

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicefamily/{servicefamily}/roles
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "items": [
```

```

{
  "href":
  "https://xx.idc.example.com:34518/em/websvcs/restful/extws/cloudservices/
  admin/cfw/v2/setup/r
  equestsettings/servicefamily/cfw_samplexaas_servicefamily/roles/TVMCFW_R2",
  "name": "TVMCFW_R2"
}
],
"totalResults": 1
}

```

58.9.3.11 Creating Service Family Settings for a Role

A POST operation is issued to create Service family settings for a role.

Table 58-89 POST Request Configuration for Creating Service Family Settings for a Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicefamily/{servicefamily}/roles
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "SERVICE_INSTANCE_USER_SHARE_ALLOWED": { "value": "true" }, "requestSettings": [{ "name": "REQUEST_DURATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Weeks", "value": "14" }, { "name": "REQUEST_ARCHIVE_RETENTION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Hours", "value": "123" }, { "name": "FUTURE_RESERVATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Days", "value": "121" }], "role": "TVMCFW_R2" } </pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "message": "\"Family role \" settings created successfully."
}
```

58.9.3.12 Viewing Details of the Service Family Request Settings for a Specific Role

A GET operation is issued to view details of the Service family request settings for a specific role.

Table 58-90 GET Request Configuration for Viewing Details of the Service Family Request Settings for a Specific Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicefamily/{servicefamily}/roles/{role}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "requestSettings": [
    {
      "description": "This setting controls how far a user can make a request",
      "displayName": "Future Reservation Length",
      "family": "cfw_samplexaas_servicefamily",
      "name": "FUTURE_RESERVATION_LENGTH",
      "restrictionPolicy": "Restricted",
      "role": "TVMCFW_R2",
      "unitOfMeasurement": "Days",
      "value": "121"
    },
    {
      "description": "This setting controls the maximum duration for which a user can make a request",
      "displayName": "Request duration Length",
      "family": "cfw_samplexaas_servicefamily",
      "name": "REQUEST_DURATION_LENGTH",
      "restrictionPolicy": "Restricted",
      "role": "TVMCFW_R2",
      "unitOfMeasurement": "Weeks",
      "value": "14"
    },
    {
      "description": "This setting controls the maximum duration after which archived requests will be automatically deleted by the system",
      "displayName": "Request Archive Retention Length",
      "family": "cfw_samplexaas_servicefamily",
      "name": "REQUEST_ARCHIVE_RETENTION_LENGTH",
      "restrictionPolicy": "Restricted",

```

```

"role": "TVMCFW_R2",
"unitOfMeasurement": "Hours",
"value": "123"
},
{
"description": "Sharing enabled/disabled",
"name": "SERVICE_INSTANCE_USER_SHARE_ALLOWED",
"value": "false"
},
{
"description": "Sharing enabled/disabled",
"name": "SERVICE_INSTANCE_ROLE_SHARE_ALLOWED",
"value": "false"
}
]
}

```

58.9.3.13 Updating the Service Family Request Settings for a Specific Role

A PUT operation is issued to update the Service family request settings for a specific role.

Table 58-91 PUT Request Configuration for Updating the Service Family Request Settings for a Specific Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicefamily/{servicefamily}/roles/{role}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ <pre> "name": "FUTURE_RESERVATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Years", "value": "75" </pre>
Request method	PUT

A sample of the response received is shown below.

```

{
"message": "\"Family role\" settings updated successfully."
}

```

58.9.3.14 Deleting Service Family Request Settings for a Specific Role

A DELETE operation is issued to delete Service family request settings for a specific role.

Table 58-92 DELETE Request Configuration for Deleting Service Family Request Settings for a Specific Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicefamily/{servicefamily}/roles/{role}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
{
  "message": "\"Family role \" settings deleted successfully."
}
```

58.9.3.15 Viewing Details of the Request Settings for a Service Type

A GET operation is issued to view details of the Request settings for a service type.

Table 58-93 GET Request Configuration for Viewing Details of the Request Settings for a Service Type

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicetype/{servicetype}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "requestSettings": [
    {
      "description": "This setting controls if there is a restriction on how far a user can
make a request",
      "displayName": "Future Reservation Restricted",
      "name": "FUTURE_RESERVATION_LENGTH",
      "restrictionPolicy": "No Restriction",
      "serviceType": "cfw_samplexaas_service"
    },
    {
      "description": "This setting controls if there is a restriction on the maximum
duration
for which requests can be made",
      "displayName": "Request Duration Restricted",
      "name": "REQUEST_DURATION_LENGTH",

```

```

"restrictionPolicy": "No Restriction",
"serviceType": "cfw_samplexaas_service"
},
{
"description": "This setting controls if there is a restriction on the maximum
duration
after which archived requests will be automatically deleted by the system",
"displayName": "Request Archive Retention Restricted",
"name": "REQUEST_ARCHIVE_RETENTION_LENGTH",
"restrictionPolicy": "No Restriction",
"serviceType": "cfw_samplexaas_service"
},
{
"displayName": "Service Instance Sharing With Users Restricted",
"name": "SERVICE_INSTANCE_USER_SHARE_ALLOWED",
"serviceType": "cfw_samplexaas_service",
"value": "false"
},
{
"displayName": "Service Instance Sharing With Roles Restricted",
"name": "SERVICE_INSTANCE_ROLE_SHARE_ALLOWED",
"serviceType": "cfw_samplexaas_service",
"value": "false"
}
]
}

```

58.9.3.16 Updating the Request Settings for a Service Type

A PUT operation is issued to update the Request settings for a service type.

Table 58-94 PUT Request Configuration for Updating the Request Settings for a Service Type

Feature	Specification
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicetype/{servicetype}</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "name": "FUTURE_RESERVATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Weeks", "value": "4" } </pre>
Request method	PUT

A sample of the response received is shown below.

```

{
"message": "\"Servicetype \" settings updated successfully."
}

```

58.9.3.17 Viewing Details of the Service Type Settings by Roles

A GET operation is issued to view details of the Service type settings by roles.

Table 58-95 GET Request Configuration for Viewing Details of the Service Type Settings by Roles

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicetype/{servicetype}/roles
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "items": [
    {
      "href":
      "https://xx.idc.example.com:34518/em/websvcs/restful/extws/cloudservices/
      admin/cfw/v2/setup/r
      equestsettings/servicetype/cfw_samplexaas_service/roles/TVMCFW_R3",
      "name": "TVMCFW_R3"
    }
  ],
  "totalResults": 1
}
```

58.9.3.18 Creating Service Type Settings for Roles

A POST operation is issued to create a Service type settings for roles.

Table 58-96 POST Request Configuration for Creating Service Type Settings for Roles

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicetype/{servicetype}/roles
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 58-96 (Cont.) POST Request Configuration for Creating Service Type Settings for Roles

Feature	Specification
Body	<pre>{ "SERVICE_INSTANCE_USER_SHARE_ALLOWED": { "value": "true" }, "requestSettings": [{ "name": "REQUEST_DURATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Weeks", "value": "14" }, { "name": "REQUEST_ARCHIVE_RETENTION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Hours", "value": "123" }, { "name": "FUTURE_RESERVATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Days", "value": "121" }], "role": "TVMCFW_R3" }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "message": "\"Servicetype role \" settings created successfully."
}
```

58.9.3.19 Viewing Details of the Service Type Request Settings for a Specific Role

A GET operation is issued to view details of the Service type request settings for a specific role.

Table 58-97 GET Request Configuration for Viewing Details of the Service Type Request Settings for a Specific Role

Feature	Specification
URI	<a href="https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicetype/{servicetype}/roles/{role}">https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicetype/{servicetype}/roles/{role}

Table 58-97 (Cont.) GET Request Configuration for Viewing Details of the Service Type Request Settings for a Specific Role

Feature	Specification
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "requestSettings": [
    {
      "description": "This setting controls how far a user can make a request",
      "displayName": "Future Reservation Length",
      "name": "FUTURE_RESERVATION_LENGTH",
      "restrictionPolicy": "Restricted",
      "role": "TVMCFW_R3",
      "serviceType": "cfw_samplexaas_service",
      "unitOfMeasurement": "Days",
      "value": "121"
    },
    {
      "description": "This setting controls the maximum duration for which a user can make a request",
      "displayName": "Request duration Length",
      "name": "REQUEST_DURATION_LENGTH",
      "restrictionPolicy": "Restricted",
      "role": "TVMCFW_R3",
      "serviceType": "cfw_samplexaas_service",
      "unitOfMeasurement": "Weeks",
      "value": "14"
    },
    {
      "description": "This setting controls the maximum duration after which archived requests will be automatically deleted by the system",
      "displayName": "Request Archive Retention Length",
      "name": "REQUEST_ARCHIVE_RETENTION_LENGTH",
      "restrictionPolicy": "Restricted",
      "role": "TVMCFW_R3",
      "serviceType": "cfw_samplexaas_service",
      "unitOfMeasurement": "Hours",
      "value": "123"
    },
    {
      "description": "Sharing enabled/disabled",
      "name": "SERVICE_INSTANCE_USER_SHARE_ALLOWED",
      "value": "false"
    },
    {
      "description": "Sharing enabled/disabled",
      "name": "SERVICE_INSTANCE_ROLE_SHARE_ALLOWED",
      "value": "false"
    }
  ]
}
```

```
]
}
```

58.9.3.20 Updating the Service Type Request Settings for a Specific Role

A PUT operation is issued to update the Service type request settings for a specific role.

Table 58-98 PUT Request Configuration for Updating the Service Type Request Settings for a Specific Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicetype/{servicetype}/roles/{role}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "name": "FUTURE_RESERVATION_LENGTH", "restrictionPolicy": "Restricted", "unitOfMeasurement": "Years", "value": "75" }
Request method	PUT

A sample of the response received is shown below.

```
{
  "message": "\"Servicetype role \" settings updated successfully."
}
```

58.9.3.21 Deleting Service Type Request Settings for a Specific Role

A DELETE operation is issued to delete Service type request settings for a specific role.

Table 58-99 DELETE Request Configuration for Deleting Service Type Request Settings for a Specific Role

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/setup/requestsettings/servicetype/{servicetype}/roles/{role}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
{
  "message": "\"Servicetype role \" settings deleted successfully.\"
}
```

58.10 VM Adapters for V2

This section explains the VM Adapters REST APIs.

58.10.1 VM Adapters Data Model

The table below shows the VM Adapters data model.

Table 58-100 VM Adapters Data Model

Field	Type	Description
name	String	Name of the resource.
type	String	Type of the resource.
totalResults	int	The total results.
items	List<VMAdapter>	The list of VM Adapters
canonicalLink	CfwLink	A GET request against this URI refreshes the client representation of this resource.
selfLink	CfwLink	Refers to the resource equivalent to the containing elements.

58.10.2 Supported Operations

The table below provides the operations supported on the VM Adapters resource.

Table 58-101 Supported Methods for VM Adapters

Request Method	Canonical Link	Description
GET	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/vmadapters	Returns all the registered VM Adapters.
GET	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/vmadapters/{name}	Returns the registered VM Adapter's details.
GET	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/vmadapters/stagingservers	Returns the staging servers.
POST	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/vmadapters/stagingservers	Creates a staging server.

58.10.3 VM Adapters REST API Examples for V2

This sections describes the REST APIs for the VM Adapter resource. The following operations are explained:

- [Viewing Details of All the Registered VM Adapters](#)
- [Viewing Details of a Specific Registered VM Adapter](#)
- [Viewing Details of the Staging Servers](#)
- [Creating a Staging Server](#)

58.10.3.1 Viewing Details of All the Registered VM Adapters

A GET operation is issued to view details of all the registered VM Adapters.

Table 58-102 GET Request Configuration for Viewing Details of All the Registered VM Adapters

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/vmadapters
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{ "name": "VMAdapters",
  "type": "VMAdaptersCollection",
  "totalResults": 1,
  "items": [ { "id": "1",
    "name": "SAMPLEADAPTER",
    "displayName": "SampleAdapter",
    "description": "SampleStand alone adapter",
    "instances": { "count": 0, "href": "https://cloudcompany.com/em/websvcs/restful//extws/cloudservices/admin/cfw/v2/resourceproviders?propertyname=adapertype&propertyvalue=SAMPLEADAPTER" },
    "canonicalLink": { "href": "https://cloudcompany.com/em/websvcs/restful//extws/cloudservices/admin/cfw/v2/vmadapters/SAMPLEADAPTER" } } ],
  "canonicalLink": { "href": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/vmadapters/" } }
```

58.10.3.2 Viewing Details of a Specific Registered VM Adapter

A GET operation is issued to view details of a registered VM Adapter.

Table 58-103 GET Request Configuration for Viewing Details of a Specific Registered VM Adapter

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/vmadapters/{name}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None

Table 58-103 (Cont.) GET Request Configuration for Viewing Details of a Specific Registered VM Adapter

Feature	Specification
Request method	GET

A sample of the response received is shown below.

```
{ "name": "SAMPLEADAPTER",
  "connection": { "endpoints": [ { "purpose": "login_url", "custom": [ { "name":
  "CloudType", "type": "STRING", "description": "CoudType, e.g. openstack, ec2, etc",
  "displayName": "CoudType", "required": false, "secret": false },
  { "name": "custom_param1", "type": "STRING", "description": "Custom parameter",
  "displayName": "Custom parameter", "required": false, "secret": false } ] } ],
  "virtualizationContainers": [ { "name": "Zone" } ] }, "proxies": [ { } ] }
```

58.10.3.3 Viewing Details of the Staging Servers

A GET operation is issued to view details of the staging servers.

Table 58-104 GET Request Configuration for Viewing Details of the Staging Servers

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/vmadapters/stagingservers
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{ "name" : "StagingServers", "totalResults" : 1, "items" : [ { "location" : "script/
location", "targetName" : "blr2223141.idc.oracle.com",
"targetGuid" : "5BC2376B484BC065B6661458DAF1F56D", "credentialGuid" :
"25D30ADD427484310DBC8CF6211A383B" } ],
"canonicalLink" : { "href" : "https://cloudcompany.com/em/websvcs/restful/extws/
cloudservices/admin/cfw/v2/vmadapters/stagingservers" }}
```

58.10.3.4 Creating a Staging Server

A POST operation is issued to create a staging server.

Table 58-105 POST Request Configuration for Creating a Staging Server

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/vmadapters/stagingservers
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "targetName" : "blr2223141.idc.oracle.com", "location" : "script/location", "credentialGuid" : "25D30ADD427484310DBC8CF6211A383B" }
Request method	POST

A sample of the response received is shown below.

```
{ "message" : "StagingServer created successfully." }
```

58.11 SSA Admin Resources for V1

The Cloud REST APIs can be categorized as follows:

- Collection Resources
 - [PaasZones for V1](#)
 - [SoftwarePools for V1](#)
 - [Service Template Management for V1](#)
- Singular Resources
 - [PaasZone for V1](#)
 - [SoftwarePool for V1](#)
 - [Service Template Management for V1](#)

Every singular resource has its own attributes and methods supported on it, but in general all singular resources have some common attributes, as described in the following table.

Table 58-106 Common Resource Attributes for Singular Resources

Field	Type	Supported Method	Description	Occurs
name	String	Any	Name of Resource	1
type	String	Any	Resource Type	1
description	String	Any	Description	0..1
id	String	GET	Resource Identifier	0..1
createdOn	TimeStamp	GET	Date and time, in W3C format when the resource was created.	0..1
createdBy	String	GET	User who created resource	0..1

Table 58-106 (Cont.) Common Resource Attributes for Singular Resources

Field	Type	Supported Method	Description	Occurs
modifiedOn	TimeStamp	GET	Date and time, in W3C format when the resource was last modified	0..1
ModifiedBy	Date	GET	User who last modified resource	0..1
owner	String	GET	User who owns resource	0..1
etag	String	GET	HTTP Entity tag value	0..1
lastModified	String	GET	HTTP Last-Modified value	0..1
canonicalLink	URI	GET	Preferred Version of Resource	1
selfLink	URI	GET	Refers to resource equivalent to the containing element	1

Where:

- Supported Method: Indicates in which method type this attribute will be available
- Supported Method type 'Any': Indicates that it might be available with GET, PUT, or POST methods, but not for DELETE.
- Occurs: An occurrence of 0..1 indicates it is an optional parameter. An occurrence of 1 means the parameter is mandatory.

58.11.1 Viewing Details of the REST API Entry Point Resources

The table below shows the GET configuration for viewing details of the REST API resources.

Table 58-107 GET Request Configuration for Viewing Details of the REST API Resources

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/API
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  v1:
  {
    canonicalLink:
    "https://example.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1"
    paasZones: "https://example.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
    paaszones"
    softwarePools: "https://example.com/em/websvcs/restful/extws/cloudservices/
    admin/cfw/v1/softwarepools"
```

```

}
}

```

58.12 PaasZones for V1

PaasZones is a collection resource representing a Cloud Administrator's view of all the accessible PaasZone resources. The following table describes the PaaS Zones [application/oracle.com.cloud.common.PaaS Zones+json] data model.

Table 58-108 PaasZones Data Model

Field	Type	Description	Occurs
name	String	Display name of this collection resource	1
type	String	Type of this collection resource	1
hasMore	Boolean	Indicates whether there are more elements in the collection	1
count	Integer	Number of elements returned	1
items	Collection <PaasZone>	List of Paas Zone resources. In case no instance are there items will be present but empty	1
totalCount	Integer	Total number of Paas Zone resources	1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent to the containing elements.	1

The following table describes the Supported Methods for PaaS Zones:

Table 58-109 Supported Methods for PaasZones

Method	Query Parameters	Request Payload	URI	Description
GET	NA	NA	<i>em/websvcs/restful/extws/cloudservices/admin/cfw/v1/paaszones/</i>	Returns PaasZones collection resource details
GET/metadata	NA	NA	<i>em/websvcs/restful/extws/cloudservices/admin/cfw/v1/paaszones/metadata</i>	Returns PaasZone Metadata
PUT	NA	PaasZone (Json Payload)	<i>em/websvcs/restful/extws/cloudservices/admin/cfw/v1/paaszones/</i>	Updates PaasZone resource

Table 58-109 (Cont.) Supported Methods for PaasZones

Method	Query Parameters	Request Payload	URI	Description
POST	NA	PaasZone (Json Payload)	<i>em/websvcs/restful// extws/cloudservices/ admin/cfw/v1/ paaszones/</i>	Creates PaasZone resource

58.12.1 PaasZones REST API Examples

The following sections provide example PaasZones REST API operations. Note that you can also use EMCLI commands to perform a range of different operations (including, create, update, and delete operations) and these commands are described in [EM CLI Verbs for SSA Operations for V2](#).

The following operations are covered in this section.

- [Viewing PaaS Zones Metadata](#)
- [Listing PaaS Zones](#)

58.12.1.1 Viewing PaaS Zones Metadata

The table below shows the GET configuration for viewing the metadata.

Table 58-110 GET Request Configuration for Viewing the Metadata

Feature	Specification
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/passzones/metadata</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  "constraints" : [ {
    "name" : "MAX_CPU_UTILIZATION",
    "description" : "Maximum CPU Utilization (%)",
    "value" : "80"
  }, {
    "name" : "MAX_MEMORY_ALLOCATION",
    "description" : "Maximum Memory Allocation (%)",
    "value" : "80"
  } ],
  "memberTargetTypes" : [ "oracle_vm_zone", "host" ],
  "message" : "When creating Paas Infrastructure zone: (1) member_type should be set to one of the values shown in member target types. All Zone members have to be of
```

```

the same type. (2) Please change the value of the constraints as required."
}

```

58.12.1.2 Listing PaaS Zones

The table below shows the GET configuration for listing the PaaS zones.

Table 58-111 GET Request Configuration for Viewing the PaaS Zones

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/passzones/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

Status 200 OK
Content-Type: application/json
{
  "name" : "Paas Zones",
  "type" : "Paas Infrastructure Zone",
  "hasMore" : false,
  "count" : 4,
  "items" : [ {
    "name" : "pzone1",
    "id" : "A3CF2D49CFF3F3E664D073303EA51F8E",
    "type" : "self_service_zone",
    "canonicalLink" :
"https://example.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/paaszones/
A3CF2D49CFF3F3E664D073303EA51F8E"
  }, {
    "name" : "Test Zone 2",
    "id" : "EF3830C71CC54B50B963376F9217AB95",
    "type" : "self_service_zone",
    "description" : "with MAX_CPU_UTILIZATION ",
    "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/EF3830C71CC54B50B963376F9217AB95"
  }, {
    "name" : "test paas zone",
    "id" : "5D7548C1B879A51CFD894CEA8D5FB19B",
    "type" : "self_service_zone",
    "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/5D7548C1B879A51CFD894CEA8D5FB19B"
  }, {
    "name" : "Test Zone",
    "id" : "CACBB07A674F280DF84FC4CBFA76DFA7",
    "type" : "self_service_zone",
    "description" : "with MAX_CPU_UTILIZATION ",
    "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/CACBB07A674F280DF84FC4CBFA76DFA7"
  } ],
  "totalCount" : 4,
  "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones",

```

```

    "selfLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones"
}

```

58.13 PaaSZone for V1

This resource represents a PaaS Infrastructure Zone. The following table describes the PaaSZone [application/oracle.com.cloud.common.PaaSZone+json] data model.

Table 58-112 PaaSZone Data Model

Field	Type	Supported Methods	Description	Occurs
name	String	Any	A human readable name given to the PaaS Zone. It is non editable.	1
id	String	GET	Zone ID. GET method will have value for this element.	1
description	String	Any	A brief description given to the zone.	0..1
credential	String	Any	Global Named Credentials to be used for provisioning in this PaaS Infrastructure Zone	1
members	Collection <String>	GET POST	Members of PaaS Zone. They can be either Host members or Oracle VM Zone members.	1
memberType	String	GET POST	Target type of the members of PaaS Zone. It can be either "host" for Host members or "oracle_vm_zone" for Oracle VM Zone members.	1
constraints	Collection <EntityValueHolder>	Any	Placement Policy Constraints allow the cloud administrator to set maximum thresholds for any host. Refer to zone metadata REST API for more information.	0..1
roles	Collection <String>	GET POST	SSA roles that can access this PaaS Infrastructure Zone.	0..1
pools	Collection <Software Pool>	GET	Software Pools associated with this PaaS Zone	0..1
membersToAdd	Collection <String>	PUT	Host or Oracle VM Zone targets to be added to an existing PaaS Zone while editing it.	0..1
membersToRemove	Collection <String>	PUT	Host or Oracle VM Zone targets to be removed from an existing PaaS Zone while editing it.	0..1
rolesToAdd	Collection <String>	PUT	SSA roles to be added while editing a PaaS Zone	0..1
rolesToRemove	Collection <String>	PUT	SSA roles to be removed while editing a PaaS Zone.	0..1

Where:

- Supported Methods: Value 'Any' indicates GET/POST/PUT

Depending on the Supported Methods column value, the respective attributes need to be specified in the Request Payload or are available in the Response Payload after the operation is complete.

For example, while executing a PUT operation, the name, description, credential, membersToAdd, membersToRemove, constraints, rolesToAdd, and rolesToRemove attributes can be specified in the Request payload.

- The constraints attribute is not defined for a PaasZone when its memberType is oracle_vm_zone.
- The MAX_CPU_UTILIZATION and MAX_MEMORY_ALLOCATION are the two placement constraints supported for a PaaS Zone when the memberType is "host". If they are not provided, then their default value is taken to be 80 percent.

The following table describes the supported methods on the PaaSZone resource:

Table 58-113 Supported Methods on PaaSZone Resources

Method	Query Parameters	Request Payload	Response Payload	URI	Description
GET	Possible values for this optional query parameter: <ul style="list-style-type: none"> constraints pools members roles 	NA	PaasZone (Json Payload)	<i>em/websvcs/restful//extws/cloudservices/admin/cfw/v1/paaszones/{zoneId}</i>	Retrieve PaaS Infrastructure Zone details
DELETE	NA	NA	Status Message (json payload)	<i>em/websvcs/restful//extws/cloudservices/admin/cfw/v1/paaszones/{zoneId}</i>	Deletes a PaaS Infrastructure Zone

58.13.1 PaaS Zone REST API Examples

The following sections provide example PaaS Zone REST API operations. Note that you can also use EMCLI commands to perform a range of different operations on a PaaS Zone (including, create, update, and delete) and these commands are described in [EM CLI Verbs for SSA Operations for V2](#).

The following operations are covered in this section.

- [Creating a PaaS Zone](#)
- [Updating a PaaS Zone](#)
- [Deleting a PaaS Zone](#)
- [Viewing Details of the PaasZone](#)
- [Viewing the Expanded form of a PaasZone](#)

58.13.1.1 Creating a PaaS Zone

The table below shows the POST configuration for creating a PaaS zone.

Table 58-114 POST Request Configuration for Creating a PaaS Zone

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/passzones/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "name": "My Test Zone", "description": "This is a TestZone", "credential": "NCAIME", "memberType": "host", "members": ["slc05gvt.us.example.com"], "constraints": [{ "name": "MAX_CPU_UTILIZATION", "value": "85" }, { "name": "MAX_MEMORY_ALLOCATION", "value": "95" }], "roles": ["SSACOREROLE1", "SSACOREROLE2"], }</pre>
Request method	POST

A sample of the response received is shown below.

```
Status 201 Created
Content-Type: application/json
{
  "name" : "My Test Zone",
  "description" : "This is a TestZone",
  "type" : "PaaS Infrastructure Zone",
  "id" : "DDBFEFDAD2AE6490E040F00AA37D4C67",
  "credential" : "NCAIME",
  "members" : {
    "canonicalLink" :
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
      paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67/members",
    "memberType" : "host",
    "numberOfHostMembers" : "1"
  },
  "constraints" : {
    "canonicalLink" :
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
      paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67/constraints",
    "numberOfConstraints" : "2"
  }
}
```

```

    },
    "roles" : {
      "canonicalLink" :
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
      paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67/roles",
      "numberOfUserRoles" : "2"
    },
    "pools" : {
      "canonicalLink" :
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
      paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67/pools",
      "numberOfSoftwarePools" : "0"
    },
    "createdOn" : "2013-05-27 20:57:18",
    "createdBy" : null,
    "modifiedOn" : null,
    "modifiedBy" : null,
    "owner" : "SYSMAN",
    "etag" : null,
    "lastModified" : null,
    "canonicalLink" :
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
    paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67",
    "selfLink" :
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
    paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67"
  }
}

```

58.13.1.2 Updating a PaaS Zone

The table below shows the PUT configuration for updating a PaaS zone.

Table 58-115 PUT Request Configuration for Updating a PaaS Zone

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/passzones/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 58-115 (Cont.) PUT Request Configuration for Updating a PaaS Zone

Feature	Specification
Body	<pre> { "name": "My Test Zone", "credential": "NCAIME2", "description": "Description_01", "membersToAdd": ["somehost.com", "someotherhost.com"], "membersToRemove": ["removehost.com", "removeotherhost2.com"] }, "rolesToAdd": ["ROLE_1", "ROLE_2"], "rolesToRemove": ["ROLE_1_1", "ROLE_2_1"], "constraints": [{ "name": "MAX_MEMORY_ALLOCATION", "value": "80" }, { "name": "MAX_CPU_UTILIZATION", "value": "80" }] } </pre>
Request method	PUT

A sample of the response received is shown below.

```

Status 200 OK
Content-Type: application/json
{
  "message" : "PaaS Infrastructure Zone "My Test Zone" updated successfully."
}

```

58.13.1.3 Deleting a PaaS Zone

The table below shows the DELETE configuration for deleting a PaaS zone.

Table 58-116 DELETE Request Configuration for Deleting a PaaS Zone

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/passzones/DDBFEFDAD2AE6490E040F00AA37D4C67
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  "message" : "PaaS Infrastructure Zone "DDBFEFDAD2AE6490E040F00AA37D4C67"
deleted successfully."
}
```

 **Note:**

A PaaS Infrastructure Zone cannot be deleted if there are Software Pools associated with it.

58.13.1.4 Viewing Details of the PaasZone

The table below shows the GET configuration for viewing details of a PaaS zone.

Table 58-117 GET Request Configuration for Viewing Details of a PaaS Zone

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/passzones/A3CF2D49CFF3F3E664D073303EA51F8E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  "name" : "pzone1",
  "description" : "This zone contains Host members",
  "type" : "PaaS Infrastructure Zone",
  "id" : "A3CF2D49CFF3F3E664D073303EA51F8E",
  "credential" : "SXAASJUNITHOSTCRED",
```

```

"members" : {
  "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/A3CF2D49CFF3F3E664D073303EA51F8E/members",
  "memberType" : "host",
  "numberOfHostMembers" : "2"
},
"constraints" : {
  "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/A3CF2D49CFF3F3E664D073303EA51F8E/constraints",
  "numberOfConstraints" : "2"
},
"roles" : {
  "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/A3CF2D49CFF3F3E664D073303EA51F8E/roles",
  "numberOfUserRoles" : "1"
},
"pools" : {
  "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/A3CF2D49CFF3F3E664D073303EA51F8E/pools",
  "numberOfSoftwarePools" : "0"
},
"createdOn" : "2013-05-22 01:50:30",
"createdBy" : null,
"modifiedOn" : null,
"modifiedBy" : null,
"owner" : "SYSMAN",
"etag" : null,
"lastModified" : null,
"canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/A3CF2D49CFF3F3E664D073303EA51F8E",
"selfLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/A3CF2D49CFF3F3E664D073303EA51F8E"
}

```

58.13.1.5 Viewing the Expanded form of a PaasZone

The get request supports expands query parameter. Based on this query parameter the relevant attribute for a PaasZone is expanded.

The following query parameters are supported:

- members
- role
- constraints
- pools

The table below shows the GET configuration for expanded view of a PaaS zone.

Table 58-118 GET Request Configuration for an Expanded View of a PaaS Zone

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/passzones/{zone_id}?expands=<param_name>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None

Table 58-118 (Cont.) GET Request Configuration for an Expanded View of a PaaS Zone

Feature	Specification
Request method	GET

A sample of the response received is shown below.

```
{
  "name" : "My Test Zone",
  "description" : "Description_02",
  "type" : "PaaS Infrastructure Zone",
  "id" : "DDBFEFDAD2AE6490E040F00AA37D4C67",
  "credential" : "C",
  "members" : {
    "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67/members",
    "memberType" : "host",
    "numberOfHostMembers" : "1"
  },
  "constraints" : {
    "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67/constraints",
    "items" : [ {
      "name" : "MAX_MEMORY_ALLOCATION",
      "value" : "25"
    }, {
      "name" : "MAX_CPU_UTILIZATION",
      "value" : "25"
    } ]
  },
  "roles" : {
    "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67/roles",
    "numberOfUserRoles" : "0"
  },
  "pools" : {
    "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67/pools",
    "numberOfSoftwarePools" : "0"
  },
  "createdOn" : "2013-05-27 20:57:18",
  "createdBy" : null,
  "modifiedOn" : null,
  "modifiedBy" : null,
  "owner" : "SYSMAN",
  "etag" : null,
  "lastModified" : null,
  "canonicalLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67",
  "selfLink" : "https://example.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/paaszones/DDBFEFDAD2AE6490E040F00AA37D4C67"
}
```

58.14 SoftwarePools for V1

SoftwarePools is a collection resource representing an SSA Administrator's view of all the accessible SoftwarePool resources. The following table describes the SoftwarePools [application/oracle.com.cloud.common.SoftwarePools+json] data model.

Table 58-119 SoftwarePools Data Model

Field	Type	Description	Occurs
name	String	Display name of this collection resource	1
type	String	Type of this collection resource	1
hasMore	Boolean	Indicates whether there are more elements in the collection	1
count	Integer	Number of elements returned	1
items	Collection <SoftwarePools>	The elements of this collection	1
totalCount	Integer	Total number of elements in the collection	1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent to the containing elements.	1

The following table describes the supported methods on the SoftwarePools resource:

Table 58-120 Supported Methods on SoftwarePools Resources

Method	Query Parameters	Request Payload	URI	Description
GET	zonename pooltype	NA	<i>em/websvcs/restful/ extws/cloudservices/ admin/cfw/v1/ softwarepools/</i>	Returns the collection of existing Software Pools
PUT	NA	SoftwarePool(Json Payload)	<i>em/websvcs/restful/ extws/cloudservices/ admin/cfw/v1/ softwarepools/</i>	Updates an existing Software Pool resource.
POST	NA	SoftwarePool(Json Payload)	<i>em/websvcs/restful/ extws/cloudservices/ admin/cfw/v1/ softwarepools/</i>	Creates a Software Pool

58.14.1 Software Pools REST API Example

The following provides an example of a SoftwarePools REST API operation. Note that you can also use EMCLI commands to perform a range of different operations on Software Pools (including, create, update, and delete) and these commands are described in [EM CLI Verbs for SSA Operations for V2](#)

The following operations are covered in this section.

- [Viewing Details of the Software Pools](#)
- [Filtering Output based on Search Query Parameters](#)

58.14.1.1 Viewing Details of the Software Pools

The table below shows the GET configuration for viewing details of the Software pools.

Table 58-121 GET Request Configuration for Viewing Details of the Software Pools

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  name: "Software Pools"
  type: "Software Pool"
  hasMore: false
  count: 2
  items: [2]
  0: {
    name: "IT_MW_Pool_2"
    type: "mwaas_zone"
    id: "E284FAAA7FBA6A06F7090115A3E07299"
    zoneName: "IT_MW_Zone1"
    canonicalLink:
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/E284FAAA7FBA6A06F7090115A3E07299"
    description: "Middleware Pool of Oracle Homes of Version 10.3.5.0"
  }-
  1: {
    name: "IT_MW_Pool1"
    type: "mwaas_zone"
    id: "DD73A46E9E3C9866E040F00AE5235A7F"
    zoneName: "IT_MW_Zone1"
    canonicalLink:
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/DD73A46E9E3C9866E040F00AE5235A7F"
    description: "Middleware Pool of Oracle Homes"
  }-
  -
  totalCount: 2
  canonicalLink:
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/"
  selfLink:
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/"
```

```
softwarepools/"
}
```

58.14.1.2 Filtering Output based on Search Query Parameters

Search on the Software Pools is supported on the following by the following query parameters:

- zonename
- pooltype

Single or multiple search parameters may be specified at once. Wildcard search is supported using '%' character.

The table below shows the GET configuration for filtering the Software pools.

Table 58-122 GET Request Configuration for Filtering the Software Pools

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools?zonename=IT_MW%&pooltype=mwaas_zone
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  name: "Software Pools"
  type: "Software Pool"
  hasMore: false
  count: 1
  items: [1]
  0: {
    name: "IT_MW_Pool1"
    type: "mwaas_zone"
    id: "DD73A46E9E3C9866E040F00AE5235A7F"
    zoneName: "IT_MW_Zone1"
    canonicalLink:
      "https://cloudcompany/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/DD73A46E9E3C9866E040F00AE5235A7F"
    description: "Middleware Pool of Oracle Homes"
  }

  totalCount:1
  canonicalLink:
    "https:// cloudcompany/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/"
  selfLink:
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/"
}
```

58.15 SoftwarePool for V1

A SoftwarePool resource represents a collection of homogeneous servers or clusters that are used to service requests within a PaaS Infrastructure Zone. All members within a SoftwarePool must be of the same type and must belong to the same PaaS Infrastructure Zone.

In addition, to maintain homogeneity, the members must satisfy a set of filter criteria that restrict the addition of members to a SoftwarePool. The following table describes the SoftwarePool [application/oracle.com.cloud.common.SoftwarePool+json] data model.

Table 58-123 SoftwarePool Data Model

Field	Type	Supported Methods	Description	Occurs
name	String	Any	A human readable name given to the Software Pool. It is non editable.	1
id	String	GET	Pool GUID that uniquely identifies the resource.	1
description	String	Any	A brief description given to the Software Pool.	0..1
poolTargetType	String	Any	Target type of the Software Pool to be created.Example : "mwaas_zone" for Middleware Pool, "oracle_cloud_zone" for Database Pool, "schaas_pool" for Schema Pool.	1
paasZone	String	GET POST	Name of the PaaS Zone associated with this Software Pool.	1
members	Collection <String>	GET POST	Members of PaaS Zone. They can be either Host members or Oracle VM Zone members.	1
constraints	Collection <EntityValueHolder >	Any	Placement constraints for a Software Pool that allow the self service administrator to set maximum ceilings for resource utilization.	0..1
filters	Collection <EntityValueHolder >	GET POST	Filters on a Software Pool restrict the addition of member targets to it with a set criteria.	1
properties	Collection <EntityValueHolder >	Any	Additional properties that need to be specified for a specific pool target type.	1
membersToAdd	Collection <String>	PUT	Targets to be added to an existing Software Pool while editing it.	0..1
membersToRemove	Collection <String>	PUT	Targets to be removed from an existing Software Pool while editing it.	0..1

Table 58-123 (Cont.) SoftwarePool Data Model

Field	Type	Supported Methods	Description	Occurs
canonicalLink	URI	GET	A GET against this URI refreshes the client representation of this resource.	1

**Note:**

Supported methods value 'Any' indicates GET/POST/PUT .

The following table describes the Supported Methods for Software Pool resources:

Table 58-124 Supported Methods on Software Pool Resources

Method	Query Parameters	Request Payload	Response Payload	URI	Description
GET	param-name : expandsparam- value : members/ filters/ constraints/all Expands a particular attribute to show its data. "all" expands all the attributes.	NA	SoftwarePool (Json Payload)	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful//extws/cloudservices/admin/cfw/v1/softwarepool/{poolId}</code>	Retrieves the Software Pool details
DELETE	NA	NA	Status Message (json payload)	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful//extws/cloudservices/admin/cfw/v1/softwarepool/{poolId}</code>	Deletes a Software Pool

58.15.1 SoftwarePool REST API Examples

The following sections provide example SoftwarePool REST API operations. Note that you can also use EMCLI commands to perform a range of different operations on a Software Pool (including, create, update, and delete operations) and these commands are described in [EM CLI Verbs for SSA Operations for V2](#).

The following operations are covered in this section.

- [Creating a Software Pool](#)
- [Updating a Software Pool](#)

- [Deleting a Software Pool](#)
- [Viewing Details of the Software Pool](#)
- [Expands Query Parameter](#)

58.15.1.1 Creating a Software Pool

A POST operation is issued on Software Pools Collection resource to create a Software Pool.

The table below shows the POST configuration for creating a Software pool.

Table 58-125 POST Request Configuration for Creating a Software Pool

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "name": "IT_MW_Pool1", "poolTargetType": "mwaas_zone", "description": "Middleware Pool of Oracle Homes", "paasZone": "IT_MW_Zone1", "members": ["WebLogicServer10_3_6_0_slc01afx_6775", "WebLogicServer10_3_6_0_adc2201439_4731"], "constraints": { "items": [{"name": "MAX_INSTANCES", "value": "10"}]}, "filters": { "items": [{"name": "VERSION", "value": "10.3.6.0"}]} }</pre>
Request method	POST

A sample of the response received is shown below.

```
Status 201 Created
Content-Type: application/json
{
  name: "IT_MW_Pool1"
  description: "Middleware Pool of Oracle Homes"
  type: "Middleware Pool"
  id: "687FE169ED3556CED38D11DC9BDD5CCD"
  zoneName: "IT_MW_Zone1"
  members: {
  canonicalLink:
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/687FE169ED3556CED38D11DC9BDD5CCD/members"
  numberOfPoolMembers: "2"
  }-
  constraints: {
  canonicalLink:
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
```

```

softwarepools/687FE169ED3556CED38D11DC9BDD5CCD/constraints"
numberOfConstraints: "1"
}-
filters: {
canonicalLink:
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
softwarepools/687FE169ED3556CED38D11DC9BDD5CCD/filters"
numberOfFilters: "1"
}-
properties: {
canonicalLink:
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
softwarepools/687FE169ED3556CED38D11DC9BDD5CCD/properties"
numberOfProperties: "0"
}-
createdOn: "2013-05-24 00:26:42"
createdBy: null
modifiedOn: null
modifiedBy: null
owner: "CLOUD_ADMIN1"
etag: null
lastModified: null
canonicalLink:
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
softwarepools/687FE169ED3556CED38D11DC9BDD5CCD"
selfLink:
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
softwarepools/687FE169ED3556CED38D11DC9BDD5CCD"
}

```

58.15.1.2 Updating a Software Pool

The table below shows the PUT configuration for updating a Software pool.

Table 58-126 PUT Request Configuration for Updating a Software Pool

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "name": "IT_MW_Pool1", "poolTargetType": "mwaas_zone", "description": "Middleware Pool of Oracle Homes Updated", "membersToAdd": ["WebLogicServer10_3_6_0_slc01afx_6776", "WebLogicServer10_3_6_0_adc2201439_4732"], "constraints": { "items": [{"name": "MAX_INSTANCES", "value": "10"}] }, } </pre>
Request method	PUT

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  message: "Software Pool " IT_MW_Pool1" updated successfully."
}
```

58.15.1.3 Deleting a Software Pool

The table below shows the DELETE configuration for deleting a Software pool.

Table 58-127 DELETE Request Configuration for Deleting a Software Pool

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/687FE169ED3556CED38D11DC9BDD5CCD
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  message: "Software Pool "687FE169ED3556CED38D11DC9BDD5CCD" deleted successfully."
}
```

Note:

Software Pool cannot be deleted if there are Service Templates associated with the Pool

58.15.1.4 Viewing Details of the Software Pool

The table below shows the GET configuration for viewing details of a Software pool.

Table 58-128 GET Request Configuration for Viewing Details of a Software Pool

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/687FE169ED3556CED38D11DC9BDD5CCD
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  name: "IT_MW_Pool1"
  description: "Middleware Pool of Oracle Homes"
  type: "Middleware Pool"
  id: "687FE169ED3556CED38D11DC9BDD5CCD"
  zoneName: "IT_MW_Zone1"
  members: {
    canonicalLink:
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
      softwarepools/687FE169ED3556CED38D11DC9BDD5CCD/members"
    numberOfPoolMembers: "2"
  }-
  constraints: {
    canonicalLink:
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
      softwarepools/687FE169ED3556CED38D11DC9BDD5CCD/constraints"
    numberOfConstraints: "1"
  }-
  filters: {
    canonicalLink:
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
      softwarepools/687FE169ED3556CED38D11DC9BDD5CCD/filters"
    numberOfFilters: "1"
  }-
  properties: {
    canonicalLink: https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/
    admin/cfw/v1/softwarepools/687FE169ED3556CED38D11DC9BDD5CCD/properties"
    numberOfPropertiess: "0"
  }-
  createdOn: "2013-05-24 00:26:42"
  createdBy: null
  modifiedOn: null
  modifiedBy: null
  owner: "CLOUD_ADMIN1"
  etag: null
  lastModified: null
  canonicalLink:
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
    softwarepools/687FE169ED3556CED38D11DC9BDD5CCD"
  selfLink:
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
    softwarepools/687FE169ED3556CED38D11DC9BDD5CCD"
}
```

58.15.1.5 Expands Query Parameter

GET operation on SoftwarePool resource supports the expands query parameter to expand the following link resource attributes:

- **members:** Expands the members attribute to show all the members of this Software Pool.
- **filters:** Expands the filters attribute to show the filter criteria of the members of this Software Pool.
- **constraints:** Expands the constraints attribute to show the placement constraints associated with this Software Pool.

- **all** : Expands all the attributes of the Software Pool when returning the Software Pool details.

The URI has the following format:

```
https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/{poolid}/?expands=<paramname>
```

Example:

```
https://hostname/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/687FE169ED3556CED38D11DC9BDD5CCD?expands=members
```

If no query parameter is specified then software pool details data is returned to the user without any attributes expanded.

58.15.2 SoftwarePoolMetadata for V1

This provides the metadata information for all the software pool target types that is needed while creating a Software Pool. The following table describes the SoftwarePoolMetadata [application/oracle.com.cloud.common.SoftwarePools+json] data model.

Table 58-129 SoftwarePoolMetadata Data Model

Field	Type	Description	Occurs
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
poolType	String	Target type of the Software Pool	1
poolTypeDisplay Name	String	Display name of this Software Pool target type.	0..1
poolTypeDescription	String	Description of the Software Pool target type.	0..1
serviceFamily	String	Represents the service family to which this pool type belongs.	1
serviceType	String	Represents the service type to which this pool type belongs.	1
constraints	Collection<ValueDescriptor>	Represents the metadata information about the possible placement constraints for this pool type.	0..1
filters	Collection<ValueDescriptor >	Represents the metadata information about the possible filters (member constraints) for a pool type.	0..1

The GET method for the SupportedPoolMetadata resource has the following characteristics:

- **Response Payload:**
SoftwarePoolMetadata (Json Payload)
- **URI:**
em/websvcs/restful//extws/cloudservices/admin/cfw/v1/softwarepools/metadata
- **Descriptions:**

Retrieves the metadata information for all the software pool types like service type, service family, available constraints, and available filters.

58.15.2.1 Retrieving Software Pool Metadata REST API Example

A GET request is issued to obtain the SoftwarePoolMetadata URI, which is then used to retrieve the metadata information of all the software pool types. Note that you can also use EMCLI commands to retrieve Software Pool information and these commands are described in [EM CLI Verbs for SSA Operations for V2](#)

The table below shows the GET configuration for viewing metadata of the Software pools.

Table 58-130 GET Request Configuration for Viewing Metadata of the Software Pools

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/metadata
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json

{
  softwarePoolsMetadata:
  {
    items: [1]
    0:
    {
      poolType: "mwaas_zone"
      poolTypeDisplayName: "Middleware Pool"
      poolTypeDescription: "Middleware Pool is a set of homogeneous Middleware Oracle
      Homes."
      serviceFamily: "MWAAS"
      serviceType: "PhysicalWLS"
      constraints:
      {
        items: [1]
        0:
        {
          name: "MAX_INSTANCES"
          description: "Maximum Number of Java Servers (per host)"
          defaultValue: "1"
          isRequiredValue: true
        }
      }
      filters:
      {
        items: [1]
        0:
        {
```

```

name: "VERSION"
description: "Version"
defaultValue: "10.3.5.0"
isRequiredValue: true
possibleValues: [7]
0:
{value: "12.1.1.0"
description: "12.1.1.0"}
1:
{
value: "10.3.6.0"
description: "10.3.6.0"
}
2:
{
value: "10.3.5.0"
description: "10.3.5.0"
}
3:
{
value: "10.3.4.0"
description: "10.3.4.0"
}
4:
{
value: "10.3.3.0"
description: "10.3.3.0"
}
5:
{
value: "10.3.2.0"
description: "10.3.2.0"
}
6:
{
value: "10.3.1.0"
description: "10.3.1.0"
}
}
}
}
canonicalLink: "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/
admin/cfw/v1/softwarepools/metadata"
}

```

58.15.3 SoftwarePoolFilteredTargets for V1

This gives the available targets in a given PaaS Infrastructure Zone based on the filter criteria given, that can be used in POST operation on SoftwarePool resource. The following table describes the SoftwarePoolFilteredTargets [application/oracle.com.cloud.common.SoftwarePoolFilteredTargets+json] data model.

Table 58-131 SoftwarePoolFilteredTargets Data Model

Field	Type	Description	Occurs
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1

Table 58-131 (Cont.) SoftwarePoolFilteredTargets Data Model

Field	Type	Description	Occurs
targetType	String	Target type of the Software Pool . Example : "mwaas_zone" for Middleware Pool, "oracle_cloud_zone" for Database Pool, "schaas_pool" for Schema Pool.Refer SoftwarePoolsMetadata resource to get the available filters for a pool target type.[POST]	1
paasZone	String	Name of the PaaS Zone representing a filter criteria. [POST]	1
targets	Map<String, List<String>>	Filtered targets after applying the filter criteria.	1
filters	Collection<Filters>	Filter criteria that needs to be applied to get the filtered targets. Refer SoftwarePoolsMetadata resource to get the available filters for a pool target type. [POST]	1

Note that filtered targets satisfy the following:

- Are part of the given PaaS Infrastructure zone.
- Satisfy the filter criteria passed.
- Are not part of any other Software Pool.

The POST method for the SupportedPoolFilteredTargets resource has the following characteristics:

- Request Payload:
SoftwarePoolFilteredTargets (Json Payload)
- Response Payload
SoftwarePoolFilteredTargets (Json Payload)
- URI:
`em/websvcs/restful//extws/cloudservices/admin/cfw/v1/softwarepools/filteredtargets`
- Descriptions:
Retrieves the metadata information for all the software pool types, such as service type, service family, available constraints, and available filters.

58.15.3.1 Retrieving Available Filtered Targets - REST API Example

A POST operation on SoftwarePoolFilteredTargets resource is issued to fetch the filtered targets based on the paas zone and filters given. Note that you can also use EMCLI commands to retrieve Filtered Targets information and these commands are described in [EM CLI Verbs for SSA Operations for V2](#)

The table below shows the POST configuration for viewing the filtered targets of the Software pools.

Table 58-132 POST Request Configuration for Viewing Metadata of the Software Pools

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: applicaiton/json
Body	<pre>{ "targetType": "mwaas_zone", "paasZone": "IT_MW_Zone1", "filters": {"items": [{"name": "VERSION", "value": "10.3.6.0"}]} }</pre>
Request method	POST

A sample of the response received is shown below.

```
Status 201 Created
Content-Type: application/json

{
  targets: {
    oracle_home: [2]
    0: "WebLogicServer10_3_6_0_slc01afx_6775"
    1: "WebLogicServer10_3_6_0_adc2201439_4731"
  }
  canonicalLink:
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
softwarepools/filteredtargets"
}
```

58.15.4 SoftwarePoolCapacity for V1

This resource retrieves the software pool capacity details like CPU utilization, memory allocation, and number of instances for the pool entities. The following table describes the SoftwarePoolCapacity [application/oracle.com.cloud.common.SoftwarePoolCapacity+json] data model.

Table 58-133 SoftwarePoolCapacity Data Model

Field	Type	Description	Occurs
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
name	String	Name of the Software Pool. [POST]	1
type	String	Target type of the Software Pool. Example : "mwaas_zone" for Middleware Pool, "oracle_cloud_zone" for Database Pool, "schaas_pool" for Schema Pool.	1

Table 58-133 (Cont.) SoftwarePoolCapacity Data Model

Field	Type	Description	Occurs
capacity	Collection<Filters>	Filter criteria that needs to be applied to get the filtered targets. Refer SoftwarePoolsMetadata resource to get the available filters for a pool target type. [POST]	1

The GET method for the SupportedPoolCapacity resource has the following characteristics:

- Response Payload
SoftwarePoolCapacity (Json Payload)
- URI:
https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful//extws/cloudservices/admin/cfw/v1/softwarepools/{poolId}/capacity
- Descriptions:
Retrieves the software pool capacity details.

58.15.4.1 Retrieving Software Pool Capacity

A GET on SoftwarePoolCapacity resource is issued to get the Software Pool capacity details. Note that you can also use EMCLI commands to retrieve Software Pool Capacity information and these commands are described in [EM CLI Verbs for SSA Operations for V2](#)

The table below shows the GET configuration for viewing the Software pool capacity.

Table 58-134 GET Request Configuration for Viewing the Software Pool Capacity

Feature	Specification
URI	<i>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/softwarepools/687FE169ED3556CED38D11DC9BDD5CCD/capacity</i>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  name: "mySchemaPool"
  type: "schaas_pool"
  capacity: {
    items: [1]
    0: {
```

```

entityName: "Oemrep_Database"
entityType: "oracle_database"
entityCapacity: {
  items: [4]
  0: {
    resourceType: "Storage Utilization"
    resourceUsed: "64.74"
    resourceThreshold: "100.0"
    resourceUnit: "%"
  }-
  1: {
    resourceType: "CPU Utilization"
    resourceUsed: "0.0"
    resourceThreshold: "0.0"
    resourceUnit: "%"
  }-
  2: {
    resourceType: "Memory Utilization"
    resourceUsed: "0.0"
    resourceThreshold: "0.0"
    resourceUnit: "%"
  }-
  3: {
    resourceType: "Instances"
    resourceUsed: "0"
    resourceThreshold: "100"
  }-
  -
  }-
  -
  }-
  -
  }-
  canonicalLink:
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
  softwarepools/2E7C9C632B18C3FEB4FEA5A614E51BE7/capacity"
}

```

58.16 Composite Resource Attributes for V1

Some of the resource entities in this specification contain the following composite resource attributes:

- [ValueDescriptor for V1](#)
- [ValueEntity for V1](#)
- [EntityValueHolder for V1](#)
- [PoolEntityCapacity for V1](#)
- [ResourceTypeCapacity for V1](#)

58.16.1 ValueDescriptor for V1

This describes the metadata regarding the type of value that can be set upon an associated object. The following table describes the data model:

Table 58-135 ValueDescriptor Data Model

Field	Type	Description	Occurs
name	String	Name of the datum being described.	1
description	String	Description of the datum being described.	1
defaultValue	String	Default value of the datum being described.	1
isRequiredValue	Boolean	True if the value is required.	1
possibleValues	Collection<ValueEntity>	Optional list of valid values of the datum being described.	0..1

58.16.2 ValueEntity for V1

This represents a value (string representation) and their description (caption). The following table describes the data model:

Table 58-136 ValueEntity Data Model

Field	Type	Description	Occurs
value	String	String representation of the actual value of the entity.	1
description	String	Caption of the entity that describes it.	0..1

58.16.3 EntityValueHolder for V1

This represents a simple entity having a name, value and description. The following table describes the data model:

Table 58-137 EntityValueHolder Data Model

Field	Type	Description	Occurs
name	String	Name of the entity	1
value	String	String representation of the actual value of the entity.	1
description	String	Caption of the entity that describes it.	0..1

58.16.4 PoolEntityCapacity for V1

This represents the capacity details of individual entities of the Software Pool. The following table describes the data model:

Table 58-138 PoolEntityCapacity Data Model

Field	Type	Description	Occurs
entityName	String	Name of the entity	1

Table 58-138 (Cont.) PoolEntityCapacity Data Model

Field	Type	Description	Occurs
entityType	String	Target type of the entity.	1
entityCapacity	Collection<ResourceTypeCapacity>	Collection of capacity details of a particular resource type like Storage Utilization, CPU Utilization.	1

58.16.5 ResourceTypeCapacity for V1

This represents the capacity details of a particular resource type, such as Storage Utilization and CPU Utilization. The following table describes the data model:

Table 58-139 ResourceTypeCapacity Data Model

Field	Type	Description	Occurs
resourceType	String	Type of the resource like Storage Utilization.	1
resourceUsed	String	String representation of the used resource.	1
resourceThreshold	String	String representation of the resource threshold.	0..1
resourceUnit	String	String representation of the unit in which the utilization of the resource is measured.	0..1

58.17 Service Template Management for V1

This section describes the resources and REST APIs that can be used to manage service templates.

58.17.1 Service Templates for V1

Service templates is a collection resource representing a Cloud Administrator's view of all the accessible service template resources. The following table describes the Service Templates data model.

Table 58-140 Service Templates Data Model

Field	Type	Description	Occurs
name	String	Display name of this collection resource.	1
type	String	Type of collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in this collection resource.	1
count	Integer	The number of elements in the collection resource.	1
items	Collection<integer>	List of service template resources. If there are no service templates present, this field will be blank.	1
totalCount	Integer	Total number of service template resources.	1

Table 58-140 (Cont.) Service Templates Data Model

Field	Type	Description	Occurs
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent to the containing elements.	1

58.17.1.1 Supported Methods on ServiceTemplates Resources

The following table describes the supported methods on the ServiceTemplates resources.

Table 58-141 Supported Methods on ServiceTemplates Resources

Method	Query Parameters	Request Payload	URI	Description
GET	NA	NA	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/	Returns service template collection resource details for all service types.
POST	NA	Service Template (Json Payload)	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/	Creates an instance of service template.

58.17.1.2 ServiceTemplates REST API Example

An example of ServiceTemplates REST API operation is given below.

Listing Service Templates

A GET request on ServiceTemplates resource is issued to list all the Service Templates.

The table below shows the GET configuration for viewing the Software pool capacity.

Table 58-142 GET Request Configuration for Viewing All the Service Templates

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None

Table 58-142 (Cont.) GET Request Configuration for Viewing All the Service Templates

Feature	Specification
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
{
  "name": "Service Templates",
  "type": "Service Template",
  "hasMore": false,
  "items": [
    {
      "id": "E821074692058B5DE040F00AA37D75AB",
      "name": "ST_DB_SCH_01",
      "serviceFamily": "DBAAS",
      "description": "Database Schema Service Template",
      "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws
/cloudservices/admin/cfw/v1/servicetemplates/E821074692058B5DE040F00AA37D75AB"
    }
  ],
  "totalCount": 1,
  "canonicalLink": "https://cloudcompany.com/em/websvcs/restful/extws
/cloudservices/admin/cfw/v1/servicetemplates"
}
```

58.17.2 Service Template for V1

A service template is a standardized service definition that can be used by self service users to provision a service instance. The following table describes the Service Template.

Table 58-143 ServiceTemplate Data Model

Field	Type	Supported Methods	Description	Occurs
name	String	Any	A human readable name given to the service template. This field cannot be edited.	1
serviceFamily	String	Any	Service Family.	1
serviceType	String	Any	Service type	1
id	String	GET	Service template ID. The GET method contains the value for this element.	1
description	String	Any	A brief description given to the service template.	0..1

Table 58-143 (Cont.) ServiceTemplate Data Model

Field	Type	Supported Methods	Description	Occurs
roles	Collection<Role>	GET POST	SSA roles that can access the template.	0..1
poolIds	Collection <String>	POST	Software Pool IDs associated with this template.	1
serviceExecutableMeta	ServiceExecutable MetaDataEntity	Any	Service executable to be used for the service template.	0..1
createdOn	String (Date / Time)	GET	Date and time on which the resource was created.	0..1
createdBy	String	GET	User who created the resource.	1
modifiedOn	String (Date / Time)	GET	Date and time on which the resource was modified.	0..1
modifiedBy	String	GET	User who modified the resource.	1
owner	String	GET	User who owns the resource.	1
etag	String	GET	HTTP entity value tag.	0..1
lastModified	String	GET	HTTP last modified value	0..1
canonicalLink	URI	GET	Preferred version of resource.	1

where:

- Supported Method:
 - Indicates the method type where this attribute will be available.
 - The method type **Any** indicates that this resource is available for GET, PUT, or POST methods.
- Occurs: An occurrence is 0..1 indicates that this is an optional parameter. An occurrence of 1 indicates that this parameter is mandatory.

58.17.2.1 Supported Methods on ServiceTemplate Resources

The following table describes the supported methods for servicetemplates resources.

Table 58-144 Supported Methods on ServiceTemplate Resources

Method	Query Parameters	Request Payload	Response Payload	URI	Description
GET		NA	Service Template (Json Payload)	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/{serviceFamily}/{template id}	Retrieve service template details.

Table 58-144 (Cont.) Supported Methods on ServiceTemplate Resources

Method	Query Parameters	Request Payload	Response Payload	URI	Description
DELETE	NA	NA	Status Message (Json payload)	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/<serviceFamily>/{template id}	Delete a service template
PUT	NA	Service Template (Json payload)		https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/<serviceFamily>/{template id}	Updates service template resource

58.17.3 ServiceTemplateUpdate for V1

This table describes the ServiceTemplateUpdate data model.

Table 58-145 ServiceTemplateUpdate Data Model

Field	Type	Supported Methods	Description	Occurs
description	String	PUT	A brief description given to the service template.	0..1
rolesAdded	Collection<Role>	PUT	SSA roles to be added that can access this service template.	0..1
rolesRemoved	Collection<Role>	PUT	SSA roles to be removed that have access to this service template.	0..1
poolIdsAdded	Collection<String>	PUT	Software pool IDs to be added to an existing template while it is being edited.	0..1
poolIdsRemoved	Collection<String>	PUT	Software pool IDs to be removed from an existing template while it is being edited.	0..1
executableEntity	ServiceExecutableMetadataEntity	PUT	Service executable to be used for the service template.	0..1

58.17.4 ServiceExecutableMetaEntity for V1

This table describes the ServiceExecutableMetaEntity data model.

Table 58-146 ServiceExecutableMetaDataEntity

Field	Type	Description
name	String	Name of the executable that is used to save the actual executable in Enterprise Manager. This can be the name of a job, configured deployment procedure, deployment procedure, or a profile. This field cannot be edited.
type	String	This can be: <ul style="list-style-type: none"> • Job • DP • CDP • Profile
serviceFamily	String	Service Family.
serviceType	String	Service Type
configurations	Collection<Template ConfigParam>	Executable Parameters
payloads	Collection<PayloadDescriptor>	Collection of payload descriptor.

58.17.5 Template Configuration Parameters for V1

The following table lists the TemplateConfigParam data model.

Table 58-147 Configuration Parameters

Field	Type	Description
id	String	ID of the configuration parameter.
name	String	Name of the configuration parameter
value	String	Value of the configuration parameter.
values	Collection<String>	List of configuration parameter values.
description	String	Description of the configuration parameter.
required	boolean	Boolean if parameter is required.
secret	boolean	Boolean if parameter is secret.
subconfigurations	Collection<TemplateConfig Param>	Set of possible values.

58.17.6 PayloadDescriptor for V1

The following table describes the PayloadDescriptor data model

Table 58-148 PayloadDescriptor data model

Field	Type	Description
name	String	Name of the payload entity.

Table 58-148 (Cont.) PayloadDescriptor data model

Field	Type	Description
id	String	Id of the payload entity.

58.17.7 ServiceTemplate Metadata for V1

The ServiceTemplate Metadata is used to generate JSON Payloads that are required to create the service template instance. The following table describes ServiceTemplate Metadata Data Model.

Table 58-149 ServiceTemplate Metadata Data Model

Field	Type	Description
serviceFamily	String	Name of the service family.
serviceType	String	Name of service type.
type	String	Can be one of: JOB DP CDP PROFILE
description	String	Description
payload	Boolean	Is true if payload is expected.
payloads	Collection<PayloadMetaD ata>	Boolean if parameter is required.

58.17.8 PayloadMetaData for V1

The following table describes the PayloadMetadata.

Table 58-150 PayloadMetaData

Field	Type	Description
id	String	Payload Id.
name	String	Name of payload
defaultValue	String	Default value

58.17.9 ServiceTemplate MetaData for V1

The following table describes the supported methods on the ServiceTemplateMetaData.

Table 58-151 Supported Methods on ServiceTemplateMetaData

Method	Query Parameters	Request Payload	Response Payload	URI	Description
GET		NA	Collection<ServiceTemplateMetaData> (Json Payload)	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/{serviceFamily}/executable/metadata	Retrieve metadata for given service family and service type for CDP, DP, and so on.
POST		Service Template MetaData (Json Payload)	ServiceExecutableMetaEntity (Json Payload)	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/metadata	Retrieve configurations for posted service family and service type.

58.17.10 ServiceTemplates REST API Example

This section covers examples of ServiceTemplates REST API operations.

- [Creating Service Templates](#)
- [Updating a Service Template](#)
- [Deleting a Service Template](#)
- [Viewing Details of a Service Template](#)
- [Viewing Metadata of a Service Template](#)
- [Creating Configuration Values for Service Templates](#)

58.17.10.1 Creating Service Templates

The table below shows the POST configuration for creating a Service template.

Table 58-152 POST Request Configuration for Creating a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 58-152 (Cont.) POST Request Configuration for Creating a Service Template

Feature	Specification
Body	<pre> { "name": "TestSchaasTemplate3", "serviceType": "SCHEMA", "serviceFamily": "DBAAS", "description": "This is a test schaaS service template 1", "poolIds": ["FC129EEFFD67CD948B3147D2BAE0BA89"], "roles": [{ "name": "SSA01" }], "serviceExecutableMeta": { "type": "CDP", "configurations": [{ "name": "ROLE_NAME", "value": "SampleRole" }, { "name": "MAX_NUMBER_OF_SCHEMAS", "value": "2" }, { "name": "ENFORCE_STORAGE_CONSTRAINT", "value": "NO_LIMIT" }, { "name": "AUTO_EXTEND_BLOCK_SIZE", "value": "1024" }, { "name": "REF_ZONE", "value": "blr zone" }, { "name": "REF_POOL", "value": "schpool" }, { "name": "REF_HOST", "value": "mycompanyhost.com" }, { "name": "REF_DB", "value": "Database" }, { "name": "CREATE_SCHEMA_OPTION", "value": "EMPTY_SCHEMAS" }, { </pre>

Table 58-152 (Cont.) POST Request Configuration for Creating a Service Template

Feature	Specification
	<pre> "name": "WORKLOADS", "subconfigurations": [{ "name": "WORK_LOADS:1", "subconfigurations": [{ "name": "name", "value": "Small" }, { "name": "description", "value": "small workload" }, { "name": "default", "value": "Y" }, { "name": "CPU", "value": "2" }, { "name": "Memory", "value": "2048" }, { "name": "Storage", "value": "1024" }] }, { "name": "WORK_LOADS:2", "subconfigurations": [{ "name": "name", "value": "large " }, { "name": "description", "value": "large workload" }, { "name": "default", "value": "Y" }, { "name": "CPU", "value": "6" }, { "name": "Memory", "value": "4048" }] }] </pre>

Table 58-153 (Cont.) PUT Request Configuration for Updating a Service Template

Feature	Specification
Body	<pre> { "description": "Service Template", "rolesAdded": [{ "name": "SSA02" }], "rolesRemoved": [{ "name": "SSA01" }], "serviceExecutableMeta": { "type": "CDP", "configurations": [{ "name": "REF_ZONE", "value": "blr zone" }, { "name": "REF_POOL", "value": "schpool" }, { "name": "REF_HOST", "value": "mycompanyhost.com" }] } } </pre>
Request method	PUT

58.17.10.3 Deleting a Service Template

The table below shows the DELETE configuration for deleting a Service template.

Table 58-154 DELETE Request Configuration for Deleting a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/687FE169ED3556CED38D11DC9BDD5CCD
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

58.17.10.4 Viewing Details of a Service Template

The table below shows the GET configuration for viewing details of a Service template.

Table 58-155 DEELTE Request Configuration for Deleting a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/687FE169ED3556CED38D11DC9BDD5CCD
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

Status 200 OK

```
Content-Type: application/json
{
  "name" : "ST_DB_SCH_01",
  "serviceFamily" : "DBAAS",
  "serviceType" : "SCHEMA",
  "type" : "Service Template",
  "description" : "Database Schema Service Template",
  "id" : "E821074692058B5DE040F00AA37D75AB",
  "pools" : [ {
    "name" : "SP_DB_SCH_01",
    "id" : "EBECE6B8F0144BEFAB2F1991B4AFCC65",
    "type" : "schaas_pool",
    "zone" : {
      "id" : "E82022FF954B98CFE040F00AA37D447B",
      "name" : "PZ01"
    }
  } ],
  "serviceExecutableMeta" : {
    "type" : "CDP",
    "configurations" : [ {
      "id" : "targets",
      "name" : "targets",
      "value" : ""
    }, {
      "id" : "ssaRequestId",
      "name" : "ssaRequestId",
      "value" : ""
    }, {
      "id" : "ssaUser",
      "name" : "ssaUser",
      "value" : ""
    }, {
      "id" : "ssaTargetName",
      "name" : "ssaTargetName",
      "value" : ""
    }, {
      "id" : "ssaTargetType",
```

```

    "name" : "ssaTargetType",
    "value" : ""
  }, {
    "id" : "zoneTargetName",
    "name" : "zoneTargetName",
    "value" : ""
  }, {
    "id" : "zoneTargetType",
    "name" : "zoneTargetType",
    "value" : ""
  }, {
    "id" : "REQUEST_NAME",
    "name" : "REQUEST_NAME",
    "value" : ""
  }, {
    "id" : "SERV_TEMPLATE_GUID",
    "name" : "SERV_TEMPLATE_GUID",
    "value" : ""
  }, {
    "id" : "CREATE_SCHEMA_OPTION",
    "name" : "Option for creating user schemas",
    "value" : "EMPTY_SCHEMAS"
  }, {
    "id" : "MAX_NUMBER_OF_SCHEMAS",
    "name" : "Maximum number of schemas permissible",
    "value" : "4"
  }, {
    "id" : "DB_PROFILE_URN",
    "name" : "Database Profile Component's URN",
    "value" : ""
  }, {
    "id" : "REMAP_SCHEMA_LIST",
    "name" : "Schema list.",
    "value" : "",
    "values" : [ ]
  }, {
    "id" : "MASTER_ACCOUNT",
    "name" : "Master Account",
    "value" : ""
  }, {
    "id" : "ROLE_NAME",
    "name" : "Database Role Name",
    "value" : "ST_DB_SCH_01_Oct_06_2013_22"
  }, {
    "id" : "SCHEMA_PRIVILEGES",
    "name" : "Schema Privileges",
    "value" : "",
    "values" : [ "CREATE TABLE", "CREATE SEQUENCE", "CREATE OPERATOR", "CREATE
DIMENSION", "CREATE VIEW", "CREATE INDEXTYPE", "CREATE TYPE", "CREATE TRIGGER",
"CREATE SESSION", "CREATE SYNONYM", "CREATE PROCEDURE" ]
  }, {
    "id" : "ENFORCE_STORAGE_CONSTRAINT",
    "name" : "Enforces Storage Constraint",
    "value" : "false"
  }, {
    "id" : "INITIAL_BLOCK_SIZE",
    "name" : "Initial Storage Size",
    "value" : ""
  }, {
    "id" : "AUTO_EXTEND_BLOCK_SIZE",
    "name" : "Auto extend block size",

```

```

        "value" : ""
    }, {
        "id" : "TABLESPACE_ENCRYPTION_ALGORITHM",
        "name" : "Tablespace Encryption",
        "value" : ""
    }, {
        "id" : "SHARED_STAGE_LOCATION",
        "name" : "Staging Location",
        "value" : ""
    }, {
        "id" : "WORKING_DIRECTORY",
        "name" : "Working Directory",
        "value" : ""
    }, {
        "id" : "SCHAAS_CUSTOM_PRE_SCRIPTS_URN",
        "name" : "Pre-script",
        "value" : ""
    }, {
        "id" : "SCHAAS_CUSTOM_POST_SCRIPTS_URN",
        "name" : "Post-script",
        "value" : ""
    }, {
        "id" : "SCHEMA_PASSWORD_LIST",
        "name" : "Schema password list",
        "value" : "",
        "values" : [ ]
    }, {
        "id" : "CUSTOM_USER_SELECTED_SCRIPT_URN",
        "name" : "Custom Script URN",
        "value" : "",
        "values" : [ ]
    }, {
        "id" : "DBSERVICE_NAME",
        "name" : "Database Service Name",
        "value" : ""
    }
    ]
},
"createdOn" : null,
"createdBy" : null,
"modifiedOn" : null,
"modifiedBy" : null,
"owner" : "SYSMAN",
"etag" : null,
"lastModified" : null,
"canonicalLink" : "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/E821074692058B5DE040F00AA37D75AB",
"selfLink" : "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/E821074692058B5DE040F00AA37D75AB"
}

```

58.17.10.5 Viewing Metadata of a Service Template

The table below shows the GET configuration for viewing metadata of a Service template.

Table 58-156 GET Request Configuration for Viewing Metadata a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/metadata/DBAAS/DB
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
Content-Type: application/json
"metadata" : {
  "serviceFamily:DBAAS" : {
    "serviceType:DB" : {
      "options" : [ {
        "serviceFamily" : "DBAAS",
        "serviceType" : "DB",
        "type" : "CDP",
        "description" : "Create a Service Template based on Configured Deployment
Procedure.",
        "name" : "<user_input>",
        "payload" : false
      }, {
        "serviceFamily" : "DBAAS",
        "serviceType" : "DB",
        "type" : "CDP",
        "description" : "Create a Service Template based on Configured Deployment
Procedure and its Payload.",
        "name" : "<user_input>",
        "payload" : true,
        "payloads" : [ {
          "id" : "DBDELETE_PRESCRIPT",
          "defaultValue" : "DBDELETE_PRESCRIPT",
          "name" : "<user_input>"
        } ]
      }, {
        "serviceFamily" : "DBAAS",
        "serviceType" : "DB",
        "type" : "DP",
        "description" : "Create a Service Template based on Deployment Procedure.",
        "name" : "<user_input>",
        "payload" : false
      }, {
        "serviceFamily" : "DBAAS",
        "serviceType" : "DB",
        "type" : "DP",
        "description" : "Create a Service Template based on Deployment Procedure
and its Payload.",
        "name" : "<user_input>",
        "payload" : true,
```

```

        "payloads" : [ {
            "id" : "DBDELETE_PRESCRIPT",
            "defaultValue" : "DBDELETE_PRESCRIPT",
            "name" : "<user_input>"
        } ]
    } ]
}
,
"message" : "This gives the metadata information of the different types of
service templates that can be created, the executable options supported and the
allowed configuration parameters.",
"canonicalLink" : "/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/
servicetemplates/metadata/DBAAS/DB"
}
}
}

```

58.17.10.6 Creating Configuration Values for Service Templates

To get configuration values that are required for creation of service template, perform a POST operation on the metadata.

Table 58-157 POST Request Configuration for Creating Configuration Values for a Service Template

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates/metadata/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "type": "CDP", "serviceFamily": "MWAAS", "serviceType": "PhysicalWLS", "name": "Provision Middleware_SYSMAN_Jul-18-2013 00-52AM" } </pre>
Request method	POST

 **Note:**

- This payload is the one that we get via GET call of metadata.
- User fills <user_input> appropriately to get ServiceExecutableMetaDataSet as response.
- User uses this ServiceExecutableMetaDataSet in his/her create Payload with values set accordingly to create Service Template MetaDataSet.

A sample of the response received is shown below.

```

{
  "configurations" : [ {
    "description" : "Username for the WebLogic Server",
    "id" : "wlsUserName",
    "name" : "WebLogic Username *",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Password for the WebLogic Server",
    "id" : "wlsUserPassword",
    "name" : "WebLogic Password *",
    "required" : "false",
    "secret" : "true"
  }, {
    "description" : "Re-enter Password for the WebLogic Server",
    "id" : "wlsUserPassword2",
    "name" : "Re-enter WebLogic Password *",
    "required" : "false",
    "secret" : "true"
  }, {
    "description" : "Enter 1 for single cluster, 0 for no cluster. For physical
provisioning it is auto populated based on the profile selected. For virtual
provisioning it is defaulted to 1. Please change based on the actual topology of
the assembly. ",
    "id" : "topology",
    "name" : "Topology *",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Enter 1 for 'Yes', 0 for 'No'",
    "id" : "exposeAdminURLs",
    "name" : "Expose WebLogic and FMW Console URLs to SSA User",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Enter 1 to enable, 0 to disable Load Balancer",
    "id" : "enableLoadBalancer",
    "name" : "Enable Load Balancer",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Use ',' to separate multiple target hosts",
    "id" : "hostListForScripts",
    "name" : "Hosts for Executing Scripts",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "This will be used for the above hosts",
    "id" : "namedCredforHostList",
    "name" : "Named Credential for execution of scripts",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "To execute scripts on Admin Server besides the hosts entered
above, enter 1 for 'Yes', 0 for 'No'",
    "id" : "isScriptExecuteOnAdminServer",
    "name" : "Execution of Scripts on Admin Server Host",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Lower Bound for choosing Free Ports",

```

```

    "id" : "portRangeStart",
    "name" : "Port Range Start",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Upper Bound for choosing Free Ports",
    "id" : "portRangeEnd",
    "name" : "Port Range End",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Memory required by each additional instance in GB",
    "id" : "memoryUsagePerInstance",
    "name" : "Expected Memory Consumption (For Use By Placement Logic)",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "CPU required by each additional instance in percentage",
    "id" : "cpuUsagePerInstance",
    "name" : "Expected CPU Utilization (For Use By Placement Logic)",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Enter memory and java arguments to start the server. Example: -
Xms1280m -Xmx1280m -XX:PermSize=128m -XX:MaxPermSize=256m -
Dweblogic.security.SSL.ignoreHostnameVerification=true (Physical Only)",
    "id" : "startupArguments",
    "name" : "Managed Server Startup Arguments",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Enter 1 for distributing Java Servers uniformly on available
hosts for high availability or 0 for placing maximum number of Java Servers possible
on a host first before provisioning on other available host (Physical Only)",
    "id" : "requireHighAvailability",
    "name" : "Distribute Java Servers on Available Hosts",
    "required" : "false",
    "secret" : "false"
  }, {
    "description" : "Root Password to override (Virtual Only)",
    "id" : "rootPwd",
    "name" : "Root Password",
    "required" : "false",
    "secret" : "true"
  }, {
    "description" : "Agent Install User Password to override (Virtual Only)",
    "id" : "agentInstallUserPwd",
    "name" : "Agent Install User Password",
    "required" : "false",
    "secret" : "true"
  }, {
    "description" : "Enter name of the host credential to use for provisioning
operations (Virtual Only)",
    "id" : "namedHostCredForVirtualFlow",
    "name" : "Host credential name for virtual flow",
    "required" : "false",
    "secret" : "false"
  } ],
  "name" : "Provision Middleware_SYSMAN_Oct-02-2013 10-31AM",
  "serviceFamily" : "MWAAS",

```

```
"serviceType" : "PhysicalWLS",  
"type" : "CDP"
```

58.18 EM CLI Verbs for Self Service Applications

The Enterprise Manager Command Line Interface (EM CLI) enables you to access Enterprise Manager Cloud Control functionality from text-based consoles (shells and command windows) for a variety of operating systems. You can call Enterprise Manager functionality using custom scripts, such as SQL*Plus, OS shell, Perl, or Tcl, thus easily integrating Enterprise Manager functionality with a company's business process.

This section provides details on the EM CLI verbs for Enterprise Manager Self Service Applications (SSA) Admin users.

58.18.1 Introduction

A new framework is introduced for the release 12.1.0.9, along with which new EM CLI verbs are introduced. The EM CLI verbs associated with the previous version of the framework are deprecated and users are suggested to move to the supported EM CLI verbs. The EM CLI verbs for the deprecated version are listed as v1 and the supported EM CLI verbs are listed as v2:

- [EM CLI Verbs for SSA Operations for V2](#)
- [EM CLI Verbs for SSA Operations for V1](#)

All PaaS Infrastructure Zone EM CLI operations are available only to users with a EM_CLOUD_ADMINISTRATOR role and Software Pool operations can be performed only by users with a EM_SSA_ADMINISTRATOR role. EM CLI verbs will obtain user information from the security context and verify only those users authorized to perform these operations.

58.18.2 EM CLI Verbs for SSA Operations for V2

The following table provides details of the supported verbs (v2). Note that these verbs are available to SSA Administrator users only and cannot be used with an EM_SSA_USER role.

Table 58-158 EM CLI Verbs Supported for V2

Verb	Description	Format
emcli invoke_ws	<p>Invokes the Enterprise Manager Web service.</p> <p>Options:</p> <ul style="list-style-type: none"> -wsname - Indicates the URI of the resource. -method - Type of the REST method. -payload - Indicates the json/xml input payload. -accept - Payload type. These are standard jersey values. -type - Standard jersey response types. -param - Use this option to pass in form/query parameter value. For example, -param="name:value". More than one parameter can be specified. For example, -param="name:value" -param="zip:12345". <p>The parameter can be provided through a file. To read from file, specify as shown in the example: -param="name:tag" -input_file="tag:file.txt". In this example, the name parameter will be read from file file.txt.</p> <ul style="list-style-type: none"> -input_file - Use this option to pass in payload or param value from file. <p>Examples:</p> <ul style="list-style-type: none"> emcli invoke_ws -wsname=/em/websvcs/restful/emws/core/v0/list/dataservice -method=get -param="name:Administrators" Invokes list resource and sources all administrators emcli invoke_ws -wsname=/em/websvcs/restful/emws/core/v0/list/dataservice -method=get -param="name:tag" -input_file="tag:file.txt" Invokes list resource and sources all administrators. The name parameter is read from file.txt. 	<p>emcli invoke_ws</p> <p>-</p> <p>wsname=<WebService Name></p> <p>-method=<method name></p> <p>[-payload=<Payload>]</p> <p>[-accept=<accept type>]</p> <p>[-type=response type]</p> <p>[-param=Query Parameters]</p> <p>[-input_file=<Input File for payload data>]</p>

Table 58-158 (Cont.) EM CLI Verbs Supported for V2

Verb	Description	Format
emcli invoke_ws - method="post" - wsname="/em/ websvcs/ restful/ extws/ cloudservices/ admin/cfw/ v2/ resourcepro viders/" - type="application/json" - accept="application/json" - payload='xxxxx'	<p>Creates a new PaaS Infrastructure zone with the provided payload.</p> <p>Example:</p> <pre>emcli invoke_ws -method="post" -wsname="/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/" -type="application/json" -accept="application/json" -payload='{ "useExistingTarget":false, "name":"CLI_ZONE", "type":"self_service_zone", "credentials": [{"name":"normal_credential_guid", "value":"AKM"}], "memberTargetType": "host", "members": ["myhost2.idc.example.com"], "placementConstraints": [{"name":"MAX_CPU_UTILIZATION","value":["75"]}, {"name":"MAX_MEMORY_ALLOCATION","value":["75"]}], "characteristics": [{"name":"EXAMPLE.SYSMAN.CFW.ORCL_GTP_CONTACT", "value":["123456789"]}, {"name":"EXAMPLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER", "value":["IDC.NOIDA"]}, {"name":"EXAMPLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT", "value":["CFW"]}, {"name":"EXAMPLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS", "value":["Test"]}, {"name":"EXAMPLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS", "value":["ST"]}, {"name":"EXAMPLE.SYSMAN.CFW.ORCL_GTP_LOCATION", "value":["IDC"]}], "roles": ["SSA_USER"]}'</pre>	Same as above.

Table 58-158 (Cont.) EM CLI Verbs Supported for V2

Verb	Description	Format
emcli get_targets	<p>Obtain status and alert information for targets.</p> <p>Options:</p> <ul style="list-style-type: none"> -targets=name:type - Name or type can be either a full value or a pattern match using "%". Also, name is optional, so the type alone may be specified. -limit_rows="Maximum number of targets to be retrieved" - Defaults to 2000 rows, if not specified. -config_search="Configuration Search UI Name" - Search UI name should be the display name of the configuration search. -alerts - Displays the count of critical and warning alerts for each target. -noheader - Displays tabular output without column headers. -unmanaged - Displays unmanaged targets (no status or alert information). -properties - Displays unmanaged targets with properties. -separator_properties="separator_properties" - Displays unmanaged target properties with separator_properties. -subseparator_properties="subseparator_properties" - Displays unmanaged target properties with subseparator_properties. -script - This option is equivalent to -format="name:script". -format - Format specification (default is -format="name:pretty"). <ul style="list-style-type: none"> -format="name:pretty" prints the output table in a readable format but is not intended to be parsed by scripts. -format="name:script" sets the default column separator to a tab and the default row separator to a new line. The column and row separator strings may be specified to change these defaults. -format="name:csv" sets the column separator to a comma and the row separator to a newline. <p>Examples:</p> <ul style="list-style-type: none"> emcli get_targets Displays a maximum of 2000 targets. Critical and Warning columns are not shown. emcli get_targets -limit_rows=20 Displays a maximum of 20 targets. Critical and Warning columns are not shown. emcli get_targets -alerts Displays a maximum of 2000 targets. Critical and Warning columns are shown. emcli get_targets -targets="oracle_database" Displays all "oracle_database" targets. emcli get_targets -targets="%oracle%" 	<pre>emcli get_targets [- targets="[name1:]type 1:[name2:]type2;..." [-alerts] [-noheader] [-script -format= [name:<pretty script csv>]; [column_separator:"col umn_sep_string"]; [row_separator:"row_s ep_string"];] [- limit_rows="Maximum number of targets to be retrieved"] [- config_search="Config uration Search UI Name"] [-unmanaged] [-properties] [- separator_properties=" properties_sep_string"] [- subseparator_properti es="properties_subse p_string"]</pre>

Table 58-158 (Cont.) EM CLI Verbs Supported for V2

Verb	Description	Format
	<p>Displays all targets whose type contains the string "oracle".</p> <ul style="list-style-type: none"> emcli get_targets -targets="database%:%oracle%" <p>Displays all targets whose name starts with "database" and type contains "oracle".</p> <ul style="list-style-type: none"> emcli get_targets -targets="database3:oracle_database" -alerts <p>Displays status and alert information on the Oracle database named "database3".</p> <ul style="list-style-type: none"> emcli get_targets -config_search="Search File Systems on Hosts" -targets="oracle%:host" -alerts <p>Displays status and alert information of the resulting targets from configuration search named "Search File Systems on Hosts" and targets whose name starts with "oracle" and of type "host".</p> <ul style="list-style-type: none"> emcli get_targets -targets="host" -unmanaged <p>Displays name and type information for unmanaged host targets.</p> <ul style="list-style-type: none"> emcli get_targets -unmanaged -properties -separator_properties=, -subseparator_properties== <p>Displays name, type, and properties for unmanaged host targets with the specified separators. By default the separator_properties is ";" and the subseparator_properties is ":".</p>	
cancel_cloud_service_requests	<p>Cancels cloud service requests. Either user or names option should be provided. Both cannot be used simultaneously.</p> <ul style="list-style-type: none"> user: The user name to be used to filter delete requests. family: The Service Family Name to be used to filter cloud requests. ids: List of request ids to be used to filter cloud requests separated by a semicolon(";"). Only scheduled requests can be canceled. <p>Example</p> <pre>emcli cancel_cloud_service_requests -user="user1"</pre> <p>Cancels all Scheduled cloud requests whose owner is specified user.</p> <pre>emcli cancel_cloud_service_requests -user="user1" -family="family1"</pre> <p>Cancels all Scheduled cloud requests owned by "user1" and service family="family1".</p> <pre>emcli cancel_cloud_service_requests -user="user1" -ids="1;2"</pre> <p>Cancels all Scheduled cloud requests owned by "user1" and with ids "1" and "2".</p>	<pre>emcli cancel_cloud_service_ requests - user="username" [- family="family"] [- ids="id1;id2..."]</pre>

Table 58-158 (Cont.) EM CLI Verbs Supported for V2

Verb	Description	Format
delete_cloud_service_instances	<p>Deletes the cloud service instances based on a specified filter. This option cleans up all objects owned by a self service user when the instance is deleted.</p> <ul style="list-style-type: none"> • user: The user name to be used to filter service instances to be deleted. • family: The service family name to be used to filter service instances to be deleted. • type: The service type to be used to filter service instances to be deleted. <p>Examples:</p> <pre>emcli delete_cloud_service_instances - user="user1"</pre> <p>Deletes all cloud instances whose owner is the specified user.</p> <pre>emcli delete_cloud_service_instances - user="user1" -family="family1"</pre> <p>Deletes all cloud instances owned by "user1" that belong to service family="family1".</p> <pre>emcli delete_cloud_service_instances - user="user1" -type="type1"</pre> <p>Deletes all cloud instances owned by "user1" that belong to service type="type".</p> <pre>emcli delete_cloud_service_instances - user="user1" -family="family1" -type="type1"</pre> <p>Deletes all cloud instances owned by "user1", that belong to service family="family1" and service type="type1".</p>	<pre>emcli delete_cloud_service_i nstances - user="username" [- family="family"] [- type="type"]</pre>

Table 58-158 (Cont.) EM CLI Verbs Supported for V2

Verb	Description	Format
delete_cloud_user_objects	<p>Deletes cloud user objects including cloud service instances and requests.</p> <ul style="list-style-type: none"> • user: The user name to be used to filter user objects. • purge: Purges the completed requests. Default is false • force: Tries to cancel In Progress requests. Depending on the Job Status, some resources may require manual cleanup. This option should be used with caution as you cannot stop or undo the operation once it has been started. <p>Note: If you use the purge option when some service instances are running, you must wait till the request is fully completed before you use the purge option again.</p> <p>Examples:</p> <pre>emcli delete_cloud_user_objects -user="user1"</pre> <p>Deletes all cloud objects whose owner is "user1". All scheduled requests will be canceled.</p> <pre>emcli delete_cloud_user_objects -user="user1" -purge</pre> <p>Deletes all cloud objects whose owner is "user1". All scheduled requests will be canceled. All Complete Requests will be purged.</p> <pre>emcli delete_cloud_user_objects -user="user1" -force</pre> <p>Deletes all cloud objects whose owner is "user1". All scheduled requests will be canceled. All In Progress Requests will be aborted.</p>	<pre>emcli delete_cloud_user_obj ects -user="username" [-purge] [-force]</pre>
get_cloud_service_instances	<p>Retrieves the list of cloud service instances. All instances will be printed if no option is specified.</p> <ul style="list-style-type: none"> • user: The user name to be used to filter service instances. • family: The service family name to be used to filter service instances. • type: The service family type to be used to filter service instances. <p>Examples:</p> <pre>emcli get_cloud_service_instances</pre> <p>Displays all the cloud instances.</p> <pre>emcli get_cloud_service_instances -user="user1"</pre> <p>Displays all cloud instances whose owner is "user1"</p> <pre>emcli get_cloud_service_instances -family="family1"</pre> <p>Displays all cloud instances that belong to service family "family1"</p> <pre>emcli get_cloud_service_instances -type="type1"</pre> <p>Displays all cloud instances that belong to service type "type1"</p>	<pre>emcli get_cloud_service_inst ances [-user="username"] [-family="family"] [-type="type"]</pre>

Table 58-158 (Cont.) EM CLI Verbs Supported for V2

Verb	Description	Format
get_cloud_service_requests	Retrieves the list of cloud requests. All requests will be printed if no filter is applied. Both options cannot be used simultaneously. <ul style="list-style-type: none"> user: The user name to be used to filter cloud requests. family: The service family name to be used to filter cloud requests. ids: The list of request ids to be used to filter cloud requests separated by a semicolon. Examples: emcli get_cloud_service_requests Displays all cloud requests. emcli get_cloud_service_requests -user="user1" Displays all cloud requests created by "user1" emcli get_cloud_service_requests -family="family1" Displays all cloud requests that belong to service family "family1" emcli get_cloud_service_requests -ids="1;2" Displays all cloud with RequestIds "1" and "2"	emcli get_cloud_service_requests [-user="username"] [-family="family"] [-ids="id1;id2..."]
get_cloud_user_objects	Retrieves the list of cloud user objects including cloud service instances and requests. All objects will be printed if the user option is not used. <ul style="list-style-type: none"> - user: The user name to be used to filter user objects. Examples: emcli get_cloud_user_objects Displays all cloud objects, cloud instances, requests, and other objects. emcli get_cloud_user_objects -user="user1" Displays cloud objects whose owner is "user1", cloud instances, requests, and other objects.	emcli get_cloud_user_objects [-user="username"]

58.18.3 EM CLI Verbs for SSA Operations for V1

The following table provides details of the deprecated verbs (v1). Users are suggested to avoid using these verbs. These verbs are available to SSA Administrator users only and cannot be used with an EM_SSA_USER role.

Table 58-159 EM CLI Verbs for V1

Verb	Description	Format
create_paaS_zone	<p>Creates a PaaS Infrastructure Zone.</p> <ul style="list-style-type: none"> name - Name of the PaaS Infrastructure Zone to be created credential - Global Named Credentials to be used for provisioning in this PaaS Infrastructure Zone. hosts - Comma separated list of the Host targets to be added as members of this PaaS Infrastructure Zone. PaaS Infrastructure Zone can contain either hosts or Oracle VM Zones as members. ovm_zones - Comma separated list of the Oracle VM Zone targets to be added as members of this PaaS Infrastructure Zone. roles - Comma separated list of SSA roles that can access this PaaS Infrastructure Zone. description - Description of the PaaS Infrastructure Zone. cpu_utilization - Placement Policy Constraints allow the cloud administrator to set maximum thresholds for any host. Value entered must be between 1 and 100. If not provided, default value is taken to be 80 percent. Parameter is not needed if Oracle VM Zone targets are added as members. memory_utilization - Another Placement Policy Constraint for PaaS Infrastructure Zone. Value entered must be between 1 and 100. If not provided, default value is taken to be 80 percent. Parameter is not needed if Oracle VM Zone targets are added as members. <p>Example:</p> <pre>emcli create_paas_zone -name=MyPaaSZone -credential=ABCDEF -hosts=slc03qtn.us.example.com -roles="SSA_USER_ROLE1,SSA_USER_ROLE2" -description="Test PaaS zone" -cpu_utilization=40 -memory_utilization=70</pre> <p>Sample Output:</p> <pre>PaaS Infrastructure Zone "MyPaaSZone" created successfully.</pre>	<pre>emcli create_paas_zone- name=<Name of PaaS Zone> -credential=<Global Named Credential> [- hosts=<Host1,Host2,H ost3...>] [- ovm_zones=<OVMZo ne1,OVMZone2,OVM Zone3...>] [- roles=<SsaRole1,Ssa Role2,..>] [- description=<Descripti on of PaaS Zone>] [- cpu_utilization=<Value between 1 and 100>] [- memory_utilization=<V alue between 1 and 100>]</pre>

Table 58-159 (Cont.) EM CLI Verbs for V1

Verb	Description	Format
update_paas_zone	<p>Updates a PaaS Infrastructure Zone.</p> <ul style="list-style-type: none"> name - Name of the existing PaaS Infrastructure Zone. credential - Global Named Credentials to be updated. add_hosts - Comma separated list of the Host targets to be added as members of this Paas Infrastructure Zone. The hosts to be added must not be already added to other existing PaaS Zones. remove_hosts - Comma separated list of the Host targets to be removed as members from this Paas Infrastructure Zone. add_ovm_zones - Comma separated list of the Oracle VM Zone targets to be added as members of this Paas Infrastructure Zone. The Oracle VM Zones to be added must not be already added to other existing PaaS Zones. remove_ovm_zones - Comma separated list of the Oracle VM Zone targets to be removed as members from this Paas Infrastructure Zone. add_roles - Comma separated list of SSA roles to be added that can access this PaaS Infrastructure Zone. remove_roles - Comma separated list of SSA roles to be removed from this PaaS Infrastructure Zone. description - Updated description of the PaaS Infrastructure Zone. cpu_utilization - Placement Policy Constraints allow the cloud administrator to set maximum thresholds for any host. Value entered must be between 1 and 100. memory_utilization - Another Placement Policy Constraint for PaaS Infrastructure Zone. Value entered must be between 1 and 100. 	<p>emcli update_paas_zone - name=<Name of PaaS Zone> [- description=<Description of PaaS Zone>] [-credential=<Global Named Credential> [- add_hosts=<Host1,Host2,Host3...>] [- remove_hosts=<Host4,Host5...>] [- add_ovm_zones=<OV MZone1,OVMZone2,O VMZone3...> [- remove_ovm_zones=<OVMZone4,OVMZone 5...>] [- add_roles=<SsaRole1,SsaRole2,...> [- remove_roles=<SsaRole3,SsaRole4,...> [- cpu_utilization=<Value between 1 and 100> [- memory_utilization=<Value between 1 and 100>]</p>
delete_paas_zone	<p>Deletes a PaaS Infrastructure Zone. PaaS Infrastructure Zone cannot be deleted if there is an existing Software Pool associated with it.</p> <p>name - Name of the existing PaaS Infrastructure Zone to be deleted.</p>	<p>emcli delete_paas_zone - name=<Name of PaaS Zone></p>
get_paas_zone_detail	<p>Retrieves the PaaS Infrastructure Zone details.</p> <p>name - Details of the existing PaaS Infrastructure Zone, such as Name, Description, Named Credentials, Number of Hosts, Roles, Maximum Memory Allocation (%), and Maximum CPU Utilization (%).</p>	<p>emcli get_paas_zone_detail -name=<Name of PaaS Zone></p>

Table 58-159 (Cont.) EM CLI Verbs for V1

Verb	Description	Format
create_pool	<p>Creates a Software Pool.</p> <ul style="list-style-type: none"> name - Name of the Software Pool to be created target_type - Target type of the Software Pool to be created. paas_zone - Name of PaaS Infrastructure Zone in which the Software Pool is to be created. members - Comma separated list of targets to be added as members of the Software Pool. description - Description of the Software Pool. placement_constraints - Comma separated key value pairs of the placement constraints that allow the self service administrator to set maximum ceilings for resource utilization. This provides protection for the members of the Software Pool in terms of resource consumption. Refer to the get_pool_allowed_placement_constraints verb to get the available placement constraints for a pool target type. member_constraints - Comma separated key value pairs that restricts the addition of member targets to a Software Pool with a set criteria. Refer to the get_pool_allowed_member_constraints verb to get the available member constraints and their possible values for a pool target type. properties - Comma separated key value pairs for additional properties that need to be specified based on the Software Pool target type. <p>Example:</p> <pre>emcli create_pool -name=MyDbPool -target_type=oracle_cloud_zone -paas_zone=MyPaaSZone -members=OraDb11g_homel_1_slc03qtn -description="Test Database Pool" - member_constraints="CONFIGURATION=oracle_database,V ERSION=11.2.0.3.0,PLATFORM=226" -placement_constraints="MAX_INSTANCES=7" - properties="host_credential_guid=DBA449B8967AAF77E0 40F00A73B11F55, root_credential_guid=DBA449B8967AAF77E040F00A73B11F 55"</pre> <p>Sample Output:</p> <p>Software Pool "MyDbPool" created successfully.</p> <p>Note:</p> <ul style="list-style-type: none"> This verb is for DB Pool. The target_type for Schema Pool is schaas_pool. 	<pre>emcli create_pool - name=<Name of Software Pool> -target_type=<Target type of Software Pool> -paas_zone=<Paas Infrastructure Zone of Software Pool> -members=<Member1, Member2...> [- description=<Descripti on of Software Pool>] [- placement_constraints =<constraint1=value1, constraint2=value2...>] [- member_constraints= <constraint1=value1, constraint2=value2>] [- properties=<property1 =value1, property2=value2>]</pre>

Table 58-159 (Cont.) EM CLI Verbs for V1

Verb	Description	Format
	<ul style="list-style-type: none"> Though the properties are not mandated by the verb (because SSA framework owns it), they are needed and without them the pools will not work. Valid property names for Schema Pool are host_credential_guid, database_credential_guid, and gi_credential_guid. 	
update_pool	<p>Updates a Software Pool.</p> <ul style="list-style-type: none"> name - Name of the existing Software Pool. target_type - Target type of the existing Software Pool. For example: "mwaas_zone" for Middleware Pool, "oracle_cloud_zone" for Database Pool, and "schaas_pool" for Schema Pool. description - Description of the Software Pool. add_members - Comma separated list of targets to be added as members of the Software Pool. The targets to be added must satisfy the member constraints of the Software Pool. remove_members - Member targets to be removed from the Software Pool. placement_constraints - Comma separated key value pairs of the placement constraints that allow the self service administrator to set maximum ceilings for resource utilization. This provides protection for the members of the Software Pool in terms of resource consumption. properties - Comma separated key value pairs for properties that need to be updated based on the Software Pool target type. 	<p>emcli update_pool - name=<Name of Software Pool></p> <p>-target_type=<Target type of Software Pool></p> <p>[- description=<Description of Software Pool>]</p> <p>[- add_members=<Member1, Member2...>]</p> <p>[- remove_members=<Member4, Member5...>]</p> <p>[- placement_constraints=<constraint1=value1, constraint2=value2...>]</p> <p>[- properties=<property1=value1, property2=value2>]</p>
delete_pool	<p>Deletes a Software Pool. Software Pool cannot be deleted if there is an existing Service Template associated with it.</p> <ul style="list-style-type: none"> name - Name of an existing Software Pool. target - Target type of the Software Pool. 	<p>emcli delete_pool - name=<Name of Software Pool></p> <p>-target_type=<Target type of Software Pool></p>
get_pool_detail	<p>Retrieves the Software Pool details, such as name, target type, description, PaaS Infrastructure Zone, number of members, placement constraints, and member constraints.</p> <ul style="list-style-type: none"> name - Name of the Software Pool. target - Target type of the Software Pool 	<p>emcli get_pool_detail - name=<Name of Software Pool></p> <p>- target_type=mwaas_zone</p>

Table 58-159 (Cont.) EM CLI Verbs for V1

Verb	Description	Format
get_pool_capacity	Retrieves the software pool capacity details like CPU utilization, memory allocation, and number of instances per host for the pool entities. <ul style="list-style-type: none"> name - Name of Software Pool target_type - Target type of Software Pool <p>Example:</p> <pre>emcli get_pool_capacity -name=MyDbPool -target_type=oracle_cloud_zone</pre> <p>Sample Output:</p> <pre>Details of Software Pool "MyDbPool" : Capacity information for Software Pool "MyDbPool" : Capacity information for Entity "slc03qtn.us.example.com" of type "host" : Storage Utilization : 29.0 : 100.0 CPU Utilization : 2.96 : 40.0 Memory Utilization : 27.68 : 70.0 Instances : 2 : 7</pre>	emcli get_pool_capacity - name=<Name of Software Pool> - target_type=<Target type of Software Pool>
get_pool_allowed_placement_constraints	Retrieves the list of placement constraints for a given pool target type. <p>target_type - Target type of the Software Pool</p> <p>Example:</p> <pre>emcli get_pool_allowed_placement_constraints -target_type=oracle_cloud_zone</pre> <p>Sample Output:</p> <pre>Name Description MAX_INSTANCES Maximum Number of Instances</pre>	emcli get_pool_allowed_placement_constraints - target_type=<mwaas_ zone>

Table 58-159 (Cont.) EM CLI Verbs for V1

Verb	Description	Format
get_pool_filtered_targets	<p>Retrieves the filtered targets available for Software Pool creation based on the criteria passed.</p> <ul style="list-style-type: none"> target_type - Target type of the Software Pool paas_zone - Name of PaaS Infrastructure Zone within which the filtered targets are to be retrieved member_constraints - Comma separated key value pairs that restricts the addition of member targets to a Software Pool with a set criteria <p>Example:</p> <pre>emcli get_pool_filtered_targets -target_type=oracle_cloud_zone -paas_zone=MyPaaSZone - member_constraints="CONFIGURATION=oracle_database,VERSION=11.2.0.3.0,PLATFORM=226"</pre> <p>Sample Output:</p> <pre>Target Type Target Name oracle_home OraDb11g_home1</pre>	<pre>emcli get_pool_filtered_targets - target_type=<Target type of Software Pool> -paas_zone=<Paas Infrastructure Zone of Software Pool> - member_constraints= <constraint1=value1, constraint2=value2></pre>
get_pool_allowed_member_constraints	<p>Retrieves the list of allowed Software Pool member constraint values for creation of Software Pool.</p> <p>target_type - Target type of the Software Pool.</p> <p>Example:</p> <pre>emcli get_pool_allowed_member_constraints -target_type=oracle_cloud_zone</pre>	<pre>emcli get_pool_allowed_member_constraints - target_type=<Target type of Software Pool></pre>

Table 58-159 (Cont.) EM CLI Verbs for V1

Verb	Description	Format
get_named_credential	<p>Retrieves credential information used to create DBaaS and SchaaS Pools.</p> <ul style="list-style-type: none"> • cred_name - The credential name • cred_owner - Owner of the credential <p>Example:</p> <pre>emcli get_named_credential -cred_name=ABCDEF -cred_owner=ORACLE</pre>	
	<p>Sample Output:</p> <pre>Output: Credential Name:test12 Credential Owner:ORACLE Credential Type:HostCreds Credential Target Type:host Credential Username:test123 Credential Scope:global Credential Guid:DBA449B8967AAF77E040F00A73B11F55 Credential Stripe:TARGETS Credential Columns: HostPassword=***** HostUserName=test12</pre>	

SSA Portal Management REST APIs

This chapter covers the REST APIs for request scheduling and user preference management.

 **Note:**

For the SSA Plug-in release 12.1.0.9, a new framework is introduced for the REST APIs which is referred to as the v2 framework. The new framework consists of a different approach and signatures, as a result of which the REST APIs also differ when compared to the earlier framework. The earlier framework (v1) is deprecated and users are suggested to move to the v2 REST APIs and EM CLI verbs.

In v2, REST APIs for the Self Service Portal application are generally used by the SSA users. These REST APIs are generally in the `.../ssa/...` format. For example, `/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/`. REST APIs for administrative functions (i.e., `.../admin/...` format) are REST APIs that configure the SSA Portal setup, such as creating zones, templates, etc., which are generally performed by Cloud or SSA Administrators. The SSA user REST APIs are covered in this chapter.

This chapter contains the sections listed below. The first two sections provide summaries of all the v2 and v1 REST APIs covered in this chapter, whereas the following sections provide the user preference and request scheduling resource details and their REST APIs.

- [Summary of SSA User REST APIs for V2](#)
- [Summary of User REST APIs for V1](#)
- [Common REST Entities for V2](#)
 - [Cfw Resource for V2](#)
 - [Cfw Link for V2](#)
 - [Cfw Value Descriptor for V2](#)
- [Catalog APIs](#)
- [Service Types for V2](#)
- [Services for V2](#)
 - [Service Collection for V2](#)
 - [Service Offering for V2](#)
 - [Request Metadata for V2](#)
- [Service Requests REST APIs for V1 and V2](#)
 - [Service Requests Resource for V2](#)

- Service Request Collection - Collection Resource for V1
- Service Request REST API Examples for V1 and V2
- Service Instances for V2
- Quota Usage for V2
- User Preferences for V2
- User Preferences for V1
 - My Preferences for V1
 - Canonical Link for V1
 - General Preferences for V1
- Composite Resource Attributes for V1
 - RequestEntity Data Model for V1
 - InstanceExpiryEntity Data Model for V1
 - QuotaEntity Data Model for V1
- Supported Methods for General Preferences (for V1)
- Service Specific User Preferences for V1
 - Service Preferences for V1
 - Supported Methods for My Preferences (for V1)
 - ServicePreferenceMetadata Data Model for V1
 - Composite Resource Attributes for V1
 - Service Preferences REST API Examples for V1
 - My Database Preferences REST API Examples for V1
 - My Middleware Preferences REST API Examples for V1
 - My Tests Preferences for V1

59.1 Summary of SSA User REST APIs for V2

The table below shows a summary of all the User preference and Request scheduling REST APIs covered in this chapter for the v2 framework.

Table 59-1 Summary of User Preference and Request Scheduling REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Common REST Entities	Common REST Entities for V2	Not applicable	Not supported	Not supported	Not supported

Table 59-1 (Cont.) Summary of User Preference and Request Scheduling REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Catalog	Not applicable	<ul style="list-style-type: none"> Viewing Details of the Available REST API Catalogs Viewing Details of the API Catalog by User Type Viewing Details of the User API Catalog 	Not supported	Not supported	Not supported
Service Types	Not applicable	Viewing Details of Service Types	Not supported	Not supported	Not supported
Service Collection	Table 59-11	Viewing Details of the Services Resource	Creating a Service Instance	Not supported	Not supported
Service Offering	Table 59-12	Viewing Details of the Service Offering Resource	Not supported	Not supported	Not supported
Request Metadata	Table 59-13	Viewing Details of the Request Metadata	Not supported	Not supported	Not supported

Table 59-1 (Cont.) Summary of User Preference and Request Scheduling REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Service Requests	Table 59-19	<ul style="list-style-type: none"> Retrieving Top Level View of Service Requests in V1 and V2 Querying the Service Requests Resource for Status=SUCCESS in V2 Querying the Service Requests Resource for Expanded=true and Expanded=false in V2 Querying the Service Requests Resource for status=SUCCESS &expanded=false and status=SUCCESS &expanded=true in V2 	Not supported	Not supported	Not supported

Table 59-1 (Cont.) Summary of User Preference and Request Scheduling REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Service Request	Not applicable	<ul style="list-style-type: none"> Viewing Details of a Service Request in V2 Viewing the Logs of a Service Request in V2 Querying the Logs of a Service Request in V2 	Not supported	Rescheduling a Service Request that is in a Scheduled State in V1 and V2	Deleting a Service Request in V2

Table 59-1 (Cont.) Summary of User Preference and Request Scheduling REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Service Instances	Table 59-38	<ul style="list-style-type: none"> Viewing Details of the Service Instance Resource in V2 Querying the Service Instance Resource in V2 Viewing Details of a Service Instance in V2 Viewing Details of the Available Actions on a Service Instance in V2 Viewing Details of the Attributes of a Service Instance in V2 Viewing Details of the Action Inputs Required To Execute an Action on a Service Instance in V2 	Not supported	Executing an Action on a Service Instance in V2	Not supported

Table 59-1 (Cont.) Summary of User Preference and Request Scheduling REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Quota Usage	Not applicable	<ul style="list-style-type: none"> Viewing Details of Quota Usage Viewing Details of Quota Usage by Service Family 	Not supported	Not supported	Not supported
User Preferences	Not applicable	Viewing Details of the User Preferences Resource for V2	Not supported	Not supported	Not supported
General User Preferences	Not applicable	<ul style="list-style-type: none"> Viewing Details of the General User Preferences Resource for V2 Viewing Metadata of the General User Preferences Resource for V2 	Not supported	Updating the General User Preferences for V2	Not supported
Services User Preferences	Not applicable	Viewing Details of the Services User Preferences Resource for V2	Not supported	Not supported	Not supported

Table 59-1 (Cont.) Summary of User Preference and Request Scheduling REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Service Family User Preferences	Not applicable	<ul style="list-style-type: none"> Viewing Details of the Service Family User Preferences Resource for V2 Viewing Metadata of the Service Family User Preferences for V2 	Not supported	Updating the Service Family User Preferences for V2	Not supported
Service Type User Preferences	Not applicable	<ul style="list-style-type: none"> Viewing Details of the Service Type User Preferences Resource for V2 Viewing Metadata of the Service Type User Preferences for V2 	Not supported	Updating the Service Type User Preferences for V2	Not supported



Note:

In the table above, "supported" indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

59.2 Summary of User REST APIs for V1

The table below shows a summary of all the User preference and Request scheduling REST APIs covered in this chapter for the v1 framework.

Table 59-2 Summary of User Preference and Request Scheduling REST APIs for V1

Resource	Data Model	GET	POST	PUT	DELETE
General Preferences	Table 59-66	Viewing Details of the General Preferences for an SSA User	Not supported	Updating the General Preferences for an SSA User	Not supported
Service Preferences	Table 59-73	Viewing Details of the Service Preferences Resource	Not supported	Supported	Not supported
Database Preferences	Not applicable	<ul style="list-style-type: none"> Viewing Details of the DBaaS User Preferences Metadata Viewing the DBaaS User Preferences 	Not supported	<ul style="list-style-type: none"> Updating DBaaS User Preferences Setting a Blank DBaaS User Preference Setting 	Not supported
Middleware Preferences	Not applicable	<ul style="list-style-type: none"> Viewing MWaaS User Preferences Metadata Viewing MWaaS User Preference Settings 	Not supported	<ul style="list-style-type: none"> Updating MWaaS User Preferences Setting a Blank MWaaS User Preference Setting 	Not supported
Testing Preferences	Not applicable	Viewing TaaS User Preferences Metadata	Not supported	Updating TaaS User Preferences	Not supported
Service Request Collection	Table 59-20	Retrieving Top Level View of Service Requests in V1 and V2	Not supported	Not supported	Not supported

Table 59-2 (Cont.) Summary of User Preference and Request Scheduling REST APIs for V1

Resource	Data Model	GET	POST	PUT	DELETE
Service Request Entity	Table 59-21	<ul style="list-style-type: none"> Retrieving Top Level View of Service Requests for a Specific Service Family in V1 Retrieving Top Level View of Service Requests for a Specific Status in V1 	Not supported	<ul style="list-style-type: none"> Rescheduling a Service Request that is in a Scheduled State in V1 and V2 Rescheduling a Service Request that is in a Cancelled State (or in a state other than Scheduled) in V1 	Deleting a Service Request that is in a Scheduled State in V1



Note:

In the table above, "supported" indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

59.3 Common REST Entities for V2

This section describes the common REST entities to the cloud framework resources. These entities are specific to the new Cloud Framework (CFW) v2.

59.3.1 Cfw Resource for V2

Cfw resource is the base class for cloud framework resources. This resource fields that are common to all singular resources.

Table 59-3 Cfw Resource Data Model

Field	Type	Description
description	String	Description of the resource.
createdOn	String	Date of creation.

Table 59-3 (Cont.) Cfw Resource Data Model

Field	Type	Description
createdBy	String	Details of the creator.
modifiedOn	String	Date of last modification.
modifiedBy	String	Details of the modifier.
owner	String	Indicates the owner of the resource.
e-Tag	String	Indicates the Etag.
lastModified	String	Details of the last modification.
canonicalLink	Cfw Link	Indicates the canonical link of the resource.

59.3.2 Cfw Link for V2

Cfw link is the base class for the link to a resource.

Table 59-4 Cfw Link Data Model

Field	Type	Description
href	String	Indicates the URI or URI template. If the value is a URI template, then the templated property should be true.
templated	Boolean	Is <code>True</code> if <code>href</code> is a URI template, else <code>false</code> . The default value is <code>false</code> .
rel	String	Indicates the name of the link relation that the consumer may lookup as a secondary key (in addition to the type property) to retrieve actual link details, e.g. <code>href</code> or <code>profile</code> .
profile	String	Indicates the Json-schema describing the resource expected when deferring the target resource.
method	String	The method for requesting the target of the link.
mediaType	String	Description of the link target.

59.3.3 Cfw Value Descriptor for V2

Cfw value descriptor defines the dynamic data.

Table 59-5 Cfw Value Descriptor Data Model

Field	Type	Description
id	String	Indicates the ID.
name	String	Indicates the name.
value	String	Indicates the value.
defaultValue	String	Indicates the default value.
description	String	Provides a description.
displayName	String	Provides the display name.
required	Boolean	Signifies if required or not.

Table 59-5 (Cont.) Cfw Value Descriptor Data Model

Field	Type	Description
secret	Boolean	Signifies if it is a secret or not.
type	String	Indicates the type.
unitOfmeasurement	String	Indicates the unit of measurement.
values	List	Provides the list of values.
subvalues	List<CfwValueDescriptor>	Provides the list of sub-values.
subtype	String	Provides the type of elements in the values.

59.4 Catalog APIs

This section covers the Catalog APIs for SSA user.

59.4.1 Supported Operations

The table below lists the supported operations for the Catalog APIs.

Table 59-6 Supported operations for Catalog APIs

Method	URI	Description
GET	/em/websvcs/restful/extws/cloudservices/cfw/API	Returns links to available REST API catalogs.
GET	/em/websvcs/restful/extws/cloudservices/cfw/API/v2	Returns links to REST API catalog by user type.
GET	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/API	Returns user REST API catalog.

59.4.2 REST API Catalog Examples for V2

This section contains examples of the Catalog APIs. The following REST API examples are covered:

- [Viewing Details of the Available REST API Catalogs](#)
- [Viewing Details of the API Catalog by User Type](#)
- [Viewing Details of the User API Catalog](#)

59.4.2.1 Viewing Details of the Available REST API Catalogs

The table below shows the GET configuration for viewing details of the available REST API catalogs.

Table 59-7 GET Request Configuration for Viewing Details of the Available REST API Catalogs

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/cfw/API
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "items": [
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/cfw/API/v1",
      "description": "API Summary for version V1"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/cfw/API/v2",
      "description": "API Summary for version V2"
    }
  ],
  "totalResults": 2
}
```

59.4.2.2 Viewing Details of the API Catalog by User Type

The table below shows the GET configuration for viewing details of the REST API catalog by user type.

Table 59-8 GET Request Configuration for Viewing Details of the REST API Catalog by User Type

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/cfw/API/v2
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "items": [
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/"
    }
  ]
}
```

```

API",
"description": "APIs for Self Service Application for version V2",
"type": "SSA"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/
API",
"description": "APIs for administrative functions for version V2",
"type": "Admin"
}
],
"goBack":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/cfw/API",
"totalResults": 2
}

```

59.4.2.3 Viewing Details of the User API Catalog

The table below shows the GET configuration for viewing details of the user API catalog.

Table 59-9 GET Request Configuration for Viewing Details of the User API Catalog

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/API
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
"items": [
{
"totalResults": 5,
"resource": "services",
"APIs": [
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
services",
"method": "GET",
"description": "Get all the service offerings"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
services",
"method": "POST",
"description": "Create a service"
},
{
"href":

```

```
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
services/{
  id}",
"method": "GET",
"templated": true,
"description": "Get details of a service"
},
{
  "href":
  "https://bxx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
services/{
  id}/metadata",
"method": "GET",
"templated": true,
"description": "Get the metadata for a service"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
services/{
  id}/metrics",
"method": "PUT",
"templated": true,
"description": "Get the metrics for a service"
}
],
},
{
  "totalResults": 11,
  "resource": "userpreferences",
  "APIs": [
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences",
"method": "GET"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/general",
"method": "GET",
"description": "Get the general user preferences"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/general/metadata",
"method": "GET",
"description": "Get the metadata for general user preferences"
    },
    {
      "href":
      "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userprefer
ences/services",
"method": "GET",
"description": "Get the service user preferences"
    }
  ]
}
```

```
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  userprefer
  ences/services/{service-family}",
  "method": "GET",
  "templated": true,
  "description": "Get the user preferences for a service family"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  userprefer
  ences/services/{service-family}/metadata",
  "method": "GET",
  "templated": true,
  "description": "Get the metadata for user preference at family level"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  userprefer
  ences/services/{service-family}/{service-type}",
  "method": "GET",
  "templated": true,
  "description": "Get the user preferences for a service type"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  userprefer
  ences/services/{service-family}/{service-type}/metadata",
  "method": "GET",
  "templated": true,
  "description": "Get the metadata for user preference at service type level"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  userprefer
  ences/general",
  "method": "PUT",
  "description": "Update general user preference"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  userprefer
  ences/services/{service-family}",
  "method": "PUT",
  "templated": true,
  "description": "Update family level user preferences"
},
{
  "href":
  "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  userprefer
  ences/services/{service-family}/{service-type}",
  "method": "PUT",
  "templated": true,
```

```
"description": "Update service type level user preferences"
}
],
{
"totalResults": 4,
"resource": "servicerequests",
"APIs": [
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicereq
uests",
"method": "GET",
"description": "Get service requests"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicereq
uests/{id}",
"method": "PUT",
"templated": true,
"description": "Reschedule the request"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicereq
uests/{id}",
"method": "GET",
"templated": true,
"description": "Get the details of request"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicereq
uests/{id}",
"method": "DELETE",
"templated": true,
"description": "Delete the request"
}
]
},
{
"totalResults": 5,
"resource": "serviceinstances",
"APIs": [
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
serviceins
tances",
"method": "GET",
"description": "Get the service instances"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
serviceins
```

```

tances/{id}",
"method": "GET",
"templated": true,
"description": "Get details of a service instance"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
serviceins
tances/{id}/actions",
"method": "GET",
"templated": true,
"description": "Get actions for a service instance"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
serviceins
tances/{id}/actions/{action-id}",
"method": "GET",
"templated": true,
"description": "Get metadata details of action"
},
{
"href":
"https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
serviceins
tances/{id}/actions/{action-id}",
"method": "PUT",
"templated": true,
"description": "Perform the action on the service instance"
}
]
}
],
"goBack": "https://xx.idc.example.com:4473/em/websvcs/restful/extws/cloudservices/
API",
"totalResults": 4
}

```

59.5 Service Types for V2

This section covers the Service type REST APIs.

59.5.1 Service Types REST API Example for V2

The Service types REST API for SSA user is as follows.

The query parameter `servicefamily` can be optionally used in the GET request to filter the output for the given service family type.

59.5.1.1 Viewing Details of Service Types

The table below shows the GET configuration for viewing details of Service types.

Table 59-10 GET Request Configuration for Viewing Details of Service Types

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicetypes
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "Service Types",
  "type": "Service Types Collection",
  "totalResults": 3,
  "cfwItems": [
    {
      "name": "CFW_SAMPLEXAAS_REMOTESERVER_SERVICE",
      "displayName": "Cfw Sample RemoteServer XaaS",
      "serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY",
      "targetTypes": [
        "Cfw_XaaS_DB_Service"
      ]
    },
    {
      "name": "CFW_SAMPLEXAAS_SERVICE",
      "displayName": "Cfw Sample XaaS",
      "serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY",
      "targetTypes": [
        "Cfw_XaaS_DB_Service",
        "cfw_xaaS_storage_service"
      ]
    },
    {
      "name": "CFW_SAMPLEXAAS_SERVICE_FOR_NOMEM",
      "displayName": "Cfw Sample XaaS - Other Service",
      "serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY",
      "targetTypes": [
        "Cfw_XaaS_DB_Service_for_nomem"
      ]
    }
  ],
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicetypes"
  },
  "selfLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicetypes"
  }
}
```

59.6 Services for V2

The Services resource is defined by the Service collection resource, Service offering resource and the Request metadata resource. These resource are explained below.

The following topics are covered in this section:

- [Service Collection for V2](#)
- [Service Offering for V2](#)
- [Request Metadata for V2](#)
- [Supported Operations for Services for V2](#)
- [Services REST API Examples for V2](#)
- [Creating a Service Instance using V2](#)

59.6.1 Service Collection for V2

Service collection resource is an extension of the `oracle.sysman.cfw.cloudAPI.common.CfwCollection` resource.

Table 59-11 Service Collection Data Model

Field	Type	Description
name	String	Name of the collection. The value is "Services".
type	String	Type of the collection. The value is "Services".
totalResults	Integer	The total count of items.
cfwItems	List<ServiceOffering>	Provides the list of <code>ServiceOffering</code> .
canonicalLink	Cfw link	Indicates the canonical link.
selfLink	Cfw link	Indicates the self link.

59.6.2 Service Offering for V2

Service offering resource is an extension of the `oracle.sysman.cfw.cloudAPI.common.CfwResource` resource. Service offering resource encapsulates the service offering that is available to the user using which the user can provision a service instance.

Table 59-12 Service Offering Data Model

Field	Type	Description
id	String	Indicates the ID of the service offering.
name	String	Name of the service offering.
displayName	String	Display name of the service offering.
guid	String	GUID of the service offering.
serviceType	String	Indicates the service type.

Table 59-12 (Cont.) Service Offering Data Model

Field	Type	Description
serviceFamily	String	Indicates the service family.
description	String	Description of the service offering.
modifiedOn	String	Indicates the date of the modification.
lastModified	String	Indicates the date of the last modification.
meta	String	Meta details of the service offering.
canonicalLink	Cfw link	Indicates the canonical link.
selfLink	Cfw link	Indicates the self link.

59.6.3 Request Metadata for V2

Request metadata resource is an extension of the `oracle.sysman.cfw.cloudAPI.common.CfwResource`. Request metadata encapsulates the data required to create a service instance. This response returned is filled by user with appropriate values and is used as in "POST" payload required for creation of service instance.

Table 59-13 Request Metadata Data Model

Field	Type	Description
instanceName	String	Name of the service instance.
schedule	Schedule entity	Schedule of the request.
configurations	List<CfwValue Descriptor>	Provides the list of configurations.
characteristics	List<Characteristic>	Provides the list of characteristics.

59.6.4 Supported Operations for Services for V2

The table below lists the supported operations for the Services resource.

Table 59-14 Supported operations for Services Resource

Method	URI	Description
GET	<code>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services</code>	Returns list of service offerings.
GET	<code>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/{serviceguid}</code>	Returns service offering details.
GET	<code>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/{serviceguid}/metadata</code>	Returns service offering metadata details.

Table 59-14 (Cont.) Supported operations for Services Resource

Method	URI	Description
POST	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services	Submits request for creation of Service instance.

59.6.5 Services REST API Examples for V2

This section contains the REST APIs which are a part of the Services resource. The following REST API tasks are covered.

- [Viewing Details of the Services Resource](#)
- [Viewing Details of the Service Offering Resource](#)
- [Viewing Details of the Request Metadata](#)
- [Creating a Service Instance](#)

59.6.5.1 Viewing Details of the Services Resource

The table below shows the GET configuration for viewing details of the Services resource.

Table 59-15 GET Request Configuration for Viewing Details of the Services Resource

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "Services",
  "type": "Service",
  "totalResults": 4,
  "cfwItems": [
    {
      "id": "1",
      "name": "ORACLE_NIMBULA_ORCHESTRATION_TEMPLATE",
      "displayName": "Orchestration",
      "guid": "04FA3C08D3F3398AE053CE74B10A52F3",
      "serviceType": "ORACLE_NIMBULA_ORCHESTRATION_SERVICE",
      "serviceFamily": "NIMBULA_INFRASTRUCTURE",
      "description": "Create a set of Oracle VM instances with customized configuration for multi-tier applications",
      "meta":
        "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/"
    }
  ]
}
```

```
04FA3C08D3F3398AE053CE74B10A52F3/metadata",
"canonicalLink": {
  "href":
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
04FA3C08D3F3398AE053CE74B10A52F3"
}
},
{
  "id": "2",
  "name": "ORACLE_NIMBULA_SIMPLE_ORCHESTRATION_TEMPLATE",
  "displayName": "Simple Orchestration",
  "guid": "04FA3C08D3F6398AE053CE74B10A52F3",
  "serviceType": "ORACLE_NIMBULA_ORCHESTRATION_SERVICE",
  "serviceFamily": "NIMBULA_INFRASTRUCTURE",
  "description": "Create one or more Oracle VM instances with default configuration
and minimum inputs",
  "meta":
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
04FA3C08D3F6398AE053CE74B10A52F3/metadata",
  "canonicalLink": {
    "href":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
04FA3C08D3F6398AE053CE74B10A52F3"
  }
},
{
  "id": "44",
  "name": "MY DB Schema",
  "displayName": "MY DB Schema",
  "guid": "04FBAB67376E77D1E053CE74B10A9AA8",
  "serviceType": "SCHEMA",
  "serviceFamily": "DBAAS",
  "description": "My DB Schema",
  "meta":
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
04FBAB67376E77D1E053CE74B10A9AA8/metadata",
  "canonicalLink": {
    "href":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
04FBAB67376E77D1E053CE74B10A9AA8"
  }
},
{
  "id": "41",
  "name": "My WebLogic Template",
  "displayName": "My WebLogic Template",
  "guid": "04FB7EEED9A03798E053CE74B10A753D",
  "serviceType": "WLAAS",
  "serviceFamily": "MIDDLEWARE_CFW",
  "description": "My Web Logic Template",
  "meta":
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
04FB7EEED9A03798E053CE74B10A753D/metadata",
  "canonicalLink": {
    "href":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
04FB7EEED9A03798E053CE74B10A753D"
  }
}
],
```

```

"canonicalLink": {
  "href":
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  services/"
},
"selfLink": {
  "href":
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  services/"
}
}

```

59.6.5.2 Viewing Details of the Service Offering Resource

The table below shows the GET configuration for viewing details of the Service offering resource.

Table 59-16 GET Request Configuration for Viewing Details of the Service Offering Resource

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/{serviceguid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "id": "42",
  "name": "My XaaS Remote Server",
  "displayName": "My XaaS Remote Server",
  "guid": "04FBAB67376677D1E053CE74B10A9AA8",
  "serviceType": "CFW_SAMPLEXAAS_REMOTESERVER_SERVICE",
  "serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY",
  "description": "My XaaS Remote Server",
  "createdOn": "2014-10-09T10:13:34Z",
  "modifiedOn": "2014-10-09T10:13:34Z",
  "lastModified": "2014-10-09T10:13:34Z",
  "meta":
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
  04FBAB67376677D
  1E053CE74B10A9AA8/metadata",
  "canonicalLink": {
    "href":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
    04FBAB67376677D
    1E053CE74B10A9AA8"
  }
}

```

59.6.5.3 Viewing Details of the Request Metadata

The table below shows the GET configuration for viewing details of the Request metadata.

Table 59-17 GET Request Configuration for Viewing Details of the Request Metadata

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/{serviceguid}/metadata
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "characteristics": [
    {
      "displayName": "Self Service Zone",
      "name": "ORACLE.SYSMAN.SXAAS.CFW_SAMPLEXAAS_RSRC_POOL",
      "possibleValues": [
        {
          "name": "my_paaszone",
          "value": "1C3A932A9089BBEC27A63EF389C7DF24"
        }
      ]
    }
  ],
  "configurations": [
    {
      "name": "temp_param2",
      "type": "STRING",
      "value": "",
      "required": false,
      "secret": false
    },
    {
      "name": "USER_NAME",
      "type": "STRING",
      "description": "User Name (cannot be any of Oracle default accounts) used to login to the requested database",
      "value": "",
      "required": false,
      "secret": false
    },
    {
      "name": "temp_param1",
      "type": "STRING",
      "value": "",
      "required": false,
      "secret": false
    }
  ]
}
```

```

{
  "name": "USER_PASSWORD",
  "type": "STRING",
  "description": "User Password to login to the given User Name database account",
  "required": false,
  "secret": true
},
{
  "canonicalLink": {
    "href":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
    04FBAB67376677D1E053CE74B10A9AA8/metadata"
  },
  "selfLink": {
    "href":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/
    04FBAB67376677D1E053CE74B10A9AA8/metadata"
  },
  "instanceName": "<user-input>"
}

```

59.6.5.4 Creating a Service Instance

The table below shows the POST configuration for creating a Service instance.

Table 59-18 POST Request Configuration for Creating a Service Instance

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 59-18 (Cont.) POST Request Configuration for Creating a Service Instance

Feature	Specification
Body	<pre> { "name": "Xaas RemoteServer Request", "offeringId": "04FBAB67376677D1E053CE74B10A9AA8", "instanceName": "Xaas RemoteServer", "schedule": { "scheduleStartTime": "2015-01-12T16:48:10ZAmerica/ Los_Angeles", "scheduleEndTime": "2015-31-12T16:48:10ZAmerica/ Los_Angeles" }, "characteristics": [{ "name": "ORACLE.SYSMAN.SXAAS.CFW_SAMPLEXAAS_RSRC_POOL", "value": "1C3A932A9089BBEC27A63EF389C7DF24" }], "configurations": [{ "name": "temp_param2", "value": "val2" }, { "name": "USER_NAME", "value": "user" }, { "name": "temp_param1", "value": "val1" }, { "name": "USER_PASSWORD", "value": "passwords" }] } </pre>
Request method	POST

A sample of the response received is shown below.

```

{
  "requests": [
    {
      "id": "16",
      "actionName": "CREATE",
      "canonicalLink": {
        "href": "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicerequests/1
6"
      }
    },
    {
      "id": "17",
      "actionName": "DELETE",

```

```

"canonicalLink":{
  "href":"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicerequests/1
7"
}
}
]
}

```

59.6.6 Creating a Service Instance using V2

This section provides the procedure to create a Service instance using REST APIs.

Follow the steps below to create a Service instance:

1. Perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/`. See, [Viewing Details of the Services Resource](#).

The GET operation returns all the service offerings. Note the required service offering.

2. Perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/{serviceofferingid}/metadata`, using the service offering ID from the previous step. See, [Viewing Details of the Request Metadata](#).

The GET operation returns the metadata of the service offering. Note the metadata fields.

3. Perform a POST operation on the URI - `em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/`, by providing values for the metadata fields. See, [Creating a Service Instance](#).

The POST generates a request for the creation of a Service instance. The request payload is expected to have the following fields with values set.

- `offeringId` - A unique ID for identifying the Service instance.
- `name` - A name for the Service instance.
- `schedule` - This is an optional field and has two sub-fields, `scheduleStartTime` and `scheduleEndTime`. To schedule an instance for future use provide `scheduleStartTime` value. Additionally, to set expiry or end time for the service instance set the `scheduleEndTime`.
- `instanceName` - This field is dependent on the chosen service offering and may or may not be required.
- `configurations` - This field is dependent on the chosen service offering and may or may not be required.
- `characteristics` - This field is dependent on the chosen service offering and may or may not be required.

59.7 Service Requests REST APIs for V1 and V2

A user with the EM_SSA_USER role can reschedule and cancel requests that are in the **scheduled** state.

All the REST APIs will be available from the top level URI /extws/cloudservices/ssa/cfw/v1/.

59.7.1 Service Requests Resource for V2

The Service requests resource is an extension of oracle.sysman.cfw.cloudAPI.pojo.request.RequestSummary. A request enables a SSA user to initiate a task for immediate or future execution.

Table 59-19 Service Requests Data Model for V2

Field	Type	Description
requestType	String	Type of request.
serviceFamily	String	Name of service family.
serviceType	String	Name of service type.
startDate	String	Start date of request.
endDate	String	End date of request.
lastModifiedDate	String	Date of last modification of request.
timeZone	String	Time zone of the request.
displayName	String	Display name of the request.
actionName	String	Name of the request action.
description	String	Description of the request.
submissionDate	String	Date of submission of the request.
submittedBy	String	Name of the user who submitted the request.
executionLogs	String	Execution logs.
status	Request status	Status of the request.

59.7.2 Service Request Collection - Collection Resource for V1

Service Request Collection is a collection resource representing a Cloud Administrator's view of all the accessible Service Request resources. The following table describes the Service Request Collection data model for v1.

Table 59-20 Service Request Collection Data Model for V1

Field	Type	Description	Occurs
name	String	Display name of this collection resource.	1
type	String	Type of this collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in the collection	1
count	Integer	Number of elements returned.	1
items	Collection <ServiceRequestEntity >	List of ServiceRequestEntity resources. In case no requests exist, items will be present but empty.	1

Table 59-20 (Cont.) Service Request Collection Data Model for V1

Field	Type	Description	Occurs
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent to the containing elements.	1

Table 59-21 Service Request Entity Data Model for V1

Field	Type	Description	Occurs
id	String	The RequestId of the ServiceRequest.	1
beginDate	String	The String representation of timestamp to which the new schedule has to be updated, in specified format. e.g 2013-10-02T16:14:41ZPST	1
status	String	The status of service request	1
name	String	Name of service request.	1
serviceFamily	String	The service family of the request type.	1
lastUpdatedTime	String	The string value of last modified timestamp, in specified format.	1
lifeCycle	String	The life cycle of request.	1
selfLink	String	A GET against this URI represents the client representation of this resource.	1
canonicalLink	String	A GET against this URI represents the client representation of this resource	1

59.7.3 Supported Operations for Service Requests

The table below lists the operations that are supported in the Service requests resource.

Table 59-22 Supported Methods for Service Requests

Request Method	V2 Canonical Link	V1 Canonical Link	Description
GET	em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/	em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/	Provides the list of all service requests. There are two query parameter types and status for v1. For v2, see Table 59-23 , for query parameters.
GET	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/{requestid}	em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/<request-id>	Provides the details of the service request ID.

Table 59-22 (Cont.) Supported Methods for Service Requests

Request Method	V2 Canonical Link	V1 Canonical Link	Description
PUT	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/v2/servicerequests/{requestid}	em/websvcs/restful/ extws/ cloudservices/ssa/cfw/v1/servicerequests/<request-id>	Re-schedule the specified request to another schedule. The beginDate for the schedule is specified in the payload.
DELETE	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/v2/servicerequests/{requestid}	em/websvcs/restful/ extws/ cloudservices/ssa/cfw/v1/servicerequests/<service-request-id>	Cancels specified Service Request.
GET	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/v2/servicerequests/{requestid}/logs	Not applicable	Provides the service request logs.
GET	/em/websvcs/restful/ extws/ cloudservices/ssa/cfw/v2/servicerequests/{requestid}/logs? stepid={stepid}	Not applicable	Returns request execution step log.

The table below shows the query parameters supported for the GET request on the Service Requests resource in the v2 framework.

Table 59-23 Query Parameters for Service Requests in V2

Parameter	Input	Description	Required
servicetype	Name of service type	Returns service type specific information.	Optional

Table 59-23 (Cont.) Query Parameters for Service Requests in V2

Parameter	Input	Description	Required
status	Status of service request	Returns status specific information. The possible values are: <ul style="list-style-type: none"> CANCELLED CLEANUP_ERROR CLEANUP_FAILED CLEANUP_SCHEDULED CLEANED CLEANING_UP EXECUTION_ERROR INCOMPLETE IN_PROGRESS NO_QUOTA_ERROR NO_RESOURCE_ERROR PARTIAL_SUCCEEDED ENDED ERROR_ENDING ENDING EXECUTING SAVED SCHEDULED SCHEDULING ERROR_SCHEDULING SUCCESS 	Optional
expanded	Boolean; true or false	If true, <code>RequestCollection</code> returns a list of requests <code>cfwItems</code> , else status wise summary of requests is returned. Possible values are true, and false. Any value apart from true or false is ignored and treated as false.	Optional
servicefamily	Name of service family	Returns service family specific information.	Optional

59.7.4 Service Request REST API Examples for V1 and V2

This section lists all a few REST API example scenarios. The following operations are covered in this section:

V2:

- [Retrieving Top Level View of Service Requests in V1 and V2](#)
- [Querying the Service Requests Resource for Status=SUCCESS in V2](#)
- [Querying the Service Requests Resource for Expanded=true and Expanded=false in V2](#)
- [Querying the Service Requests Resource for status=SUCCESS&expanded=false and status=SUCCESS&expanded=true in V2](#)
- [Viewing Details of a Service Request in V2](#)
- [Deleting a Service Request in V2](#)

- Rescheduling a Service Request that is in a Scheduled State in V1 and V2
- Viewing the Logs of a Service Request in V2
- Querying the Logs of a Service Request in V2

V1:

- Retrieving Top Level View of Service Requests for a Specific Service Family in V1
- Retrieving Top Level View of Service Requests for a Specific Status in V1
- Rescheduling a Service Request that is in a Cancelled State (or in a state other than Scheduled) in V1
- Deleting a Service Request that is in a Scheduled State in V1
- Deleting a Service Request that is in a Canceled State (or in a state other than scheduled) in V1

59.7.4.1 Retrieving Top Level View of Service Requests in V1 and V2

Table 59-24 GET Request Configuration for Viewing Details of Service Requests Resource in V1 and V2

Feature	Specification for V1	Specification for V2
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None	None
Request method	GET	GET

A sample of the response received for v2 is shown below.

```
{
  "name": "Request summary grouped by status",
  "totalResults": 17,
  "requestSummary": [
    {
      "status": "NO_QUOTA_ERROR",
      "count": 1,
      "href":
        "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests?status=NO_QUOTA_ERROR&expanded=true"
    },
    {
      "status": "EXECUTION_ERROR",
      "count": 1,
      "href":
        "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests?status=EXECUTION_ERROR&expanded=true"
    },
    {
      "status": "SUCCESS",
```

```

"count": 5,
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicerequests?status=SUCCESS&expanded=true"
},
{
"status": "CLEANUP_FAILED",
"count": 1,
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicerequests?status=CLEANUP_FAILED&expanded=true"
},
{
"status": "SCHEDULED",
"count": 9,
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicerequests?status=SCHEDULED&expanded=true"
}
],
"canonicalLink": {
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicerequests"
},
"selfLink": {
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicerequests"
}
}

```

A sample of the response received for v1 is shown below.

```

{
"name": "Service Requests",
"type": "Service Request", "count": 2,
"items": [
{
"id": "2",
"name": "future_Create Sample XaaS Service#2",
"beginDate": "2015-02-14T08:37:18Z India Standard Time",
"status": "SCHEDULED",
"selfLink": "https://cloudcompnay.com/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v1/servicerequests/2",
"canonicalLink": "https://cloudcompnay.com/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v1/servicerequests/2",
"serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY"
},
{
"id": "1",
"name": "eadeweqqw_Create Sample XaaS Service#1",
"beginDate": "2015-02-10T07:49:24Z India Standard Time",
"status": "EXECUTION_ERROR",
"selfLink": "https://cloudcompnay.com/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v1/servicerequests/1",
"canonicalLink": "https://cloudcompnay.com/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v1/servicerequests/1",
"serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY"
}
],

```

```

    "selfLink": "https://cloudcompnay.com/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v1/servicerequest?status=ALL",
    "canonicalLink": "https://cloudcompnay.com/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v1/servicerequests/"
  }

```

59.7.4.2 Querying the Service Requests Resource for Status=SUCCESS in V2

The table below shows the GET configuration for querying the Service requests resource.

Table 59-25 GET Request Configuration for Querying a Service Request for Status=SUCCESS in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests?status=SUCCESS
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "name" : "Request summary grouped by status",
  "totalResults" : 5,
  "requestSummary" : [ {
    "status" : "SUCCESS",
    "count" : 3,
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests?status=SUCCESS&expanded=true"
  }, {
    "status" : "SCHEDULED",
    "count" : 2,
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests?status=SCHEDULED&expanded=true"
  } ],
  "canonicalLink" : {
    "href" :
    3.4 22
    -
    -
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests"
  },
  "selfLink" : {
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests?status=SUCCESS"
  }
}

```

```
}
}
```

59.7.4.3 Querying the Service Requests Resource for Expanded=true and Expanded=false in V2

The table below shows the GET configuration for querying the Service requests resource for `expanded=true`. A similar approach is followed for `expanded=false`, where the query change is made in the URI.

Table 59-26 GET Request Configuration for Querying a Service Request for Expanded=true in V2

Feature	Specification
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests?expanded=true</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received for `expanded=true` is shown below.

```
{
  "name" : "Service Requests",
  "type" : "Service Request",
  "totalResults" : 5,
  "cfwItems" : [ {
    "id" : "5",
    "name" : "Rst_rpc_14-09-11 09.52.58_11-Sep-14 21:53:06.663",
    "startDate" : "2014-09-11T16:23:06Z",
    "status" : "SUCCESS",
    "canonicalLink" : {
      "href" :
      "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/5"
    }
  },
  "displayName" : "Rst_rpc_14-09-11 09.52.58_11-Sep-14 21:53:06.663"
}, {
  "id" : "4",
  "name" : "Remove Sample XaaS Service_XaaS_Storage__11-Sep-14 21:52:58.553",
  "startDate" : "2017-07-12T23:48:10Z",
  "status" : "SCHEDULED",
  "canonicalLink" : {
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/4"
  }
},
  "displayName" : "Remove Sample XaaS Service_XaaS_Storage__11-Sep-14 21:52:58.553"
}, {
  "id" : "3",
  "name" : "Rst_en_14-09-11 09.52.58_11-Sep-14 21:52:58.363",
  "startDate" : "2014-09-11T16:22:58Z",
  "status" : "SUCCESS",
  "canonicalLink" : {
```

```

    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicerequests/3"
  },
  "displayName" : "Rst_en_14-09-11 09.52.58_11-Sep-14 21:52:58.363"
}, {
  "id" : "2",
  "name" : "Rst_st_en_14-09-11 09.52.58_11-Sep-14 21:52:54.187",
  "startDate" : "2015-01-13T00:48:10Z",
  "status" : "SCHEDULED",
  "canonicalLink" : {
    "href" :
    3.5 23
  -
  -
  "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  servicerequests/2"
  },
  "displayName" : "Rst_st_en_14-09-11 09.52.58_11-Sep-14 21:52:54.187"
}, {
  "id" : "1",
  "name" : "Rst_14-09-11 09.52.58_11-Sep-14 21:52:49.360",
  "startDate" : "2014-09-11T16:22:49Z",
  "status" : "SUCCESS",
  "canonicalLink" : {
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicerequests/1"
  },
  "displayName" : "Rst_14-09-11 09.52.58_11-Sep-14 21:52:49.360"
} ],
"canonicalLink" : {
  "href" :
  "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  servicerequests"
},
"selfLink" : {
  "href" :
  "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  servicerequests?expanded=true"
}
}
}

```

A sample of the response received for `expanded=false` is shown below.

```

{
  "name" : "Request summary grouped by status",
  "totalResults" : 5,
  "requestSummary" : [ {
    "status" : "SUCCESS",
    "count" : 3,
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicere
    quests?status=SUCCESS&expanded=true"
  }, {
    "status" : "SCHEDULED",
    "count" : 2,
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicerequests?status=SCHEDULED&expanded=true"
  }
]
}

```

```

    } ],
    "canonicalLink" : {
      "href" :
      "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
      servicerequests"
    },
    "selfLink" : {
      "href" :
      "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
      servicere
      quests?expanded=false"
    }
  }
}

```

59.7.4.4 Querying the Service Requests Resource for status=SUCCESS&expanded=false and status=SUCCESS&expanded=true in V2

The table below shows the GET configuration for querying the Service requests resource for `status=SUCCESS&expanded=false`. A similar approach is followed for `status=SUCCESS&expanded=true`, where the query change is made in the URI.

Table 59-27 GET Request Configuration for Querying a Service Request for status=SUCCESS&expanded=false in V2

Feature	Specification
URI	<code>https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests?status=SUCCESS&expanded=false</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received for `status=SUCCESS&expanded=false` is shown below.

```

{
  "name" : "Request summary grouped by status",
  "totalResults" : 5,
  "requestSummary" : [ {
    "status" : "SUCCESS",
    "count" : 3,
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicere
    quests?status=SUCCESS&expanded=true"
  }, {
    "status" : "SCHEDULED",
    "count" : 2,
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicere
    quests?status=SCHEDULED&expanded=true"
  } ],
  "canonicalLink" : {
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/

```

```

servicere
quests"
},
"selfLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests?status=SUCCESS&expanded=false"
}
}

```

A sample of the response received for `status=SUCCESS&expanded=true` is shown below.

```

{
"name" : "Service Requests",
"type" : "Service Request",
"totalResults" : 3,
"cfwItems" : [ {
"id" : "5",
"name" : "Rst_rpc_14-09-11 09.52.58_11-Sep-14 21:53:06.663",
"startDate" : "2014-09-11T16:23:06Z",
"status" : "SUCCESS",
"canonicalLink" : {
"href" :
3.7 "https://xx.idc.example.com:24503/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/servicere 25
quests/5"
},
"displayName" : "Rst_rpc_14-09-11 09.52.58_11-Sep-14 21:53:06.663"
}, {
"id" : "3",
"name" : "Rst_en_14-09-11 09.52.58_11-Sep-14 21:52:58.363",
"startDate" : "2014-09-11T16:22:58Z",
"status" : "SUCCESS",
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests/3"
},
"displayName" : "Rst_en_14-09-11 09.52.58_11-Sep-14 21:52:58.363"
}, {
"id" : "1",
"name" : "Rst_14-09-11 09.52.58_11-Sep-14 21:52:49.360",
"startDate" : "2014-09-11T16:22:49Z",
"status" : "SUCCESS",
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests/1"
},
"displayName" : "Rst_14-09-11 09.52.58_11-Sep-14 21:52:49.360"
} ],
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests"
},
"selfLink" : {

```

```

"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests?status=SUCCESS&expanded=true"
}
}

```

59.7.4.5 Viewing Details of a Service Request in V2

The GET request configuration for viewing details of a Service request is shown below.

Table 59-28 GET Request Configuration for Viewing Details of a Service Request in V2

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/{requestid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "id": "44",
  "name": "dp_2b022961-c#44",
  "status": "SUCCESS",
  "serviceType": "CFW_SAMPLEXaaS_SERVICE",
  "serviceFamily": "Sample Services",
  "actionName": "Create Sample XaaS Service",
  "startDate": "2014-10-15T09:29:23Z",
  "createdOn": "2014-10-15T09:29:23Z",
  "createdBy": "SYSMAN",
  "owner": "SYSMAN",
  "canonicalLink": {
    "href":
      "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
      servicerequests/44"
  },
  "executionLogs":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicerequests/44/logs"
}

```

59.7.4.6 Deleting a Service Request in V2

The DELETE request configuration for deleting a Service request is shown below.

Table 59-29 DELETE Request Configuration for Deleting a Service Request in V2

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/{requestid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
{
  "message" : "[\"Request 31 deleted successfully\"]"
}
```

59.7.4.7 Rescheduling a Service Request that is in a Scheduled State in V1 and V2

The table below shows the PUT request configuration.

Table 59-30 PUT Request Configuration for Rescheduling a Service Request in a Scheduled State in V1 and V2

Feature	Specification for V1	Specification for V2
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/2	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/{requestid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "beginDate": "2013-10-02T16:14:41ZPST" }	{"startDate": "2015-08-12T16:48:10ZAmerica/Los_Angeles"}
Request method	PUT	PUT

A sample of the response received for v2 is shown below.

```
{
  "message" : "Request 2 rescheduled successfully."
}
```

A sample of the response received for v1 is shown below.

```
Status 200 OK
{
  message: "Service request 2 rescheduled successfully."
}
```

59.7.4.8 Viewing the Logs of a Service Request in V2

The table below shows the GET request configuration for viewing the Service request logs.

Table 59-31 GET Request Configuration for Viewing the Logs of a Service Request in V2

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/{requestid}/logs
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "submittedOn" : "2014-09-12T07:20:38Z",
  "steps" : [ {
    "stepName" : "CfwRequestInitCommand",
    "stepId" : "CfwRequestInitCommand",
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicere
    quests/21/logs?stepid=CfwRequestInitCommand"
  }, {
    "stepName" : "CfwRequestPreProcessCommand",
    "stepId" : "CfwRequestPreProcessCommand",
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicere
    quests/21/logs?stepid=CfwRequestPreProcessCommand"
  }, {
    "stepName" : "CfwRequestJobInvokerCommand",
    "stepId" : "CfwRequestJobInvokerCommand",
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicere
    quests/21/logs?stepid=CfwRequestJobInvokerCommand"
  }, {
    "stepId" : "",
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicere
    quests/21/logs?stepid="
  }, {
    "stepName" : "CfwRequestPostProcessCommand",
    "stepId" : "CfwRequestPostProcessCommand",
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    servicere
    quests/21/logs?stepid=CfwRequestPostProcessCommand"
  } ],
}
```

```
"id" : "21"
}
```

59.7.4.9 Querying the Logs of a Service Request in V2

The table below shows the GET request configuration for querying the Service request logs.

Table 59-32 GET Request Configuration for Querying the Logs of a Service Request in V2

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/{requestid}/logs?stepid=CfwRequestPreProcessCommand
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "id" : "21",
  "stepName" : "CfwRequestPreProcessCommand",
  "stepId" : "CfwRequestPreProcessCommand",
  "data" : "INFO:Request Pre-processing in progress.\nINFO:Preparing the inputs for
Request Action:
Create Sample XaaS Service\nINFO:Performing placment checks to identify the
appropriate Service-
Provider.\nINFO:Placement checks executed successfully.\nINFO:Request pre-processing
successfully
executed.",
  "canonicalLink" : {
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicere
quests/21/logs?stepid=CfwRequestPreProcessCommand"
  }
}
```

59.7.4.10 Retrieving Top Level View of Service Requests for a Specific Service Family in V1

The table below shows the GET request configuration.

Table 59-33 GET Request Configuration for Viewing Details of a Service Request for a Specific Service Family in V1

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests?type=mwaas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 59-33 (Cont.) GET Request Configuration for Viewing Details of a Service Request for a Specific Service Family in V1

Feature	Specification
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK
{
  name: "Service Requests"
  type: "Service Request"
  count: 2
  items: [2]
    0:
      {
        id: "2"
        name: "request2_14153ee61c5_Create_20130925_123353"
        beginDate: "2013-09-25T12:48:50ZAsia/Calcutta"
        status: "Scheduled"
        lifeCycle: "Create Service Instance"
        selfLink: "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/2"
        canonicalLink: "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/2"
        serviceFamily: "MWAAS"
      }
    1:
      {
        id: "1"
        name: "request1_14153ea0bb6_Create_20130925_122909"
        beginDate: "2013-09-25T12:44:03ZAsia/Calcutta"
        status: "Cancelled"
        lifeCycle: "Create Service Instance"
        selfLink: "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/1"
        canonicalLink: "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/1"
        serviceFamily: "MWAAS"
      }
    selfLink: "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests?status=ALL"
    canonicalLink: "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests"
  }
}
```

59.7.4.11 Retrieving Top Level View of Service Requests for a Specific Status in V1

The table below shows the GET request configuration.

Table 59-34 GET Request Configuration for Viewing Details of a Service Request for with a Specific Status in V1

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/?status=SCHEDULED
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name": "Service Requests",
  "type": "Service Request",
  "count": 1,
  "items": [
    {
      "id": "2",
      "name": "future_Create Sample XaaS Service#2",
      "beginDate": "2015-02-14T08:37:18Z India Standard Time",
      "status": "SCHEDULED",
      "selfLink": "https://cloudcompnay.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/2",
      "canonicalLink": "https://cloudcompnay.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/2",
      "serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY"
    }
  ],
  "selfLink": "https://cloudcompnay.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequest?status=SCHEDULED",
  "canonicalLink": "https://cloudcompnay.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/"
}
```

59.7.4.12 Rescheduling a Service Request that is in a Cancelled State (or in a state other than Scheduled) in V1

The table below shows the PUT request configuration.

Table 59-35 PUT Request Configuration for Rescheduling a Service Request that is in Cancelled State in v1

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	{ "beginDate": "2013-10-02T16:14:41ZPST" }

Table 59-35 (Cont.) PUT Request Configuration for Rescheduling a Service Request that is in Cancelled State in v1

Feature	Specification
Request method	PUT

A sample of the response received is shown below.

```
Status : 400 Bad request {errorMessages: "Error occured while rescheduling. Verify that schedule is not in past and status is scheduled."}
```

59.7.4.13 Deleting a Service Request that is in a Scheduled State in V1

The table below shows the DELETE request configuration.

Table 59-36 DELETE Request Configuration for Cancelling a Scheduled Service Request in V1

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
Status 200 OK
{
  message: "Service request 1 cancelled successfully."
}
```

59.7.4.14 Deleting a Service Request that is in a Canceled State (or in a state other than scheduled) in V1

The table below shows the DELETE request configuration.

Table 59-37 DELETE Request Configuration for Deleting a Service Request in Cancelled State in V1

Feature	Specification
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests/1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
Status : 400 Bad request{errorMessages: "Error occurred while cancelling. Only request with status SCHEDULED is cancellable."}
```

59.8 Service Instances for V2

Service instances resources comprises of Service instance and Action entities. The data models of the Service instances resource and its associated entities is given below.

Table 59-38 Service Instance Data Model for V2

Field	Type	Description
guid	String	Guid of the service instance.
serviceFamily	String	Name of the service family.
serviceType	String	Name of the service type.
status	String	Status of the service instance.
displayname	String	Display name of the service instance.
targetType	String	Target type of the service instance.

Table 59-39 Action Data Model for V2

Field	Type	Description	Occurs
offeringId	String	Guid of the service.	1
name	String	Name of the request.	1
instanceName	String	Name of the service instance.	0..1
schedule	ScheduleEntity	Schedule of the request.	0..1
configurations	List<CfwValueDescriptor>	Configurations.	0..1
characteristics	List<Characteristic>	List of characteristics.	0..1

The supported request parameters and their descriptions are provided in the table below.

59.8.1 Supported Methods for Service Instance in V2

The table below provides information on the supported methods for Service instance resource.

Table 59-40 Supported methods for Service Instance Resource

Request Method	URI	Description
GET	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/	Returns the service instances collection details. See Table 59-41 , for query parameters.

Table 59-40 (Cont.) Supported methods for Service Instance Resource

Request Method	URI	Description
GET	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}	Returns the details of specified service instance.
GET	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}/actions	Returns actions available on the specified service instance.
GET	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}/attributes	Returns attributes for the specified service instance.
GET	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}/actions/{actionid}	Returns the action details and the action inputs required to execute the action on the specified service instance.
PUT	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}/	Executes the action on a given service instance.

The table below shows the query parameters supported for the GET request on the Service instance resource in the v2 framework.

Table 59-41 Query Parameters for Service Instance in V2

Parameter	Input	Description	Required
servicetype	Name of service type.	Returns service type specific information.	Optional

Table 59-41 (Cont.) Query Parameters for Service Instance in V2

Parameter	Input	Description	Required
status	Status of service instance.	Returns status specific information. The possible values are: <ul style="list-style-type: none"> PENDING_CREATION: Indicates that a request to create the service instance is scheduled to run on a later date and the relevant service instance is scheduled to be created. PROCESSING_CREATION: Indicates that a request to create the service instance is running and is in the process of creation. ERROR_CREATION: Indicates that a request to create the service instance failed due to error. STATUS_DOWN: Indicates that the service instance is currently down. STATUS_UP: Indicates that the service instance is up and running fine. STATUS_METRIC_ERROR: Indicates that the system (EM/OMS) monitoring the service instance has encountered issues while collecting certain data on the service instance. STATUS_AGENT_DOWN: Indicates that the agent monitoring the service instance is down. Hence, the monitoring data of the service instance cannot be uploaded. STATUS_UNREACHABLE: Indicates that the system is not able to get the service instance availability status. STATUS_BLACKOUT: Indicates that the Administrator has black-out the service instance for upgrades/patches. The upgrades will be applied generally to the machines hosting the service. STATUS_PENDING: Indicates that the system is in the process of collecting the availability status of the service instance. 	Optional
expanded	Boolean; true or false.	ServiceInstanceCollection contains <code>cfwItems</code> if true and <code>serviceInstanceSummary</code> if false.	Optional

59.8.2 Service Instances REST API Examples for V2

This section provides the REST API examples of the Service instances resource. The following operations are covered in this section:

- [Viewing Details of the Service Instance Resource in V2](#)
- [Querying the Service Instance Resource in V2](#)
- [Viewing Details of a Service Instance in V2](#)
- [Viewing Details of the Attributes of a Service Instance in V2](#)

- [Viewing Details of the Available Actions on a Service Instance in V2](#)
- [Viewing Details of the Action Inputs Required To Execute an Action on a Service Instance in V2](#)
- [Executing an Action on a Service Instance in V2](#)

59.8.2.1 Viewing Details of the Service Instance Resource in V2

The table below shows the GET request configuration.

Table 59-42 GET Request Configuration for Viewing Details of Service Instance Resource in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name" : "Service Instances Summary",
  "totalResults" : 7,
  "serviceInstanceSummary" : [ {
    "status" : "STATUS_UP",
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    serviceinstances?status=STATUS_UP&expanded=true",
    "count" : 3
  }, {
    "status" : "PENDING_CREATION",
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    serviceinstances?status=PENDING_CREATION&expanded=true",
    "count" : 4
  } ],
  "canonicalLink" : {
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    serviceinstances"
  }
}
```

59.8.2.2 Querying the Service Instance Resource in V2

The table below shows the GET request configuration for querying the Service instance resource based on the following parameters:

- expanded=true
- expanded=false
- status=STATUS_UP

- servicetype=CFW_SAMPLEXaaS_SERVICE
- expanded=true,status=STATUS_UP
- expanded=false,status=STATUS_UP,servicetype=CFW_SAMPLEXaaS_SERVICE

Table 59-43 GET Request Configuration for Querying Service Instance Resource in V2

Feature	Specification
URI for expanded=true	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?expanded=true
URI for expanded=false	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?expanded=false
URI for status=STATUS_UP	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?status=STATUS_UP
URI for servicetype=CFW_SAMPLEXaaS_SERVICE	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?servicetype=CFW_SAMPLEXaaS_SERVICE
URI for expanded=true&status=STATUS_UP	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?expanded=true&status=STATUS_UP
URI for expanded=false,status=STATUS_UP,servicetype=CFW_SAMPLEXaaS_SERVICE	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?expanded=false&status=STATUS_UP&servicetype=CFW_SAMPLEXaaS_SERVICE
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received for `expanded=false` is shown below.

```
{
  "name" : "Service Instances Summary",
  "totalResults" : 7,
  "serviceInstanceSummary" : [ {
    "status" : "STATUS_UP",
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?status=STATUS_UP&expanded=true",
    "count" : 3
  }, {
    "status" : "PENDING_CREATION",
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances?status=PENDING_CREATION&expanded=true",
    "count" : 4
  } ],
  "canonicalLink" : {
    "href" :
```

```

"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicein
stances"
},
"selfLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicein
stances?expanded=false"
}
}

```

59.8.2.3 Viewing Details of a Service Instance in V2

The table below shows the GET request configuration.

Table 59-44 GET Request Configuration for Viewing Details of a Service Instance in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
"name" : "test",
"targetName" : "test",
"guid" : "CCA88E9507D4A9E2214935F956D83150",
"serviceType" : "CFW_SAMPLEXAAS_SERVICE",
"serviceFamily" : "CFW_SAMPLEXAAS_SERVICEFAMILY",
"status" : "STATUS_UP",
"targetType" : "Cfw_Xaas_DB_Service",
"createdOn" : "2014-11-15T00:00:00ZAsia/Calcutta",
"createdBy" : "SYSMAN",
"owner" : "SYSMAN",
"attributes" : {
"href" :
"https://xx.idc.example.com:14488/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicein
stances/CCA88E9507D4A9E2214935F956D83150/attributes"
},
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:14488/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicein
stances/CCA88E9507D4A9E2214935F956D83150"
},
"selfLink" : {
"href" :
"https://xx.idc.example.com:14488/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
servicein
stances"
}
}

```

```
stances/CCA88E9507D4A9E2214935F956D83150"
}
}
```

59.8.2.4 Viewing Details of the Attributes of a Service Instance in V2

The table below shows the GET request configuration.

Table 59-45 GET Request Configuration for Viewing Details of the Attributes of a Service Instance in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}/attributes
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
"serviceInstanceGuid" : "CCA88E9507D4A9E2214935F956D83150",
"attributes" : [ {
"name" : "xaasServiceName",
"type" : "STRING",
"value" : "test"
} ],
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:14488/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/CCA88E9507D4A9E2214935F956D83150/attributes"
},
"selfLink" : {
"href" :
"https://xx.idc.example.com:14488/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/CCA88E9507D4A9E2214935F956D83150/attributes"
}
}
```

59.8.2.5 Viewing Details of the Available Actions on a Service Instance in V2

The table below shows the GET request configuration.

Table 59-46 GET Request Configuration for Viewing Details of the Available Actions on a Service Instance in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}/actions

Table 59-46 (Cont.) GET Request Configuration for Viewing Details of the Available Actions on a Service Instance in V2

Feature	Specification
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "totalResults" : 6,
  "selfLink" : {
    "href" :
      "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/
      2A2BD0D7C40F7C2814FA6788704E313
      A/actions"
  },
  "cfwItems" : [ {
    "name" : "DELETE",
    "id" : "82",
    "displayName" : "Remove Sample XaaS Service",
    "description" : "Removing my Sample XaaS service"
  }, {
    "name" : "START",
    "id" : "84",
    "displayName" : "Start Service",
    "description" : "Starts this service"
  }, {
    "name" : "STOP",
    "id" : "85",
    "displayName" : "Stop Service",
    "description" : "Stops this service"
  }, {
    "name" : "CLEANUP",
    "id" : "86",
    "displayName" : "Cleanup Sample XaaS Failed Request",
    "description" : "Cleanup Sample XaaS Failed Request"
  }, {
    "name" : "SYNCSTARTSERVICE",
    "id" : "87",
    "displayName" : "Sync Start Service",
    "description" : "Synchronous Action to Start Sample Service"
  }, {
    "name" : "SYNCSTOPSERVICE",
    "id" : "88",
    "displayName" : "Sync Stop Service",
    "description" : "Synchronous Action to Stop Sample Service"
  } ],
  "name" : "Actions",
  "type" : "Action",
  "canonicalLink" : {
    "href" :
      "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/
      2A2BD0D7C40F7C2814FA6788704E313
      A/actions"
  }
}
```

```
}
}
```

59.8.2.6 Viewing Details of the Action Inputs Required To Execute an Action on a Service Instance in V2

The table below shows the GET request configuration.

Table 59-47 GET Request Configuration for Viewing Details of the Action Inputs Required To Execute an Action on a Service Instance in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}/actions/{actionid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name" : "START",
  "id" : "94",
  "displayName" : "START",
  "actionInputs" : [ {
    "name" : "WorkLoads",
    "type" : "VECTOR",
    "description" : "WorkLoad Values",
    "required" : false,
    "secret" : false,
    "subvalues" : [ {
      "name" : "Small",
      "type" : "VECTOR",
      "description" : "Configuration Values for Small WorkLoad",
      "required" : false,
      "secret" : false,
      "subvalues" : [ {
        "name" : "DEPL_SIZE_IS_DEFAULT_KEY",
        "value" : "Y",
        "type" : "STRING",
        "required" : false,
        "secret" : false
      }, {
        "name" : "CPU",
        "value" : "60",
        "type" : "STRING",
        "required" : false,
        "secret" : false
      }, {
        "name" : "MEMORY",
        "value" : "4048",
        "type" : "STRING",
        "required" : false,
        "secret" : false
      }
    ]
  }
]
```

```
}, {
  "name" : "STORAGE",
  "value" : "500",
  "type" : "STRING",
  "required" : false,
  "secret" : false
}, {
  "name" : "XAAS_TEST",
  "value" : "NONE",
  "type" : "STRING",
  "required" : false,
  "secret" : false
} ]
}, {
  "name" : "Medium",
  "type" : "VECTOR",
  "description" : "Configuration Values for Medium WorkLoad",
  "required" : false,
  "secret" : false,
  "subvalues" : [ {
    "name" : "DEPL_SIZE_IS_DEFAULT_KEY",
    "value" : "N",
    "type" : "STRING",
    "required" : false,
    "secret" : false
  }, {
    "name" : "CPU",
    "value" : "80",
    "type" : "STRING",
    "required" : false,
    "secret" : false
  }, {
    "name" : "MEMORY",
    "value" : "8088",
    "type" : "STRING",
    "required" : false,
    "secret" : false
  }, {
    "name" : "STORAGE",
    "value" : "750",
    "type" : "STRING",
    "required" : false,
    "secret" : false
  } ]
}, {
  "name" : "Large",
  "type" : "VECTOR",
  "description" : "Configuration Values for Large WorkLoad",
  "required" : false,
  "secret" : false,
  "subvalues" : [ {
    "name" : "DEPL_SIZE_IS_DEFAULT_KEY",
    "value" : "Y",
    "type" : "STRING",
    "required" : false,
    "secret" : false
  }, {
    "name" : "CPU",
    "value" : "60",
    "type" : "STRING",
    "required" : false,
```

```

"secret" : false
}, {
"name" : "MEMORY",
"value" : "40448",
"type" : "STRING",
"required" : false,
"secret" : false
}, {
"name" : "STORAGE",
"value" : "500",
"type" : "STRING",
"required" : false,
"secret" : false
} ]
} ]
} ],
"description" : "Starts this service"
}

```

59.8.2.7 Executing an Action on a Service Instance in V2

The table below shows the PUT request configuration.

Table 59-48 PUT Request Configuration for Executing an Action on a Service Instance in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "actionId":94, "configurations":[{ "name":"domainName", "type":"STRING", "description":"Domain Name", "required":true, "value":"/mwaas_rest_9_SSA_USER1/rest_9_SSA_USER1" }, { "name":"applicationName", "type":"STRING", "description":"Application Name", "required":true, "value":"test1" }] } </pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests": [
    {
      "id": "4",
      "actionName": "STOP",
      "canonicalLink": {
        "href":
          "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
          servicerequests/4"
      }
    }
  ]
}
```

59.8.3 Executing Actions on a Service Instance in V2

This section provides the procedure to execute an action on a Service instance using REST APIs.

Follow the steps below to execute an action on a Service instance:

1. Perform a GET operation on the URI - `em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}/actions`. See, [Viewing Details of the Available Actions on a Service Instance in V2](#).

The GET operation returns all the supported actions that an user can execute on the specified Service instance. The Action name, Action ID, Display name and Description are provided for each action. Note the required Action ID.

2. Perform a GET operation on the URI - `/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}/actions/{actionid}`, using the Action ID from the previous step. See, [Viewing Details of the Action Inputs Required To Execute an Action on a Service Instance in V2](#).

The GET operation returns all the action details and the action inputs. Some actions require action inputs to complete an action. Action inputs capture the data or input which is to be provided by the user while executing an action on an instance. Note the action inputs.

3. Perform a PUT operation on the URI - `/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/{instanceid}`, using the action inputs from the previous step. See, [Executing an Action on a Service Instance in V2](#).

The PUT operation executes the action on the Service instance. To execute the action, provide appropriate action input values as `configurations` in the payload.

59.9 Quota Usage for V2

This section describes the quota usage REST APIs for SSA user.

59.9.1 Supported Operations for Quota Usage for V2

The table below lists the supported operations for quota usage.

Table 59-49 Supported Methods for Quota Usage

Request Method	URI	Description
GET	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/quotausage	Returns links to quota usage.
GET	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/quotausage/{servicefamily}	Returns quota usage by service family.

59.9.2 Quota Usage REST API Examples for V2

This section provides the REST API examples for Quota usage. The following examples are covered:

- [Viewing Details of Quota Usage](#)
- [Viewing Details of Quota Usage by Service Family](#)

59.9.2.1 Viewing Details of Quota Usage

The table below shows the GET request configuration.

Table 59-50 GET Request Configuration for Viewing Details of Quota Usage

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/quotausage
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "canonicalLink": {
    "href":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    quotausage/"
  },
  "usages": [
    {
      "serviceFamily": "CFW_SAMPLEXAAS_SERVICEFAMILY",
      "canonicalLink": {
        "href":
        "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
        quotausage/CFW_SAMPLEXAAS_SERVICEFAMILY"
      }
    },
    {
      "serviceFamily": "NIMBULA_INFRASTRUCTURE",
```

```

"canonicalLink": {
  "href":
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  quotausage/NIMBULA_INFRASTRUCTURE"
},
{
  "serviceFamily": "DBAAS",
  "canonicalLink": {
    "href":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    quotausage/DBAAS"
  }
},
{
  "serviceFamily": "MIDDLEWARE_CFW",
  "canonicalLink": {
    "href":
    "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
    quotausage/MIDDLEWARE_CFW"
  }
},
"selfLink": {
  "href":
  "https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
  quotausage/"
}
}

```

59.9.2.2 Viewing Details of Quota Usage by Service Family

The table below shows the GET request configuration.

Table 59-51 GET Request Configuration for Viewing Details of Quota Usage by Service Family

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/quotausage/{servicefamily}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "name": "Usages",
  "type": "Usages Collection",
  "totalResults": 4,
  "cfwItems": [
    {
      "id": "sampleActionOpen",
      "name": "Storage",
      "type": "Others",

```

```

"allowed": "10.0",
"used": "3.0",
"unit": "GB"
},
{
"name": "Cfw Sample XaaS - Other Service",
"type": "Service Instances",
"serviceType": "CFW_SAMPLEXAAS_SERVICE_FOR_NOMEM",
"used": "0"
},
{
"name": "Cfw Sample XaaS",
"type": "Service Instances",
"serviceType": "CFW_SAMPLEXAAS_SERVICE",
"used": "0"
},
{
"name": "Cfw Sample RemoteServer XaaS",
"type": "Service Instances",
"serviceType": "CFW_SAMPLEXAAS_REMOTESERVER_SERVICE",
"used": "0"
}
],
"canonicalLink": {
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
quotausage/CFW_SAMPLEXAAS_SERVICEFAMILY"
},
"selfLink": {
"href":
"https://cloudcompany.com/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
quotausage/CFW_SAMPLEXAAS_SERVICEFAMILY"
}
}

```

59.10 User Preferences for V2

This section describes the User preference resource in the v2 framework.

59.10.1 Supported Request Methods for User Preference Resource in V2

The table below shows the supported request methods on the User preference resource.

Table 59-52 Supported Request Methods for the User Preferences Resource in V2

Request Method	URI	Description
GET	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/	Returns top level view of general and service specific preferences.

Table 59-52 (Cont.) Supported Request Methods for the User Preferences Resource in V2

Request Method	URI	Description
GET	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/general	Returns general user preferences.
GET	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/general/metadata	Returns metadata for general user preferences.
PUT	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/general	Updates general preferences of the user.
GET	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services	Returns the top level view of the service preferences.
GET	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}	Returns service family user preferences.
GET	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}/metadata	Returns metadata for the specified service family preferences.
PUT	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}	Updates service family user preferences.
GET	https:// <OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}/{servicetype}	Returns service type user preferences.

Table 59-52 (Cont.) Supported Request Methods for the User Preferences Resource in V2

Request Method	URI	Description
GET	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}/{servicetype}/metadata	Returns metadata for the specified service type preferences.
PUT	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}/{servicetype}	Updates service family preferences of the user.

59.10.2 User Preferences for V2 REST API Examples

The following REST APIs are covered in this section. The following operations are covered in this section:

- [Viewing Details of the User Preferences Resource for V2](#)
- [Viewing Details of the General User Preferences Resource for V2](#)
- [Viewing Metadata of the General User Preferences Resource for V2](#)
- [Updating the General User Preferences for V2](#)
- [Viewing Details of the Services User Preferences Resource for V2](#)
- [Viewing Details of the Service Family User Preferences Resource for V2](#)
- [Viewing Metadata of the Service Family User Preferences for V2](#)
- [Updating the Service Family User Preferences for V2](#)
- [Viewing Details of the Service Type User Preferences Resource for V2](#)
- [Viewing Metadata of the Service Type User Preferences for V2](#)
- [Updating the Service Type User Preferences for V2](#)

59.10.2.1 Viewing Details of the User Preferences Resource for V2

The table below shows the configuration for the GET request.

Table 59-53 GET Request Configuration for Viewing Details of the User Preferences Resource in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/

Table 59-53 (Cont.) GET Request Configuration for Viewing Details of the User Preferences Resource in V2

Feature	Specification
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "generalPreferences" :
  "https://blr2223141.idc.example.com:24503/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/userpreferences/general",
  "servicePreferences" :
  "https://blr2223141.idc.example.com:24503/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/userpreferences/services",
  "canonicalLink" : {
    "href" :
    "https://blr2223141.idc.example.com:24503/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/userpreferences"
  }
}
```

59.10.2.2 Viewing Details of the General User Preferences Resource for V2

The table below shows the configuration for the GET request.

Table 59-54 GET Request Configuration for Viewing Details of the General User Preferences Resource in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/ restful/extws/cloudservices/ssa/cfw/v2/userpreferences/general
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name" : "General Preference",
  "type" : "General User Preferences",
  "preferences" : [ {
    "name" : "USER_LOCALE",
    "value" : "en",
    "type" : "STRING",
    "defaultValue" : "en",
    "displayName" : "English",
    "description" : "This is the default Locale for receiving cloud notifications.",
    "required" : false,
  }
]
```

```
"secret" : false
}, {
  "name" : "REQUEST_STATUS",
  "type" : "VECTOR",
  "description" : "Request Status For Which Notifications Are Enabled",
  "required" : false,
  "secret" : false
}, {
  "name" : "REQUEST_NOTIFICATION",
  "value" : "false",
  "type" : "BOOLEAN",
  "defaultValue" : "false",
  "description" : "This allows the user to receive notifications for different
statuses of the request.",
  "required" : false,
  "secret" : false
}, {
  "name" : "NOTIFICATION_DAYS_1",
  "value" : "0",
  "type" : "INTEGER",
  "defaultValue" : "0",
  "description" : "Number of days before the first notification is sent to the user
before the expiry date of the service instance.",
  "required" : false,
  "secret" : false
}, {
  "name" : "NOTIFICATION_DAYS_2",
  "value" : "0",
  "type" : "INTEGER",
  "defaultValue" : "0",
  "description" : "Number of days before the second notification is sent to the user
before the expiry date of the service instance.",
  "required" : false,
  "secret" : false
}, {
  "name" : "DEFAULT_SERVICE",
  "value" : "MWAAS",
  "type" : "STRING",
  "defaultValue" : "IAAS",
  "description" : "This will be used as your default service after successful login to
Self Service Portal.",
  "required" : false,
  "secret" : false
}, {
  "name" : "EMAIL",
  "type" : "VECTOR",
  "description" : "This is the default Email address for receiving cloud
notifications.",
  "required" : false,
  "secret" : false
}, {
  "name" : "QUOTA_THRESHOLD",
  "value" : "0.0",
  "type" : "FLOAT",
  "defaultValue" : "0.0",
  "description" : "Notifications will be sent to users when resources exceed the
defined quota percentage.",
  "required" : false,
  "secret" : false
}, {
  "name" : "QUOTA_NOTIFICATION",
```

```

"value" : "false",
"type" : "BOOLEAN",
"defaultValue" : "false",
"description" : "Receive quota related notification when the quota reaches the
specified threshold.",
"required" : false,
"secret" : false
}, {
"name" : "INSTANCE_EXPIRY_NOTIFICATION",
"value" : "false",
"type" : "BOOLEAN",
"defaultValue" : "false",
"description" : "Enables user to receive notifications for Service Instances that
are due to expire based on the notification period.",
"required" : false,
"secret" : false
} ],
"meta" :
"https://blr2223141.idc.example.com:24503/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/userpreferences/general/metadata",
"canonicalLink" : {
"href" :
"https://blr2223141.idc.example.com:24503/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/userpreferences/general"
}
}

```

59.10.2.3 Viewing Metadata of the General User Preferences Resource for V2

The table below shows the configuration for the GET request.

Table 59-55 GET Request Configuration for Viewing Metadata of the General User Preferences Resource in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/general/metadata
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
"name" : "General Preference",
"type" : "General User Preferences",
"preferences" : [ {
"name" : "USER_LOCALE",
"value" : "en",
"type" : "STRING",
"defaultValue" : "en",
"displayName" : "English",
"description" : "This is the default Locale for receiving cloud notifications.",
"required" : false,
"secret" : false,

```

```
"possibleValues" : [ {
  "name" : "USER_LOCALE",
  "value" : "es_ES",
  "type" : "STRING",
  "defaultValue" : "en",
  "displayName" : "Spanish",
  "description" : "This is the default Locale for receiving cloud notifications.",
  "required" : false,
  "secret" : false
}, {
  "name" : "USER_LOCALE",
  "value" : "ja",
  "type" : "STRING",
  "defaultValue" : "en",
  "displayName" : "Japanese",
  "description" : "This is the default Locale for receiving cloud notifications.",
  "required" : false,
  "secret" : false
}, {
  "name" : "USER_LOCALE",
  "value" : "fr",
  "type" : "STRING",
  "defaultValue" : "en",
  "displayName" : "French",
  "description" : "This is the default Locale for receiving cloud notifications.",
  "required" : false,
  "secret" : false
}, {
  "name" : "USER_LOCALE",
  "value" : "ko",
  "type" : "STRING",
  "defaultValue" : "en",
  "displayName" : "Korean",
  "description" : "This is the default Locale for receiving cloud notifications.",
  "required" : false,
  "secret" : false
}, {
  "name" : "USER_LOCALE",
  "value" : "de",
  "type" : "STRING",
  "defaultValue" : "en",
  "displayName" : "German",
  "description" : "This is the default Locale for receiving cloud notifications.",
  "required" : false,
  "secret" : false
}, {
  "name" : "USER_LOCALE",
  "value" : "zh_TW",
  "type" : "STRING",
  "defaultValue" : "en",
  "displayName" : "Traditional Chinese",
  "description" : "This is the default Locale for receiving cloud notifications.",
  "required" : false,
  "secret" : false
}, {
  "name" : "USER_LOCALE",
  "value" : "zh_CN",
  "type" : "STRING",
  "defaultValue" : "en",
  "displayName" : "Simplified Chinese",
  "description" : "This is the default Locale for receiving cloud notifications.",
```

```
"required" : false,
"secret" : false
}, {
  "name" : "USER_LOCALE",
  "value" : "en",
  "type" : "STRING",
  "defaultValue" : "en",
  "displayName" : "English",
  "description" : "This is the default Locale for receiving cloud notifications.",
  "required" : false,
  "secret" : false
}, {
  "name" : "USER_LOCALE",
  "value" : "pt_BR",
  "type" : "STRING",
  "defaultValue" : "en",
  "displayName" : "Brazilian Portuguese",
  "description" : "This is the default Locale for receiving cloud notifications.",
  "required" : false,
  "secret" : false
} ]
}, {
  "name" : "REQUEST_STATUS",
  "type" : "VECTOR",
  "description" : "Request Status For Which Notifications Are Enabled",
  "required" : false,
  "secret" : false,
  "possibleValues" : [ {
    "name" : "REQUEST_STATUS",
    "value" : "PARTIAL_SUCCEEDED",
    "type" : "VECTOR",
    "displayName" : "Partially Succeeded",
    "description" : "Request Status For Which Notifications Are Enabled",
    "required" : false,
    "secret" : false
  } ], {
    "name" : "REQUEST_STATUS",
    "value" : "ERROR",
    "type" : "VECTOR",
    "displayName" : "Error",
    "description" : "Request Status For Which Notifications Are Enabled",
    "required" : false,
    "secret" : false
  } ], {
    "name" : "REQUEST_STATUS",
    "value" : "CANCELLED",
    "type" : "VECTOR",
    "displayName" : "Cancelled",
    "description" : "Request Status For Which Notifications Are Enabled",
    "required" : false,
    "secret" : false
  } ], {
    "name" : "REQUEST_STATUS",
    "value" : "EXECUTING",
    "type" : "VECTOR",
    "displayName" : "Running",
    "description" : "Request Status For Which Notifications Are Enabled",
    "required" : false,
    "secret" : false
  } ], {
    "name" : "REQUEST_STATUS",
```

```
"value" : "SUCCESS",
"type" : "VECTOR",
"displayName" : "Success",
"description" : "Request Status For Which Notifications Are Enabled",
"required" : false,
"secret" : false
}, {
"name" : "REQUEST_STATUS",
"value" : "SCHEDULED",
"type" : "VECTOR",
"displayName" : "Scheduled",
"description" : "Request Status For Which Notifications Are Enabled",
"required" : false,
"secret" : false
} ]
}, {
"name" : "REQUEST_NOTIFICATION",
"value" : "false",
"type" : "BOOLEAN",
"defaultValue" : "false",
"description" : "This allows the user to receive notifications for different
statuses of the request.",
"required" : false,
"secret" : false
}, {
"name" : "NOTIFICATION_DAYS_1",
"value" : "0",
"type" : "INTEGER",
"defaultValue" : "0",
"description" : "Number of days before the first notification is sent to the user
before the expiry date of the service instance.",
"required" : false,
"secret" : false
}, {
"name" : "NOTIFICATION_DAYS_2",
"value" : "0",
"type" : "INTEGER",
"defaultValue" : "0",
"description" : "Number of days before the second notification is sent to the user
before the expiry date of the service instance.",
"required" : false,
"secret" : false
}, {
"name" : "DEFAULT_SERVICE",
"value" : "MWAAS",
"type" : "STRING",
"defaultValue" : "IAAS",
"description" : "This will be used as your default service after successful login to
Self Service Portal.",
"required" : false,
"secret" : false
}, {
"name" : "EMAIL",
"type" : "VECTOR",
"description" : "This is the default Email address for receiving cloud
notifications.",
"required" : false,
"secret" : false
}, {
"name" : "QUOTA_THRESHOLD",
"value" : "0.0",
```

```

"type" : "FLOAT",
"defaultValue" : "0.0",
"description" : "Notifications will be sent to users when resources exceed the
defined quota percentage.",
"required" : false,
"secret" : false
}, {
"name" : "QUOTA_NOTIFICATION",
"value" : "false",
"type" : "BOOLEAN",
"defaultValue" : "false",
"description" : "Receive quota related notification when the quota reaches the
specified threshold.",
"required" : false,
"secret" : false
}, {
"name" : "INSTANCE_EXPIRY_NOTIFICATION",
"value" : "false",
"type" : "BOOLEAN",
"defaultValue" : "false",
"description" : "Enables user to receive notifications for Service Instances that
are due to expire based on the notification period.",
"required" : false,
"secret" : false
} ],
"canonicalLink" : {
"href" :
"https://xxx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userpreferences/general/metadata"
}
}

```

59.10.2.4 Updating the General User Preferences for V2

The table below shows the configuration for the PUT request.

Table 59-56 PUT Request Configuration for Updating the General User Preferences in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/general
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "preferences":[{ "value":"MWAAS", "name":"DEFAULT_SERVICE" }, { "value":"false", "name":"REQUEST_NOTIFICATION" }] } </pre>

Table 59-56 (Cont.) PUT Request Configuration for Updating the General User Preferences in V2

Feature	Specification
Request method	PUT

A sample of the response received is shown below.

```
{
  "message" : "General preferences updated successfully."
}
```

59.10.2.5 Viewing Details of the Services User Preferences Resource for V2

The table below shows the configuration for the GET request.

Table 59-57 GET Request Configuration for Viewing Details of the Services User Preferences Resource in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "preferences" : [ {
    "name" : "MIDDLEWARE_CFW",
    "type" : "Service Family User Preferences",
    "required" : false,
    "secret" : false,
    "meta" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/MIDDLEWARE_CFW/metadata",
    "canonicalLink" : {
      "href" :
      "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/MIDDLEWARE_CFW"
    }
  }, {
    "name" : "NIMBULA_INFRASTRUCTURE",
    "type" : "Service Family User Preferences",
    "required" : false,
    "secret" : false,
    "meta" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/NIMBULA_INFRASTRUCTURE/metadata",
    "canonicalLink" : {
      "href" :
      "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/"
    }
  }
]
```

```

userpreferences/services/NIMBULA_INFRASTRUCTURE"
}
}, {
"name" : "DBAAS",
"type" : "Service Family User Preferences",
"required" : false,
"secret" : false,
"meta" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userpreferences/services/DBAAS/metadata",
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userpreferences/services/DBAAS"
}
}, {
"name" : "CFW_SAMPLEXAAS_SERVICEFAMILY",
"type" : "Service Family User Preferences",
"required" : false,
"secret" : false,
"meta" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userpreferences/services/CFW_SAMPLEXAAS_SERVICEFAMILY/metadata",
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userpreferences/services/CFW_SAMPLEXAAS_SERVICEFAMILY"
}
} ],
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userpreferences/services"
}
}
}

```

59.10.2.6 Viewing Details of the Service Family User Preferences Resource for V2

The table below shows the configuration for the GET request.

Table 59-58 GET Request Configuration for Viewing Details of the Service Family User Preferences Resource in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

59.10.2.7 Viewing Metadata of the Service Family User Preferences for V2

The table below shows the configuration for the GET request.

Table 59-59 GET Request Configuration for Viewing Metadata of the Service Family User Preferences in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}/metadata
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name" : "CFW_SAMPLEXAAS_SERVICEFAMILY",
  "type" : "Service Type User Preferences",
  "preferences" : [ {
    "name" : "SAMPLE_PREFERENCE_1",
    "value" : "test",
    "type" : "STRING",
    "defaultValue" : "Sample Value 1",
    "description" : "Type of the Supported Files",
    "required" : false,
    "secret" : false
  } ],
  "subPreferences" : [ {
    "name" : "CFW_SAMPLEXAAS_SERVICE_FOR_NOMEM",
    "type" : "Service Type User Preferences",
    "canonicalLink" : {
      "href" :
      "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
      userpreferences/services/CFW_SAMPLEXAAS_SERVICEFAMILY/metadata/
      CFW_SAMPLEXAAS_SERVICE_FOR_NOMEM"
    }
  }, {
    "name" : "CFW_SAMPLEXAAS_SERVICE",
    "type" : "Service Type User Preferences",
    "canonicalLink" : {
      "href" :
      "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
      userpreferences/services/CFW_SAMPLEXAAS_SERVICEFAMILY/metadata/
      CFW_SAMPLEXAAS_SERVICE"
    }
  }, {
    "name" : "CFW_SAMPLEXAAS_REMOTESERVER_SERVICE",
    "type" : "Service Type User Preferences",
    "canonicalLink" : {
      "href" :
      "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
      userpreferences/services/CFW_SAMPLEXAAS_SERVICEFAMILY/metadata/
      CFW_SAMPLEXAAS_REMOTESERVER_SERVICE"
    }
  }
]
```

```

}
} ],
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userpreferences/services/CFW_SAMPLEXAAS_SERVICEFAMILY/metadata"
}
}
}

```

59.10.2.8 Updating the Service Family User Preferences for V2

The table below shows the configuration for the PUT request.

Table 59-60 PUT Request Configuration for Updating the Service Family User Preferences in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "preferences": [{ "value": "test", "name": "SAMPLE_PREFERENCE_1" }] } </pre>
Request method	PUT

A sample of the response received is shown below.

```

{
"message" : "User service preferences updated successfully."
}

```

59.10.2.9 Viewing Details of the Service Type User Preferences Resource for V2

The table below shows the configuration for the GET request.

Table 59-61 GET Request Configuration for Viewing Details of the Service Type User Preferences Resource in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}/{servicetype}

Table 59-61 (Cont.) GET Request Configuration for Viewing Details of the Service Type User Preferences Resource in V2

Feature	Specification
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name" : "CFW_SAMPLEXAAS_SERVICE",
  "type" : "Service Type User Preferences",
  "preferences" : [ {
    "name" : "SAMPLE_PREFERENCE_1",
    "value" : "UPD_ST_Rest_14-09-06 11.59.34",
    "type" : "STRING",
    "defaultValue" : "Sample Value 1",
    "description" : "Type of the Supported Files",
    "required" : false,
    "secret" : false
  } ],
  "canonicalLink" : {
    "href" :
    "https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/CFW_SAMPLEXAAS_SERVICEFAMILY/CFW_SAMPLEXAAS_SERVICE"
  }
}
```

59.10.2.10 Viewing Metadata of the Service Type User Preferences for V2

The table below shows the configuration for the GET request.

Table 59-62 GET Request Configuration for Viewing Metadata of the Service Type User Preferences in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}/{servicetype}/metadata
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name" : "CFW_SAMPLEXAAS_SERVICE",
  "type" : "Service Type User Preferences",
  "preferences" : [ {
```

```

"name" : "SAMPLE_PREFERENCE_1",
"value" : "test",
"type" : "STRING",
"defaultValue" : "Sample Value 1",
"description" : "Type of the Supported Files",
"required" : false,
"secret" : false
} ],
"canonicalLink" : {
"href" :
"https://xx.idc.example.com:24503/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/
userpreferences/services/CFW_SAMPLEXAAS_SERVICEFAMILY/CFW_SAMPLEXAAS_SERVICE/
metadata"
}
}
}

```

59.10.2.11 Updating the Service Type User Preferences for V2

The table below shows the configuration for the PUT request.

Table 59-63 PUT Request Configuration for Updating the Service Type User Preferences in V2

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/userpreferences/services/{servicefamily}/{servicetype}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre> { "preferences": [{ "value": "UPD_ST_Rest_14-09-07 12.03.39", "name": "SAMPLE_PREFERENCE_1" }] } </pre>
Request method	PUT

A sample of the response received is shown below.

```

{
"message" : "User service preferences updated successfully."
}

```

59.11 User Preferences for V1

An SSA user (with the `EM_SSA_USER` role) can set user preferences (both general and service specific) using Cloud REST APIs.

59.11.1 My Preferences for V1

This is the top level resource and is used to get the following preferences:

- General Preferences
- Service Preferences: This includes My Database Preferences, My Middleware Preferences, and My Tests Preferences

59.11.2 Canonical Link for V1

The URI (canonicalLink) for user preferences is `em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/`. A GET request to this URI provided a top level view of the general and service specific preferences. The table below shows the GET request configuration on this URI.

Table 59-64 Canonical Link

Method	Query Parameters	Request Payload	URI	Description
GET	NA	NA	<code>https://<OMS_HOST>:<OMS_CON SOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/</code>	Gives a top level view of the general and service specific preferences.

Table 59-65 GET Request Configuration for Viewing Details of My Preferences Resource

Feature	Specification
URI	<code>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/</code>
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "servicePreferences": "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services",
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/"
}
```

59.11.3 General Preferences for V1

This represents the general user preferences that are applicable across all service types.

Table 59-66 General Preferences Data Model

Field	Type	Description	Occurs
emailAddress	String	This is the default email address for receiving cloud notifications.	0..1

Table 59-66 (Cont.) General Preferences Data Model

Field	Type	Description	Occurs
locale	String	This is the default locale for receiving cloud notifications. The default locale is English. Supported values include: <ul style="list-style-type: none"> en (English) es_ES (Spanish) zh_CN (Simplified Chinese) zh_TW (Traditional Chinese) ja (Japanese) ko (Korean) fr (French) pt_BR (Brazilian Portugese) de (German) 	0..1
request	RequestEntity	Request notification values.	0..1
instanceExpiry	InstanceExpiry Entity	Instance expiry notification values.	0..1
quota	QuotaEntity	Instance expiry notification values.	0..1
quotaThreshold	Integer	Notifications will be sent to users when resources exceed the defined quota percentage.	0..1
defaultServiceType	String	This is the default service after successful login to Self Service Portal.If not specified, this is defaulted to servers. Supported service type values include: IAAS (Servers), DBAAS (Databases), MWAAS (Middleware) , TAAS (Tests)	0..1
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1

59.12 Composite Resource Attributes for V1

The following composite resource attribute data model are described in this section.

- RequestEntity
- InstanceExpiryEntity
- QuotaEntity

59.12.1 RequestEntity Data Model for V1

The following table describes the RequestEntity data model:

Table 59-67 RequestEntity Data Model

Field	Type	Description	Occurs
requestNotifications	boolean	This allows the user to receive notifications for different statuses of the request.	0..1

Table 59-67 (Cont.) RequestEntity Data Model

Field	Type	Description	Occurs
requestStatus	List<String>	The list of request statuses for which notifications are enabled. Supported request status values are: <ul style="list-style-type: none"> • Incomplete • Scheduling • Scheduling Error • Scheduled • Canceled • Insufficient Quota • Insufficient Resources in Zone • In Progress • Execution Error • Partially Succeeded • Success • Running • All 	

59.12.2 InstanceExpiryEntity Data Model for V1

The following table describes the InstanceExpiryEntity data model:

Table 59-68 InstanceExpiryEntity Data Model

Field	Type	Description	Occurs
instanceExpiryNotifications	boolean	Enables user to receive notifications for service instances that are scheduled to expire based on the notification period.	0..1
daysBeforeFirstNotification	Integer	The number of days before the first notification is sent to the user before the expiry date of the service instance.	0..1
daysBeforeSecondNotification	Integer	The number of days before the second notification is sent to the user before the expiry date of the service instance.	0..1

59.12.3 QuotaEntity Data Model for V1

The following table describes the QuotaEntity data model:

Table 59-69 QuotaEntity Data Model

Field	Type	Description	Occurs
quotaNotifications	boolean	Receive quota related notification when the quota reaches the specified threshold.	0..1
quotaThreshold	Integer	Notifications will be sent to users when resources exceed the defined quota percentage.	0..1

59.13 Supported Methods for General Preferences (for V1)

The following table shows the supported methods:

Table 59-70 Supported Methods

Method	Query Parameters	Request Payload	URI	Description
GET	NA	NA	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/general	Gives the general preferences for an SSA user.
PUT	NA	General Preferences	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/general	Updates the general preferences for an SSA user.

59.13.1 Viewing Details of the General Preferences for an SSA User

The table below provides the configuration for a GET request to know the general preferences for an SSA user.

Table 59-71 GET Request Configuration for Viewing Details of General Preferences for an SSA User

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/general/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "emailAddress": "john.smith@cloudcompany.com",
  "locale": "English",
  "request": {
    "requestNotifications": true,
    "requestStatus": ["SUCCESS", "INCOMPLETE"]
  }
}
"instanceExpiry": {
  "instanceExpiryNotifications": true,
  "daysBeforeFirstNotification": 10,
```

```

        "daysBeforeSecondNotification": 5
    },
    "quota": {
        "quotaNotifications": true,
        "quotaThreshold": 80.0
    },
    "defaultServiceType": "Servers",
    "canonicalLink":
"em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/general"
}

```

59.13.2 Updating the General Preferences for an SSA User

The table below provides the configuration for a PUT request to update the general preferences for an SSA user.

Table 59-72 PUT Request Configuration for Updating the General Preferences for an SSA User

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/general/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body to update a single field	<pre> { "emailAddress": "john.smith@cloudcompany.com", "locale": "en", "defaultServiceType": "IAAS", } </pre>
Body to update all fields	<pre> { "emailAddress": "john.smith@cloudcompany.com", "locale": "en", "request": { "requestNotifications": true, "requestStatus": ["SCHEDULED", "INCOMPLETE"] }, "instanceExpiry": { "instanceExpiryNotifications": true, "daysBeforeFirstNotification": 10, "daysBeforeSecondNotification": 5 }, "quota": { "quotaNotifications": true, "quotaThreshold": 80 }, "defaultServiceType": "IAAS" } </pre>
Body to update Notification fields	<pre> { "request": { "requestNotifications": true, "requestStatus": ["SCHEDULED", "INCOMPLETE"] } } </pre>

Table 59-72 (Cont.) PUT Request Configuration for Updating the General Preferences for an SSA User

Feature	Specification
Body to update instance expiry notification fields	<pre>{ "instanceExpiry": { "instanceExpiryNotifications": true, "daysBeforeFirstNotification": 10, "daysBeforeSecondNotification": 5 } }</pre>
Body to update quota notification fields	<pre>{ "quota": { "quotaNotifications": true, "quotaThreshold": 80 } }</pre>
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK {   message: "General Preferences updated successfully." }
```

59.14 Service Specific User Preferences for V1

This section describes the following:

59.14.1 Service Preferences for V1

The Service Preferences resource represents the user preferences of an SSA user per service family.

Table 59-73 ServicePreferences Data Model

Field	Type	Description	Occurs
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
servicePreferences	Collection<EntityValueHolder>	User preferences of SSA user for a specific service family.	1

59.14.2 Supported Methods for My Preferences (for V1)

Table 59-74 Supported Methods (II)

Method	Query Parameters	Request Payload	URI	Description
GET	NA	NA	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services	This gives the top level view of service preferences for all service families.
GET	NA	NA	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/<servicefamily>	Gives user preferences of SSA user for a specific service family.
PUT	NA	ServicePreferences	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/<servicefamily >	Updates the user preferences of SSA user for a specific service family.

59.14.3 ServicePreferenceMetadata Data Model for V1

This fetches the set of user preferences metadata relevant to the respective service family. Using this, the user can identify the user preferences available for each service family and the possible values of each.

Table 59-75 ServicePreferenceMetaData Data Model

Field	Type	Description	Occurs
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
servicePreferencesMeta	Collection<ValueDescriptor>	The set of user preferences metadata relevant to the respective service type.	0..1

59.14.4 Composite Resource Attributes for V1

Some of the resource entities in this specification contain the following composite resource attributes:

59.14.4.1 ValueEntity Data Model for V1

This represents a value (string representation) and their description (caption). The following table describes the data model:

Table 59-76 ValueEntity Data Model

Field	Type	Description	Occurs
value	String	String representation of the actual value of the entity.	1
description	String	Caption of the entity that describes it.	0..1

59.14.4.2 EntityValueHolder Data Model for V1

This represents a simple entity having a name, value and description. The following table describes the data model:

Table 59-77 EntityValueHolder Data Model

Field	Type	Description	Occurs
name	String	Name of the entity.	1
value	String	String representation of the actual value of the entity.	1
description	String	Caption of the entity that describes it.	0..1

59.14.4.3 ValueDescriptor Data Model for V1

This describes the metadata regarding the type of value that can be set upon an associated object. The following table describes the data model.

Table 59-78 ValueDescriptor Data Model

Field	Type	Description	Occurs
name	String	Name of the datum being described.	1
displayName	String	Display name of the datum being described.	0..1
description	String	Description of the datum referred.	0..1
currentValue	String	Current value of the datum being described.	0..1
isRequiredAttribute	boolean	True if the value of the datum is required.	0..1
possibleValues	Collection<V alueEntity>	Optional list of valid values of the datum being described.	0..1
description	String	Description of the datum referred.	0..1

59.14.5 Service Preferences REST API Examples for V1

This section describes the REST API examples of the Service Preferences resource.

59.14.5.1 Viewing Details of the Service Preferences Resource

The table below shows the GET request configuration for getting top level view of service preferences for all service families.

Table 59-79 GET Request Configuration for Viewing Details of Service Preferences Resource

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

Status 200 OK

```
{
  DBAAS: {
    displayName: "My Database Preferences"
    description: "User preferences for Database services"
    canonicalLink:
      "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/dbaas"
  }
  MWAAS: {
    displayName: "My Middleware Preferences"
    description: "User preferences for Middleware services"
    canonicalLink:
      "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/mwaas"
  }
  TAAS: {
    displayName: "My Tests Preferences"
    description: "User preferences for Testing as a Service (TaaS)"
    canonicalLink:
      "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/taas"
  }
  canonicalLink:
    "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services"
}
```

59.14.6 My Database Preferences REST API Examples for V1

This section details the REST API examples for My Database Preferences resource which specifies the preferences for database services.

59.14.6.1 Viewing Details of the DBaaS User Preferences Metadata

The table below shows the configuration for the GET request.

Table 59-80 GET Request Configuration for Viewing Details of the DBaaS User Preferences Metadata

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/dbaas/metadata
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

Status 200 OK

```
{
  servicePreferencesMetadata: {
    items:
      {
        name: "defaultPaasZone"
        displayName: "Default PaaS Infrastructure Zone"
        description: "Default PaaS Infrastructure Zone"
        currentValue: ""
        isRequiredAttribute: false
        possibleValues:
          {
            value: "dbaas_west_coast_zone"
          }
        }
      }
    canonicalLink:
      "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/dbaas/metadata"
  }
}
```

59.14.6.2 Updating DBaaS User Preferences

The table below shows the PUT request configuration.

Table 59-81 PUT Request Configuration for Updating the DBaaS User Preferences

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/dbaas/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 59-81 (Cont.) PUT Request Configuration for Updating the DBaaS User Preferences

Feature	Specification
Body	<pre>{ "servicePreferences": { "items":[{ "name": "defaultPaasZone", "value": "dbaas_west_coast_zone" }] } }</pre>
Request method	PUT

A sample of the response received is shown below.

Status 200 OK

```
{
  message: Service Preferences updated successfully.
}
```

59.14.6.3 Setting a Blank DBaaS User Preference Setting

The table below shows the PUT request configuration.

Table 59-82 PUT Request Configuration for Setting a Blank DBaaS User Preference Setting

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/dbaas/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "servicePreferences": { "items":[{ "name": "defaultPaasZone", "value": "" }] } }</pre>
Request method	PUT

A sample of the response received is shown below.

```
Status 200 OK

{
  message: Service Preferences updated successfully."
}
```

59.14.6.4 Viewing the DBaaS User Preferences

The table below shows the GET request configuration.

Table 59-83 GET Request Configuration for Viewing the DBaaS User Preference Setting

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/dbaas/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK

{
  canonicalLink:
  "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/dbaas"
  servicePreferences: {
    items: {
      name: "defaultPaasZone"
      value: "dbaas_west_coast_zone"
    }
  }
}
```

59.14.7 My Middleware Preferences REST API Examples for V1

This section shows the REST API examples of user preferences for Middleware services:

59.14.7.1 Viewing MWaaS User Preferences Metadata

The table below shows the GET request configuration.

Table 59-84 GET Request Configuration for Viewing the MWaaS User Preferences Metadata

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/mwaas/metadata/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

Status 200 OK

```
{
  servicePreferencesMetadata: {
    items:
      {
        name: "defaultPaasZone"
        displayName: "Default PaaS Infrastructure Zone"
        description: "Default PaaS Infrastructure Zone"
        currentValue: ""
        isRequiredAttribute: false
        possibleValues:
          {
            value: "mwaas_east_coast_zone"
          }
        }
      }
    canonicalLink:
      "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/mwaas/metadata"
  }
}
```

59.14.7.2 Updating MWaaS User Preferences

The table below shows the PUT request configuration.

Table 59-85 PUT Request Configuration for Updating MWaaS User Preferences

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/mwaas/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 59-85 (Cont.) PUT Request Configuration for Updating MWaaS User Preferences

Feature	Specification
Body	<pre>{ "servicePreferences": { "items":[{ "name": "defaultPaasZone", "value": "mwaas_east_coast_zone" }] } }</pre>
Request method	PUT

A sample of the response received is shown below.

Status 200 OK

```
{
  message: Service Preferences updated successfully.
}
```

59.14.7.3 Setting a Blank MWaaS User Preference Setting

0

Table 59-86 PUT Request Configuration for Setting a Blank MWaaS User Preference Setting

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/mwaas/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	<pre>{ "servicePreferences": { "items":[{ "name": "defaultPaasZone", "value": "" }] } }</pre>
Request method	PUT

A sample of the response received is shown below.

```
Status 200 OK

{
  message: Service Preferences updated successfully."
}
```

59.14.7.4 Viewing MWaaS User Preference Settings

The table below shows the GET request configuration.

Table 59-87 GET Request Configuration for Viewing MWaaS User Preference Settings

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/mwaas/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
Status 200 OK

{
  canonicalLink:
  "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/mwaas"
  servicePreferences: {
    items: {
      name: "defaultPaasZone"
      value: "mwaas_west_coast_zone"
    }
  }
}
```

59.14.8 My Tests Preferences for V1

This section details the REST API examples of user preferences for Testing as a Service (TaaS).

59.14.8.1 Viewing TaaS User Preferences Metadata

The table below shows the GET request configuration.

Table 59-88 GET Request Configuration for Viewing TaaS User Preferences Metadata

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/taas/metadata
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json
Body	None
Request method	GET

A sample of the response received is shown below.

Status 200 OK

```
{
  servicePreferencesMetadata: {
    items:
      {
        name: "defaultInstanceRootPassword"
        displayName: "Default Instance Root Password"
        description: "The password that will be set as default root password to new
        environment and test driver instance."
        currentValue: ""
        isRequiredAttribute: false
      }
    }
  canonicalLink:
  "/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/taas/m
  etadata"
}
```

59.14.8.2 Updating TaaS User Preferences

The table below shows the PUT request configuration.

Table 59-89 PUT Request Configuration for Updating TaaS User Preferences

Feature	Specification
URI	https://<OMS_HOST>:<OMS_CONSOLE_PORT>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/mypreferences/services/taas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 59-89 (Cont.) PUT Request Configuration for Updating TaaS User Preferences

Feature	Specification
Body	<pre>{ "servicePreferences": { "items":[{ "name": "defaultInstanceRootPassword", "value": "AQPY8bgHk" }] } }</pre>
Request method	PUT

A sample of the response received is shown below.

```
Status 200 OK
{
  message: "Service Preferences updated successfully."
}
```

WebLogic as a Service REST APIs

This chapter describes the resource model for WebLogic as a Service (WLaaS) REST APIs and their responses. Application component filtering, which is supported for WLaaS zones, and templates are also described.

 **Note:**

For the Plug-in release 12.1.0.9, a new framework is introduced for the REST APIs which is referred to as the v2 framework. The new framework consists of a different approach and signatures, as a result of which the REST APIs also differ when compared to the earlier framework. The earlier framework (v1) is deprecated and users are suggested to move to the v2 REST APIs.

This chapter contains the topics listed below. The first two sections provide a summary of all the REST APIs covered in this chapter whereas the following sections provide the resource details and the related REST APIs.

- [Summary of WebLogic as a Service REST APIs for V2](#)
- [Summary of WebLogic as a Service REST APIs for V1](#)
- [Resource Providers for V2 - PaaS Infrastructure Zone and Middleware Pool](#)
- [Quotas for V2](#)
- [Service Templates for V2](#)
- [Load Balancer Configurations for V2](#)
- [User Operation REST API Examples for V2](#)
- [WebLogic as a Service Resource Model for V1](#)
 - [Cloud](#)
 - [JaaS Service Family Type](#)
 - [Zone](#)
 - [JavaPlatformTemplate](#)
 - [Java Platform Instance](#)
 - [Application Instance Deployment](#)
 - [DataSource](#)
 - [Application Instance Component](#)
- [Application Component Filtering for V1](#)
- [Load Balancer Configuration for V1](#)
- [Quotas for V1](#)

- Service Templates for V1
- User Operation REST API Examples for V1
- EMCLI Support for Administration Operations

60.1 Summary of WebLogic as a Service REST APIs for V2

The table below shows a summary of all the v2 WLaaS REST APIs covered in this chapter.

Table 60-1 Summary of WLaaS REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Resource provider - PaaS infrastructure zone	Table 60-3	Viewing Details of All the Resource Providers	Creating a PaaS Infrastructure Zone	Updating a PaaS Infrastructure Zone	Deleting a Resource Provider (PaaS Infrastructure Zone or Middleware Pool)
Resource provider - Middleware pool	Table 60-3	Viewing Details of All the Resource Providers	Creating a Middleware Pool	Updating a Middleware Pool	Deleting a Resource Provider (PaaS Infrastructure Zone or Middleware Pool)
Quotas	Table 60-10	Viewing Details of Quota Settings	Creating a Quota for a SSA User Role	Updating a Quota for a SSA User Role	Deleting a Quota for a SSA User Role
Service templates	Table 60-15	<ul style="list-style-type: none"> • Viewing Details of all Service Templates • Viewing Details of a Specific Service Template 	Creating a Service Template	Updating a Service Template	Deleting a Service Template

Table 60-1 (Cont.) Summary of WLaaS REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Load balancer configuration	Table 60-21	<ul style="list-style-type: none"> Viewing all the Load Balancer Configurations Viewing Details of a Specific Load Balancer Configuration 	Creating a Load Balancer Configuration	Updating a Load Balancer Configuration	Deleting a Load Balancer Configuration
Service instance	Table 60-28	<ul style="list-style-type: none"> Viewing Details of all Service Instances Viewing all Service Instances With UP Status Viewing Details of all Possible Actions on a Specific Service Instance 	Creating a Service Instance Request	<ul style="list-style-type: none"> Scaling Up a Service Instance Scaling Down a Service Instance Stopping a Service Instance Starting a Service Instance 	Deleting a Service Instance
Application	Not available	<ul style="list-style-type: none"> Viewing Details of all Applications Deployed in a Domain Viewing an Application URL 	Not supported	<ul style="list-style-type: none"> Deploying an Application Redeploying an Application Un-deploying an Application Stopping an Application Starting an Application 	Not supported

Table 60-1 (Cont.) Summary of WLaaS REST APIs for V2

Resource	Data Model	GET	POST	PUT	DELETE
Data source	Not available	<ul style="list-style-type: none"> Viewing Details of All Data Sources in the Profile Viewing Details of All the Data Sources 	Creating a Data Source	<ul style="list-style-type: none"> Editing a Data Source Testing a Data Source 	Deleting a Data Source

 **Note:**

In the table above, "supported" indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

60.2 Summary of WebLogic as a Service REST APIs for V1

The table below shows a summary of all the v1 WLaaS REST APIs covered in this chapter.

Table 60-2 Summary of WLaaS REST APIs for V1

Resource	Data Model	GET	POST	PUT	DELETE
Cloud	Table 60-56	Viewing Details of the Cloud Resource	Not supported	Not supported	Not supported
Jaas service family type	Table 60-58	Viewing Detail of the JaaS Service Family Type Resource	Creating an Application Instance Component by Passing a POST Request on the Jaas Service Family Type Resource	Not supported	Not supported
Zone	Table 60-60	Viewing Details of the Zone Resource	Not supported	Not supported	Not supported

Table 60-2 (Cont.) Summary of WLaaS REST APIs for V1

Resource	Data Model	GET	POST	PUT	DELETE
Java platform template	Table 60-62	Viewing Details of the Java Platform Template Resource	Creating a Java Platform Instance by Passing POST Request on a Java Platform Template	Not supported	Not supported
Java platform instance	Table 60-66	Viewing Details of the Java Platform Instance Resource	<ul style="list-style-type: none"> • Creating an Application Instance Deployment By Passing a POST Request on Java Platform Instance • Creating a Data Source by Passing a POST Request on the Java Platform Instance Resource 	Scaling Up/ Down the Service Instance	Deleting a Service Instance by Passing a DELETE Request on a Java Platform Instance
Application instance deployment	Table 60-75	Viewing Details of the Application Instance Deployment Resource	Creating an Application Instance Deployment By Passing a POST Request on Java Platform Instance	Starting, Stopping and Redeploying an Application Instance Deployment	Deleting an Application Instance Deployment
Data source	Table 60-80	Viewing Details of the Data Source Resource	Creating a Data Source by Passing a POST Request on the Java Platform Instance Resource	Updating a Data Source	Deleting a Data Source

Table 60-2 (Cont.) Summary of WLaaS REST APIs for V1

Resource	Data Model	GET	POST	PUT	DELETE
Application instance component	Table 60-87	Viewing Details of the Application Instance Component Resource	Not supported	Not supported	Deleting an Application Instance Component
Service template finds	Not applicable	Filtering Service Templates	Not applicable	Not applicable	Not applicable
Zone finds	Not applicable	Filtering Zones	Not applicable	Not applicable	Not applicable
Load balancer configuration	Not applicable	<ul style="list-style-type: none"> Viewing Details of the Load Balancer Configuration Resource Viewing Details of the specified Load Balancer Configuration 	Adding a Load Balancer Configuration	Editing the Load Balancer Configuration	Not supported
Quotas	Not applicable	Viewing Details of the Quota Settings for All SSA User Roles	Creating Quota Settings for a SSA User Role	Editing Quota Settings for a SSA User Role	Deleting Quota Settings for a SSA User Role
Service templates	Not applicable	Not supported	Creating a Service Template	Not supported	Not supported

Table 60-2 (Cont.) Summary of WLaaS REST APIs for V1

Resource	Data Model	GET	POST	PUT	DELETE
Service instance	Not applicable	Not supported	User Operations for Scheduling Support	<ul style="list-style-type: none"> Starting/ Stopping Service Instances Rescheduling Service Instance Deploying an Application as a Library (see also Viewing Details of the Java EE Application Components in Software Library) 	Not supported

 **Note:**

In the table above, "supported" indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

60.3 Resource Providers for V2 - PaaS Infrastructure Zone and Middleware Pool

Resource Providers is a collection resource representing a Cloud Administrator's view of all the accessible Resource provider resources. In the WLaaS structure, PaaS Infrastructure zone and Middleware pool are the Resource provider resources. The following table describes the Resource Providers data model.

Table 60-3 Resource Providers Data Model

Field	Type	Description	Occurs
name	String	Display name of this collection resource.	1
type	String	Type of collection resource.	1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1

Table 60-3 (Cont.) Resource Providers Data Model

Field	Type	Description	Occurs
count	Integer	Number of elements returned.	1
items	Collection <ResourceProvider>	List of Resource Provider resources. In case no instance exist, the <code>items</code> field will be empty.	1
totalCount	Integer	Total number of Resource Provider resources.	1
canonicalLink	URI	A GET request against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent to the containing elements.	1

60.3.1 Resource Providers - PaaS Infrastructure Zone and Middleware Pool REST API Examples

This section provides the REST API examples for PaaS infrastructure zones and Middleware pools.

The REST APIs covered in this section are:

- [Viewing Details of All the Resource Providers](#)
- [Creating a PaaS Infrastructure Zone](#)
- [Creating a Middleware Pool](#)
- [Updating a PaaS Infrastructure Zone](#)
- [Updating a Middleware Pool](#)
- [Deleting a Resource Provider \(PaaS Infrastructure Zone or Middleware Pool\)](#)

60.3.1.1 Viewing Details of All the Resource Providers

The following table shows an example of a GET operation on the Resource providers URI to return its representation.

Table 60-4 GET Request Configuration for Viewing Details of the Resource Providers

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

60.3.1.2 Creating a PaaS Infrastructure Zone

The following table shows an example of a POST operation on the Resource providers URI to create a PaaS infrastructure zone.

Table 60-5 POST Request Configuration for Creating a PaaS Infrastructure Zone

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "useExistingTarget" : false, "name": "WlaaS_Zone1", "type": "self_service_zone", "credentials": [{ "name": "normal_credential_guid", method, "value": "AIME_CLOUD_CRED" }], "memberTargetType": "host", "members": ["xyxy.example.com", "xxxxy.example.com"], "placementConstraints": [{ "name": "MAX_CPU_UTILIZATION", "value": ["80"] }, { "name": "MAX_MEMORY_ALLOCATION", "value": ["80"] }], "characteristics": [{ "name": "ORACLE.SYSMAN.CFW.SELF_SERVICE_ZONE", "value": ["70F61D030338B79AFEC42E008AF6F6B7"] }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_CONTACT", "value": ["123456789"] }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER", "value": ["IDC.LEX"] }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT", "value": ["FMW"] }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS", "value": ["Test"] }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS", "value": ["ST"] }, { "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION", "value": ["IDC"] }], "roles": ["MWAS_SSA_USER_ROLE1"] }</pre>
Request method	POST

60.3.1.3 Creating a Middleware Pool

The following table shows an example of a POST operation on the Resource providers URI to create a Middleware pool.

Table 60-6 POST Request Configuration for Creating a Middleware Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 60-6 (Cont.) POST Request Configuration for Creating a Middleware Pool

Feature	Description
Body	<pre>{ "useExistingTarget": "false", "name": "WlaaS_Pool1", "type": "mwaas_zone", "description": "This is a Windows Pool for WLAAS testing", "memberTargetType": "host", "members": ["xyxy.example.com", "xxxxy.example.com"], "parentResourceProviderId": "1", "placementConstraints": [{ "name": "MAX_INSTANCES", "value": "10" }], "memberConstraints": [{ "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.PLATFORM", "value": "226" }], "characteristics": [{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER", "value": "IDC" }] }</pre>
Request method	POST

60.3.1.4 Updating a PaaS Infrastructure Zone

The following table shows an example of a PUT operation to update the PaaS infrastructure zone.

Table 60-7 PUT Request Configuration for Updating a PaaS Infrastructure Zone

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "description": "This is description frpm the REST PUT method", "placementConstraints": [{ "name": "MAX_CPU_UTILIZATION", "value": ["90"] }, { "name": "MAX_MEMORY_ALLOCATION", "value": ["90"] }] }</pre>
Request method	PUT

60.3.1.5 Updating a Middleware Pool

The following table shows an example of a PUT operation to update a Middleware pool.

Table 60-8 PUT Request Configuration for Updating a Middleware Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/2

Table 60-8 (Cont.) PUT Request Configuration for Updating a Middleware Pool

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "placementConstraints":[{"name":"NUMBER_OF_INSTANCES","value": ["15"]}]} </pre>
Request method	PUT

60.3.1.6 Deleting a Resource Provider (PaaS Infrastructure Zone or Middleware Pool)

The following table shows an example of a DELETE operation to delete a PaaS Infrastructure zone or Middleware pool.

Table 60-9 DELETE Request Configuration for Deleting a PaaS Infrastructure Zone

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

60.4 Quotas for V2

The table below provides the data model for Quotas resource.

Table 60-10 Quotas Data Model for V2

Field	Type	Description	Occurs
name	String	Display name of the quota.	1
description	String	Description of the quota resource.	1
quotas	Collection <Quota Item>	List of quotas. In case no quota exist, the quotas field will be empty.	1
selfLink	URI	Refers to the resource equivalent of the containing elements.	1

60.4.1 Quotas REST API Examples

This section lists the REST APIs for the Quotas resource.

The REST APIs covered in this section are:

- [Viewing Details of Quota Settings](#)
- [Creating a Quota for a SSA User Role](#)
- [Updating a Quota for a SSA User Role](#)
- [Deleting a Quota for a SSA User Role](#)

60.4.1.1 Viewing Details of Quota Settings

The following table shows an example of a GET operation on the quotas URI to return its representation. This operation returns quota settings for all the SSA user roles for MWaaS.

Table 60-11 GET Request Configuration for Viewing Details of Quota Settings

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/quotas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  name: "Middleware Cloud Quotas"
  description: "Middleware Cloud Quotas per SSA User Role"
  quotas: [1]
  0: {
    roleName: "SSA_USER_ROLE"
    memory: "4"
    javaServersCount: "10"
  }-
  -
  selfLink: "https://slc06ekg.us.example.com:5416/em/websvcs/restful/extws/
  cloudservices/admin/wlaas/v2/quotas"
}
```

60.4.1.2 Creating a Quota for a SSA User Role

The following table shows an example of a POST operation on the quotas URI to create a quota for the SSA user role.

Table 60-12 POST Request Configuration for Creating a Quota Setting for a SSA User Role

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/quotas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "roleName": "SSA_ROLE" "memory": "5" "javaServersCount": "10" }</pre>
Request method	POST

A sample of the response received is shown below.

```
Status 200 OK
{
  message: "Quota has been created."
  statusUri: "https://slc03sey.us.example.com:11040/em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/quotas"
}
```

60.4.1.3 Updating a Quota for a SSA User Role

The following table shows an example of a PUT operation to update a quota for the SSA user role.

Table 60-13 PUT Request Configuration for Updating a Quota Setting for a SSA User Role

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/quotas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "roleName": "SSA_ROLE" "memory": "10" "javaServersCount": "5" }</pre>
Request method	PUT

A sample of the response received is shown below.

```
Status 200 OK
{
  message: "Quota has been updated."
  statusUri: "https://xxyy.us.example.com:11040/em/websvcs/restful/extws/cloudservices/
```

```
admin/wlaas/v2/quotas"
}
```

60.4.1.4 Deleting a Quota for a SSA User Role

The following table shows an example of a DELETE operation to delete a quota for a SSA user role.

Table 60-14 DELETE Request Configuration for Deleting a Quota for a SSA User Role

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/quotas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "roleName": "SSA_ROLE" }</pre>
Request method	DELETE

A sample of the response received is shown below.

```
Status 200 OK
{
  message: "Quota has been deleted."
}
```

60.5 Service Templates for V2

Service Templates is a collection resource representing an SSA administrator's view of all the accessible Service Template resources. The following table describes the Service Template data model.

Table 60-15 Service Templates Collection Resource Data Model

Field	Type	Description	Occurs
name	String	Display name of the collection resource.	1
type	String	Indicates the type of the collection resource.	0..1
hasMore	Boolean	Indicates whether there are more elements in the collection.	1
count	Integer	Number of elements returned.	1
items	Collection <ServiceTemplate>	List of Service Template resources. In case no instances exist, <code>items</code> field is empty.	1
totalCount	Integer	Total number of Service Template resources.	1

Table 60-15 (Cont.) Service Templates Collection Resource Data Model

Field	Type	Description	Occurs
canonicalLink	URI	A GET against this URI refreshes the client representation of this resource.	1
selfLink	URI	Refers to the resource equivalent of the containing elements.	1

60.5.1 Service Templates REST API Examples

This section lists the REST APIs for Service Templates for v2.

The REST APIs covered in this section are:

- [Viewing Details of all Service Templates](#)
- [Viewing Details of a Specific Service Template](#)
- [Creating a Service Template](#)
- [Updating a Service Template](#)
- [Deleting a Service Template](#)

60.5.1.1 Viewing Details of all Service Templates

The following table shows an example of a GET operation on the service templates URI to return its representation.

Table 60-16 GET Request Configuration for Viewing Details of all Service Templates

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

60.5.1.2 Viewing Details of a Specific Service Template

The following table shows an example of a GET operation on a specific service template URI to return its representation.

Table 60-17 GET Request Configuration for Viewing Details of a Specific Service Template

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/21

Table 60-17 (Cont.) GET Request Configuration for Viewing Details of a Specific Service Template

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

60.5.1.3 Creating a Service Template

A POST operation is issued to create a Service template.

Table 60-18 POST Request Configuration for Creating a Service Template

Feature	Specification
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/json

Table 60-18 (Cont.) POST Request Configuration for Creating a Service Template

Feature	Specification
Body	<pre> { "name": "wls1213_njrf_1clms_gc131_150601", "description": "Sample template", "serviceType": "WLAAS", "serviceTemplateTypeId": "56", "rscProvAssocOption": ["byRscProvInst"], "roles": ["DEV"], "payloads": [{ "name": "DEFAULT_PAYLOAD", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_FMWBundle: 315DF307EDA131FDE0530B2AFC0A1076:0.1" }], "characteristics": [{ "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.ENABLEEXALOGICRACKHA", "values": ["No"] }, { "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.DISTRIBUTELOADHOST", "values": ["Yes"] }, { "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.EXPOSEADMINURLS", "values": ["No"] }, { "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.EXPOSEADVANCEDSETTINGS", "values": ["No"] }], "resourceProvider": { "lookupCharacteristics": [{ "purposeId": "1", "characteristics": [{ "name": "ORACLE.SYSMAN.EMAS.MWAAS_ZONE", "displayName": "oracle.sysman.emas.mwaas_zone", "targetType": { "targetType": "mwaas_zone", "targetTypeName": "Middleware Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "Paas Infrastructure Zone" }, "targets": [{ "guid": "31672212A5F96DC1E0530B2AFC0ADE97", </pre>

Table 60-18 (Cont.) POST Request Configuration for Creating a Service Template

Feature	Specification
	<pre> "displayName": "wlaas_pool1" }], "values": ["31672212A5F96DC1E0530B2AFC0ADE97"] }] }, "configurations": [{ "name": "hostForResourceProvisioningScript", "value": "" }, { "name": "portRangeStart", "value": "1024" }, { "name": "wlsUserPassword", "value": "example1" }, { "name": "wlsUserName", "value": "weblogic" }, { "name": "wlsUserPassword2", "value": "example1" }, { "name": "externalHostListForScripts", "value": "" }, { "name": "postScriptForInstance", "value": "" }, { "name": "startupArguments", "value": "" }, { "name": "isScriptExecuteOnManagedServer", "value": "0" }, { "name": "cpuUsagePerInstance", "value": "10" }, { "name": "preScriptForInstance", "value": "" }, { "name": "portRangeEnd", "value": "65000" }, { "name": "memoryUsagePerInstance", "value": "0.25" }, { "name": "jdkHome", "value": </pre>
	"/ade_autofs/gr04_fmw/ASCORE_12.1.2_LINUX.X64.rdd/

Table 60-18 (Cont.) POST Request Configuration for Creating a Service Template

Feature	Specification
	<pre>RELEASE_12.1.2.0.0/jdk7" }, { "name": "isModifyFilePermissionOnJKSFile", "value": "0" }, { "name": "topology", "value": "1" }, { "name": "isScriptExecuteOnAdminServer", "value": "0" }] }</pre>
Request method	POST

A sample of the response received is shown below.

```
Status 200 OK
{"message": "Service template with ID \"31672212A61F6DC1E0530B2AFC0ADE97\" created successfully."
}
```

60.5.1.4 Updating a Service Template

The table below shows the PUT configuration for updating a Service template.

Table 60-19 PUT Request Configuration for Updating a Service Template

Feature	Specification
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/46
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 60-19 (Cont.) PUT Request Configuration for Updating a Service Template

Feature	Specification
Body	<pre> { "name": "wls1213_njrf_1clms_gc131_150601", "description": "Sample template", "serviceType": "WLAAS", "serviceTemplateTypeId": "46", "rscProvAssocOption": ["byRscProvInst"], "roles": ["DEV"], "payloads": [{ "name": "DEFAULT_PAYLOAD", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_FMWBundle: 315DF307EDA131FDE0530B2AFC0A1076:0.1" }], "characteristics": [{ "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.ENABLEEXALOGICRACKHA", "values": ["No"] }, { "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.DISTRIBUTELOADHOST", "values": ["Yes"] }, { "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.EXPOSEADMINURLS", "values": ["No"] }, { "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.EXPOSEADVANCEDSETTINGS", "values": ["No"] }], "resourceProvider": { "lookupCharacteristics": [{ "purposeId": "1", "characteristics": [{ "name": "ORACLE.SYSMAN.EMAS.MWAAS_ZONE", "displayName": "oracle.sysman.emas.mwaas_zone", "targetType": { "targetType": "mwaas_zone", "targetTypeName": "Middleware Pool", "parentTargetType": "self_service_zone", "parentTargetTypeName": "Paas Infrastructure Zone" }, "targets": [{ "guid": "31672212A5F96DC1E0530B2AFC0ADE97", </pre>

Table 60-19 (Cont.) PUT Request Configuration for Updating a Service Template

Feature	Specification
	<pre> "displayName": "wlaas_pool1" }], "values": ["31672212A5F96DC1E0530B2AFC0ADE97"] }] }, "configurations": [{ "name": "hostForResourceProvisioningScript", "value": "" }, { "name": "portRangeStart", "value": "1024" }, { "name": "wlsUserPassword", "value": "example1" }, { "name": "wlsUserName", "value": "weblogic" }, { "name": "wlsUserPassword2", "value": "example1" }, { "name": "externalHostListForScripts", "value": "" }, { "name": "postScriptForInstance", "value": "" }, { "name": "startupArguments", "value": "" }, { "name": "isScriptExecuteOnManagedServer", "value": "0" }, { "name": "cpuUsagePerInstance", "value": "10" }, { "name": "preScriptForInstance", "value": "" }, { "name": "portRangeEnd", "value": "65000" }, { "name": "memoryUsagePerInstance", "value": "0.25" }, { "name": "jdkHome", "value": "/ade_autofs/gr04_fmw/SCORE_12.1.2_LINUX.X64.rdd/ </pre>

Table 60-19 (Cont.) PUT Request Configuration for Updating a Service Template

Feature	Specification
	<pre>RELEASE_12.1.2.0.0/jdk7" }, { "name": "isModifyFilePermissionOnJKSFile", "value": "0" }, { "name": "topology", "value": "1" }, { "name": "isScriptExecuteOnAdminServer", "value": "0" }] } }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "message": "Service template with ID \"46\" updated successfully."
}
```

60.5.1.5 Deleting a Service Template

The following table shows an example of a DELETE operation to delete a service template.

Table 60-20 DELETE Request Configuration for Deleting a Service Template

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/21
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

60.6 Load Balancer Configurations for V2

Load balancer configurations is a collection resource. The table below shows the data model for the Load balancer configurations collection resource.

Table 60-21 Load Balancer Configurations Data Model for V2

Field	Type	Description	Occurs
name	String	Display name of the load balancer configurations.	1
description	String	Description of the load balancer configurations resource.	1
lbrconfigs	Collection <Lbrconfig Item>	List of load balancer configurations. In case, load balancer configurations do not exist, the lbrconfigs field will be empty.	1
selfLink	URI	Refers to the resource equivalent of the containing elements.	1

60.6.1 Load Balancer Configuration for V2

Load balancer configuration is a singular resource. The table below shows the data model for the Load balancer configuration singular resource.

Table 60-22 Load Balancer Configuration Data Model for V2

Field	Type	Description	Occurs
name	String	Display name of the load balancer configuration.	1
description	String	Description of the load balancer configuration resource.	1
type	String	Indicates the type of Load balancer. It is either Oracle Traffic Director (OTD), or Oracle Https Server(OHS), or third party.	1
id	Integer	Indicates the Load balancer configuration ID. The id is unique.	1
owner	String	Owner of the Load balancer configuration.	1
host	String	Load balancer host. The Load balancer host must be added as a EM target in advance.	1
credential	String	Credential associated with the Load balancer host.	1
agentTargetName	String	Indicates the agent target name.	1
instanceHome	String	Load balancer instance home location.	1
poolTargets	Collection <Pool Guids >	List of Guids of Middleware pool associated to the Load balancer (Resource provider).	1
properties	Collection <String>	List of all properties of Load balancer configuration.	1
selfLink	URI	Refers to the resource equivalent of the containing elements.	1

60.6.2 Load Balancer Configurations REST API Examples

This section details the REST APIs for Load balancer configurations for v2.

The REST APIs covered in this section are:

- [Viewing all the Load Balancer Configurations](#)
- [Viewing Details of a Specific Load Balancer Configuration](#)
- [Creating a Load Balancer Configuration](#)
- [Updating a Load Balancer Configuration](#)
- [Deleting a Load Balancer Configuration](#)

60.6.2.1 Viewing all the Load Balancer Configurations

The following table shows an example of a GET operation to view all the Load balancer configurations.

Table 60-23 GET Request Configuration for Viewing Details of all Load Balancer Configurations

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  name: "Load Balancer Configurations"
  description: "Load Balancer Configurations available  "
  selfLink: "https://xyxy.example.com:5416/em/websvcs/restful/extws/cloudservices/
  admin/wlaas/v2/lbrconfigs"
  lbrconfigs: [1]
  0: {
    name: "ohs_1"
    type: "OHS"
    id: 1000
    selfLink: "https://xyxy.example.com:5416/em/websvcs/restful/extws/cloudservices/
    admin/wlaas/v2/lbrconfigs/1000"
  }-
  -
}
```

60.6.2.2 Viewing Details of a Specific Load Balancer Configuration

The following table shows an example of a GET operation to view a specific Load balancer configuration.

Table 60-24 GET Request Configuration for Viewing Details of a Specific Load Balancer Configuration

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs/1000
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received for OHS is shown below.

```
{
name: "ohs_1"
description: null
type: "OHS"
id: 1000
owner: "SSA_ADMIN1"
host: "xyxy.example.com"
credential: "Insufficient Priviege"
agentTargetName: "xxxxy.example.com:1838"
instanceHome: "/scratch/PS5_OHS/instance_home"
poolTargets: [1]
0: "10729BD1A3B12FA254232EE4F84CB71B"
-
properties: {
OHS_ROUTING_HTTP_PORT: "80"
HTTP_PORT_RANGE: "8000-9000"
OHS_ROUTING_PROTOCOL: "HTTP"
COMPONENT_NAME: "ohs1"
}-
selfLink: "https://xyxy.example.com:5416/em/websvcs/restful/extws/cloudservices/
admin/wlaas/v2/lbrconfigs/1000"
}
```

A sample of the response received for OTD 11g is shown below.

```
{
"name": "otd11config"
"description": null
"type": "OTD"
"id": 1000
"owner": "SYSMAN"
"host": "sl.example.com"
"credential": "SSHAZAD_CRED"
"agentTargetName": "sl.example.com:4112"
"instanceHome": "/scratch/sma/otdps7/trafficdirector_Home"
"poolTargets":
[
1]
0: "10615D604F180B0FC539057A5FF0B509"
-
"properties":
{
"SNMP_PORT": "11161"
"OTD_INSTANCENODES": "slc00dvd"
}
```

```

"HTTP_PORT": "80"
"CONFIG_NAME": "config1"
"HTTP_PORT_RANGE": "8000-9000"
"ADMIN_LISTEN_PORT": "6969"
"PRIV_NAMED_CRED": "OTD11G_CREDS"
"VERSION_CATEGORY": "pre12c"
"ADMIN_PROTOCOL": "HTTPS"
"ROUTING_PROTOCOL": "HTTP"
}
-
"selfLink": "https://sl.example.com:5416/em/websvcs/restful/extws/cloudservices/
admin/wlaas/v2/lbrconfigs/1000"
}

```

A sample of the response received for OTD 12c is shown below.

```

{
"name": "otd12cconfig"
"description": null
"type": "OTD"
"id": 1000
"owner": "SYSMAN"
"host": "sl.example.com"
"credential": "SSHAZAD_CRED"
"agentTargetName": "sl.example.com:4112"
"instanceHome": "/scratch/sma/fmwc122110_stage1"
"poolTargets":
[
1]
0: "7AE4F072A89F9B2D45F8DE82282A9128"
-
"properties":
{
"SNMP_PORT": "11161"
"ADMIN_SERVER_PROTOCOL": "HTTP"
"OTD_INSTANCENODES": "sl.example.com"
"HTTP_PORT": "80"
"CONFIG_NAME": "config1"
"HTTP_PORT_RANGE": "8000-9000"
"WEBLOGIC_ADMIN_SERVER_CRED": "OTD12C_DOMAIN_CREDS"
"ADMIN_SERVER_PORT": "17001"
"VERSION_CATEGORY": "post12c"
"ROUTING_PROTOCOL": "HTTP"
}
-
"selfLink": "https://sl.example.com:5416/em/websvcs/restful/extws/cloudservices/
admin/wlaas/v2/lbrconfigs/1000"
}

```

60.6.2.3 Creating a Load Balancer Configuration

The following table shows an example of a POST operation to create a Load balancer configuration.

Table 60-25 POST Request Configuration for Creating a Load Balancer Configuration

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body for OHS	<pre> { "name": "lbr1", "description": "desc by rest", "type": "OHS", "host": "xyxy.example.com", "agentTargetName": "xyxy.example.com:1838", "credential": "NC_HOST_2014-08-13-015648", "instanceHome": "/scratch/PS5_OHS/instance_home", "properties": { "items": [{ "name": "HTTP_PORT_RANGE", "value": "8000-9000" }, { "name": "OHS_ROUTING_PROTOCOL", "value": "HTTP" }, { "name": "COMPONENT_NAME", "value": "ohs1" }] }, "poolTargets": ["002E15567E25ED53EA2EC76BADE76B08"] } </pre>
Body for OTD 11g (pre 12c)	<pre> { "name": "lbr_sumaiya_new", "description": "desc by rest1", "type": "OTD", "host": "xyxy.example.com", "agentTargetName": "xyxy.example.com:1833", "credential": "HOST_CREDS", "instanceHome": "/scratch/smawa/fmwc122110_stage1", "properties": { "items": [{ "name": "SNMP_PORT", "value": "11161" }, { "name": "OTD_INSTANCENODES", "value": "slc0" }, { "name": "HTTP_PORT", "value": "80" }, { "name": "HTTP_PORT_RANGE", "value": "8000-9000" }, { "name": "ADMIN_LISTEN_PORT", "value": "6969" }, { "name": "PRIV_NAMED_CRED", "value": "OTD11G_CREDS" }, { "name": "VERSION_CATEGORY", "value": "pre12c" }, { "name": "ADMIN_PROTOCOL", "value": "HTTPS" }, { "name": "ROUTING_PROTOCOL", "value": "HTTP" }, { "name": "CERT_NAME", "value": "www.oracle.com" }, { "name": "VIRTUAL_SERVER_NAME", "value": "vhs1" }] }, "poolTargets": ["34239A20C9FFD85C897FB92040946586"] } </pre>

Table 60-25 (Cont.) POST Request Configuration for Creating a Load Balancer Configuration

Feature	Description
Body for OTD 12c	<pre>{ "name": "lbr_sumaiya_new", "description": "desc by rest1", "type": "OTD", "host": "xyxy.example.com", "agentTargetName": "xyxy.example.com:1833", "credential": "HOST_CREDS", "instanceHome": "/scratch/smawa/fmwc122110_stage1", "properties":{ "items": [{"name":"HTTP_PORT_RANGE", "value":"8000-9000"}, {"name":"ROUTING_PROTOCOL", "value": "HTTP"}, {"name":"ADMIN_SERVER_PROTOCOL", "value": "HTTP"}, {"name":"OTD_INSTANCENODES", "value": "slc0.example.com"}, {"name":"CONFIG_NAME", "value": "config1"}, {"name":"HTTP_PORT", "value": "80"}, {"name":"WEBLOGIC_ADMIN_SERVER_CRED", "value": "OTD12C_DOMAIN_CREDS"}, {"name":"ADMIN_SERVER_PORT", "value": "17001"}, {"name":"VERSION_CATEGORY", "value": "post12c"}, {"name":"CERT_NAME", "value": "www.oracle.com"}, {"name":"VIRTUAL_SERVER_NAME", "value": "vhs1"}] }, "poolTargets": ["34239A20C9FFD85C897FB92040946586"] }</pre>
Request method	POST

A sample of the response received is shown below.

```
Status 200 OK
{
  message: "Load Balancer Configuration has been created with ID: 1000"
  statusUri: "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs/1000"
}
```

60.6.2.4 Updating a Load Balancer Configuration

The following table shows an example of a PUT operation to update a Load balancer configuration.

Table 60-26 PUT Request Configuration for Updating a Load Balancer Configuration

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs

Table 60-26 (Cont.) PUT Request Configuration for Updating a Load Balancer Configuration

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body for OHS	<pre> { "name": "lbr1", "description": "desc by rest", "type": "OHS", "id": 1004, "host": "xyxy.example.com", "agentTargetName": "xyxy.example.com:1838", "credential": "NC_HOST_2014-08-13-015648", "instanceHome": "/scratch/PS5_OHS/instance_home", "properties":{ "items": [{ "name":"HTTP_PORT_RANGE", "value":"8001-9001"}, { "name":"OHS_ROUTING_PROTOCOL", "value": "HTTP"}, { "name":"COMPONENT_NAME", "value": "ohs1"}] }, "poolTargets": ["002E15567E25ED53EA2EC76BADE76B08"] } </pre>
Body for OTD 11g (pre 12c)	<pre> { "name": "lbr_sumaiya_new", "description": "desc by rest1", "type": "OTD", "id": "1004", "host": "xyxy.example.com", "agentTargetName": "xyxy.example.com:1833", "credential": "HOST_CREDS", "instanceHome": "/scratch/smawa/fmwc122110_stage1", "properties":{ "items": [{ "name": " SNMP_PORT ", "value": "11161"}, { "name": " OTD_INSTANCENODES ", "value": " slc0"}, { "name": " HTTP_PORT", "value": "80"}, { "name": "HTTP_PORT_RANGE", "value": "8000-9000"}, { "name": " ADMIN_LISTEN_PORT", "value": "6969"}, { "name": " PRIV_NAMED_CRED ", "value": " OTD11G_CREDS"}, { "name": "VERSION_CATEGORY ", "value": "pre12c"}, { "name": "ADMIN_PROTOCOL", "value": "HTTPS"}, { "name": "ROUTING_PROTOCOL", "value": "HTTP"}, { "name": "CERT_NAME", "value": "www.oracle.com"}, { "name": "VIRTUAL_SERVER_NAME", "value": "vhs1"}] }, "poolTargets": ["34239A20C9FFD85C897FB92040946586"] } </pre>

Table 60-26 (Cont.) PUT Request Configuration for Updating a Load Balancer Configuration

Feature	Description
Body for OTD 12c	<pre>{ "name": "lbr_sumaiya_new", "description": "desc by rest1", "type": "OTD", "id": "1004", "host": "xyxy.example.com", "agentTargetName": "xyxy.example.com:1833", "credential": "HOST_CREDS", "instanceHome": "/scratch/smawa/fmwc122110_stage1/sshazad", "properties": { "items": [{ "name": "HTTP_PORT_RANGE", "value": "8000-9000" }, { "name": "ROUTING_PROTOCOL", "value": "HTTP" }, { "name": "ADMIN_SERVER_PROTOCOL", "value": "HTTP" }, { "name": "OTD_INSTANCENODES", "value": "slc0.example.com" }, { "name": "CONFIG_NAME", "value": "config1" }, { "name": "HTTP_PORT", "value": "80" }, { "name": "WEBLOGIC_ADMIN_SERVER_CRED", "value": "OTD12C_DOMAIN_CREDS" }, { "name": "ADMIN_SERVER_PORT", "value": "17001" }, { "name": "VERSION_CATEGORY", "value": "post12c" }, { "name": "CERT_NAME", "value": "www.oracle.com" }, { "name": "VIRTUAL_SERVER_NAME", "value": "vhs1" }] }, "poolTargets": ["34239A20C9FFD85C897FB92040946586"] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
Status 200 OK
{
  message: "Load Balancer Configuration has been updated."
  statusUri: "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs"
}
```

60.6.2.5 Deleting a Load Balancer Configuration

The following table shows an example of a DELETE operation to delete a Load balancer configuration.

Table 60-27 DELETE Request Configuration for Deleting a Load Balancer Configuration

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs/1000

Table 60-27 (Cont.) DELETE Request Configuration for Deleting a Load Balancer Configuration

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
Status 200 OK
{
  message: "Load Balancer Configuration has been deleted."
}
```

60.7 Service Instance Action for V2

Service instance action resource is a SSA user resource. The table below shows the data model for this resource.

Table 60-28 Service Instance Action Data Model for V2

Field	Type	Description	Occurs
id	String	Request ID of the performed action.	1
actionName	String	Name of the action.	1
canonicalLink	String	A GET request against this URI refreshes the client representation of this resource.	1

60.8 User Operation REST API Examples for V2

The following REST API examples are described in this section:

- [Viewing Details of all Service Templates](#)
- [Viewing Details of all Service Instances](#)
- [Viewing all Service Instances With UP Status](#)
- [Creating a Service Instance Request](#)
- [Viewing Details of all Possible Actions on a Specific Service Instance](#)
- [Scaling Up a Service Instance](#)
- [Scaling Down a Service Instance](#)
- [Stopping a Service Instance](#)
- [Starting a Service Instance](#)
- [Deleting a Service Instance](#)
- [Viewing Details of Java EE Applications Components from the Software Library](#)

- [Deploying an Application](#)
- [Redeploying an Application](#)
- [Un-deploying an Application](#)
- [Stopping an Application](#)
- [Starting an Application](#)
- [Viewing Details of all Applications Deployed in a Domain](#)
- [Viewing an Application URL](#)
- [Viewing Details of the Libraries Deployed in a Domain](#)
- [Viewing the WebLogic Console URL](#)
- [Viewing Details of All the Data Sources](#)
- [Viewing Details of All Data Sources in the Profile](#)
- [Creating a Data Source](#)
- [Editing a Data Source](#)
- [Deleting a Data Source](#)
- [Testing a Data Source](#)

60.8.1 Viewing Details of all Service Templates

The following table shows an example of a GET operation to view all the service templates.

Table 60-29 GET Request Configuration for Viewing Details of all Service Templates

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  name: "Services"
  type: "Service"
  totalResults: 1
  cfwItems: [1]
  0: {
    id: "1"
    name: "PS4_LowHeapTemplate"
    displayName: "PS4_LowHeapTemplate"
    guid: "089D4C0EA3EB1E41E0532B54F20A7740"
    serviceType: "WLAAS"
    serviceFamily: "MIDDLEWARE_CFW"
    description: "This is a service template using the profile"
```

```

    meta: "https://xyxy.example.com:11040/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/services/089D4C0EA3EB1E41E0532B54F20A7740/metadata"
  canonicalLink: {
    href: "https://xyxy.example.com:11040/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/services/0 89D4C0EA3EB1E41E0532B54F20A7740"
  }-
}-
-
canonicalLink: {
href: "https://xyxy.example.com:11040/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/services/"
}-
selfLink: {
href: "https://xyxy.example.com:11040/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/services/"
}-
}

```

60.8.2 Viewing Details of all Service Instances

The following table shows an example of a GET operation to view all the service instances.

Table 60-30 GET Request Configuration for Viewing Details of all Service Instances

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
name: "Service Instances Summary"
totalResults: 1
serviceInstanceSummary: [1]
0: {
status: "STATUS_UP"
href: "https://xyxy.example.com:11040/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/serviceinstances/?expanded=true&status=STATUS_UP"
count: 1
}-
-
canonicalLink: {
href: "https://xyxy.example.com:11040/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/serviceinstances"
}-
selfLink: {
href: "https://xyxy.example.com:11040/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/serviceinstances"
}-
}

```

60.8.3 Viewing all Service Instances With UP Status

The following table shows an example of a GET operation to view all the service instances with UP status.

Table 60-31 GET Request Configuration for Viewing all Service Instances with UP Status

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/?expanded=true&status=STATUS_UP
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  name: "Service Instances"
  type: "Service Instance"
  totalResults: 0
  cfwItems: [0]
  canonicalLink: {
    href: "https://xyxy.example.com:11040/em/websvcs/restful/extws/
    cloudservices/ssa/cfw/v2/serviceinstances/?expanded=true&status=STATUS_UP"
  }-
  selfLink: {
    href: "https://xyxy.example.com:11040/em/websvcs/restful/extws/
    cloudservices/ssa/cfw/v2/serviceinstances/?expanded=true&status=STATUS_UP"
  }-
}
```

60.8.4 Creating a Service Instance Request

The following table shows an example of a POST operation to request a service instance.

Table 60-32 POST Request Configuration for Creating a Service Instance Request

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 60-32 (Cont.) POST Request Configuration for Creating a Service Instance Request

Feature	Description
Body	<pre>{ "offeringId": "0731632460E41A38E0539D8DF50A9D13", "name": "rest_inst01", "instanceName": "rest_inst01", "configurations": [{"name": "serviceName", "value": "rest_inst01"}, {"name": "initialNumberOfManagedServers", "value": "1"}, {"name": "wlsNewPassword", "value": "extra3"}, {"name": "wlsNewUserName", "value": "controll1"}] }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "requests": [{"id": "1", "actionName": "CREATE",
    "canonicalLink": {"href": "https://xyxy.example.com:11040/em/websvcs/restful/
extws/cloudservices/ssa/cfw/v2/services/1"}
  }
]
```

The following table shows an example of a POST operation to request a service instance using a service template where the profile contains either JRF or application specific data sources.

Table 60-33 POST Request Configuration for Creating a Service Instance Request Using a Service Template Where The Profile Contains JRF or Application Specific Data Sources

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 60-34 GET Request Configuration for Viewing Details of all Possible Actions on a Specific Service Instance

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E/actions
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name":"Actions","type":"Action","totalResults":13,
  "cfwItems":[
    {"id":"10","name":"DELETE","displayName":"Delete","description":"Deletes WebLogic Service instance."},
    {"id":"11","name":"START","displayName":"Start Instance","description":"Starts the WebLogic Service instance."},
    {"id":"12","name":"STOP","displayName":"Stop Instance","description":"Stops the WebLogic Service instance."},
    {"id":"13","name":"SCALE_UP","displayName":"Scale Up","description":"Scale up WebLogic Service instance."},
    {"id":"14","name":"SCALE_DOWN","displayName":"Scale Down","description":"Scale down WebLogic Service instance."},
    {"id":"15","name":"CREATEDATASOURCE","displayName":"Create Data Source","description":"Request for creating a Data source."},
    {"id":"16","name":"EDITDATASOURCE","displayName":"Edit Data Source","description":"Request for editing a JDBC Data source."},
    {"id":"17","name":"DELETEDATASOURCE","displayName":"Delete Data Source","description":"Request for deleting a JDBC Data source."},
    {"id":"18","name":"DEPLOY_APP","displayName":"Deploy Application","description":"Deploy application from service."},
    {"id":"19","name":"REDEPLOY_APP","displayName":"Redeploy Application","description":"Redeploy application from service."},
    {"id":"20","name":"UNDEPLOY_APP","displayName":"Undeploy Application","description":"Undeploy application from service."},
    {"id":"21","name":"STARTAPPLICATION","displayName":"Start Application","description":"Request for Starting a J2EE Application"},
    {"id":"22","name":"STOPAPPLICATION","displayName":"Stop Application","description":"Request for Stopping a J2EE Application"}],
  "canonicalLink":{"href":"/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/7B7027E1E89427C6B3E8B9BE494AD9E8/actions"},
  "selfLink":{"href":"/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/7B7027E1E89427C6B3E8B9BE494AD9E8/actions"}
}
```

60.8.6 Scaling Up a Service Instance

The following table shows an example of a PUT operation to scale up a service instance.

Table 60-35 PUT Request Configuration for Scaling Up a Service Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "actionId": 33, "configurations": [{"name": "numberOfServers", "value": "1"}] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests": [{"id": "27",
    "actionName": "SCALE_UP",
    "canonicalLink": {"href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/27"}
  }]
}
```

60.8.7 Scaling Down a Service Instance

The following table shows an example of a PUT operation to scale down a service instance.

Table 60-36 PUT Request Configuration for Scaling Down a Service Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "actionId": 34, "configurations": [{"name": "numberOfServers", "value": "1"}] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests": [{"id": "28",
    "actionName": "SCALE_DOWN",
    "canonicalLink": {"href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/28"}
  }]
}
```

60.8.8 Stopping a Service Instance

The following table shows an example of a PUT operation to stop a service instance.

Table 60-37 PUT Request Configuration for Stopping a Service Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	{"actionId":32}
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests":[{"id":"29",
    "actionName":" STOP",
    "canonicalLink":{"href":"https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/29"}
  }]
}
```

60.8.9 Starting a Service Instance

The following table shows an example of a PUT operation to start a service instance.

Table 60-38 PUT Request Configuration for Starting a Service Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	{"actionId":31}
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests":[{"id":"30",
    "actionName":" START ",
    "canonicalLink":{"href":"https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/30"}
  }]
}
```

60.8.10 Deleting a Service Instance

The following table shows an example of a PUT operation to delete a service instance.

Table 60-39 PUT Request Configuration for Deleting a Service Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	{"actionId":30}
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests":[{"id":"40",
    "actionName":"DELETE",
    "canonicalLink":{"href":"https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/40"}
  }]
}
```

60.8.11 Viewing Details of Java EE Applications Components from the Software Library

The following table shows an example of a GET operation to view details of the Java EE application components from the software library.

Table 60-40 GET Request Configuration for Viewing Details of Java EE Applications Components from the Software Library

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/javaeeappcomponents
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "name":"Java EE Application Components uploaded in My Library ",
  "selfLink":"https://xyxy.example.com:443/em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/javaeeappcomponents",
  "appUrns":[{"type":"Java EE
```

```
Application", "description": null, "status": "Ready", "appName": "Riddles", "creator": "MWAS_SSA_USER1", "revision": "0.1", "maturity": "Untested", "createdTime": "2014-10-28 01:42:22.0",
"appUrn": "oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_JavaEEApplication:06783833EA2545ECE0537492F20AAD84:0.1"},
{"type": "Java EE
Application", "description": null, "status": "Ready", "appName": "riddles_1413283657449",
"creator": "MWAS_SSA_USER1", "revision": "0.1", "maturity": "Untested", "createdTime": "2014-10-14 10:47:37.0",
"appUrn": "oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_JavaEEApplication:055ED28CCB3F3E9BE0537492F20A5827:0.1"}
]
}
```

60.8.12 Deploying an Application

The following table shows an example of a PUT operation to deploy an application.

Table 60-41 PUT Request Configuration for Deploying an Application

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "actionId": 38, "configurations": [{ "name": "applicationName", "value": "Riddles_app" }, { "name": "isSharedLibrary", "value": "false" }, { "name": "applicationUrn", "value": "oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_JavaEEApplication:077E2D85D70E60D0E0539D8DF50A19F1:0.1" }] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests": [
    {
      "id": "31",
      "actionName": "DEPLOY_APP",
      "canonicalLink": {
        "href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/31"
      }
    }
  ]
}
```

60.8.13 Redeploying an Application

The following table shows an example of a PUT operation to redeploy an application.

Table 60-42 PUT Request Configuration for Redeploying an Application

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "actionId": 39, "configurations": [{ "name": "applicationName", "value": "Riddles_app" }, { "name": "isSharedLibrary", "value": "false" }, { "name": "applicationUrn", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_JavaEEApplication: 06783833EA2545ECE0537492F20AAD84:0.1" }] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests": [
    {
      "id": "32",
      "actionName": " REDEPLOY_APP ",
      "canonicalLink": {
        "href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/32"
      }
    }
  ]
}
```

60.8.14 Un-deploying an Application

The following table shows an example of a PUT operation to un-deploy an application.

Table 60-43 PUT Request Configuration for Un-deploying an Application

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "actionId": 40, "configurations": [{ "name": "applicationName", "value": "Riddles_app" }] }</pre>
Request method	PUT

A sample of the response received is shown below.

```

{
  "requests": [{"id": "33",
    "actionName": " UNDEPLOY_APP",
    "canonicalLink": {"href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/33"}
  }]
}

```

60.8.15 Stopping an Application

The following table shows an example of a PUT operation to stop an application.

Table 60-44 PUT Request Configuration for Stopping an Application

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre> { "actionId": 41, "configurations": [{ "name": "applicationName", "value": "Riddles_app" }, { "name": "moduleType", "value": "ear" }] } </pre>
Request method	PUT

A sample of the response received is shown below.

```

{
  "requests": [{"id": "34",
    "actionName": " STOPAPPLICATION",
    "canonicalLink": {"href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/34"}
  }]
}

```

60.8.16 Starting an Application

The following table shows an example of a PUT operation to start an application.

Table 60-45 PUT Request Configuration for Starting an Application

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 60-45 (Cont.) PUT Request Configuration for Starting an Application

Feature	Description
Body	<pre>{ "actionId": 42, "configurations": [{ "name": "applicationName", "value": "Riddles_app" }, { "name": "moduleType", "value": "ear" }] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests": [
    {
      "id": "35",
      "actionName": "STARTAPPLICATION",
      "canonicalLink": {
        "href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/35"
      }
    }
  ]
}
```

60.8.17 Viewing Details of all Applications Deployed in a Domain

The following table shows an example of a GET operation to view details of all the applications deployed in a domain.

Table 60-46 GET Request Configuration for Viewing Details of all Applications Deployed in a Domain

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E/applications
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  name: "Applications "
  description: "Applications deployed in the domain"
  selfLink: "https://xyxy.example.com:5416/em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/serviceinstances/0148F63816763D1C34900CBDCB86C3DB/applications"
  apps: [1]
  0: {
    appName: "/mwaas_slc06ekg__1_149e5639b55_SSA_USER1/slc06ekg__1_149e5639b55_SSA_USER1/Cluster_1/appl"
    moduleType: "war"
    appDisplayName: "appl"
  }
}
```

```
}-
}
```

60.8.18 Viewing an Application URL

The following table shows an example of a PUT operation to view an application's URL.

Table 60-47 PUT Request Configuration for Viewing Details an Application's URL

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E/applications
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	{ "appDisplayName": "app1" }
Request method	PUT

A sample of the response received is shown below.

```
{
  name: "Application URLs"
  description: "Applications URLs for deployed Application"
  appName: "app1"
  selfLink: "https://xyxy.example.com:5416/em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/serviceinstances/0148F63816763D1C34900CBDCB86C3DB/applications"
  apps: [1]
  0: {
    httpsurl: "http://xyxy.example.com:18536/Calendar"
    httpsUrl: "https://xyxy.example.com:13241/Calendar"
  }
}
```

60.8.19 Viewing Details of the Libraries Deployed in a Domain

The following table shows an example of a GET operation to view details of all the libraries deployed in a domain.

Table 60-48 GET Request Configuration for Viewing Details of all Libraries Deployed in a Domain

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E/libraries
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  name: "Libraries"
  description: "Libraries deployed in the domain"
  selfLink: "https://xyxy.example.com:5416/em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/serviceinstances/0148F63816763D1C34900CBDCB86C3DB/libraries"
  libs: [18]
  0: {
    libName: "oracle.adf.desktopintegration.model"
    libDisplayName: "oracle.adf.desktopintegration.model(1.0,11.1.1.2.0)"
  }-
  1: {
    libName: "adf.oracle.domain.webapp"
    libDisplayName: "adf.oracle.domain.webapp(1.0,11.1.1.2.0)"
  }-
  2: {
    libName: "oracle.adf.desktopintegration"
    libDisplayName: "oracle.adf.desktopintegration(1.0,11.1.1.2.0)"
  }-
  3: {
    libName: "ohw-uix"
    libDisplayName: "ohw-uix(5,5.0)"
  }-
  4: {
    libName: "oracle.wsm.seedpolicies"
    libDisplayName: "oracle.wsm.seedpolicies(11.1.1,11.1.1)"
  }-
  5: {
    libName: "adf.oracle.domain"
    libDisplayName: "adf.oracle.domain(1.0,11.1.1.2.0)"
  }-
  6: {
    libName: "oracle.pwdgen"
    libDisplayName: "oracle.pwdgen(11.1.1,11.1.1.2.0)"
  }-
  7: {
    libName: "oracle.jrf.system.filter"
    libDisplayName: "oracle.jrf.system.filter"
  }-
  8: {
    libName: "oracle.dconfig-infra"
    libDisplayName: "oracle.dconfig-infra(11,11.1.1.1.0)"
  }-
  9: {
    libName: "orai18n-adf"
    libDisplayName: "orai18n-adf(11,11.1.1.1.0)"
  }-
  10: {
    libName: "ohw-rcf"
    libDisplayName: "ohw-rcf(5,5.0)"
  }-
  11: {
    libName: "jsf"
    libDisplayName: "jsf(1.2,1.2.9.0)"
  }-
  12: {
    libName: "adf.oracle.businesseditor"
    libDisplayName: "adf.oracle.businesseditor(1.0,11.1.1.2.0)"
  }-
  13: {
```

```

libName: "oracle.jsp.next"
libDisplayName: "oracle.jsp.next(11.1.1,11.1.1)"
}-
14: {
libName: "oracle.adf.management"
libDisplayName: "oracle.adf.management(1.0,11.1.1.2.0)"
}-
15: {
libName: "UIX"
libDisplayName: "UIX(11,11.1.1.1.0)"
}-
16: {
libName: "jstl"
libDisplayName: "jstl(1.2,1.2.0.1)"
}-
17: {
libName: "oracle.adf.dconfigbeans"
libDisplayName: "oracle.adf.dconfigbeans(1.0,11.1.1.2.0)"
}-
}

```

60.8.20 Viewing the WebLogic Console URL

The following table shows an example of a GET operation to view the WebLogic console URL.

Table 60-49 GET Request Configuration for Viewing the WebLogic Console URL

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E/weblogicconsoleurls
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

60.8.21 Viewing Details of All the Data Sources

The following table shows an example of a GET operation to view details of all the data sources.

Table 60-50 GET Request Configuration for Viewing Details of all Data Sources

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E/datasources
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None

Table 60-50 (Cont.) GET Request Configuration for Viewing Details of all Data Sources

Feature	Description
Request method	GET

A sample of the response received is shown below.

```
{
name: "Data Sources"
description: "Data Sources in the domain"
selfLink: "https://xyxy.example.com:5416/em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/serviceinstances/0148F63816763D1C34900CBDCB86C3DB/datasources"
datasources: [1]
0: {
jndiName: [1]
0: "ds_1"
-
driverClass: null
dbUrl: "jdbc:oracle:thin:@xyxy.example.com:15044:sekg3"
dsName: "ds_1"
driverKey: "oracle.jdbc.OracleDriver"
}-
-
}
```

60.8.22 Viewing Details of All Data Sources in the Profile

The following table shows an example of a GET operation to view all the data sources present in a WLaaS profile associated with the service template.

Table 60-51 GET Request Configuration or Viewing Details of All Data Sources in the Profile

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/serviceinstances/2676FEE71F762ED4E0530B2AFC0AB9D5/profiledatasources
Request headers	Authorization: basic ZGVVtb3VzZXI6ZGVVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
"selfLink": "https://sl.example.com:5416/em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/serviceinstances/2676FEE71F762ED4E0530B2AFC0AB9D5/profiledatasources"
"name": "Data Sources","description": "Data sources in the Profile","datasources":
[4]
0: {
"dsName": "LocalSvcTblDataSource","driverClass": null,"driverKey": null,"jndiName":
null,"dbUrl": "jdbc:oracle:thin:@//sl.example.com:1525/MYDB2","userName": "DEV3_STB"
```

```

}
1: {
  "dsName": "opss-audit-DBDS", "driverClass": null, "driverKey": null, "jndiName":
  null, "dbUrl": "jdbc:oracle:thin:@//sl.example.com:1525/MYDB2", "userName":
  "DEV3_IAU_APPEND"
}
2: {
  "dsName": "opss-audit-viewDS", "driverClass": null, "driverKey": null, "jndiName":
  null, "dbUrl": "jdbc:oracle:thin:@//sl.example.com:1525/MYDB2", "userName":
  "DEV3_IAU_VIEWER"
}
3: {
  "dsName": "opss-data-source", "driverClass": null, "driverKey": null, "jndiName":
  null, "dbUrl": "jdbc:oracle:thin:@//sl.example.com:1525/MYDB2", "userName": "DEV3_OPSS"
}
}

```

60.8.23 Creating a Data Source

The following table shows an example of a PUT operation to create a data source.

Table 60-52 PUT Request Configuration for Creating a Data Source

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	{ "actionId": 35, "configurations": [{ "name": "dsName", "value": "Test_DS1"}, { "name": "jndiName", "value": "DS_1"}, { "name": "driverClass", "value": "oracle.jdbc.OracleDriver"}, { "name": "jdbcUrl", "value": "jdbc:oracle:thin:@xyxy.example.com:13914:db2430"}, { "name": "dbUserName", "value": "sysman"}, { "name": "dbPassword", "value": "Welcome1"}]}
Request method	PUT

A sample of the response received is shown below.

```

{
  "requests": [{
    "id": "36",
    "actionName": "CREATEDATASOURCE",
    "canonicalLink": {
      "href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/36"}
    }
  ]
}

```

60.8.24 Editing a Data Source

The following table shows an example of a PUT operation to edit a data source.

Table 60-53 PUT Request Configuration for Editing a Data Source

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "actionId": 36, "configurations": [{ "name": "dsName", "value": "Test_DS1" }, { "name": "jndiName", "value": "DS_1_edit" }, { "name": "driverClass", "value": "oracle.jdbc.OracleDriver" }, { "name": "jdbcUrl", "value": "jdbc:oracle:thin:@xyxy.example.com:13914:db2430" }, { "name": "dbUserName", "value": "sysman" }, { "name": "dbPassword", "value": "Welcome1" }] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests": [
    {
      "id": "37",
      "actionName": "EDITDATASOURCE",
      "canonicalLink": {
        "href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/37"
      }
    }
  ]
}
```

60.8.25 Deleting a Data Source

The following table shows an example of a PUT operation to delete a data source.

Table 60-54 PUT Request Configuration for Deleting a Data Source

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "actionId": 37, "configurations": [{ "name": "dsName", "value": "Test_DS1" }] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests": [
    {
      "id": "38",
      "actionName": "DELETEDATASOURCE",

```

```
"canonicalLink":{"href":"https://xyxy.example.com:11040/em/websvcs/restful/extws/
cloudservices/ssa/cfw/v2/servicerequests/38"}
  }]
}
```

60.8.26 Testing a Data Source

The following table shows an example of a PUT operation to test a data source.

Table 60-55 PUT Request Configuration for Testing a Data Source

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/wlaas/v2/serviceinstances/ 21324EF5A81B4D8ECA7F835A209B857E/datasources
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	{ "dsName": "ds_1" }
Request method	PUT

A sample of the response received is shown below.

```
{
message: "Test Connection succeeded for data source "
statusUri: "https://xyxy.example.com:5416/em/websvcs/restful//extws/
cloudservices/ssa/wlaas/v2/serviceinstances"
}
```

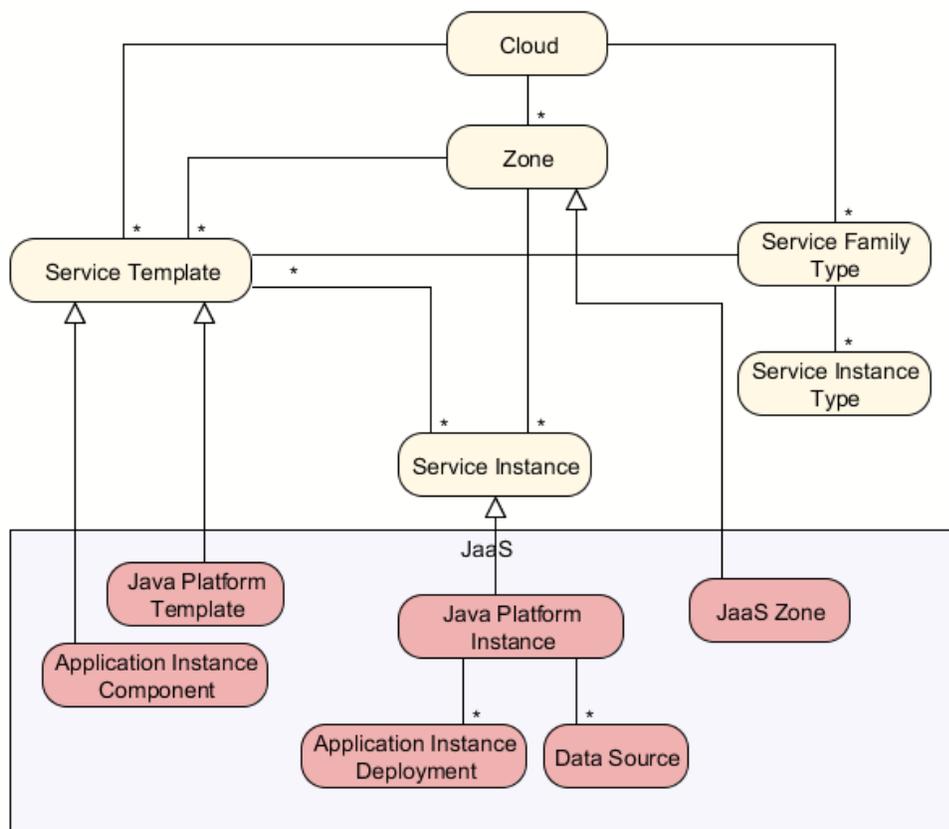
60.9 WebLogic as a Service Resource Model for V1

The following sections describe the resource models that are supported by the Java as a Service family type and provide examples of supported operations. The following resource models are described:

- [Cloud](#)
- [JaaS Service Family Type](#)
- [Zone](#)
- [JavaPlatformTemplate](#)
- [Java Platform Instance](#)
- [Application Instance Deployment](#)
- [DataSource](#)
- [Application Instance Component](#)
- [Filtering Service Templates](#)
- [Filtering Zones](#)

The figure below shows the WebLogic as a Service resource model.

Figure 60-1 WLaaS Resource Model



60.9.1 Cloud

The following table describes the Cloud [application/oracle.com.cloud.common.Cloud +json] data model.

Table 60-56 Cloud Resource Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name. It is a UNICODE string to support different languages.	1
description	String	A brief description. This is a UNICODE string to support different languages.	0..1
service_template	Collection<ServiceTemplates>	List of service templates that are accessible to the user.	0..1
zones	Collection<Zone>	List of zones that are supported by the cloud and accessible to the user.	0..1

Table 60-56 (Cont.) Cloud Resource Data Model

Field	Type	Description	Occurs
service_family_type	Collection <ServiceFamilyType>	The list of service family types that are supported by the cloud.	0..1
resource_state	ResourceState	A cloud that is online and running has READY as its state. If this field is not returned, the client can assume the cloud is READY. If the state of the returned field is not READY, the client cannot assume the viability of subsequent interactions into the cloud.	0..1
media_type	String	The value of this media type with the payload format. For example, application/oracle.com.cloud.common.Cloud+json.	1
canonicalLink	String	GET against this normalized/canonical URI refreshes the client representation of the resources accessible to this user.	1

60.9.1.1 Viewing Details of the Cloud Resource

The following shows an example of a GET operation on the Cloud URI to return its representation.

Example Request:

Table 60-57 GET Request Configuration for Viewing the Cloud Resources

Feature	Description
URI	/em/cloud/
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.common.Cloud+json
Body	None
Request method	GET

Example Response:

```
{
  "uri" : "/em/cloud" ,
  "name" : "Oracle Cloud by Enterprise Manager" ,
  "description" : "This represents the Cloud resource of the Oracle Enterprise
Manager Cloud Management solution" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "media_type" : "application/oracle.com.cloud.common.Cloud+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0
/ssa/em/cloud" ,
  "zones" : {
    "media_type" : "application/oracle.com.cloud.common.Zone+json" ,
    "total" : "3" ,
```

```

"elements" :
[
  {
    {
      "uri" : "/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
      "name" : "Zone1" ,
      "media_type" : "application/oracle.com.cloud.jaas.Zone+json" ,
      "service_family_type" : "jaas"
      "canonicalLink": "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51"
    } ,
    {
      "uri" : "/em/cloud/dbaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
      "name" : "Zone1" ,
      "description" : "Zone for Physical Pool" ,
      "media_type" : "application/oracle.com.cloud.common.DbZone+json" ,
      "type" : "self_service_zone"
      "canonicalLink": "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/dbaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51"
    } ,
    {
      "uri" : "/em/cloud/opc/opczone" ,
      "name" : "OPC Zone" ,
      "media_type" : "application/oracle.com.cloud.opc.OpcZone+json" ,
      "service_family_type" : "opc" ,
      "type" : "opc"
      "canonicalLink": "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/service_family_type/opc"
    }
  ]
} ,
"service_templates" : {
  "media_type" : "application/oracle.com.cloud.common.ServiceTemplate+json" ,
  "total" : "5" ,
  "elements" :
  [
    {
      {
        "uri" : "/em/cloud/jaas/javaplatformtemplate/
D016AADD465462ACE040F20AD18167BA" ,
        "name" : "PS4_LowHeapTemplate" ,
        "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformTemplate
+json" ,
        "service_family_type" : "jaas"
        "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/javaplatformtemplate/ D016AADD465462ACE040F20AD18167BA"
      } ,
      {
        "uri" : "/em/cloud/jaas/applicationinstancecomponent/oracle
%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component
%3ASUB_JavaEEApplication%3AD03030FAE80F6B58E040F20AD1812FE2%3A0.1" ,
        "name" : " rtriddappjul18_Deploy_20120718_051319824" ,
        "media_type" : "application/
oracle.com.cloud.jaas.ApplicationInstanceComponent+json" ,
        "service_family_type" : "jaas"
        "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService
%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication
%3AD03030FAE80F6B58E040F20AD1812FE2%3A0.1"
      } ,
      {
        "uri" : "/em/cloud/jaas/applicationinstancecomponent/oracle
%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component

```

```

%3ASUB_JavaEEApplication%3AD03517A824EBFCF9E040F20AD1811CD9%3A0.1" ,
    "name" : "FileUploadFromCode" ,
    "media_type" : "application/
oracle.com.cloud.jaas.ApplicationInstanceComponent+json" ,
    "service_family_type" : "jaas"
    "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService
%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication
%3AD03517A824EBFCF9E040F20AD1811CD9%3A0.1"
    } ,
    {
        "uri" : "/em/cloud/jaas/applicationinstancecomponent/oracle
%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component
%3ASUB_JavaEEApplication%3AD03EFA365D58A674E040F20AD18134AE%3A0.1" ,
        "name" : "Test_1354864500315" ,
        "media_type" : "application/
oracle.com.cloud.jaas.ApplicationInstanceComponent+json" ,
        "service_family_type" : "jaas"
        "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService
%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication
%3AD03EFA365D58A674E040F20AD18134AE%3A0.1"
    } ,
    {
        "uri" : "/em/cloud/jaas/applicationinstancecomponent/oracle
%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component
%3ASUB_JavaEEApplication%3AD1103FE5F6877372E040F20AD1814215%3A0.1" ,
        "name" : "RiddleApp" ,
        "media_type" : "application/
oracle.com.cloud.jaas.ApplicationInstanceComponent+json" ,
        "service_family_type" : "jaas"
        "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService
%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication
%3AD1103FE5F6877372E040F20AD1814215%3A0.1"
    }
    ]
} ,
"service_family_types" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType+json" ,
    "total" : "4" ,
    "elements" :
    [
        {
            "uri" : "/em/cloud/service_family_type/jaas" ,
            "name" : "jaas" ,
            "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType
+json" ,
            "type" : "jaas"
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/service_family_type/jaas"
        } ,
        {
            "uri" : "/em/cloud/service_family_type/dbaas" ,
            "name" : "dbaas" ,
            "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType
+json" ,
            "type" : "dbaas"
            "canonicalLink": "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/service_family_type/dbaas"
        } ,
    ]
} ,

```

```

    {
      "uri" : "/em/cloud/service_family_type/opc" ,
      "name" : "opc" ,
      "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType
+json" ,
      "type" : "opc"
      canonicalLink: "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/service_family_type/opc"
    } ,
    {
      "uri" : "/em/cloud/service_family_type/iaas" ,
      "name" : "iaas" ,
      "media_type" : "application/oracle.com.cloud.iaas.IaasServiceFamilyType
+json" ,
      "type" : "iaas"
      "canonicalLink": "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/service_family_type/iaas"
    }
  ]
},
"service_requests" : {
  "media_type" : "application/oracle.com.cloud.common.Request+json" ,
  "total" : "0" ,
  "elements" :
  [
  ]
}
}

```

60.9.2 JaaS Service Family Type

Jaas service family type is a category of services that are offered by WebLogic as a Service (WLaaS). The following table describes the Jaas ServiceFamilyType [application/oracle.com.cloud.common.ServiceFamilyType+json] data model:

Table 60-58 JaaS Service Family Type Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the Jaas ServiceFamilyType definition to this user.	1
name	String	Name of the Jaas ServiceFamilyType.	1
description	String	Human readable description of the Service Family Type. Shall be a UNICODE string to support different languages.	1
resource_state	ResourceState	The resource state of the resource.	0..1
media_type	String	The media type of the resource.	1
service_templates	Collection <ServiceTemplate>	The collection of service templates that are of this service family type.	0..1
zones	Collection <Zone>	The collection of zones that support service instances of this service family type.	0..1

Table 60-58 (Cont.) JaaS Service Family Type Data Model

Field	Type	Description	Occurs
instance_types	Collection <Instance Type>	The collection of instance types that are supported by this service family type.	0..1
canonicalLink	String	GET against this normalized/canonical URI refreshes the client representation of the resources accessible to this user.	1

60.9.2.1 Viewing Detail of the JaaS Service Family Type Resource

The following shows an example of a GET operation on the JaaS Service Family Type URI to return its representation.

Example Request:

Table 60-59 GET Request Configuration for Viewing Details of the JaaS Service Family Type Resource

Feature	Description
URI	/em/cloud/service_family_type/jaas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.common.ServiceFamilyType+json
Body	None
Request method	GET

Example Response:

```
{
  "uri" : "/em/cloud/service_family_type/jaas" ,
  "name" : "jaas" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "media_type" : "application/oracle.com.cloud.common.ServiceFamilyType+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
service_family_type/jaas" ,
  "type" : "jaas" ,
  "service_templates" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/jaas/javaplatfromtemplate/
D016AADD465462ACE040F20AD18167BA" ,
        "name" : "PS4_LowHeapTemplate" ,
        "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformTemplate
+json" ,
        "service_family_type" : "jaas" ,
        "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
```

```

service/v0/ssa/em/cloud/jaas/javaplatformtemplate/D016AADD465462ACE040F20AD18167BA"
    }
  ]
}
"zones" : {
  "media_type" : "application/oracle.com.cloud.common.Zone+json" ,
  "total" : "1" ,
  "elements" :
  [
    {
      "uri" : "/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
      "name" : "Zone1" ,
      "media_type" : "application/oracle.com.cloud.jaas.Zone+json" ,
      "service_family_type" : "jaas" ,
      "type" : "jaas" ,
      "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51"
    }
  ]
} ,
"instance_types" : {
  "media_type" : "application/oracle.com.cloud.common.InstanceType+json" ,
  "total" : "0" ,
  "elements" :
  [
    ]
} ,
"service_requests" : {
  "total" : "0" ,
  "elements" :
  [
    ]
}
}

```

60.9.2.2 Creating an Application Instance Component by Passing a POST Request on the Jaas Service Family Type Resource

ApplicationInstanceComponent can be created using a post request on JaaS. Right now this is being done using a Java Program. The following shows a sample program:



Note:

<<>> : Provides a hint to an appropriate value.

```

import java.io.File;
import java.io.FileInputStream;
import java.io.PrintWriter;
import java.io.StringWriter;

import java.util.ArrayList;
import java.util.List;
import java.util.Properties;

import oracle.sysman.emInternalSDK.ssa.cloudapi.client.EMRestService;

public class FileUpload {
    static public void main(String[] args)

```

```

throws Exception {
    String emUser = <<JAAS_USER_NAME>>;
    String emPassword = <<password>>;
    String emHost = <<host_machine_name/ip>>;
    String emPort = <<port>>;
    String emLocation = "https://" + emHost + ":" + emPort;
    String applicationLocation = <<application_location>>;
    String deployPlanLocation = <<deploy_plan_location>>;
    File f = new File(applicationLocation + "deploy_app.ear");
StringWriter sw = new StringWriter();
    PrintWriter pw = new PrintWriter(sw);
    pw.println("{");
    String fileName = "MyApplication" + emUser + "_" + System.currentTimeMillis();
    pw.println("\"name\": \"" + fileName + "\",");
    pw.println("\"description\": \"Riddles App\",");
    pw.println("\"originate\": \"STREAMING\",");
    pw.println("\"files\": {");
    pw.println("{");
    //pw.println("\"path\": \"swlib_internal_path\",");
    pw.println("\"file_archive_path\": \"swlib_internal_path\",");
    pw.println("\"content_type\": \"application/octet-stream\",");
    pw.println("\"source\": \"" + f.getName() + "\"");
    pw.println("}");
    pw.println("]");
    pw.print("}");
    pw.flush();
    pw.close();
    String content = sw.toString();
    System.out.println("CONTENT:\n" + content + "\n");
    //String content = "{\n\"name\": \"STOPPED\"\n}";
    List<EMRestService.MultipartItem> items = new
ArrayList<EMRestService.MultipartItem>();
    EMRestService.MultipartItem item1, item2, item3, item4, item5;
    item1 = new EMRestService.MultipartItem("item1", false);
    item1.setContentType("multipart/form-data");
    item1.setContent(content);
    items.add(item1);
    item2 = new EMRestService.MultipartItem("item2", true);
    item2.setFileAlias(f.getName());
    item2.setFile(f);
    items.add(item2);
    File deploymentPlanFile = new File(applicationLocation
+ "deployment_plan.xml");
    item3 = new EMRestService.MultipartItem("item3", true);
    item3.setFileAlias(deploymentPlanFile.getName());
    item3.setFile(deploymentPlanFile);
    items.add(item3);
    File preDeployFile = new File(deployPlanLocation + "predeploy_script.py");
    item4 = new EMRestService.MultipartItem("item4", true);
    item4.setFileAlias(preDeployFile.getName());
    item4.setFile(preDeployFile);
    items.add(item4);
    File postDeployFile = new File(deployPlanLocation + "postdeploy_script.py");
    item5 = new EMRestService.MultipartItem("item5", true);
    item5.setFileAlias(postDeployFile.getName());
    item5.setFile(postDeployFile);
    items.add(item5);

    String uri = emLocation + "/em";
    EMRestService ers = new EMRestService(uri, emUser, emPassword.getBytes());
    ers.setReadTimeout(600*1000);

```

```

        Object o = ers.webserviceMultipart(EMRestService.Method.POST, uri+"/cloud/
service_family_type/jaas", "application/
oracle.com.cloud.jaas.ApplicationInstanceComponent", items);
        System.out.println(o);
    }
}

```

60.9.3 Zone

The following table describes the Zone [application/oracle.com.cloud.common.Zone+json] data model.

Table 60-60 Zone Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the zone definition to this user.	1
name	String	Name of the Zone.	1
description	String	Human readable description of the Zone. It is a UNICODE string to support different languages.	0..1
context_id	String	This is an ID indication the internal reference of the zone	1
service_instances	Collection <ServiceInstance>	Collection of the service instances that are in this zone.	0..1
service_family_type	String	The name of the service family type that this zone is associated with.Each Zone is contextualized in the service family type.	0..1
resource_state	ResourceState	The resource state of the resource.	0..1
media_type	String	The media type of the resource.	1
canonicalLink	String	GET against this normalized/canonical URI refreshes the client representation of the resources accessible to this user.	1

60.9.3.1 Viewing Details of the Zone Resource

The following shows an example of a GET operation on the Zone URI to return its representation.

Example Request:

Table 60-61 GET Request Configuration for Viewing Details of a Zone

Feature	Description
URI	/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.common.Zone+json
Body	None

Table 60-61 (Cont.) GET Request Configuration for Viewing Details of a Zone

Feature	Description
Request method	GET

Example Response:

```
{
  "uri" : "/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
  "name" : "Zone1" ,
  "description" : "Zone for Physical Pool" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
  "media_type" : "application/oracle.com.cloud.jaas.Zone+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
  "service_instances" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceInstance+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/jaas/javaplatforminstance/8AF6E65447FBA84E968CCD909BD05D42" ,
        "name" : "MyServer-1" ,
        "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
        "status" : "RUNNING"
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/javaplatforminstance/8AF6E65447FBA84E968CCD909BD05D42"
      }
    ]
  }
}
```

60.9.4 JavaPlatformTemplate

The JavaPlatformTemplate extends the CloudServiceTemplate SDK class. It is permissible to accept the ServiceTemplate media type on an instance of JavaPlatformTemplate. It is a preconfigured deployable entity that realizes a JavaPlatformInstance resource.

The following table describes the JavaPlatformTemplate [application/oracle.com.cloud.jaas.JavaPlatformTemplate+json] data model.

Table 60-62 JavaPlatformTemplate Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1

Table 60-62 (Cont.) JavaPlatformTemplate Data Model

Field	Type	Description	Occurs
name	String	A human readable name given to the template.	1
description	String	A brief description given to the template.	0...1
created	Timestamp	Date and time, in ISO 8601 format, when the template was created/last modified.	1
zones	Collection <Zone>	List of all zones configured for this template.	1
service_family_type	String	Denotes the type of Service Template (for example, "jaas").	1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
service_instances	Collection <JavaPlatformInstance>	All service instances created based on this JavaPlatformTemplate.	0...1
media_type	String	The media type of the service template that this type represents.	1
default_instance_media_type	String	Default media type for the request, value "application/oracle.com.cloud.jaas.JavaPlatformInstance+json".	1
context_id	String	This is an ID indication the internal reference of the service template.	1
canonicalLink	String	GET against this normalized/canonical URI refreshes the client representation of the resources accessible to this user.	1

60.9.4.1 Viewing Details of the Java Platform Template Resource

The following shows an example of a GET operation on the JavaPlatformTemplate URI to return its representation.

Example Request:

Table 60-63 GET Request Configuration for Viewing Details of the Java Platform Template Resource

Feature	Description
URI	/em/cloud/jaas/javaplatfromtemplate/ D016AADD465462ACE040F20AD18167BA
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.JavaPlatformTemplate+json
Body	None
Request method	GET

Example Response:

```

{
  "uri" : "/em/cloud/jaas/javaplatfromtemplate/D016AADD465462ACE040F20AD18167BA" ,
  "name" : "PS4_LowHeapTemplate" ,
  "description" : "This is a service template using the CDP
CDP_PS4_lowHeap_MWProfile" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "D016AADD465462ACE040F20AD18167BA" ,
  "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformTemplate+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/javaplatfromtemplate/ D016AADD465462ACE040F20AD18167BA" ,
  "created" : "2012-12-04 23:16:10.0" ,
  "default_instance_media_type" : "application/
oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
  "zones" : {
    "media_type" : "application/oracle.com.cloud.common.Zone+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
        "name" : "Zone1" ,
        "media_type" : "application/oracle.com.cloud.jaas.Zone+json" ,
        "service_family_type" : "jaas"
        "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/service_family_type/jaas"
      }
    ]
  } ,
  "service_instances" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceInstance+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/jaas/javaplatfrominstance/
8AF6E65447FBA84E968CCD909BD05D42" ,
        "name" : "MyServer-1" ,
        "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance
+json" ,
        "status" : "RUNNING"
        "canonicalLink": "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/javaplatfrominstance/8AF6E65447FBA84E968CCD909BD05D42"
      }
    ]
  }
}

```

60.9.4.2 Creating a Java Platform Instance by Passing POST Request on a Java Platform Template

The following shows a sample POST on the JavaPlatformTemplate URI to create an "empty" JavaPlatformInstance by providing:

- Name of JavaPlatformInstance in "name" attribute

- Destination Zone URI in "zone" attribute

Example Request:

Table 60-64 POST Request Configuration for Creating a Java Platform Instance

Feature	Description
URI	/em/cloud/jaas/javaplatformtemplate/ D016AADD465462ACE040F20AD18167BA
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.JavaPlatformTemplate+json Content-Type: application/oracle.com.cloud.jaas.JavaPlatformInstance+json
Body	{ "name" : "rtjul17", "zone" : "/em/cloud/jaas/zone/C355810A6" }
Request method	POST

Example Response (When the operation is in progress):

```
{
  "uri" : "/em/cloud/jaas/javaplatforminstancerequest/1" ,
  "name" : "rtjul17_Create_20120717_045804697" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
      [
        {
          "text" : "null" ,
          "date" : "2012-07-17T09:16:13+0000"
        }
      ]
  } ,
  "context_id": "1",
  "media_type": "application/oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
  "service_family_type": "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/javaplatforminstancerequest/1" ,
  "status": "SCHEDULED"
  "created" : "2013-05-09T07:06:57+0000"
}
```

Example Response (After the instance has been created):

```
{
  "uri" : "/em/cloud/jaas/javaplatformtemplate/D016AADD465462ACE040F20AD18167BA" ,
  "name" : "PS4_LowHeapTemplate" ,
  "description" : "This is a service template using the CDP  
CDP_PS4_lowHeap_MWProfile" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "D016AADD465462ACE040F20AD18167BA" ,
  "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformTemplate+json" ,
  "service_family_type" : "jaas" ,
}
```

```

"canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/javaplatfromtemplate/ D016AADD465462ACE040F20AD18167BA" ,
"created" : "2012-12-04 23:16:10.0" ,
"default_instance_media_type" : "application/
oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
"zones" : {
  "media_type" : "application/oracle.com.cloud.common.Zone+json" ,
  "total" : "1" ,
  "elements" :
  [
    {
      "uri" : "/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
      "name" : "Zone1" ,
      "media_type" : "application/oracle.com.cloud.jaas.Zone+json" ,
      "service_family_type" : "jaas"
      "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/service_family_type/jaas"
    }
  ]
} ,
"service_instances" : {
  "media_type" : "application/oracle.com.cloud.common.ServiceInstance+json" ,
  "total" : "1" ,
  "elements" :
  [
    {
      "uri" : "/em/cloud/jaas/javaplatfrominstance/
8AF6E65447FBA84E968CCD909BD05D42" ,
      "name" : "MyServer-1" ,
      "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance
+json" ,
      "status" : "RUNNING"
      "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/javaplatfrominstance/8AF6E65447FBA84E968CCD909BD05D42"
    }
  ]
}
}

```

60.9.4.3 Viewing Details of the Java Platform Request Resource

The following shows a sample GET operation on the JavaPlatform Request URL:

Example Request:

Table 60-65 GET Request Configuration for Viewing the Status of the Java Platform Request

Feature	Description
URI	/em/cloud/jaas/javaplatfrominstancerequest/1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.JavaPlatformInstance+json
Body	None
Request method	GET

Example Response (When the operation is in progress):

```
{
  "uri" : "/em/cloud/jaas/javaplatforminstancerequest/1" ,
  "name" : "rtjull17_Create_20120717_045804697" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
      [
        {
          "text" : "null" ,
          "date" : "2012-07-17T09:16:13+0000"
        }
      ]
  } ,
  "context_id": "1",
  "media_type": "application/oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
  "service_family_type": "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/javaplatforminstancerequest/1" , "status": "SCHEDULED"
  "created" : "2013-05-09T07:06:57+0000"
}
```

Example Response (After the instance has been created):

```
{
  "uri" : "/em/cloud/jaas/javaplatformtemplate/D016AADD465462ACE040F20AD18167BA" ,
  "name" : "PS4_LowHeapTemplate" ,
  "description" : "This is a service template using the CDP
CDP_PS4_lowHeap_MWProfile" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "D016AADD465462ACE040F20AD18167BA" ,
  "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformTemplate+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/javaplatformtemplate/ D016AADD465462ACE040F20AD18167BA" ,
  "created" : "2012-12-04 23:16:10.0" ,
  "default_instance_media_type" : "application/
oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
  "zones" : {
    "media_type" : "application/oracle.com.cloud.common.Zone+json" ,
    "total" : "1" ,
    "elements" :
      [
        {
          "uri" : "/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
          "name" : "Zone1" ,
          "media_type" : "application/oracle.com.cloud.jaas.Zone+json" ,
          "service_family_type" : "jaas"
          "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/service_family_type/jaas"
        }
      ]
  } ,
  "service_instances" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceInstance+json" ,
    "total" : "1" ,
    "elements" :

```

```
[
  {
    "uri" : "/em/cloud/jaas/javaplatforminstance/
8AF6E65447FBA84E968CCD909BD05D42" ,
    "name" : "MyServer-1" ,
    "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance
+json" ,
    "status" : "RUNNING"
    "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/
service/v0/ssa/em/cloud/jaas/javaplatforminstance/8AF6E65447FBA84E968CCD909BD05D42"
  }
]
```

60.9.5 Java Platform Instance

JavaPlatformInstance will extend the ServiceInstance from the Cloud framework resource model. It is linked to an Oracle Composite Application target in Enterprise Manager.

The following table describes the JavaPlatformInstance [application/oracle.com.cloud.jaas.JavaPlatformInstance+json] data model.

Table 60-66 JavaPlatformInstance Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the instance. [POST]	1
zone	Zone (uri, name, media_type)	The Zone to which the instance is deployed. [POST]	1
media_type	String	Indicates the additional media type that clients can use to perform a GET.	1
application_instance_deployments	Collection <ApplicationInstanceDeployment>	This is a list of all the ApplicationInstanceDeployments deployed on the JavaPlatformInstance.	0...1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
based_on	JavaPlatformTemplate	JavaPlatformTemplate based on which this instance was created.	1

Table 60-66 (Cont.) JavaPlatformInstance Data Model

Field	Type	Description	Occurs
jdbc_drivers	String[]	List of JDBC drivers available to create a data source on this instance.	0...1
data_sources	Collection<DataSource>	This is a list of all the data sources configured for this instance.	0...1
status	String	Indicates the status of the underlying Weblogic cluster Values are STOPPED, RUNNING, UNREACHABLE, UNKNOWN	0...1
server_count	String	Number of Java servers in the Weblogic cluster of the JavaPlatformInstance [PUT]	1
service_family_type	String	Denotes the type of Service Instance (for example, "jaas").	1
context_id	String	This is an ID indication the internal reference of the service template	1
canonicalLink	String	GET against this normalized/canonical URI refreshes the client representation of the resources accessible to this user.	1

60.9.5.1 Viewing Details of the Java Platform Instance Resource

The following shows a sample GET operation on the JavaPlatformInstance URI to return its representation.

Example Request:

Table 60-67 GET Request Configuration for Viewing Details of the Java Platform Instance Resource

Feature	Description
URI	/em/cloud/jaas/javaplatforminstance/ 960A4A8244145EC7949303B4ECD650D0
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.JavaPlatformInstance+json
Body	None
Request method	GET

Example Response:

```

{
  "uri" : "/em/cloud/jaas/javaplatforminstance/960A4A8244145EC7949303B4ECD650D0" ,
  "name" : "jb_sd_platform_12_24_2012_13_38_28" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "960A4A8244145EC7949303B4ECD650D0" ,
  "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/javaplatforminstance/960A4A8244145EC7949303B4ECD650D0" ,
  "status" : "RUNNING" ,
  "zone" : {
    "uri" : "/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
    "name" : "Zone1" ,
    "context_id" : "A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
    "media_type" : "application/oracle.com.cloud.jaas.Zone+json" ,
    "service_family_type" : "jaas"
    "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/jaas/zone/ A1B44A4EBCC4563125D9D0A3AAE4FD51" ,      "type" : "jaas"
  } ,
  "based_on" : {
    "uri" : "/em/cloud/jaas/javaplatformtemplate/
D016AADD465462ACE040F20AD18167BA" ,
    "name" : "PS4_LowHeapTemplate" ,
    "context_id" : "D016AADD465462ACE040F20AD18167BA" ,
    "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformTemplate+json" ,
    "service_family_type" : "jaas"
    "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/jaas/javaplatformtemplate/ D016AADD465462ACE040F20AD18167BA "
  } ,
  "data_sources" : {
    "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
    "total" : "0" ,
    "elements" :
    [
      ]
    } ,
    "jdbc_drivers" :
    [
      "com.ddtek.jdbc.oracle.OracleDriver" ,
      "oracle.jdbc.xa.client.OracleXADataSource" ,
      "oracle.jdbc.OracleDriver" ,
      "com.ddtek.jdbcx.oracle.OracleDataSource"
    ] ,
    "server_count" : "1" ,
    "application_instance_deployments" : {
      "media_type" : "application/oracle.com.cloud.jaas.ApplicationInstanceDeployment
+json" ,
      "total" : "0" ,
      "elements" :
      [
        ]
      }
    }
  }
}

```

60.9.5.2 Deleting a Service Instance by Passing a DELETE Request on a Java Platform Instance

The following shows a sample DELETE operation on the JavaPlatformInstance URI to retire the service instance.

Example Request:

Table 60-68 DELETE Request Configuration for Deleting a Java Platform Instance

Feature	Description
URI	/em/cloud/jaas/javaplatforminstance/960A4A8244145EC7949303B4ECD650D0
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.JavaPlatformInstance+json
Body	None
Request method	DELETE

Example Response:

```
{
  "uri" : "/em/cloud/jaas/javaplatforminstancerequest/121" ,
  "name" : "rtjul17_Delete_20120719_035504227" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
      [
        {
          "text" : "null" ,
          "date" : "2012-07-19T09:16:13+0000"
        }
      ]
  } ,
  "context_id": "121",
  "media_type": "application/oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
  "service_family_type": "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/javaplatforminstancerequest/121" ,
  "status": "SCHEDULED"
  "created" : "2013-05-09T09:08:38+0000"
}
```

60.9.5.3 Viewing Status of the DELETE Request

Example Request:

Table 60-69 GET Request Configuration for Viewing Status of the Delete Operation

Feature	Description
URI	/em/cloud/jaas/javaplatforminstancerequest/121
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.JavaPlatformInstance+json
Body	None
Request method	GET

Example Response (When the operation is in progress):

```
{
  "uri" : "/em/cloud/jaas/javaplatforminstancerequest/121" ,
  "name" : "rtjul17_Delete_20120719_035504227" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "text" : "null" ,
        "date" : "2012-07-19T09:16:13+0000"
      }
    ]
  } ,
  "context_id": "121",
  "media_type": "application/oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
  "service_family_type": "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/javaplatforminstancerequest/121" ,
  "status": "SCHEDULED"
  "created" : "2013-05-09T09:08:38+0000"
}
```

Example Response (when the operation is complete):

The Status field will show that the resource has been deleted.

60.9.5.4 Creating an Application Instance Deployment By Passing a POST Request on Java Platform Instance

The following shows a sample POST operation on the JavaPlatformInstance URI to deploy an ApplicationInstanceDeployment.

- Name of ApplicationInstanceDeployment in the "name" attribute
- ApplicationInstanceComponent URI in the "application_instance_component" attribute

Example Request:

Table 60-70 POST Request Configuration for Creating an Application Instance Deployment Resource

Feature	Description
URI	/em/cloud/jaas/javaplatforminstance/ 8AF6E65447FBA84E968CCD909BD05D42
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json Content-Type: application/ oracle.com.cloud.jaas.ApplicationInstanceDeployment+json
Body	{ "name" : "rtriddappjul18", "application_instance_component" : "/em/cloud/jaas/ applicationinstancecomponent/oracle%3AdefaultService%3Aem %3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication %3AC414FFB7A0912357E040F10A716015F9%3A0.1" }
Request method	POST

Example Response:

```
{
  "uri" : "/em/cloud/jaas/applicationinstancedeploymentrequest/ rtriddappjul18@131" ,
  "name" : " rtriddappjul18_Deploy_20120718_051319824" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2012-07-18T12:13:28+0000" ,
        "text" : "null"
      }
    ]
  } ,
  "context_id" : "rtriddappjul18@131" ,
  "media_type" : "application/  
oracle.com.cloud.jaas.ApplicationInstanceDeployment+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/  
service/v0/ssa/em/cloud/jaas/applicationinstancedeploymentrequest/  
rtriddappjul18@131" ,
  "status" : "SCHEDULED"
}
```

60.9.5.5 Viewing Status of the Application Instance Deployment Creation Request

The following shows a sample GET of an Application Instance Deployment Request returned by POST to create Application Instance.

Example Request:

Table 60-71 GET Request Configuration for Viewing the Status of the Application Instance Deployment Creation

Feature	Description
URI	/em/cloud/jaas/applicationinstancedeploymentrequest/rtriddappju118@131
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json
Body	None
Request method	GET

Example Response (When the operation is in progress)

```
{
  "uri" : "/em/cloud/jaas/applicationinstancedeploymentrequest/ rtriddappjul18@131" ,
  "name" : " rtriddappjul18_Deploy_20120718_051319824" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2012-07-18T12:13:28+0000" ,
        "text" : "null"
      }
    ]
  } ,
  "context_id" : "rtriddappjul18@131" ,
  "media_type" : "application/
oracle.com.cloud.jaas.ApplicationInstanceDeployment+json" ,
  "service_family_type" : "jaas" ,
  "status" : "SCHEDULED"
}
```

Example Response (When the operation is complete)

```
{
  "uri" : "/em/cloud/jaas/applicationinstancedeployment/9D8868C9632E3" ,
  "name" : "rtriddappjul19" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "9D8868C9632E3" ,
  "media_type" : "application/oracle.com.cloud.jaas.ApplicationInstanceDeployment
+json" ,
  "service_family_type" : "jaas" ,
  "status" : "RUNNING" ,
  "http_application_invocation_url" : {
    "ms_3" : "http://example.com:32463/RiddlesWeb" ,
    "ms_4" : "http://example.com:40298/RiddlesWeb"
  } ,
  "https_application_invocation_url" : {
    "ms_3" : "https://example.com:3550/RiddlesWeb" ,
    "ms_4" : "https://example.com:41467/RiddlesWeb"
  }
}
```

```

    } ,
    "contained_in" : {
      "uri" : "/em/cloud/jaas/javaplatforminstance/CF4339D922C" ,
      "name" : "rtjul17" ,
      "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance
+json" ,
      "status" : "RUNNING"
    }
  }
}

```

60.9.5.6 Creating a Data Source by Passing a POST Request on the Java Platform Instance Resource

The following shows a sample POST operation on the JavaPlatformInstance URI to create a DataSource on the JavaPlatformInstance

- Name of DataSource in the "name" attribute
- JNDI Name in "jndi_name" attribute
- JDBC Driver in "jdbc_driver" attribute
- Database connect string in "database_connect_string" attribute
- Database type in "database_type" attribute
- username and password

Example Request:

Table 60-72 POST Request Configuration for Creating a Data Source on the Java Platform Instance

Feature	Description
URI	/em/cloud/jaas/javaplatforminstance/ 8AF6E65447FBA84E968CCD909BD05D42
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.DataSource+json Content-Type: application/oracle.com.cloud.jaas.DataSource+json
Body	<pre> { "name" : "tarunDS_wthParamchanges" , "jndi_name" : ["jndi_1Paramchanges"] , "jdbc_driver" : "oracle.jdbc.OracleDriver" , "database_connect_string" : "jdbc:oracle:thin:sysman/ sysman@example.com:15044:test2" , "database_type" : "Oracle" , "username": "sysman" , "password": "sysman" } </pre>
Request method	POST

Example Response:

```

{
  "uri" : "/em/cloud/jaas/datasourcerequest/rtreopdsjul23@181" ,

```

```

"name" : "rtrepodsjul23_CreateDS_20120722_112705396" ,
"resource_state" : {
  "state" : "INITIATED" ,
  "messages" :
  [
    {
      "date" : "2012-07-23T06:27:06+0000" ,
      "text" : "null"
    }
  ]
},
"context_id" : "rtrepodsjul23@181" ,
"media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
"service_family_type" : "jaas" ,
"canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/ datasourcerequest/rtrepodsjul23@181" ,
"status" : "SCHEDULED"
}

```

60.9.5.7 Viewing Status of the Data Source Creation Request

The following shows a sample GET of Data Source request returned by POST to create Data Source

Example Request:

Table 60-73 GET Request Configuration for Viewing the Status of the Data Source Creation

Feature	Description
URI	/em/cloud/jaas/datasourcerequest/rtrepodsju123@181
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.JavaPlatformInstance+json
Body	None
Request method	GET

Example Response (When the operation is in progress):

```

{
  "uri" : "/em/cloud/jaas/datasourcerequest/rtrepodsjul23@181" ,
  "name" : "rtrepodsjul23_CreateDS_20120722_112705396" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2012-07-23T06:27:06+0000" ,
        "text" : "null"
      }
    ]
  },
  "context_id" : "rtrepodsjul23@181" ,
  "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/

```

```
jaas/ datasourcerequest/rtrepodsjul23@181" ,
  "status" : "SCHEDULED"
}
```

Example Response (When the operation is complete):

```
{
  "uri" : "/em/cloud/jaas/datasource/ rtrepodsjul18@CF4339D922C" ,
  "name" : "rtrepodsjul18" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : " rtrepodsjul18@CF4339D922C" ,
  "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/jaas/datasource/rtrepodsjul18@CF4339D922C " ,
  "jndi_name" :
  [
    "jndi_1"
  ] ,
  "jdbc_driver" : "oracle.jdbc.OracleDriver" ,
  "username" : "sysam" ,
  "database_connect_string" : "jdbc:oracle:thin:sysman/sysman@example.com:
15044:sjuly14" ,
  "contained_in" : {
    "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance
+json" ,
    "context_id" : "CF4339D922C51" ,
    "name" : "rtjul17" ,
    "uri" : "/em/cloud/jaas/javaplatforminstance/CF4339D922C51"
  }
}
```

60.9.5.8 Scaling Up/Down the Service Instance

The following shows a sample PUT operation on JavaPlatformInstance URI to scale up or scale down the service instance. The final server count is contained in "server_count" attributes. A Scale up or scale down request will be submitted according to Current server count being greater than or lesser than the Final server count.

Example Request:

Table 60-74 PUT Request Configuration for Scaling Up/Down the Service Instance

Feature	Description
URI	/em/cloud/jaas/javaplatforminstance/CF4339D922C5
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.JavaPlatformInstance+json Content-type: application/oracle.com.cloud.jaas.JavaPlatformInstance+json

Table 60-74 (Cont.) PUT Request Configuration for Scaling Up/Down the Service Instance

Feature	Description
Body	<pre>{ "server_count" : "3" }</pre>
Request method	PUT

Example Response:

```
{
  "uri" : "/em/cloud/jaas/javaplatforminstancerequest/211" ,
  "name" : "rtjul17_Scaleup_20120719_045804697" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "text" : "null" ,
        "date" : "2012-07-19T09:16:13+0000"
      }
    ]
  } ,
  "context_id": "211",
  "media_type": "application/oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
  "service_family_type": "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/ javaplatforminstancerequest/211" ,
  "status": "SCHEDULED"
  "created" : "2013-05-09T11:46:27+0000"
}
```

60.9.6 Application Instance Deployment

This represents the deployment of an Application Instance in a JavaPlatformInstance.

The following table describes the ApplicationInstanceDeployment [application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json] data model.

Table 60-75 Application Instance Deployment Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the instance. [POST]	1

Table 60-75 (Cont.) Application Instance Deployment Data Model

Field	Type	Description	Occurs
application_instance_component	ApplicationInstanceComponent (uri,name,version)	The ApplicationInstanceComponent in the Software library which was used during deployment of this instance. [POST]	1
http_application_invocation_url	Map<String,String>	Map of server name and HTTP URL of the deployed application. Will be populated after the instance has been created.	0...1
https_application_invocation_url	Map<String,String>	Map of server name and HTTPS URL of the deployed application. Will be populated after the instance has been created.	0...1
contained_in	JavaPlatformInstance (uri,name)	JavaPlatformInstance on which the application is deployed.	1
deployment_plan	String	Vendor specific configuration parameters for this deployment in the prescribed XML format. [POST]	0...1
status	String	Indicates the status of the ApplicationInstanceDeployment. Values are STOPPED, RUNNING, UNREACHABLE, UNKNOWN [PUT]	0...1
metrics	Collection<Metric>	The list of metrics (uri, name, type current_value) that are pertinent to this service instance.	0...1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
service_family_type	String	Denotes the type of ApplicationInstanceDeployment (for example, "jaas").	1
media_type	String	Indicates the additional media type that clients can use to perform a GET.	1
context_id	String	This is an ID indication of the internal reference of the application deployment.	1
canonicalLink	String	GET against this normalized/canonical URI refreshes the client representation of the resources accessible to this user.	1

60.9.6.1 Viewing Details of the Application Instance Deployment Resource

The following shows a sample GET operation on the ApplicationInstanceDeployment URI to return its representation.

Example Request:

Table 60-76 GET Request Configuration for Viewing Details of the Application Instance Deployment

Feature	Description
URI	/em/cloud/jaas/applicationinstancedeployment/9D8868C9632E3
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.ApplicaitonInstanceDeployment+json
Body	None
Request method	GET

Example Response:

```
HTTP/1.1 200 OK
Content-Type: application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json
Content-Location: /em/cloud/jaas/applicationinstancedeployment/9D8868C9632E3
Cache-Control: public
Content-Length: nnn
{
  "uri" : "/em/cloud/jaas/applicationinstancedeployment/9D8868C9632E3" ,
  "name" : "rtriddappjull19" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "media_type" : "application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/applicationinstancedeployment/9D8868C9632E3" ,
  "status" : "RUNNING" ,
  "http_application_invocation_url" : {
    "ms_3" : "http://example.com:32463/RiddlesWeb" ,
    "ms_4" : "http://example.com:40298/RiddlesWeb"
  } ,
  "https_application_invocation_url" : {
    "ms_3" : "https://example.com:3550/RiddlesWeb" ,
    "ms_4" : "https://example.com:41467/RiddlesWeb"
  } ,
  "contained_in" : {
    "uri" : "/em/cloud/jaas/javaplatforminstance/CF4339D922C" ,
    "name" : "rtjull17" ,
    "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
    "status" : "RUNNING"
  } ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/javaplatforminstance/CF4339D922C"
}
```

60.9.6.2 Deleting an Application Instance Deployment

The following shows a sample DELETE operation on the Application Instance Deployment URI which undeploys the application from Java Platform Instance.

Example Request:

Table 60-77 DELETE Request Configuration for Deleting an Application Instance Deployment

Feature	Description
URI	/em/cloud/jaas/applicationinstancedeployment/9D8868C9632E3
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.ApplicaitonInstanceDeployment+json
Body	None
Request method	DELETE

Example Response:

```
HTTP/1.1 200 OK
Content-Type: application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json
Content-Location: /em/cloud/jaas/applicationinstancedeploymentrequest/
rtriddappjul19@184
Cache-Control: public
Content-Length: nnn
{
  "uri" : "/em/cloud/jaas/applicationinstancedeploymentrequest/
rtriddappjul19@184" ,
  "name" : "rtriddappjul19_Undeploy_20120723_011757881" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
      [
        {
          "date" : "2012-07-23T08:18:01+0000" ,
          "text" : "null"
        }
      ]
  } ,
  "media_type" : "application/oracle.com.cloud.jaas.ApplicationInstanceDeployment
+json" ,
  "service_family_type" : "jaas" ,
  canonicalLink: "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/applicationinstancedeploymentrequest/rtriddappjul19@184" ,
  "status" : "SCHEDULED"
}
```

60.9.6.3 Viewing Status of the Application Instance Deployment Deletion Request

The following shows a sample GET operation on an Application Instance Deployment Request.

Example Request:

Table 60-78 GET Request Configuration for Viewing the Status of the Application Instance Deployment Deletion

Feature	Description
URI	/em/cloud/jaas/applicationinstancedeploymentrequest/rtriddappju119@184
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.ApplicaitonInstanceDeployment+json
Body	None
Request method	GET

Example Response: (operation in progress):

```
{
  "uri" : "/em/cloud/jaas/applicationinstancedeploymentrequest/
rtriddappju119@184" ,
  "name" : "rtriddappju119_Undeploy_20120723_011757881" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2012-07-23T08:18:01+0000" ,
        "text" : "null"
      }
    ]
  } ,
  "context_id" : "rtriddappju119@184" ,
  "media_type" : "application/oracle.com.cloud.jaas.ApplicationInstanceDeployment
+json" ,
  "service_family_type" : "jaas" ,
  canonicalLink: "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/applicationinstancedeploymentrequest/rtriddappju119@184" ,
  "status" : "SCHEDULED"
}
```

Example Response: (operation is complete):

The status field will show that the resource has been deleted.

60.9.6.4 Starting, Stopping and Redeploying an Application Instance Deployment

The following shows a sample PUT operation on the Application Instance Deployment URI to start or stop the instance.

- STOPPED to RUNNING
Put on status attribute, value = "START"
- RUNNING to STOPPED
Put on status attribute, value = "STOP"

- REDEPLOY
Put on status attribute, value = "REDEPLOY" and ApplicationInstanceComponent URI in the "application_instance_component" attribute

Example Request: Starting/Stopping

Table 60-79 PUT Request Configuration for Starting/Stopping the Status of the Application Instance Deployment

Feature	Description
URI	/em/cloud/jaas/applicationinstancedeployment/9D8868C9632E3
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.ApplicaitonInstanceDeployment+json Content-type: application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json
Body	{ "status" : "STOP" }
Request method	PUT

Example Response:

```
HTTP/1.1 200 OK
Content-Type: application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json
Content-Location: /em/cloud/jaas/applicationinstancedeploymentrequest/rtriddappjul19@182
Cache-Control: public
Content-Length: nnn
{
  "uri" : "/em/cloud/jaas/applicationinstancedeploymentrequest/rtriddappjul19@182" ,
  "name" : "rtriddappjul19_Stop_20120723_123327380" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2012-07-23T07:33:27+0000" ,
        "text" : "null"
      }
    ]
  } ,
  "media_type" : "application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/applicationinstancedeploymentrequest/rtriddappjul19@182" ,
  "status" : "SCHEDULED"
}
```

Example Request for Redeploying:

```
PUT /em/cloud/jaas/applicationinstancedeployment/9D8868C9632E3
Host: cloudcompany.com
Authorization: Basic xxxxxxxx
Accept: application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json
Content-type: application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json
{
  "status" : "STOP" ,
  "application_instance_component" : "/em/cloud/jaas/applicationinstancecomponent/
oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component
%3ASUB_JavaEEApplication%3AC414FFB7A0912357E040F10A716015F9%3A0.1"
}
```

Example Response:

```
{
  "uri" : "/em/cloud/jaas/applicationinstancedeploymentrequest/
rtriddappjul19@183" ,
  "name" : "rtriddappjul19_Undeploy_20120723_123327380" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2012-07-23T07:33:27+0000" ,
        "text" : "null"
      }
    ]
  } ,
  "context_id" : "rtriddappjul19@183" ,
  "media_type" : "application/oracle.com.cloud.jaas.ApplicationInstanceDeployment
+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/jaas/applicationinstancedeploymentrequest/rtriddappjul19@183" ,
  "status" : "SCHEDULED"
}
```

60.9.7 DataSource

The DataSource resource model has the following characteristics:

The following table describes the DataSource [application/oracle.com.cloud.jaas.DataSource+json] data model.

Table 60-80 DataSource Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the data source. [POST][PUT]	1

Table 60-80 (Cont.) DataSource Data Model

Field	Type	Description	Occurs
jndi_name	String[]	JNDI path to where this data source will be bound. Applications look up the data source on the JNDI tree by this name when reserving a connection. [POST][PUT]	1
database_type	String	The DBMS of the database that the data source represents. [POST]	0...1
jdbc_driver	String	The database driver used to connect to the database. [POST]	1
contained_in	JavaPlatform Instance (uri, name)	JavaPlatformInstance on which the data source exists.	1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
database_connect_string	String	Connect String of the database can be provided to create the data source. [POST][PUT]	0...1
service_family_type	String	Denotes the type of Data Source (for example, "jaas").	1
media_type	String	Indicates the additional media type that clients can use to perform a GET.	1
username	String	Username of the DB connection.	1
password	String	Password of the DB connection.	1
context_id	String	This is an ID indication the internal reference of the data source.	1
canonicalLink	String	GET against this normalized/canonical URI refreshes the client representation of the resources accessible to this user.	1

60.9.7.1 Viewing Details of the Data Source Resource

The following shows a sample GET operation on the DataSource URI to return its representation.

Example Request:

Table 60-81 GET Request Configuration for Viewing Details of the Data Source

Feature	Description
URI	/em/cloud/jaas/datasource/rtrepodsjul18@CF4339D922C
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.DataSource+json

Table 60-81 (Cont.) GET Request Configuration for Viewing Details of the Data Source

Feature	Description
Body	None
Request method	GET

Example Response:

```
{
  "uri" : "/em/cloud/jaas/datasource/rtrepodsjul18@CF4339D922C" ,
  "name" : "rtrepodsjul18" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "rtrepodsjul18@CF4339D922C" ,
  "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/datasource/rtrepodsjul18@CF4339D922C " ,
  "jndi_name" :
  [
    "jndi_1"
  ] ,
  "jdbc_driver" : "oracle.jdbc.OracleDriver" ,
  "username" : "sysam" ,
  "database_connect_string" : "jdbc:oracle:thin:sysman/sysman@example.com:15044:sjuly14" ,
  "contained_in" : {
    "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance+json" ,
    "context_id" : "CF4339D922C51" ,
    "name" : "rtjul17" ,
    "uri" : "/em/cloud/jaas/javaplatforminstance/CF4339D922C51"
  }
}
```

60.9.7.2 Deleting a Data Source

The following shows a sample DELETE operation on the DataSource URI removes it from the JavaPlatformInstance.

Example Request:

Table 60-82 DELETE Request Configuration for Deleting the Data Source

Feature	Description
URI	/em/cloud/jaas/datasource/rtrepodsjul18@CF4339D922C
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.DataSource+json
Body	None

Table 60-82 (Cont.) DELETE Request Configuration for Deleting the Data Source

Feature	Description
Request method	DELETE

Example Response:

```
HTTP/1.1 200 OK
Content-Type: application/oracle.com.cloud.jaas.DataSource+json
Content-Location: /em/cloud/jaas/datasourcerequest/rtrepodsjul18@201
Cache-Control: public
Content-Length: nnn
{
  "uri" : "/em/cloud/jaas/datasourcerequest/rtrepodsjul18@201" ,
  "name" : "rtrepodsjul18_DeleteDS_20120723_024836692" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2012-07-23T09:48:37+0000" ,
        "text" : "null"
      }
    ]
  } ,
  "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/datasourcerequest/rtrepodsjul18@201" ,
  "status" : "SCHEDULED"
}
```

60.9.7.3 Viewing Status of the Data Source Deletion Request

The following shows a sample GET operation on a DataSource request.

Example Request:

Table 60-83 GET Request Configuration for Viewing Status of the Data Source Deletion

Feature	Description
URI	/em/cloud/jaas/datasourcerequest/rtrepodsjul18@201
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.DataSource+json
Body	None
Request method	GET

Example Response: (operation in progress):

```
{
  "uri" : "/em/cloud/jaas/datasourcerequest/rtrepodsjul18@201" ,
  "name" : "rtrepodsjul18_DeleteDS_20120723_024836692" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2012-07-23T09:48:37+0000" ,
        "text" : "null"
      }
    ]
  } ,
  "context_id" : "rtrepodsjul18@201" ,
  "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/jaas/datasourcerequest/rtrepodsjul18@201" ,
  "status" : "SCHEDULED"
}
```

Example Response: (operation is complete)

The status field will show that the resource has been deleted.

60.9.7.4 Updating a Data Source

The following shows a sample PUT operation on the DataSource URI to update the DataSource to add/remove JNDI names and edit the database connect string. An example request for TEST DataSource is also provided.

Example Request:

Table 60-84 PUT Request Configuration for Updating the Data Source

Feature	Description
URI	/em/cloud/jaas/datasource/rtrepodsjul18@CF4339D922C
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.DataSource+json Content-type: application/oracle.com.cloud.jaas.DataSource+json
Body	{ "jndi_name" : ["jndi_2"], "database_connect_string" : "jdbc:oracle:thin:sysman/ sysman@example.com:15044:sep25cc" , "username" : "sysman", "password" : "sysman" }
Request method	PUT

Example Response:

```
{
  "uri" : "/em/cloud/jaas/datasourcerequest/rtrepodsjul18@CF4339D922C" ,
  "name" : "rtrepodsjul18_UpdatedDS_20121216_062909975" ,
  "resource_state" : {
    "state" : "READY" ,
    "messages" :
    [
      {
        "date" : "2012-12-16T14:29:16+0000" ,
        "text" : "null"
      }
    ]
  } ,
  "context_id" : "rtrepodsjul18@681" ,
  "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/datasourcerequest/rtrepodsjul18@191" ,
  "status" : "SCHEDULED"
}
```

Example Request for TEST Data Source

Table 60-85 PUT Request Configuration for Testing the Data Source

Feature	Description
URI	/em/cloud/jaas/datasource/rtrepodsjul18@CF4339D922C
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.DataSource+json Content-type: application/oracle.com.cloud.jaas.DataSource+json
Body	{ "status" : "TEST" }
Request method	PUT

Example Response

```
{
  "uri" : "/em/cloud/jaas/datasource/rtrepodsjul18@CF4339D922C" ,
  "name" : "rtrepodsjul18" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "rtrepodsjul18@CF4339D922C" ,
  "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/datasource/rtrepodsjul18@CF4339D922C" ,
  "jndi_name" :
  [
    "jndi_1"
  ] ,
}
```

```

    "jdbc_driver" : "oracle.jdbc.OracleDriver" ,
    "username" : "sysam",
    "database_connect_string" : "jdbc:oracle:thin:sysman/sysman@example.com:
15044:sjuly14" ,
    "contained_in" : {
      "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance
+json" ,
      "context_id" : "CF4339D922C51" ,
      "name" : "rtjull17" ,
      "uri" : "/em/cloud/jaas/javaplatforminstance/CF4339D922C51"
    }
  }
}

```

60.9.7.5 Viewing Status of the Data Source Request

The following shows a sample GET on Data Source request.

Example Request:

Table 60-86 GET Request Configuration for Viewing Status of the Data Source

Feature	Description
URI	/em/cloud/jaas/datasourcerequest/rtrepodsjul18@201
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.DataSource+json
Body	None
Request method	GET

Example Response (when operation is in progress):

```

{
  "uri" : "/em/cloud/jaas/datasourcerequest/rtrepodsjul18@201" ,
  "name" : "rtrepodsjul18_DeleteDS_20120723_024836692" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "date" : "2012-07-23T09:48:37+0000" ,
        "text" : "null"
      }
    ]
  } ,
  "context_id" : "rtrepodsjul18@201" ,
  "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/jaas/datasourcerequest/rtrepodsjul18@201" ,
  "status" : "SCHEDULED"
}

```

Example Response (when operation is complete):

```

{
  "uri" : "/em/cloud/jaas/datasource/rtrepodsjul18@CF4339D922C" ,
  "name" : "rtrepodsjul18" ,

```

```

    "resource_state" :    {
      "state" : "READY"
    } ,
    "context_id" : " rtrepodsjul18@CF4339D922C" ,
    "media_type" : "application/oracle.com.cloud.jaas.DataSource+json" ,
    "service_family_type" : "jaas" ,
    "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/jaas/datasource/rtrepodsjul18@CF4339D922C " ,
    "jndi_name" :
    [
      "jndi_1"
    ] ,
    "jdbc_driver" : "oracle.jdbc.OracleDriver" ,
    "username" : "sysam",
    "database_connect_string" : "jdbc:oracle:thin:sysman/sysman@example.us.com:
15044:sjuly14" ,
    "contained_in" :    {
      "media_type" : "application/oracle.com.cloud.jaas.JavaPlatformInstance
+json" ,
      "context_id" : "CF4339D922C51" ,
      "name" : "rtjul17" ,
      "uri" : "/em/cloud/jaas/javaplatforminstance/CF4339D922C51"
    }
  }
}

```

60.9.8 Application Instance Component

This represents the application component in the software library. It can be created by POST-ing to the Jaas service type.

The following table describes the ApplicationInstanceComponent [application/oracle.com.cloud.jaas.ApplicationInstanceComponent+json] data model.

Table 60-87 Application Instance Component Data Model

Field	Type	Description	Occurs
uri	URI	A GET against this URI refreshes the client representation of the resources accessible to this user.	1
name	String	A human readable name given to the instance. [POST]	1
creator	String	Creator of the ApplicationInstanceComponent in the Software Library.	1
created	Timestamp	Date and time, in ISO 8601 format, when the instance was created.	1
version	String	Version of the ApplicationInstanceComponent in the Software library. [POST]	1
resource_state	ResourceState	The validity of the fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1
context_id	String	This is an ID indication the internal reference of the ApplicationInstanceComponent.	1

Table 60-87 (Cont.) Application Instance Component Data Model

Field	Type	Description	Occurs
service_family_type	String	Denotes the type of ApplicationInstanceComponent (for example, "jaas").	1
media_type	String	Indicates the additional media type that clients can use to perform a GET.	1
status	String	Status of the ApplicationInstanceComponent in the Software Library.	1
maturity	String	Maturity of the ApplicationInstanceComponent in the Software Library.	1
component_type	String	Component type of ApplicationInstanceComponent (for example, Java EE Application).	1
canonicalLink	String	GET against this normalized/canonical URI refreshes the client representation of the resources accessible to this user.	1

60.9.8.1 Viewing Details of the Application Instance Component Resource

The following shows a sample GET operation on the ApplicationInstanceComponent URI to return its representation.

Example Request:

Table 60-88 GET Request Configuration for Viewing Details of the Application Instance Component

Feature	Description
URI	/em/cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication%3AC514D5CF9FC00CD7E040F10A716020D0%3A0.1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.ApplicationInstanceComponent+json
Body	None
Request method	GET

Example Response:

```
HTTP/1.1 200 OK
Content-Type: application/oracle.com.cloud.jaas.ApplicationInstanceComponent+json
Content-Location: /em/cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication%3AC514D5CF9FC00CD7E040F10A716020D0%3A0.1
Cache-Control: public
Content-Length: nnn
{
  "uri" : "/em/cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication
```

```
%3AC514D5CF9FC00CD7E040F10A716020D0%3A0.1" ,
  "name" : "Riddles" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "oracle:defaultService:em:provisioning:
1:cmp:COMP_Component:SUB_JavaEEApplication:C514D5CF9FC00CD7E040F10A716020D0:0.1" ,
  "media_type" : "application/oracle.com.cloud.jaas.ApplicationInstanceComponent
+json" ,
  "service_family_type" : "jaas" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/
cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService%3Aem%3Aprovisioning
%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication
%3AC514D5CF9FC00CD7E040F10A716020D0%3A0.1" ,
  "created" : "2012-07-17 22:31:33.0" ,
  "version" : "0.1" ,
  "creator" : "SSA_USER_1" ,
  "componenttype" : "Java EE Application" ,
  "status" : "Ready" ,
  "maturity" : "Untested"
}
```

60.9.8.2 Deleting an Application Instance Component

The following shows a sample DELETE operation on the ApplicationInstanceComponent URI.

Example Request:

Table 60-89 DELETE Request Configuration for Deleting the Application Instance Component

Feature	Description
URI	/em/cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication%3AC514D5CF9FC00CD7E040F10A716020D0%3A0.1
Request header	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.jaas.ApplicationInstanceComponent+json
Body	None
Request method	DELETE

Example Response:

```
{
  "uri" : "/em/cloud/jaas/applicationinstancecomponent/oracle%3AdefaultService
%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication
%3AC514D5CF9FC00CD7E040F10A716020D0%3A0.1" ,
  "resource_state" : {
    "state" : "DESTROYED"
  } ,
  "context_id" : "oracle:defaultService:em:provisioning:"
```

```

1:cmp:COMP_Component:SUB_JavaEEApplication:C514D5CF9FC00CD7E040F10A716020D0:0.1" ,
  "media_type" : "application/oracle.com.cloud.jaas.ApplicationInstanceComponent
+json" ,
  "canonicalLink" : "/em/websvcs/restful/extws/cloudservices/service/v0/ssa/em/cloud/
jaas/applicationinstancecomponent/oracle%3AdefaultService%3Aem%3Aprovisioning
%3A1%3Acmp%3ACOMP_Component%3ASUB_JavaEEApplication
%3AC514D5CF9FC00CD7E040F10A716020D0%3A0.1"
}

```

60.10 Application Component Filtering for V1

Application component filtering is supported for JaaS zones, templates, and application components.

60.10.1 Filtering Service Templates

The filtering attributes supported are name, service_template_type, owner, and media_type. The following are sample requests and responses to Service Template Finds:

Example Request

Table 60-90 GET Request Configuration for Filtering Service Templates

Feature	Description
URI	/em/cloud?filters=
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.common.ServiceTemplateFinds+json
Body	{ "filters": {"name": "RiddleApp"} }
Request method	GET

Example Response

```

{
  "uri" : "/em/cloud/finds/service_template/
bWVkaWFfdHlwZSUyNTNEYXBwbGljYXRpb241MjUyRm9yYWNsZS5jb20uY2xvdWQuY29tbW9uLlNl
%0AcnZpY2VUZlwbGF0ZSUyRm5hbWU1MjUzRFJpZGRsZUFwcA%3D%3D" ,
  "name" : "Service Template Finds" ,
  "media_type" : "application/oracle.com.cloud.common.ServiceTemplateFinds+json" ,
  "description" : "This is a Resource Finds for 'Service Template Finds' with media
type 'application/oracle.com.cloud.common.ServiceTemplateFinds+json'" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "filters" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate" ,
    "name" : "RiddleApp"
  } ,
  "finds" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate" ,

```

```

    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/jaas/applicationinstancecomponent/oracle
%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3ACOMP_Component
%3ASUB_JavaEEApplication%3AD1103FE5F6877372E040F20AD1814215%3A0.1" ,
        "name" : "RiddleApp" ,
        "media_type" : "application/
oracle.com.cloud.jaas.ApplicationInstanceComponent+json" ,
        "service_family_type" : "jaas"
      }
    ]
  }
}

```

60.10.2 Filtering Zones

The filtering attributes supported are name, owner, service_family_type, and media_type.

Example for Filtering Zones

Table 60-91 GET Request Configuration for Filtering Zones

Feature	Description
URI	/em/cloud?filters=
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Accept: application/oracle.com.cloud.common.ZoneFinds+json
Body	{ "filters": {"name": "Zone1"} }
Request method	GET

Example Response

```

{
  "uri" : "/em/cloud/finds/zone/
bWVkaWFfdHlwZSUyNTNEYXBwbGljYXRpb241MjUyYm9yYWNsZS5jb20uY2xvdWQuY29tbW9uLlpv
%0AbmU1MkZuYW11JTIlM0Rab251MQ%3D%3D" ,
  "name" : "Zone Finds" ,
  "media_type" : "application/oracle.com.cloud.common.ZoneFinds+json" ,
  "description" : "This is a Resource Finds for 'Zone Finds' with media type
'application/oracle.com.cloud.common.ZoneFinds+json'" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "filters" : {
    "media_type" : "application/oracle.com.cloud.common.Zone" ,
    "name" : "Zone1"
  } ,
  "finds" : {
    "media_type" : "*/*" ,
    "total" : "1" ,

```

```

"elements" :
[
  {
    "uri" : "/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ,
    "name" : "Zone1" ,
    "media_type" : "application/oracle.com.cloud.jaas.Zone+json" ,
    "service_family_type" : "jaas"
  }
]
}

```

60.11 Load Balancer Configuration for V1

The following table describes the load balancer configuration.

Table 60-92 Load Balancer Configuration

Method	Request Payload	URI	Description
GET	NA	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs	Returns all load balancer configurations with lbr Id, lbr name and lbr self link.
GET	NA	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs/{lbr id}	Returns all details about the given load balancer configuration.
POST	LBR Config Item (Json Payload)	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs	Creates a new load balancer configuration.
PUT	LBR Config Item (Json Payload)	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs	Edits the load balancer configuration.
DELETE	NA	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs/{lbr id}	Deletes the lbr with the specified lbr id.

60.11.1 Load Balance Configuration REST API Examples

This section explains the REST API examples related to the Load Balancer Configuration.

60.11.1.1 Viewing Details of the Load Balancer Configuration Resource

The table below lists the GET request configuration.

Table 60-93 GET Request Configuration for Viewing Details of the Load Balancer Configuration Resource

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  name: "Load Balancer Configurations"
  description: "Load Balancer Configurations available"
  selfLink: " /em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs"
  lbrconfigs: [2]
  0: {
    name: "lbr1"
    type: "OHS"
    id: 1001
    selfLink: "/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs/1001"
  }
  1: {
    name: "lbr2"
    type: "OTD"
    id: 1002
    selfLink: "
/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs/1002"
  }
}
```

60.11.1.2 Viewing Details of the specified Load Balancer Configuration

The table below lists the GET request configuration for viewing details of the Load Balancer Configuration.

Table 60-94 GET Request Configuration for Viewing Details of the specified Load Balancer Configuration

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs/1001
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None

Table 60-94 (Cont.) GET Request Configuration for Viewing Details of the specified Load Balancer Configuration

Feature	Description
Request method	GET

A sample of the response received is shown below.

```
{
  name: "lbr1"
  description: "Real ohs lbr"
  type: "OHS"
  id: 1001
  owner: "SYSMAN"
  host: "example.com"
  credential: "HOST_CREDS"
  agentTargetName: "example.com:11852"
  instanceHome: "/scratch/PS5_OHS/instance_home"
  poolTargets: [1]
    0: "10729BD1A3B12FA254232EE4F84CB71B"
  planTargets: [0]
  properties:
    {
      OHS_ROUTING_HTTP_PORT: "7777"
      OHS_ROUTING_PROTOCOL: "HTTP"
      COMPONENT_NAME: "ohs1"
    }
  selfLink: "/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs/1001"
}
```

60.11.1.3 Editing the Load Balancer Configuration

The table below lists the PUT request configuration for editing the Load Balancer Configuration.

Table 60-95 PUT Request Configuration for Editing the Load Balancer Configuration

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 60-95 (Cont.) PUT Request Configuration for Editing the Load Balancer Configuration

Feature	Description
Body	<pre>{ "name": "lbr2", "description": "desc by rest", "type": "OTD", "id": 1002, "host": "xyxy.example.com", "agentTargetName": "xyxy.example:11852", "credential": "USER_CREDS", "instanceHome": "as", "properties":{ "items": [{ "name":"SNMP_PORT", "value":"11161"}, { "name":"CERT_NAME", "value": "sdfsdf"}, { "name":"OTD_INSTANCENODES", "value": "sd"}, { "name":"HTTP_PORT", "value": "80"}, { "name":"CONFIG_NAME", "value": "config1"}, { "name":"VIRTUAL_SERVER_NAME", "value": "dfsdfs"}, { "name":"HTTPS_PORT", "value": "443"}, { "name":"ROUTING_PROTOCOL", "value": "HTTP_HTTPS"}] }, "poolTargets": ["10729BD1A3B12FA25432EE4F84CB71B"] }</pre>
Request method	PUT

60.11.1.4 Adding a Load Balancer Configuration

The table below lists the POST request configuration for adding a Load Balancer Configuration.

Table 60-96 PUT Request Configuration for Editing the Load Balancer Configuration

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/lbrconfigs
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 60-96 (Cont.) PUT Request Configuration for Editing the Load Balancer Configuration

Feature	Description
Body	<pre>{ "name": "lbr1", "description": "desc by rest", "type": "OHS", "host": "abc.us.example.com", "agentTargetName": "abc.us.example.com:11852", "credential": "USER_CREDS", "instanceHome": "instHome", "properties":{ "items": [{"name":"OHS_ROUTING_HTTP_PORT", "value":"80"}, {"name":"OHS_ROUTING_PROTOCOL", "value": "HTTP"}, {"name":"COMPONENT_NAME", "value": "compName"}] }, "poolTargets": ["10729BD1A33B12FA254232EE4F84CB71B"] }</pre>
Request method	POST

60.12 Quotas for V1

The following table describes the quota configuration.

Table 60-97 Quota Configuration

Method	Request Payload	URI	Description
GET	NA	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/quotas	Returns quota settings for all ssa user roles for MWaaS.
POST	Quota Item (Json Payload)	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/quotas	Creates quota for the SSA user role.
PUT	Quota Item (Json Payload)	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/quotas	Edits quota for the SSA user role.
DELETE	Quota Item (Json Payload)	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/quotas	Deletes quota for the SSA user role.

60.12.1 Quotas REST API Examples

This section explains the Quotas REST API examples.

60.12.1.1 Viewing Details of the Quota Settings for All SSA User Roles

The table below lists the GET request configuration.

Table 60-98 GET Request Configuration for Viewing Details of the Quota Settings for All SSA User Roles

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/quotas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{ "name": "Middleware Cloud Quotas", "description": "Middleware Cloud Quotas per SSA
User Role", "quotas": [ { "roleName": "SSA_DEMO_ROLE",
"memory": "10", "javaServersCount": "10" } ], "selfLink": "https://example.com
:5416/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/quotas" }
```

60.12.1.2 Creating Quota Settings for a SSA User Role

The table below lists the POST request configuration.

Table 60-99 POST Request Configuration for Creating Quota Settings for a SSA User Role

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/quotas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	{ "roleName": "SSA_ROLE" "memory": "5" "javaServersCount": "10" }
Request method	POST

60.12.1.3 Editing Quota Settings for a SSA User Role

The table below lists the PUT request configuration.

Table 60-100 PUT Request Configuration for Editing Quota Settings for a SSA User Role

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/quotas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "roleName": "SSA_ROLE" "memory": "10" "javaServersCount": "5" }</pre>
Request method	PUT

60.12.1.4 Deleting Quota Settings for a SSA User Role

The table below lists the DELETE request configuration.

Table 60-101 DELETE Request Configuration for Deleting Quota Settings for a SSA User Role

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/quotas
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "roleName": "SSA_ROLE" }</pre>
Request method	DELETE

60.13 Service Templates for V1

For Create requests, the CDP based template and profiles are supported.

Note:

Middleware Virtual Template management is not supported in this release.

60.13.1 Creating a Service Template

The table below lists the POST request configuration.

Table 60-102 POST Request Configuration for Creating a Service Template

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v1/servicetemplates
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "name": "restTemplate", "serviceFamily": "MWAAS", "serviceType": "PhysicalWLS", "description": " CDP based template created through REST", "poolIds":["10729BD1A3B12FA254232EE4F84CB71B"], "roles":[{ "name":"SSA_USER_ROLE1" }], "serviceExecutableMeta": { "type": "CDP", "name": "CDP1", "configurations":[{"id": "wlsUserName","value": "weblogic"}, {"id": "wlsUserPassword","value": "welcome1"}, {"id": "wlsUserPassword2","value": "welcome1"}, {"id": "topology","value": "1"}, {"id": "exposeAdminURLs","value": "0"}, {"id": "enableLoadBalancer","value": "0"}, {"id": "hostListForScripts","value": ""}, {"id": "namedCredforHostList","value": ""}, {"id": "isScriptExecuteOnAdminServer","value": ""}, {"id": "portRangeStart","value": "1024"}, {"id": "portRangeEnd","value": "65000"}, {"id": "memoryUsagePerInstance","value": "0.25"}, {"id": "cpuUsagePerInstance","value": "10"}, {"id": "startupArguments","value": ""}, {"id": "requireHighAvailability","value": "1"}, {"id": "rootPwd","value": ""}, {"id": "agentInstallUserPwd","value": ""}, {"id": "namedHostCredForVirtualFlow","value": ""}] } } }</pre>
Request method	POST

60.14 User Operation REST API Examples for V1

The following operations are described in this section:

- [Starting/Stopping Service Instances](#)
- [Rescheduling Service Instance](#)
- [Viewing Details of the Java EE Application Components in Software Library](#)
- [Deploying an Application as a Library](#)
- [User Operations for Scheduling Support](#)

60.14.1 Starting/Stopping Service Instances

The following table describes the REST API to stop a service instance.

Table 60-103 PUT Request Configuration for Starting/Stopping Service Instances

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/mwaas/v1/serviceinstances/{instance_id}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "operation": "STOP" }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  message: "Stop service instance request has been submitted. Request ID = 122"
  statusUri:
    "https://example.com:5416/em/websvcs/restful/extws/cloudservices/ssa/cfw/v1/servicerequests"
}
```

Similar to the above example, to start a service instance all the features of the REST API shown above remain the same, except for "operation": "START" should be mentioned in the Body instead of "operation": "STOP".

60.14.2 Rescheduling Service Instance

The following table describes the reschedule service instance configuration. The following REST API reschedules the service instance based on the schedule date.

Table 60-104 PUT Request Configuration for Rescheduling a Service Instance

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/serviceinstances/{instance_id}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 60-104 (Cont.) PUT Request Configuration for Rescheduling a Service Instance

Feature	Description
Body	<pre>{ "operation": "RESCHEDULE" , "reschedule": "2013-12-20T02:10:45ZAsia/Calcutta" }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  message: "Reschedule request has been submitted. Request ID = 124 "
  statusUri:
  "https://example.com:5416/em/websvcs/restful/extws/cloudservices/ssa/cf
w/v1/servicerequests"
}
```

60.14.3 Viewing Details of the Java EE Application Components in Software Library

The following table describes the Java EE application components configuration. The following REST API returns all the Java EE app components uploaded in the software library.

Table 60-105 GET Request Configuration for Rescheduling a Service Instance

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/javaeeappcomponets
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  name: "Java EE Application Components uploaded in My Library "
  selfLink:
  "https://example.com:5416/em/websvcs/restful/extws/cloudservices/ssa/mw
aas/v1/javaeeappcomponets"
  appUrns: [1]
  0: {
  type: "Java EE Application"
```

```

description: null
status: "Ready"
appName: "Calendar"
creator: "SSA_USER1"
revision: "0.1"
maturity: "Untested"
createdTime: "2013-12-12 04:19:17.0"
appUrn: "oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB
_JavaEEApplication:ED561AB14BA02907E043AB53F20AC335:0.1"
}

```

60.14.4 Deploying an Application as a Library

This section shows the REST APIs to deploy, redeploy, and undeploy the application as a library.

Table 60-106 Deploy Application as a Library Supported Request Methods

Method	Request Payload	URI	Description
PUT	Instance Item	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/serviceinstances/{Instance_Guid}	Deploys application as a library.
PUT	Instance Item	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/serviceinstances/{Instance_Guid}	Redeploys the deployed application.
PUT	Instance Item	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/serviceinstances/{Instance_Guid}	Undeploys the library.

60.14.4.1 Deploying an Application as a Library

The table below lists the PUT request configuration for deploying an application as a library.

Table 60-107 PUT Request Configuration for Deploying an Application as a Library

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/mwaas/v1/serviceinstances/{instance_id}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=

Table 60-107 (Cont.) PUT Request Configuration for Deploying an Application as a Library

Feature	Description
Body	<pre>{ "operation": "DEPLOYLIB" , "appName": "testLib" , "appUrn": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB _JavaEEApplication:ED561AB14BA02907E043AB53F20AC335:0.1" }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  message: "Deploy Library request has been submitted. Request ID = 125 "
  statusUri:
    "https://example.com:5416/em/websvcs/restful/extws/cloudservices/ssa/
cfw/v1/servicerequests"
}
```

60.14.4.2 Redeploying an Application as a Library

The table below lists the PUT request configuration for redeploying an application as a library.

Table 60-108 PUT Request Configuration for Redeploying an Application as a Library

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/mwaas/v1/serviceinstances/{instance_id}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "operation": "REDEPLOYLIB" , "appName": "testLib" , "appUrn": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB _JavaEEApplication:ED561AB14BA02907E043AB53F20AC335:0.1" }</pre>
Request method	PUT

60.14.4.3 Undeploying an Application as a Library

The table below lists the PUT request configuration for undeploying an application as a library.

Table 60-109 PUT Request Configuration for Undeploying an Application as a Library

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/mwaas/v1/serviceinstances/{instance_id}
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "operation": "UNDEPLOYLIB" , "appName": "testLib" }</pre>
Request method	PUT

60.14.5 User Operations for Scheduling Support

This sections shows the REST APIs for the POST operations for Service Instances.

Table 60-110 Java EE Applications Components POST Request Descriptions

Method	Request Payload	URI	Description
POST	Instance Item	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/serviceinstances	Submits request for service instance creation
POST	Instance Item	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/serviceinstances	Scale up request.
POST	Instance Item	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/serviceinstances	Scale down request.
POST	Instance Item	/em/websvcs/restful/extws/cloudservices/admin/mwaas/v1/serviceinstances	Deletes the service instance.

60.14.5.1 Creating a Service Instance

The table below lists the POST request configuration for creating a service instance.

Table 60-111 POST Request Configuration for Creating a Service Instance

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/mwaas/v1/serviceinstances
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "operation": "REQUEST_INSTANCE" , "stGuid": "ED638689D4483CA4E043AB53F20A98C1" , "serviceName": "instanceName" , "zoneName": "paas_zone" , "schedule": "2013-11-23T02:10:45ZAsia/Calcutta" }</pre>
Request method	POST

60.14.5.2 Scaling Up a Service Instance

The table below lists the POST request configuration for scaling up a service instance.

Table 60-112 POST Request Configuration for Scaling Up a Service Instance

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/mwaas/v1/serviceinstances
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "operation": "SCALEUP" , "serviceName": "instanceName" , "numberOfServer": 1 , "schedule": "2013-11-23T02:10:45ZAsia/Calcutta" }</pre>
Request method	POST



Note:

For immediate execution the schedule object should be empty in the Body.

60.14.5.3 Scaling Down a Service Instance

The table below lists the POST request configuration for scaling down a service instance.

Table 60-113 POST Request Configuration for Scaling Down a Service Instance

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/mwaas/v1/serviceinstances
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "operation": "SCALEDOWN" , "serviceName": "testInstance20_142768fdfff" , "numberOfServer": 1 , "schedule": "" }</pre>
Request method	POST

 **Note:**

For a scheduled execution the schedule object should specify the date, time and zone in the Body.

60.14.5.4 Deleting a Service Instance

The table below lists the POST request configuration for deleting a service instance.

Table 60-114 POST Request Configuration for Deleting a Service Instance

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/mwaas/v1/serviceinstances
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	<pre>{ "operation": "DELETE_INSTANCE" , "serviceName": " instanceName" , "zoneName": "paas_zone" , "schedule": "" }</pre>
Request method	POST

60.15 EMCLI Support for Administration Operations

This section contains a few samples and usage of the EM CLI commands. For more details, refer to the Enterprise Manager Command Line Reference Guide.

Table 60-115 General WLaaS EM CLI Verbs

Verb	Description	Format
emcli invoke_ws	<p>Invokes the Enterprise Manager Web service.</p> <p>Options:</p> <ul style="list-style-type: none"> -wsname - Indicates the URI of the resource. -method - Type of the REST method. -payload - Indicates the json/xml input payload. -accept - Payload type. These are standard jersey values. -type - Standard jersey response types. -param - Use this option to pass in form/query parameter value. For example, -param="name:value". More than one parameter can be specified. For example, -param="name:value" -param="zip:12345". <p>The parameter can be provided through a file. To read from file, specify as shown in the example: -param="name:tag" -input_file="tag:file.txt". In this example, the name parameter will be read from file file.txt.</p> <ul style="list-style-type: none"> -input_file - Use this option to pass in payload or param value from file. <p>Examples:</p> <ul style="list-style-type: none"> emcli invoke_ws -wsname=/em/websvcs/restful/emws/core/v0/list/dataservice -method=get -param="name:Administrators" Invokes list resource and sources all administrators emcli invoke_ws -wsname=/em/websvcs/restful/emws/core/v0/list/dataservice -method=get -param="name:tag" -input_file="tag:file.txt" Invokes list resource and sources all administrators. The name parameter is read from file.txt. 	<pre>emcli invoke_ws -wsname=<WebService Name> -method=<method name> [-payload=<Payload>] [-accept=<accept type>] [-type=response type] [-param=Query Parameters] [-input_file=<Input File for payload data>]</pre>

Table 60-115 (Cont.) General WLaaS EM CLI Verbs

Verb	Description	Format
emcli get_targets	<p>Obtain status and alert information for targets.</p> <p>Options:</p> <ul style="list-style-type: none"> -targets=name:type - Name or type can be either a full value or a pattern match using "%". Also, name is optional, so the type alone may be specified. -limit_rows="Maximum number of targets to be retrieved" - Defaults to 2000 rows, if not specified. -config_search="Configuration Search UI Name" - Search UI name should be the display name of the configuration search. -alerts - Displays the count of critical and warning alerts for each target. -noheader - Displays tabular output without column headers. -unmanaged - Displays unmanaged targets (no status or alert information). -properties - Displays unmanaged targets with properties. -separator_properties="separator_properties" - Displays unmanaged target properties with separator_properties. -subseparator_properties="subseparator_properties" - Displays unmanaged target properties with subseparator_properties. -script - This option is equivalent to -format="name:script". -format - Format specification (default is -format="name:pretty"). <ul style="list-style-type: none"> -format="name:pretty" prints the output table in a readable format but is not intended to be parsed by scripts. -format="name:script" sets the default column separator to a tab and the default row separator to a new line. The column and row separator strings may be specified to change these defaults. -format="name:csv" sets the column separator to a comma and the row separator to a newline. <p>Examples:</p> <ul style="list-style-type: none"> emcli get_targets Displays a maximum of 2000 targets. Critical and Warning columns are not shown. emcli get_targets -limit_rows=20 Displays a maximum of 20 targets. Critical and Warning columns are not shown. emcli get_targets -alerts 	<pre>emcli get_targets [-targets="[name1:]type1; [name2:]type2;..."] [-alerts] [-noheader] [-script -format= [name:<pretty script csv>]; [column_separator:"column_sep_str ing"]; [row_separator:"row_sep_string"];] [-limit_rows="Maximum number of targets to be retrieved"] [-config_search="Configuration Search UI Name"] [-unmanaged] [-properties] [- separator_properties="properties_s ep_string"] [- subseparator_properties="propertie s_subsep_string"]</pre>

Table 60-115 (Cont.) General WLaaS EM CLI Verbs

Verb	Description	Format
	<p>Displays a maximum of 2000 targets. Critical and Warning columns are shown.</p> <ul style="list-style-type: none"> • <code>emcli get_targets - targets="oracle_database"</code> <p>Displays all "oracle_database" targets.</p> <ul style="list-style-type: none"> • <code>emcli get_targets -targets="%oracle%"</code> <p>Displays all targets whose type contains the string "oracle".</p> <ul style="list-style-type: none"> • <code>emcli get_targets -targets="database%: %oracle%"</code> <p>Displays all targets whose name starts with "database" and type contains "oracle".</p> <ul style="list-style-type: none"> • <code>emcli get_targets - targets="database3:oracle_database" - alerts</code> <p>Displays status and alert information on the Oracle database named "database3".</p> <ul style="list-style-type: none"> • <code>emcli get_targets -config_search="Search File Systems on Hosts" -targets="oracle %:host" -alerts</code> <p>Displays status and alert information of the resulting targets from configuration search named "Search File Systems on Hosts" and targets whose name starts with "oracle" and of type "host".</p> <ul style="list-style-type: none"> • <code>emcli get_targets -targets="host" - unmanaged</code> <p>Displays name and type information for unmanaged host targets.</p> <ul style="list-style-type: none"> • <code>emcli get_targets -unmanaged -properties -separator_properties=, - subseparator_properties==</code> <p>Displays name, type, and properties for unmanaged host targets with the specified separators. By default the separator_properties is ";" and the subseparator_properties is ":".</p>	

61

SOAaaS and OSBaaS APIs

This chapter describes the resource model for SOA as a Service (SOAaaS) APIs and OSB as a Service (OSBaaS) APIs and their responses. In particular, this chapter contains the following topics:

- [PaaS Infrastructure Zone and Middleware Pool](#)
- [Quotas](#)
- [Service Templates](#)
- [Load Balance Configuration](#)
- [SSA User Operation API Examples](#)

61.1 PaaS Infrastructure Zone and Middleware Pool

This section lists the APIs for PaaS Infrastructure zone and Middleware pool.

- [Viewing Details of All the Resource Providers](#)
- [Creating a PaaS Infrastructure Zone for SOA/OSB Domains](#)
- [Creating Middleware Pool for SOA/OSB](#)
- [Updating a PaaS Infrastructure Zone](#)
- [Updating a Middleware Pool](#)
- [Deleting a Resource Provider \(PaaS Infrastructure Zone or Middleware Pool\)](#)

61.1.1 Viewing Details of All the Resource Providers

The following table shows an example of a GET operation on the Resource providers URI to return its representation.

Table 61-1 GET Request Configuration for Viewing Details of the Resource Providers

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: Basic c3lzbWVhbnN5c21hbg==
Body	None
Request method	GET

61.1.2 Creating a PaaS Infrastructure Zone for SOA/OSB Domains

The following table shows an example of a POST operation on the Resource providers URI to create a PaaS infrastructure zone.

Table 61-2 POST Request Configuration for Creating a PaaS Infrastructure Zone

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==
Body	<pre>{ "useExistingTarget" : false, "name": "WlaaS_Zone1", "type": "self_service_zone", "credentials": [{"name":"normal_credential_guid","description":"This is description frpm the REST method","value": "AIME_CLOUD_CRED"}], "memberTargetType": "host", "members":["slc05tgu.example.com", "slc02pog.example.com"], "placementConstraints":[{"name":"MAX_CPU_UTILIZATION", "value": ["80"]}, {"name":"MAX_MEMORY_ALLOCATION", "value":["80"]}], "characteristics": [{"name":"ORACLE.SYSMAN.CFW.SELF_SERVICE_ZONE", "value": ["70F61D030338B79AFEC42E008AF6F6B7"]}], {"name": "ORACLE.SYSMAN.CFW.ORCL_GTP_CONTACT", "value":["123456789"]}, {"name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER", "value": ["IDC.LEX"]}], {"name": "ORACLE.SYSMAN.CFW.ORCL_GTP_DEPARTMENT", "value":["FMW"]}, {"name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LIFECYCLE_STATUS", "value": ["Test"]}], {"name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LINE_OF_BUS", "value":["ST"]}, {"name": "ORACLE.SYSMAN.CFW.ORCL_GTP_LOCATION", "value":["IDC"]}], "roles":["MWAS_SSA_USER_ROLE1"] }</pre>
Request method	POST

61.1.3 Creating Middleware Pool for SOA/OSB

The following table shows an example of a POST operation on the Resource providers URI to create a Middleware pool.

Table 61-3 POST Request Configuration for Creating a Middleware Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==

Table 61-3 (Cont.) POST Request Configuration for Creating a Middleware Pool

Feature	Description
Body	<pre>{ "useExistingTarget": "false", "name": "WlaaS_Pool1", "type": "mwaas_zone", "description": "This is a Windows Pool for WLAAS testing", "memberTargetType": "host", "members": ["slc05tgu.example.com", "slc02pog.example.com"], "parentResourceProviderId": "1", "placementConstraints": [{ "name": "MAX_INSTANCES", "value": "10" }], "memberConstraints": [{ "name": "ORACLE.SYSMAN.EMAS.MWC.WLAAS.PLATFORM", "value": "226" }], "characteristics": [{ "name": "ORACLE.SYSMAN.CFW.ORCL_GTP_COST_CENTER", "value": "IDC" }] }</pre>
Request method	POST

61.1.4 Updating a PaaS Infrastructure Zone

The following table shows an example of a PUT operation to update the PaaS infrastructure zone.

Table 61-4 PUT Request Configuration for Updating a PaaS Infrastructure Zone

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/1
Request headers	Authorization: Basic c3lzbWFWuOnN5c21hbg==
Body	<pre>{ "description": "This is description from the REST PUT method", "placementConstraints": [{ "name": "MAX_CPU_UTILIZATION", "value": ["90"] }, { "name": "MAX_MEMORY_ALLOCATION", "value": ["90"] }] }</pre>
Request method	PUT

61.1.5 Updating a Middleware Pool

The following table shows an example of a PUT operation to update a Middleware pool.

Table 61-5 PUT Request Configuration for Updating a Middleware Pool

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/2

Table 61-5 (Cont.) PUT Request Configuration for Updating a Middleware Pool

Feature	Description
Request headers	Authorization: Basic c3lzbWVhbnN5c21hbg==
Body	<pre>{ "placementConstraints": [{"name": "NUMBER_OF_INSTANCES", "value": ["15"]}]} </pre>
Request method	PUT

61.1.6 Deleting a Resource Provider (PaaS Infrastructure Zone or Middleware Pool)

The following table shows an example of a DELETE operation to delete a PaaS Infrastructure zone or Middleware pool.

Table 61-6 DELETE Request Configuration for Deleting a PaaS Infrastructure Zone

Feature	Description;
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/resourceproviders/1
Request headers	Authorization: Basic c3lzbWVhbnN5c21hbg==
Body	None
Request method	DELETE

61.2 Quotas

This section lists the SOA/OSB APIs for Quotas.

- [Viewing Details of Quota Settings](#)
- [Creating a Quota for a SSA User Role](#)
- [Updating a Quota for a SSA User Role](#)
- [Deleting a Quota for a SSA User Role](#)

61.2.1 Viewing Details of Quota Settings

The following table shows an example of a GET operation on the quotas URI to return its representation. This operation returns quota settings for all the SSA user roles for MWaaS.

Table 61-7 GET Request Configuration for Viewing Details of Quota Settings

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/quotas
Request headers	Authorization: Basic c3lzbWVhbnN5c21hbg==
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
name: "Middleware Cloud Quotas"
description: "Middleware Cloud Quotas per SSA User Role"
quotas: [1]
0: {
roleName: "SSA_USER_ROLE"
memory: "4"
javaServersCount: "10"
}-
-
selfLink: "https://slc06ekg.us.example.com:5416/em/websvcs/restful/extws/
cloudservices/admin/wlaas/v2/quotas"
}
```

61.2.2 Creating a Quota for a SSA User Role

The following table shows an example of a POST operation on the quotas URI to create a quota for the SSA user role.

Table 61-8 POST Request Configuration for Creating a Quota Setting for a SSA User Role

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/quotas
Request headers	Authorization: Basic c3lzbWVhbnN5c21hbg==
Body	{ "roleName": "SSA_ROLE" "memory": "5" "javaServersCount": "10" }
Request method	POST

61.2.3 Updating a Quota for a SSA User Role

The following table shows an example of a PUT operation to update a quota for the SSA user role.

Table 61-9 PUT Request Configuration for Updating a Quota Setting for a SSA User Role

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/quotas
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==
Body	<pre>{ "roleName": "SSA_ROLE" "memory": "10" "javaServersCount": "5" }</pre>
Request method	PUT

61.2.4 Deleting a Quota for a SSA User Role

The following table shows an example of a DELETE operation to delete a quota for a SSA user role.

Table 61-10 DELETE Request Configuration for Deleting a Quota for a SSA User Role

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/quotas
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==
Body	<pre>{ "roleName": "SSA_ROLE" }</pre>
Request method	DELETE

61.3 Service Templates

This section lists the APIs for Service Templates,

- [Viewing Details of all Service Templates](#)
- [Viewing Details of a Specific Service Template](#)
- [Deleting a Service Template](#)
- [Creating a Service Template](#)

61.3.1 Viewing Details of all Service Templates

The following table shows an example of a GET operation on the service templates URI to return its representation.

Table 61-11 GET Request Configuration for Viewing Details of all Service Templates

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==
Body	None
Request method	GET

61.3.2 Viewing Details of a Specific Service Template

The following table shows an example of a GET operation on a specific service template URI to return its representation.

Table 61-12 GET Request Configuration for Viewing Details of a Specific Service Template

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/21/
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==
Body	None
Request method	GET

61.3.3 Deleting a Service Template

The following table shows an example of a DELETE operation to delete a service template.

Table 61-13 DELETE Request Configuration for deleting the Service Templates

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/21
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==
Body	None

Table 61-13 (Cont.) DELETE Request Configuration for deleting the Service Templates

Feature	Description
Request method	DELETE

61.3.4 Creating a Service Template

The table below lists the POST request configuration for creating SOA/OSB service templates.

61.3.4.1 Viewing Service Template Types

The following table shows an example of a GET operation on the service template type URI to return its representation.

Table 61-14 GET Request Configuration for Viewing Details of Service Template Types

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/templatetypes/
Request headers	Authorization: Basic c3lzbWFWuOnN5c21hbg==
Body	None
Request method	GET

61.3.4.2 Getting Service Template Metadata Details

The following is an example of a POST operation on the Service Template URI to update the Service template metadata information.

Table 61-15 POST Request Configuration for Getting Service Template Metadata Details

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/metadata
Request headers	Authorization: Basic c3lzbWFWuOnN5c21hbg==
Body	<pre>{ "serviceType": "OSB_SERVICE", "serviceTemplateTypeId": "21" }</pre>

Table 61-15 (Cont.) POST Request Configuration for Getting Service Template Metadata Details

Feature	Description
Request method	POST

61.3.4.3 Getting the Resource Provider Characteristics

The following is an example of a POST operation on the Service Template URI to create the resource providers.

Table 61-16 POST Request Configuration for Getting the Resource Provider Characteristics

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/resourceProviders
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==
Body	<pre> { "serviceType": "OSB_SERVICE", "serviceTemplateTypeId": "21", "rscProvAssocOption": ["byRscLookupChars"], "selectedExecutableName": { "name": "MW_OSBAAS_CREATE_INSTANCE", "type": "STRING", "value": "SOAaaSOuterDP", "defaultValue": "SOAaaSOuterDP", "required": true, "secret": false }, "payloads": [{ "name": "Profile for OSB", "value": "<user_input>", "required": true }], "characteristics": [] } </pre>
Request method	POST

61.3.4.4 Creating the Service Template Configuration

The following is an example of a POST operation on the Service Template URI to create the service template configuration.

Table 61-17 POST Request Configuration for Creating the Resource Providers

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates/configurations
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==
Body	Payload: Use b,c responses. <pre> { "serviceType": "OSB_SERVICE", "serviceTemplateTypeId": "21", "rscProvAssocOption": ["byRscLookupChars"], "payloads": [{ "name": "Profile for OSB", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_FMWBundle: 0792B0CF52D06888E053AC75B10A17C8:0.1" }], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.EMAS.MWAAS_ZONE", "values": ["C5E76791838043BC71F5D6B70886F13B"] }], "purposeId": 1 }] } } </pre>
Request method	POST

61.3.4.5 Creating Service Templates Using these Responses

The following is an example of a POST operation on the Service Template URI to create the service templates using the responses received.

Table 61-18 POST Request Configuration for Creating the Resource Providers

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/cfw/v2/servicetemplates
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==

Table 61-18 (Cont.) POST Request Configuration for Creating the Resource Providers

Feature	Description
Body	<pre> { "name": "OSB_ST1", "displayName": "OSB_ST1", "serviceType": "OSB_SERVICE", "serviceTemplateTypeId": "21", "rscProvAssocOption":["byRscProvInst"], "roles": ["SSA_USER1"], "payloads": [{ "name": "Profile for OSB", "value": "oracle:defaultService:em:provisioning: 1:cmp:COMP_Component:SUB_FMWBundle: 0792B0CF52D06888E053AC75B10A17C8:0.1", "required": null }], "selectedExecutableName": [{ "name": "MW_OSBAAS_CREATE_INSTANCE", "value": "SOAaaSOuterDP" }], "resourceProvider": { "lookupCharacteristics": [{ "characteristics": [{ "name": "ORACLE.SYSMAN.EMAS.MWAAS_ZONE", "values":["C5E76791838043BC71F5D6B70886F13B"] }], "purposeId": 1 }] }, "configurations": [{ "name": "postScriptForInstanceCreation", "type": "SWLIB", "description": "Script that is invoked after service instance creation", "required": false, "secret": false, "value": "<URN of Script>" }, { "name": "portRangeStart", </pre>

Table 61-18 (Cont.) POST Request Configuration for Creating the Resource Providers

Feature	Description
	<pre>"type": "STRING", "description": "Port Range Start", "value": "1024", "required": true, "secret": false },</pre>

Table 61-18 (Cont.) POST Request Configuration for Creating the Resource Providers

Feature	Description
N/A	<pre> { "name": "preScriptForInstanceCreation", "type": "SWLIB", "description": "Script that is invoked before service instance creation", "required": false, "secret": false, "value": "<URN of Script>" }, { "name": "destinationFmwBase", "type": "STRING", "description": "Middleware Base Location", "value": "/scratch/osb_mid1", "required": true, "secret": false }, { "name": "workDir", "type": "STRING", "description": "Work Directory", "value": "\$MIDDLEWARE_HOME/work", "required": true, "secret": false }, { "name": "wlsUserName", "type": "STRING", "description": "Weblogic Admin UserName", "value": "weblogic", "required": true, "secret": false }, { "name": "startupArguments", "type": "STRING", "description": "Server Startup Arguments", "value": "", "required": true, "secret": false }, { "name": "namedCredforHostList", "type": "STRING", "description": "Enter the EM Named Credentials to be used for the above hosts in the 'Host for Executing Scripts' field", "required": false, "secret": false, "value": "CredName:CredOwner" }, { "name": "destinationAdminServerPassword", "type": "STRING", </pre>

Table 61-18 (Cont.) POST Request Configuration for Creating the Resource Providers

Feature	Description
	<pre>"description": "Password for the WebLogic Server", "value" : "welcome1" "required": true, "secret": true },</pre>

Table 61-18 (Cont.) POST Request Configuration for Creating the Resource Providers

Feature	Description
N/A	<pre> { "name": "computedCpuUsagePerServer", "type": "STRING", "description": "Avg CPU Usage", "value": "1.0", "required": true, "secret": false }, { "name": "portRangeEnd", "type": "STRING", "description": "Port Range End", "value": "65535", "required": true, "secret": false }, { "name": "jdkHome", "type": "STRING", "description": "Jdk Home", "value": "/usr/local/packages/jdk6", "required": true, "secret": false }, { "name": "computedMemoryUsagePerServer", "type": "STRING", "description": "Max Heap", "value": "0.45", "required": true, "secret": false }, { "name": "enableLoadBalancer", "type": "STRING", "description": "Is LBR", "value": "0", "required": true, "secret": false }, { "name": "preScriptForInstanceDeletion", "type": "SWLIB", "description": "Script that is invoked before service instance deletion", "required": false, "secret": false }, { "name": "isScriptExecuteOnManagedServers", "type": "STRING", "description": "Is Script Executable On Managed Server Hosts", </pre>

Table 61-18 (Cont.) POST Request Configuration for Creating the Resource Providers

Feature	Description
	<pre>"value": "0", "required": true, "secret": false },</pre>
N/A	<pre>{ "name": "hostListForScripts", "type": "STRING", "description": "Use ',' to separate multiple target hosts", "required": false, "secret": false, "value": "host1,host2" }, { "name": "postScriptForInstanceDeletion", "type": "SWLIB", "description": "Script that is invoked after service instance deletion", "required": false, "secret": false }, { "name": "isScriptExecuteOnAdminServer", "type": "STRING", "description": "Is Script Executable On Admin Server", "value": "0", "required": true, "secret": false }, { "name": "destinationDomainHome", "type": "STRING", "description": "Domain Home", "value": "\$MIDDLEWARE_HOME/domains", "required": true, "secret": false }] }</pre>
Request method	POST

61.4 Load Balance Configuration

This section explains the API examples related to the Load Balancer Configuration.

- [Viewing Details of all the Load Balancer Configuration Resource](#)
- [Viewing Details of the specified Load Balancer Configuration](#)
- [Creating the Load Balancer Configuration](#)

- [Editing the Load Balancer Configuration](#)
- [Deleting a Load Balancer Configuration](#)

61.4.1 Viewing Details of all the Load Balancer Configuration Resource

The table below lists the GET request configuration.

Table 61-19 GET Request Configuration for Viewing Details of the Load Balancer Configuration Resource

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs
Request headers	
Body	None
Request method	GET

61.4.2 Viewing Details of the specified Load Balancer Configuration

The table below lists the GET request configuration for viewing details of the specified Load Balancer Configuration.

Table 61-20 GET Request Configuration for Viewing Details of the specified Load Balancer Configuration

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs/{lbrld}
Request headers	None
Body	None
Request method	GET

61.4.3 Creating the Load Balancer Configuration

The following is an example of a POST operation on the Load Balancer URI to create the load balancer configuration.

Table 61-21 POST Request Configuration for Creating the Load Balancer Providers

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs

Table 61-21 (Cont.) POST Request Configuration for Creating the Load Balancer Providers

Feature	Description
Request headers	Authorization :Basic c3lzbWFuOnN5c21hbg==
Body	<pre>{ "name": "lbr1", "description": "desc by rest", "type": "OHS", "host": "slc06ekg.example.com", "agentTargetName": "slc06ekg.example.com:1838", "credential": "NC_HOST_2014-11-06-070337", "instanceHome": "/scratch/PS5_OHS/instance_home", "properties":{ "items": [{"name":"HTTP_PORT_RANGE", "value":"8000-9000"}, {"name":"OHS_ROUTING_PROTOCOL", "value": "HTTP"}, {"name":"COMPONENT_NAME", "value": "ohs1"}] }, "poolTargets": ["0FC6D3F6A9FB2456422C1094DA5D14A9"] }</pre>
Request method	POST

61.4.4 Editing the Load Balancer Configuration

The table below lists the PUT request configuration for editing the Load Balancer Configuration.

Table 61-22 PUT Request Configuration for Editing the Load Balancer Configuration

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs
Request headers	Authorization :Basic c3lzbWFuOnN5c21hbg==

Table 61-22 (Cont.) PUT Request Configuration for Editing the Load Balancer Configuration

Feature	Description
Body	<pre> { "name": "lbr1", "description": "desc by rest", "type": "OHS", "id":1004, "host": "slc06ekg.example.com", "agentTargetName": "slc06ekg.example.com:1838", "credential": "NC_HOST_2014-11-06-070337", "instanceHome": "/scratch/PS5_OHS/instance_home", "properties":{ "items": [{"name":"HTTP_PORT_RANGE", "value":"8000-9000"}, {"name":"OHS_ROUTING_PROTOCOL", "value": "HTTP"}, {"name":"COMPONENT_NAME", "value": "ohs1"}] }, "poolTargets": ["0FC6D3F6A9FB2456422C1094DA5D14A9"] } </pre>
Request method	PUT

61.4.5 Deleting a Load Balancer Configuration

The table below lists the POST request configuration for deleting a Load Balancer Configuration.

Table 61-23 DELETE Request Configuration for Deleting a Load Balancer Configuration

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/admin/wlaas/v2/lbrconfigs/{lbrld}
Request headers	None
Body	None
Request method	DELETE

61.5 SSA User Operation API Examples

The following API examples are described in this section:

- [Viewing Details of all Service Templates](#)
- [Viewing Details of all Service Instances](#)
- [Viewing all Service Instances With UP Status](#)
- [Viewing the Service Offering Metadata](#)

- [Creating a Service Instance Request](#)
- [Viewing all the Action IDs for the Service Instances](#)
- [Stopping a Service Instance](#)
- [Starting a Service Instance](#)
- [Deleting a Service Instance](#)
- [Scaling Up a Service Instance](#)

61.5.1 Viewing Details of all Service Templates

The following table shows an example of a GET operation to view all the service templates.

Table 61-24 GET Request Configuration for Viewing Details of all Service Templates

Feature	Description
URI	<code>em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/</code>
Request headers	Authorization: Basic c3lzbWFuOnN5c21hbg==
Body	None
Request method	GET

61.5.2 Viewing Details of all Service Instances

The following table shows an example of a GET operation to view all the service instances.

Table 61-25 GET Request Configuration for Viewing Details of all Service Instances

Feature	Description
URI	<code>/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances</code>
Request headers	None
Body	None
Request method	GET

61.5.3 Viewing all Service Instances With UP Status

The following table shows an example of a GET operation to view all the service instances with UP status.

Table 61-26 GET Request Configuration for Viewing all Service Instances with UP Status

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/?expanded=true&status=STATUS_UP
Request headers	None
Body	None
Request method	GET

61.5.4 Viewing the Service Offering Metadata

The following table shows an example of a GET operation to view the service offering metadata

Table 61-27 GET Request Configuration for Viewing all Service Instances with UP Status

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services/{offering_id}/metadata
Request headers	None
Body	None
Request method	GET

61.5.5 Creating a Service Instance Request

The following table shows an example of a POST operation to request a service instance.

Table 61-28 POST Request Configuration for Creating a Service Instance Request

Feature	Description
URI	em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services
Request headers	Authorization: Basic c3NhX3VzZXIwOndlbGNvbWUx

Table 61-28 (Cont.) POST Request Configuration for Creating a Service Instance Request

Feature	Description
Body	<pre> { "offeringId": "080C47B7F8EA20ECE053AC75B10A50E3", "name": "rest_inst01", "instanceName": "rest_inst01", "characteristics": [{ "name": "ORACLE.SYSMAN.EMAS.MWAAS_ZONE", "value": "98EB4ECCB01F91E40AA45708112E3920" }] }, "configurations": [{ "name": "wlsNewPassword", "type": "STRING", "description": "New Admin password", "required": true, "secret": true, "value": "password" }, { "name": "destinationDBTargetName", "type": "STRING", "description": "SOA Database Service Instance Name", "required": true, "secret": false, "value": "SOADB" }, { "name": "soaTokens", "type": "VECTOR", "description": "SOA Tokens", "values": ["port=80", "host=www.aol.com"], "required": false, "secret": false }, { "name": "destinationDBTargetType", "type": "STRING", "description": "SOA Database Service Instance Target Type", "required": true, "secret": false, "value": " oracle_database" }, { "name": "destinationSchemaPassword", "type": "STRING", "description": "SOA Database Schema Password", "required": true, </pre>

Table 61-28 (Cont.) POST Request Configuration for Creating a Service Instance Request

Feature	Description
	<pre> "secret": true, "value": "DBPassword" }, </pre>
N/A	<pre> { "name": "startupArguments", "type": "STRING", "description": "Server Startup Arguments", "value": "", "required": true, "secret": false }, { "name": "wlsNewUserName", "type": "STRING", "description": "New Admin User Name", "required": true, "secret": false, "value": "weblogic_user" }] } </pre>
Request method	POST

61.5.6 Viewing all the Action IDs for the Service Instances

The following table shows an example of a GET operation to perform an action on the service instance based on the action id.

Table 61-29 GET Request Configuration for Performing Action on the Service Instance Based on the Action ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E/actions
Request headers	None
Body	None
Request method	GET

61.5.7 Stopping a Service Instance

The following table shows an example of a PUT operation to stop a service instance.

Table 61-30 PUT Request Configuration for Stopping a Service Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/ 21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: Basic c3NhX3VzZXIxOndlbGNvbWUx
Body	{"actionId":32}
Request method	PUT

61.5.8 Starting a Service Instance

The following table shows an example of a PUT operation to start a service instance.

Table 61-31 PUT Request Configuration for Starting a Service Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/ 21324EF5A81B4D8ECA7F835A209B857E
Request headers	Authorization: Basic c3NhX3VzZXIxOndlbGNvbWUx
Body	{"actionId":31}
Request method	PUT

61.5.9 Deleting a Service Instance

The following table shows an example of a PUT operation to delete a service instance.

Table 61-32 PUT Request Configuration for Deleting a Service Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/ 21324EF5A81B4D8ECA7F835A209B857E
Request headers	None
Body	{"actionId":30}
Request method	PUT

61.5.10 Scaling Up a Service Instance

The following table shows an example of a PUT operation to scale up a service instance.

Table 61-33 PUT Request Configuration for Scaling Up a Service Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/serviceinstances/21324EF5A81B4D8ECA7F835A209B857E
Request headers	None
Body	<pre>{ "actionId": 29, "configurations": [{"name": "numberOfServers", "value": "2"}] }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{
  "requests": [{"id": "621",
    "actionName": "SCALE_UP",
    "canonicalLink": {"href": "https://xyxy.example.com:11040/em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/servicerequests/621"}
  }]
}
```

Rapid Start Cloud Setup

This chapter describes the rapid start cloud setup kit. It contains the following sections:

- [Introduction](#)
- [Installing the Kit](#)
- [Contents of the Kit](#)
- [Prerequisites](#)
- [Artifacts Created by the Rapid Start Kit](#)
- [Rapid Kit Modes](#)
- [Cloud Setup Inputs: Simple Mode](#)
- [Cloud Setup Inputs: Advanced Mode](#)
- [Command Line Interface](#)
- [Rapid Start Kit Sample Run](#)

62.1 Introduction

Setting up the DBaaS cloud involves a series of steps. The user with the `CLOUD_ADMINISTRATOR` role has to go through many wizards and clicks to complete the setup. This requires a considerable amount of effort and time before the DBaaS is ready to use.

The Rapid Start Kit provides a single command solution to setup Cloud for Database as a Service (DBaaS) and Pluggable Database as a Service (PDBaaS). One command creates all the Cloud artifacts like Roles, Administrators, Credentials, Database Profiles, PaaS Infrastructure Zone, Database Pools and Service Templates. Once the Rapid Start Kit has been successfully executed, requests can be made to provision databases, and PDBs.

Rapid start kit can create complex topologies involving multiple zones, pools and service templates. It also supports standby databases.

62.2 Installing the Kit

The Rapid Start Kit is shipped along with Oracle Cloud Application 12.1.0.8.0. The kit is available on the Oracle Management Server host with the Oracle Cloud Application 12.1.0.8.0 deployed in plug-in home directory. The Rapid Start Kit can be used from the host on which the Oracle Management Server (OMS) is installed or from any other host that can access Oracle Management Server host using Enterprise Manager Command Line Interface (emcli).

62.2.1 OMS Host

The Rapid Start Kit can be used directly from the host on which the OMS has been installed. No separate installation of the kit is required. The kit is available in the following directory:

```
EM_BASE/oracle/MW/plugins/oracle.sysman.ssa.oms.plugin_12.1.0.8.0/dbaas/setup
```

62.2.2 Other Hosts

The kit can also be used from any other host. To install the kit on any other machine, copy the setup directory to the desired location on the target machine.

62.3 Contents of the Kit

The Rapid Start Kit contains the following files:

- **Cloud Setup Script:**

```
dbaas/setup/exadata_cloud_setup.py
```

```
dbaas/setup/database_cloud_setup.py
```

These scripts contain the code for the one command cloud setup. The scripts use the input files or the cloud artifacts as defined in the configuration file.

- **Cloud Boundary XML:**

```
dbaas/setup/config/cloud_boundary.xml
```

```
dbaas/setup/config/cloud_custom_boundary.xml
```

Cloud Boundary defines the cloud topology. It has the zones and pools along with host names, oracle home locations or container database names. The `cloud_boundary.xml` file can be used as a template for simple cloud setup on Exadata machines with one zone and pool. The `cloud_custom_boundary.xml` can be used for advanced cloud setup on any set of machines with multiple zones and pools.

- **Database as a Service Input XML:**

```
dbaas/setup/config/dbaas_cloud_input.xml dbaas/setup/config/  
dbaas_cloud_custom_input.xml
```

The Cloud Setup for Database as a Service uses the `dbaas_cloud_input.xml` as the input file. The script reads this configuration file and sets up the cloud artifacts as defined in the file. Simple cloud setup on the Exadata machine is defined in `dbaas_cloud_input.xml` template file and advanced cloud setup should use `dbaas_cloud_custom_input.xml`.

- **Pluggable Database as a Service Input XML:**

```
dbaas/setup/config/pdbaas_cloud_input.xml
```

```
dbaas/setup/config/pdbaas_cloud_custom_input.xml
```

The Cloud Setup for Pluggable Database as a Service uses the `pdbaas_cloud_input.xml` as the input file. The script reads this configuration file and sets up the cloud artifacts as defined in the file. Simple cloud setup on Exadata

machine is defined in `pdbaas_cloud_input.xml` template file and advanced cloud setup should use `pdbaas_cloud_custom_input.xml`.

62.4 Prerequisites

Certain prerequisites must be fulfilled before running the Rapid Start Kit. This includes OMS setup with the correct plug-in versions as listed in the [Supported Plug-ins](#) section. Cloud setup can be done on Real application cluster machines with Database instance or Oracle Homes installed. The prerequisites are described in the following sections:

62.4.1 Oracle Management Server

- The Oracle Management Server must have the Oracle Cloud Application 12.1.0.8 deployed.
- The Software Library must have been configured.

62.4.2 EMCLI Setup

EMCLI with scripting option must be set up on the host from which the kit is going to be executed. To set up EMCLI on the host, follow these steps:

1. Download the `emcliadvancedkit.jar` from the OMS using URL `https://<omshost>:<omsport>/em/public_lib_download/emcli/kit/emcliadvancedkit.jar`
2. Set your `JAVA_HOME` environment variable and ensure that it is part of your `PATH`. You must be running Java 1.6.0_43 or greater. For example:
 - `setenv JAVA_HOME /usr/local/packages/j2sdk`
 - `setenv PATH $JAVA_HOME/bin:$PATH`
3. You can install the EMCLI with scripting option in any directory either on the same machine on which the OMS is running or on any machine on your network (download the `emcliadvancedkit.jar` to that machine)

```
java -jar emcliadvancedkit.jar client -install_dir=<emcli client dir>
```
4. Run `emcli help sync` from the EMCLI Home (the directory where you have installed `emcli`) for instructions on how to use the "sync" verb to configure the client for a particular OMS.
5. Navigate to the Setup menu then the Command Line Interface. See the *Enterprise Manager Command Line Tools Download* page for details on setting EMCLI.

62.4.3 Infrastructure Setup

To prepare the infrastructure for cloud setup, make sure that the Real Application Cluster machines are available and the required databases and oracle homes have been setup on them. Targets must have been discovered in Oracle Management Server. The following sections describe the setup requirement for PDbaaS and DBaaS.

62.4.3.1 Pluggable Database as a Service

You must ensure that the Real Application Cluster machine is available and has a 12.1.0.1 Container Database version running on it. All the hosts from Real Application Cluster have the Management Agents installed on it. The following targets must be discovered using the guided discovery process:

- Oracle Cluster
- Cluster ASM
- Oracle RAC Database
- Oracle Database Listeners

62.4.3.1.1 Database as a Service

You must ensure that the Real Application Cluster machine with Oracle home version 12.1.0.1 or 11.2.0.3 installed on it is available. All the hosts in the Real Application Cluster must have the Management Agents installed on it. The following targets must be discovered using guided discovery process:

- Oracle Cluster
- Cluster ASM
- Oracle RAC Database
- Database Instance
- Oracle Database Listener

62.5 Artifacts Created by the Rapid Start Kit

The Rapid Start Kit uses cloud input files to create cloud entities. Cloud Input files define the list of entities and input values for each of the entity. See [Contents of the Kit](#) for more details on input files. This section explains the Cloud artifacts created as part of cloud setup.

The following actions occur when the Cloud script is executed:

1. The following roles are created:

Table 62-1 Created User Roles

Role	Associated System Role
SSA_USER_ROLE	EM_SSA_USER

2. The following users are created:

Table 62-2 Created Users

Administrator / User	Associated Role
CLOUD_ADMIN	EM_CLOUD_ADMINISTRATOR
SSA_ADMIN	EM_SSA_ADMINISTRATOR

Table 62-2 (Cont.) Created Users

Administrator / User	Associated Role
SSA_USER1	EM_SSA_USER1
SSA_USER2	EM_SSA_USER2
SSA_USER3	EM_SSA_USER3

- The Rapid Start Kit does not support the creation of credentials out-of-the-box. The following credentials must be created manually when prompted by the kit during cloud setup:

Table 62-3 Credentials to be Created Manually

Credentials	Description
HOST_CRED	Host credentials with host user name and password.
HOST_CRED_ROOT	Host credentials with root access.
DB_CRED	Database access credentials.
GI_CRED	Grid infrastructure owner user.

 **Note:**

A limited support is provided to create named credentials. The credential section is commented in the template XMLs. Un-comment the credential section to enable creation of named credentials.

- The quota is set for the SSA_USER_ROLE.
- The PaaS Infrastructure Zone is created and the hosts that are part of the Oracle Cluster are added as members of the zone.
- Database provisioning profiles. The Rapid Start Kit can create the following database profiles as part of cloud setup:
 - DBCA Template
 - DBCA Template with data
 - Profile using RMAN image
 - Schema profile with full export database
 - Snapshot database profile
- The user with the EM_SSA_ADMIN role creates the following:
 - DBaaS Pool: The DBaaS Pool contains the Oracle Homes from the hosts that are part of the selected zone. The DBaaS Pool is used for Database as a Service.
 - PDBaaS Pool: The PDBaaS Pool has the container database instances from the hosts that are part of the selected zone. The PDBaaS Pool is used for Pluggable Database as a Service.
- The user with the EM_SSA_ADMIN role creates the following:

- Default Database Service Template: This service template can be used to submit a request for a Database.
- Default Pluggable Database Service Template: This service template can be used to submit a request for a Pluggable Database.
- Service templates using database profiles.

62.6 Rapid Kit Modes

The Rapid Start Kit supports two modes:

- Simple Mode (on Exadata only)
- Advanced Mode (on Exadata and non Exadata)

62.6.1 Simple Mode (On Exadata Only)

In the simple mode, the Rapid Start kit creates a single zone and pool on a specified Exadata Machine. The reference templates for the simple mode are:

`pdbaas_cloud_input.xml`

`dbaas_cloud_input.xml`

`cloud_boundary.xml`

62.6.2 Advanced Mode (Exadata and Non Exadata)

In the advanced mode, the Rapid Start kit can be used to create multiple zones and pools on any set of hosts. The reference templates for advanced mode are:

`pdbaas_cloud_custom_input.xml`

`dbaas_cloud_custom_input.xml`

`cloud_custom_boundary.xml`

62.7 Cloud Setup Inputs: Simple Mode

The cloud setup requires many user inputs specific to the RAC environment and the cloud artifacts. The Rapid Start Kit has two configuration files that define the cloud input. The following cloud input files are under the configuration directory.

- `cloud_boundary.xml`: Defines the cloud topology.
- `dbaas_cloud_input.xml`: Defines the cloud artifacts and the input values for Database as a Service.
- `pdbaas_cloud_input.xml`: Defines the cloud artifacts and the input values for Pluggable Database as a Service.

Review the cloud input files and map the artifacts with the ones defined in [Artifacts Created by the Rapid Start Kit](#). The user marked with `cloudadmin="True"` is used as the Cloud Administrator to create the PaaS Zone and the user marked as `ssaadmin="True"` is used to create the Database Pools. All default passwords used by the kit are `welcome1`.

Note: The simple mode can be used to create a cloud only on an Exadata machine. For non exadata setup, refer to Cloud Setup Inputs: Advanced mode.

62.7.1 Pluggable Database as a Service: Simple Mode

There is no environment specific value in `pdbaas_cloud_input.xml`. Pluggable Database as a Service can be run with out of box input xml without any change.

62.7.2 Database as a Service: Simple Mode

Database as a service has few environment specific values. User must set them to suite the Real Application Cluster used.

Table 62-4 Environment Details Input Guidelines

XML Input	Edit Guideline
Pool Filters: <code><platform>226</platform></code> <code><version>12.1.0.1.0</version></code>	Edit the platform value to ARU id of Real Application Cluster machine platform. Use 226 for Linux x86-64, 267 for Solaris x86, and 23 for Solaris Sparc 64. Edit the database version to the correct value from the database installed on Real Application Cluster machine.
Service Template: <code><REDO_FILE_LOCATION>RECOSLC16</REDO_FILE_LOCATION></code> <code><RECOVERY_FILE_LOCATION>N>RECOSLC16</RECOVERY_FILE_LOCATION></code> <code>><DATA_FILE_LOCATION>DATA_TASLC16</DATA_FILE_LOCATION></code>	Cloud Setup Supports Real Application Cluster with ASM and File System. Specify the disk group names used for Redo files, Recovery files and Data files for ASM and shared locations for File System.
<code><COMMON_DB_SYSTEM_PASSWORD>welcome1</COMMON_DB_SYSTEM_PASSWORD></code> <code><COMMON_DB_DBSNMP_PASSWORD>welcome1</COMMON_DB_DBSNMP_PASSWORD></code> <code><COMMON_DB_SYS_PASSWORD>welcome1</COMMON_DB_SYS_PASSWORD></code>	Specify the passwords for system, dbsnmp and sys accounts.

62.7.3 Input Customization: Simple Mode

The Rapid Setup Kit supports logical customization of input values. The customer can make a copy of the out-of-the-box input file. Customize the input values logically and pass the modified file to the Rapid Setup Kit.

For example: The user wants to change the Role name from `SSA_USER_ROLE` to `SSA_QA_ROLE`. Change should be done as follows:

Original xml tag:

```
<role name="SSA_USER_ROLE" description="SSA User role">
  <systemRoles>
    <systemRole>EM_SSA_USER</systemRole>
  </systemRoles>
  <users></users>
</role>
```

Changed tag:

```
<role name="SSA_QA_ROLE" description="SSA QA role">
  <systemRoles>
    <systemRole>EM_SSA_USER</systemRole>
  </systemRoles>
  <users></users>
</role>
```

The user must look at all the usages of above Role name and change them accordingly. Due to the change in Role name, the following user tag:

```
<user>
  <userName>SSA_USER1</userName>
  <passWord>welcomel</passWord>
  <!-- system roles or above created role -->
  <systemRole>SSA_QA_ROLE</systemRole>
</user>
```

Must change to use the new role name

```
<user>
  <userName>SSA_USER1</userName>
  <passWord>welcomel</passWord>
  <!-- system roles or above created role -->
  <systemRole> SSA_USER_ROLE</systemRole>
</user>
```

The user can edit the names and descriptions of Roles, Users, Credential Names, Pool Names and Service template names and their properties defined in the input XML. For example: The user may want to customize the work load to suit the environment for PDBaaS. The user can customize the database SID name and Domain name as follows: Change these tags from dbaaS_cloud_input.xml

```
<DB_SID_PREFIX>dbsid</DB_SID_PREFIX>
<COMMON_DOMAIN_NAME>mycompany.com</COMMON_DOMAIN_NAME>
```

To

```
<DB_SID_PREFIX>dbsid</DB_SID_PREFIX>
<COMMON_DOMAIN_NAME>company.com</COMMON_DOMAIN_NAME>
```

Similarly the init parameters for DbaaS can be changed for `sga_target` and the `pga_aggregate_target` by editing their values in the `dbaaS_cloud_input.xml`.

62.8 Cloud Setup Inputs: Advanced Mode

The Advanced Mode is useful to setup the cloud on any set of hosts with customized cloud topology. The Rapid Start Kit has three configuration template files that define the cloud input. The following cloud input files are under the configuration directory.

- `cloud_custom_boundary.xml`: Defines the cloud topology.

- `dbaas_cloud_custom_input.xml`: Defines the cloud artifacts and the input values for Database as a Service.
- `pdbaas_cloud_custom_input.xml`: Defines the cloud artifacts and the input values for Pluggable Database as a Service.

Review the cloud input files and map the artifacts with the ones defined in [Artifacts Created by the Rapid Start Kit](#). The user marked with `cloudadmin="True"` is used as the Cloud Administrator to create the PaaS Zone and the user marked as `ssaadmin="True"` is used to create the Database Pools. All default passwords used by the kit are `welcome1`.

62.8.1 Creating Custom Users

To create custom users, edit the following tags in the `cloud_input.xml` file to add the new user name roles. The user marked with `cloudadmin="True"` is used as the Cloud Administrator to create the PaaS Zone and the user marked as `ssaadmin="True"` is used to create the Database Pools.

```
<user cloudadmin="True">
  <userName>CLOUD_ADMIN</userName>
  <!-- If password is empty, default password welcome1 will be used -->
  <passWord></passWord>
  <!-- system roles or above created custom role name -->
  <systemRole>EM_CLOUD_ADMINISTRATOR</systemRole>
</user>
```

Note:

- You can set one user as the self service administrator by specifying `ssaadmin="True"`.
- You can set one user as the cloud administrator by specifying `cloudamin="True"`.

62.8.2 Pluggable Database as a Service: Advanced Mode

The following input customizations are required to prepare the input files for Pluggable database as a service.

- Make a copy of `cloud_custom_boundary.xml` template file.
- Edit the copy to define the zones and pools. You can create a zone with multiple pools and multiple such zones based on the cloud topology.

Table 62-5 XML Editing Guidelines for Creating Pools and Zones

XML Input	Edit Guidelines
<code><dbinstance></code> <code><dbName></dbName></code> <code></dbinstance></code>	Provide the container database instance name for each pool definition in <code>pdbaaspool</code> tag.

Table 62-5 (Cont.) XML Editing Guidelines for Creating Pools and Zones

XML Input	Edit Guidelines
Pool Filters: <dbType>rac_database</dbType> <version>12.1.0.1.0</version>	Edit the database version and database type to the type and version of database used for the pool. For cluster databases, specify the type as <code>rac_database</code> , and for single instance databases, specify the type as <code>oracle_database</code> .
<zone>DBaaS Zone</zone>	Provide the zone name to which the pool belongs.

Make a copy of `pdbaas_cloud_custom_input.xml` template file. You can use an existing profile or create a new database profile using a reference target using Rapid Start Kit. Remove the `profiles` tag to use existing profile. The template contains sample tags for different types of profiles. Edit the XML to remove the profiles that are not required for the setup. Provide following details to create the database profile as part of cloud setup using the Rapid Start Kit.

Table 62-6 XML Editing Guidelines for Creating a Database Profile

XML	Edit Guide Line
<REFERENCE_DATABASE>skd</REFERENCE_DATABASE>	Enter the reference database target name from Enterprise Manager.
<REF_NODE_SELECTED>abc1.example.com</REF_NODE_SELECTED>	Enter the reference node name.
<REFERENCE_DATABASE_TYPE>rac_database</REFERENCE_DATABASE_TYPE>	Specify the database type such as 'oracle_database' for Single Instance database and 'rac_database' for RAC database.
<DB_VERSION>11.2.0.4.0</DB_VERSION>	Specify RDBMS version for the reference database. For example, 11.2.0.4.0, 12.1.0.1.0, etc.
<PROFILE_PLATORM>linux_x86_64</PROFILE_PLATORM>	Specify Platform for the reference database. Profile will be created in following location by default. Database Provisioning Profiles/ <PROFILE_VERSION>/<PROFILE_PLATORM>
<REF_GI_CREDENTIALS>ORACLE_NORMAL:SSA_ADMIN</REF_GI_CREDENTIALS> <REF_DB_CREDENTIALS>DB_CRE D_NORMAL:SSA_ADMIN</REF_DB_CREDENTIALS> <REF_HOST_CREDENTIALS>ORACLE_NORMAL:SSA_ADMIN</REF_HOST_CREDENTIALS>	Enter the credential names for Grid Credential, Reference database credentials and host credentials in <CRED_NAME>:<CRED_OWNER_USER> format.
Dump directories<dumpdir>DATA_PUMP_DIR</dumpdir>	Enter the dump directory that will be used for dump files and export log.

Table 62-6 (Cont.) XML Editing Guidelines for Creating a Database Profile

XML	Edit Guide Line
<PROFILE_NAME>RAC dbm01 Profile</PROFILE_NAME>	Enter the profile name and description.
<PROFILE_DESC>Database provisioning profile</ PROFILE_DESC>	Enter this profile name in the service template that consumes the profile.

Provide the following details to create the pluggable database service template

Table 62-7 XML Editing Guidelines for Pluggable Database Service Template

XML Input	Edit Guide Line
<zone> <zoneName></zoneName> <poolName></poolName> </zone>	Specify the zones and pools that are part of this service template.
<PROFILE_COMPONENT_NAME>< /PROFILE_COMPONENT_NAME>	Enter the database profile name that is used by this service template. If this tag is empty, an empty pluggable database will be created.
<DUMP_FILE_SHARED_LOCATION ></ DUMP_FILE_SHARED_LOCATION>	Specify the shared location where the dump files are copied. Set this to the shared location used while creating the profile.
<customScripts> <beforecreateserviceinstance></ beforecreateserviceinstance> <aftercreateserviceinstance></ aftercreateserviceinstance>	Specify the custom script software library directive name to be executed before and after creating the service instance. Refer to the pre and post-database scripts.
<beforedeleteserviceinstance></ beforedeleteserviceinstance> <afterdeleteserviceinstance></ afterdeleteserviceinstance> </customScripts>	Specify the custom script software library directive to be executed before and after deleting the service instance.

62.8.3 Database as a Service: Advanced Mode

The following input customizations are required to prepare the input files for Pluggable database as a service.

- Make a copy of cloud_custom_boundary.xml template file.
- Edit the copy to define the zones and pools. You can create a zone with multiple pools and multiple such zones based on the cloud topology.

Table 62-8 XML Editing Guidelines to Define Zones and Pools

XML Input	Edit Guide Line
<dbHome> <hostName>host1.example.com</hostName> <oracleHomeLocation>/u01/app/oracle/product/11.2.0.4.0/dbhome_1</oracleHomeLocation> </dbHome>	Provide the Oracle Homes present on these hosts will be part of this Database Pool. Provide the full path for Oracle Home Location. Multiple <dbHome> tags can be provided.
Pool Filters: <dbType>rac_database</dbType> <version>12.1.0.1.0</version>	Edit the database version and database type to the type and version of database used for the pool.
<zone>DBaaS Zone</zone>	Provide the zone name to which the pool belongs.
<standbyPool></standbyPool>	Specify the standby pool names for this pool.

Make a copy of `pdbaas_cloud_custom_input.xml` template file. You can use an existing profile or create a new database profile using a reference target using Rapid Start Kit.

The following profiles can be created using the Rapid Start Kit:

- Database profile using DBCA template
- Database profile using DBCA template with data
- Snapshot database profile

Provide the following details to create the database profile as part of cloud setup using the Rapid Kit.

Table 62-9 XML Editing Guidelines to Create a Database Profile

XML Input	Edit Guide Line
Reference database details: <REFERENCE_DATABASE>refdb</REFERENCE_DATABASE> <REF_NODE_SELECTED>abc1.example.com</REF_NODE_SELECTED> <REFERENCE_DATABASE_TYPE>oracle_database</REFERENCE_DATABASE_TYPE> <DB_VERSION>11.2.0.4.0</DB_VERSION> <PROFILE_PLATORM>linux_x86_64</PROFILE_PLATORM>	Specify following details for reference database used for creating the profile. Reference database target name from Enterprise Manager. Reference host to be used for profile creation operation. Reference database type. Example: 'oracle_database' for Single Instance database and 'rac_database' for RAC database. Profile version. Profile platform.
<data>False</data>	Profile can contain 'Structure and Data' or 'Structure Only'. Choose 'True' to include data. For RMAN, data is always True.

Table 62-9 (Cont.) XML Editing Guidelines to Create a Database Profile

XML Input	Edit Guide Line
<snapshot>True</snapshot>	<p>Set to 'True' for Snapshot profile.</p> <p>Ensure the following before enabling the Snapshot option:</p> <ul style="list-style-type: none"> • The storage appliance is registered with Enterprise Manager • Snap clone option is enabled for the Database used as reference • Profile owner user (SSA_ADMIN) has access to the storage • Storage credential and Agent credential used for storage monitoring have view permission for SSA_ADMIN user. <p>Note: To set the permission, follow the instructions below:</p> <ol style="list-style-type: none"> 1. On the Enterprise Manager console, click Setup. 2. Click Security and then select Named Credentials. 3. Select the credential and then click Manage Access. 4. Click Add Grant. 5. Select SSA_ADMIN user and click Select. 6. Click Save.
RMAN Image Profile inputs:<rman> <enable>True</enable> <rmanImage>True</rmanImage> <RMANImageMode>ONLINE</RMANImageMode> <BackupLocation>/u01/sk</BackupLocation> <BackupFileTag>feb201402221143</BackupFileTag> </rman>	<p>Set enable flag to False.</p> <p>Set rmanImage flag to True.</p> <p>Provide a backup location and backup tag to identify the location for backup files.</p> <p>Note: The rman tag will not be present if the profile is not created using rman backup.</p>
Credentials:<REF_GI_CREDENTIALS>ORACLE_NORMAL:SSA_ADMIN</REF_GI_CREDENTIALS> <REF_DB_CREDENTIALS>DB_CRED_NORMAL:SSA_ADMIN</REF_DB_CREDENTIALS> <REF_HOST_CREDENTIALS>ORACLE_NORMAL:SSA_ADMIN</REF_HOST_CREDENTIALS>	<p>Enter the credential names for Grid Credential, Reference database credentials and host credentials in <CRED_NAME>:<CRED_OWNER_USER> format</p>
<PROFILE_NAME>RAC dbm01 Profile</PROFILE_NAME> <PROFILE_DESC>Database provisioning profile</PROFILE_DESC>	<p>Enter the profile name and description.</p> <p>Enter this profile name in the service template that consumes the profile.</p>

Edit the input xml to create single or multiple service templates. The following service templates can be created using the Rapid Start Kit:

- Service template using DBCA template profile
- Service template using DBCA template with data profile
- Service template using snapshot database profile

Provide following details to create the database service template.

Table 62-10 XML Editing Guidelines to Create a Database Service Template

XML Input	Edit Guide Line
<pre><zone> <zoneName></zoneName> <poolName></poolName> </zone></pre>	Specify the zones and pools that are part of this service template.
<pre><PROFILE_COMPONENT_NAME>< /PROFILE_COMPONENT_NAME></pre>	Enter the database profile name that is used by this service template. If this tag is empty, empty pluggable database will be created.
<pre><COMMON_DB_SYSTEM_PASSW ORD></ COMMON_DB_SYSTEM_PASSWO RD> <COMMON_DB_DBSNMP_PASSW ORD></ COMMON_DB_DBSNMP_PASSWO RD> <COMMON_DB_SYS_PASSWORD> </ COMMON_DB_SYS_PASSWORD></pre>	Provide the passwords for system, dbsnmp and sys users.
<pre><LISTENER_PORT>1521</ LISTENER_PORT></pre>	Provide the listener port.
<pre><PROFILE_TYPE_USED></ PROFILE_TYPE_USED></pre>	<p>Use value snapshot to create a service template using snapshot database profile.</p> <p>RMAN profile must already exist and the backup location should be updated in the service template.</p> <p>Leave the parameter empty to create service template using DBCA profile.</p>
<pre><DUMP_FILE_SHARED_LOCATION ></ DUMP_FILE_SHARED_LOCATION> Storage locations: <DB_STORAGE_TYPE>ASM</ DB_STORAGE_TYPE> <DATA_FILE_LOCATION>DA</ DATA_FILE_LOCATION> <RECOVERY_FILE_LOCATION>RE </RECOVERY_FILE_LOCATION> <REDO_FILE_LOCATION>RE</ REDO_FILE_LOCATION></pre>	<p>Enter Disk Group names for ASM and File locations for FS. Enter file locations for Data files, Recovery files and Redo files.</p> <p>For ASM, enter the disk group names.</p> <p>For FS, enter the shared storage locations.</p> <p>DA, RE are the disk group names for Data files and redo files.</p>

Table 62-10 (Cont.) XML Editing Guidelines to Create a Database Service Template

XML Input	Edit Guide Line
<pre>Standby Database:<standbydatabases> <STANDBY_REQUIRED>False</ STANDBY_REQUIRED> <STANDBY_WORK_DIR>/tmp</ STANDBY_WORK_DIR> <standbydatabase> <standbyName>Standby1</ standbyName> <databaseType></databaseType> <numberOfNodes>2</ numberOfNodes> <StandbyDatabaseSIDPrefix>sta1</ StandbyDatabaseSIDPrefix> <STANDBY_DOMAIN_NAME>myco mpany.com</ STANDBY_DOMAIN_NAME> <protectionMode>MAX_PERFORMA NCE</protectionMode> <standbyPoolName></ standbyPoolName> </standbydatabase> </standbydatabases></pre>	<p>From 12.1.0.4.0 Service template can be created with standby database.</p> <p>Specify the details for standby database:</p> <ul style="list-style-type: none"> • If standby database is required, set this to True. • Standby is not supported with CLONE_OR_FULL_DB=CLONE_DB. • Specify the working directory for standby database. • Specify the standby configuration name. • Standby database type can be rac_database or oracle_database. • Number of nodes for standby database. • Database SID pre-fix for standby database. • Specify database standby domain name. • Protection modes supported for standby database are: MAX_PROTECTION, MAX_AVAILABILITY, and MAX_PERFORMANCE • Specify the pool name that should be used to create the standby databases. <p>Note: This tag can be removed or commented if a standby database is not required.</p>
<pre><storages> <storage> <mountPointPrefix>/ oracle1</mountPointPrefix> <space>10</space> <!-- GB --> </storage> <storage> <mountPointPrefix>/ oracle2</mountPointPrefix> <space>11</space> <!-- GB --> </storage> </storages></pre>	<p>Specify the storage volume name and size. The storage volume name will be prefixed to the auto-generated mount point where a clone of this volume will be mounted. With a mount point prefix /oracle, for a source path mount, the mount point will be /oracle_my_zzz/mount.</p> <p>This tag is required for snapshot and can be removed or commented for other service templates.</p>
<pre><customScripts> <beforecreateserviceinstance></ beforecreateserviceinstance> <aftercreateserviceinstance></ aftercreateserviceinstance></pre>	<p>Specify the custom script software library directive name to be executed before and after creating the service instance. Refer to the pre and post Database scripts.</p>
<pre><beforedeleteserviceinstance></ beforedeleteserviceinstance> <afterdeleteserviceinstance></ afterdeleteserviceinstance> </customScripts></pre>	<p>Specify the custom script software library directive to be executed before and after deleting the service instance. Leave the tags empty if you do not want to run any scripts.</p>

62.10 Rapid Start Kit Sample Run

This section shows a sample run for Pluggable Database as a Service

```
<emcli_path>/emcli @database_cloud_setup.py -pdbaas -cloud_boundary=/u01/cloudsetup/
config/boundary_bp.xml -cloud_input=/u01/cloudsetup/config/pdb_input_bp.xml
=====Cloud Setup Tool
=====
Log in to Enterprise Manager:
=====
emcli executable was not found in PATH
Enterprise Manager URL found from emcli setup:
Enter Enterprise Manager Host Name: omshost.example.com
Enter Enterprise Manager Port Number. Hit enter if using portless URL: 7802
Enter Enterprise Manager Super Administrator User Name [sysman]:

Connecting to Enterprise Manager 'https://omshost.example.com:7802/em'...
  Login as 'sysman'...
Enter password : *****
  Login successful

Cloud Boundary XML: '/u01/cloudsetup/config/boundary_bp.xml'

Cloud Setup Inputs:
Cloud Input XML: '/u01/cloudsetup/config/pdb_input_bp.xml'

Fetching system information from Enterprise Manager...
  Setting up Pluggable Database as a Service (PDBaaS)...
  List of Container Databases for pool creation: dbmcdb

+-----+-----+
|          Node          |          Oracle Home          |
| Location              |                               |
+-----+-----+
| host1.example.com    | /u01/app/oracle/product/12.1.0.1/dbhome_1 |
+-----+-----+
| host2.example.com    | /u01/app/oracle/product/12.1.0.1/dbhome_1 |
+-----+-----+

Press Enter to continue:
Creating Roles...
  Creating Role "SSA_USER_ROLE"...
  Role "SSA_USER_ROLE" already exists

Creating Users...
  Creating User "SSA_ADMIN"...
  User "SSA_ADMIN" already exists

  Creating User "CLOUD_ADMIN"...
  User "CLOUD_ADMIN" already exists

  Creating User "SSA_USER1"...
  User "SSA_USER1" already exists

  Creating User "SSA_USER2"...
  User "SSA_USER2" already exists

  Creating User "SSA_USER3"...
```

User "SSA_USER3" already exists
Following named credentials should be pre-created in Enterprise Manager for this cloud setup:

HOST_CRED_SLCC: CLOUD_ADMIN
HOST_CRED_SLCC: SSA_ADMIN
GI_CRED_SLCC: SSA_ADMIN
DB_CRED: SSA_ADMIN

Named Credentials used in Rapid kit should be created manually and given the required grants. Have you created above listed credentials? (yes/no) [yes]:
User confirmed credential creation.

Connecting to Enterprise Manager 'https://omshost.example.com:7802/em'...
Login as 'CLOUD_ADMIN'...
Enter password : *****
Login successful

Creating Quotas...
Creating Quota for Role: SSA_USER_ROLE
Updating Quota for Role: SSA_USER_ROLE
Quota for Role "SSA_USER_ROLE" updated successfully.

Creating zone "PDBaaS Zone"...
PaaS Infrastructure Zone "PDBaaS Zone" created successfully.

Connecting to Enterprise Manager 'https://xyxy.example.com:7802/em'...
Login as 'SSA_ADMIN'...
Enter password : *****
Login successful

Creating pool "PDBaaS Pool"...
Software Pool "PDBaaS Pool" created successfully.
Creating Profiles...
Profiles will be created in 'serial' mode

Creating Pluggable Database Service Template...
Creating PdbaaS Service Template...
Service Template "Default Pluggable Database Service template" created successfully.
Securing Cloud setup...

Do you want to expire passwords for the users created by setup?(yes/no) [yes]: no
User opted to not expire the passwords.

Cloud Setup Summary:

Type	Cloud Entity	Status
Role exists	SSA_USER_ROLE	Already
User exists	SSA_ADMIN	Already
User exists	CLOUD_ADMIN	Already
User exists	SSA_USER1	Already
User exists	SSA_USER2	Already

```

+-----+-----+-----+
| User                | SSA_USER3                | Already
exists                |                            |
+-----+-----+-----+
| PaaS Infrastructure Zone | PDBaaS Zone                |
Created                |                            |
+-----+-----+-----+
| Software Pool        | PDBaaS Pool                |
Created                |                            |
+-----+-----+-----+
| PDB Service Template | Default Pluggable Database Service | Created
template                |                            |
+-----+-----+-----+

```

Cloud setup completed successfully for Pluggable Database as a Service (PDBaaS)
Log in to Oracle Management Server url 'https://omshost.example.com:7802/em' to
submit the request for Pluggable Database.

62.9 Command Line Interface

This section describes step by step instructions for setting up the Cloud using Rapid Start Kit. Make sure all the targets are discovered in Enterprise Manager before starting with Cloud Setup Script.

62.9.1 Usage

-help option describes all the supported options.

```
Usage: emcli @database_cloud_setup.py [-exadata_target_name=<EM system target name>]
[-dbaas|-pdbaas] [-cloud_boundary=<file name>] [-cloud_input=<file name>]
```

-pdbaas: This flag is used to setup Cloud for Pluggable Database as a Service.
-dbaas: This flag is used to setup Cloud for Database as service.
-cloud_input=<path to custom cloud input xml> [Optional]
Cloud input XML defines Enterprise Manager entities created as part of Cloud Setup.
Default file config/dbaas_cloud_input.xml will be used for database setup
Default file config/pdbaas_cloud_input.xml will be used for pluggable database setup.
Use dbaas_cloud_custom_input.xml or pdbaas_cloud_custom_input.xml to perform an
advanced cloud setup.
-cloud_boundary=<path to custom cloud boundary xml> [Optional]
Cloud boundary XML defines scope for Zones, Pools and the Cloud Hosts.
Default file config/cloud_boundary.xml will be used.
Use cloud_custom_boundary.xml to perform an advanced cloud setup.
-exadata_target_name
Pass Exadata Machine Target Name from Enterprise Manager when setup is running from
non-Exadata machine and cloud is set on Exadata machine. This will perform simple
cloud setup.
-help: Displays Cloud Setup help
For example:
Setup Cloud on a Cluster Machine or a set of standalone hosts:
Run the script on a cluster node or any standalone Machine:
emcli @database_cloud_setup.py -pdbaas : Sets up Cloud for PDBaaS using list of
container databases given in cloud_boundary.xml
emcli @database_cloud_setup.py -dbaas : Sets up Cloud for DBaaS using given list of
hosts and oracle home given in cloud_boundary.xml

```
emcli @database_cloud_setup.py -pdbaas -cloud_input=<Full path to Input XML> :
Override the default cloud input xml.
emcli @database_cloud_setup.py -pdbaas -cloud_input=<Full path to Input XML> -
cloud_boundary=<Full path to Input XML> : Override the default cloud input and cloud
boundary xmls
```

62.9.2 Database as a Service (DBaaS)

The following command can be used to setup DBaaS.

```
ORACLE_HOME/bin/emcli @database_cloud_setup.py -pdbaas -cloud_input=<Full path to
cloud input xml> -cloud_boundary=<Full path to cloud boundary xml>
```

where the `-dbaas` flag indicates that this is used set up Database as a Service.

The script retrieves the list of hosts and the location of the Oracle Home. Enter the following input when prompted by the Rapid Start Kit.

Table 62-11 User Input Details

User Input	Description
Enterprise Manager Host Name	Hostname
Enterprise Manager Port Number	Port number for the secure port.
Enterprise Manager User Name	Enter name of user with administration privileges (sysman).
Enterprise Manager User Password	Enter the password for the sysman user.
Password for the CLOUD_ADMIN user	This user is created by the kit. The default password is welcome1.
Credential verification.	Create the credentials when prompted by the kit.

If any of the cloud artifacts already exist in Enterprise Manager, the Rapid Setup Kit shows the message and does not create or modify it. The Cloud Setup script can be run again multiple times in case of any failure after fixing the issue. The kit creates the new artifacts and shows the message for already existing ones.

62.9.3 Pluggable Database as a Service (PDBaaS)

The following command can be used to set up PDBaaS.

```
ORACLE_HOME/bin/emcli @database_cloud_setup.py -pdbaas -
exadata_target_name=<Exadata target name from EM>
```

```
ORACLE_HOME/bin/emcli @database_cloud_setup.py -pdbaas -cloud_input=<Full path to
cloud input xml> -cloud_boundary=<Full path to cloud boundary xml>
```

where:

- the `-pdbaas` flag indicates that this sets up for Pluggable Database as Service

Enter the following input when prompted by the Rapid Setup Kit.

Table 62-12 User Input Details

User Input	Description
Enterprise Manager Host Name	Hostname
Enterprise Manager Port Number	Port number for the secure port.
Enterprise Manager User Name	Enter name of user with administration privileges (sysman).
Enterprise Manager User Password	Enter the password for the sysman user.
Password for the CLOUD_ADMIN user	This user is created by the kit. The default password is welcome1.
Credential verification	Create the credentials when prompted by the kit.

If any of the cloud artifacts already exist in Enterprise Manager, the Rapid Setup Kit shows the message and does not create or modify it. The Cloud Setup script can be run again multiple times in case of any failure after fixing the issue. The kit creates the new artifacts and shows the message for already existing ones.

62.9.4 Securing the Cloud Setup

The Rapid Setup Kit creates the Administrators as part of Cloud Setup. The kit allows the user to secure the cloud setup so that only authorized users can be given access to the selected functionality. If the user opts to secure the Cloud Setup, the passwords for the users created by the kit will automatically expire. Enterprise Manager allows re-setting the password on first login by each user.

62.9.4.1 Expire Default Passwords

The Rapid Start Kit will ask for confirmation and will expire the passwords for all the users that are part of input xml.

62.9.5 Set New Passwords

Administrator should log in to Enterprise Manager as each user is created. Enterprise Manager will ask to set a new password on first login.

Note: If you want to re-run the kit after the passwords have been expired by Rapid Kit, new passwords must be set for CLOUD_ADMIN and SSA_ADMIN users before re-running the Rapid Kit and the new passwords must be used when prompted during the second run.

63

Chargeback and Metering EMCLI Verbs

This chapter describes the EMCLI verbs used for Chargeback and Metering and provides details on verb names, descriptions, parameters and syntax. Examples of verb output and commands are also provided.

This chapter contains the following sections:

- [Performing UI Equivalent Chargeback Operations](#)
- [Using Custom Charge Items](#)
- [Examples of Custom Charge Item Verb Use](#)
- [Creating a Generic Entity Type](#)
- [Retrieving Metering Data from Enterprise Manager](#)

63.1 Performing UI Equivalent Chargeback Operations

The section describes EMCLI verbs with which you can perform the same operations you can perform within the Chargeback user interface.

63.1.1 list_chargeback_entity_types

Lists all entity types that Chargeback supports. You can optionally list all entity types and their respective usage mode, or all usage modes that a particular entity type supports.

Syntax

```
list_chargeback_entity_types  
  -[usage_mode]  
  -[entity_type="eType"]
```

Parameters

- `usage_mode`—(optional) displays all applicable usage modes for each entity type
- `entity_type`—(optional) displays all applicable usage modes for the specified entity type

Examples

```
list_chargeback_entity_types
```

Entity Type	Entity Type Display Name
oracle_database	Database Instance
host	Host

```
list_chargeback_entity_types -usage_mode
```

Entity Type	Entity Type Display Name	Usage Mode
oracle_database	Database Instance	dbMetered
oracle_database	Database Instance	dbByService

```

oracle_database Database Instance cdbBypdb
host Host hostMetered

list_chargeback_entity_types -entity type="oracle database"

Entity Type Entity Type Display Name Usage Mode
oracle_database Database Instance dbMetered
oracle_database Database Instance dbByService
oracle_database Database Instance cdbBypdb

```

63.1.2 list_chargeback_entities

Lists all entities that have been added to Chargeback; that is, all entities of any type for which charges and metering are calculated.

Syntax

```
list_chargeback_entities
```

Examples

Output appears in tabular format and displays the following information for each added entity:

Table 63-1 Output Example

Column Name	Column Value
Entity Name	acme_db
Entity Guid	xrdbyy
Entity Type	oracle_database
Creation Date	2014-01-01 00.00.00.0
Parent Entity Name	No Parent
Parent Entity Type	Not Applicable
Cost Center Name	cc1
Charge Plan Name	cp1

63.1.3 add_chargeback_entity

Adds an entity instance of a given entity type to Chargeback with the specified usage mode.

Syntax

```

add_chargeback_entity
  -entity_name="eName"
  -entity_type="eType"
  -usage_mode="uMode"

```

Parameters

- entity_name—identifies an entity instance by name currently being monitored by Enterprise Manager that you want to add to Chargeback.

- `entity_type`—identifies the entity type of the instance being added.
- `usage_mode`—specifies the usage mode; that is, how the entity instance is to be metered. Use the `list_chargeback_entity_types` verb with the `-entity` type option to see available usage modes.

Examples

```
add_chargeback_entity -entity_name="db1" -entity_type="oracle_database" -  
usage_mode="dbMetered"
```

Adds the entity db1 to Chargeback, metered by database instance.

63.1.4 remove_chargeback_entity

Removes an entity instance of a given entity type from Chargeback; that is, terminates Chargeback activity on the entity. with the specified usage mode.

Syntax

```
remove_chargeback_entity  
  -entity_name="eName"  
  -entity_type="eType"  
  -[entity_guid="entity guid"]
```

Parameters

- `entity_name`—identifies an entity instance by name that you want to remove from Chargeback.
- `entity_type`—identifies the entity type of the instance being removed.
- `entity_guid`—(optional) specifies the globally unique identifier by which the entity is known internally. When there are multiple entities of the same type with the same name, command output lists all such entities with additional details including GUID. Execute the command again, this time using `entity_guid` instead of the other parameters to correctly identify the intended entity.

Examples

```
remove_chargeback_entity -entity_name="db1" -entity_type="oracle_database"
```

Removes the Oracle database entity db1 from Chargeback.

63.1.5 list_charge_plans

Lists all charge plans currently in use in Chargeback. Optionally lists charge plans scheduled for use in the future. Can also optionally list current or future plans by entity type or charge plan details.

Syntax

```
list_charge_plans  
  [-[entity_type="entity type" -[ all]]  
  -[charge_plan="charge plan name" -[all]]  
  -[ all]]
```

Parameters

- `entity_type`—lists all active charge plans for the specified entity type.
- `charge_plan`—lists details about a particular charge plan.
- `all`—lists all active and future charge plans in Chargeback, or for a specified entity type, or the details of all active and future versions of the specified charge plan.

Examples

Output appears in tabular format and displays the following information, depending on parameters specified:

Table 63-2 Output Example

Column Name	Column Value
Charge Plan Name	cp1
Entity Type	host
Description	Host flat rate plan
Start Date	2014-01-01 00.00.00.0
End Date	2014-02-01 00.00.00.0

63.1.6 `assign_charge_plan`

Assigns a specified charge plan to an entity of a particular type.

Syntax

```
assign_charge_plan
  -entity_name="eName"
  -entity_type="eType"
  -plan_name="pName"
  -[entity_guid="entity guid"]
```

Parameters

- `entity_name`—identifies the entity to which a plan is to be assigned.
- `entity_type`—identifies the entity type of the named entity. Charge plans are entity-type specific.
- `plan_name`—specifies the name of an existing charge plan to be assigned to the entity.
- `entity_guid`—(optional) specifies the globally unique identifier by which the entity is known internally. When there are multiple entities of the same type with the same name, command output lists all such entities with additional details including GUID. Execute the command again, this time using `entity_guid` instead of the other parameters to correctly identify the intended entity.

Examples

```
assign_charge_plan -entity_name="db1" -entity_type="oracle_database" -
plan_name="plan1"
```

Assigns charge plan plan1 to database instance db1 of entity type Oracle Database.

63.1.7 unassign_charge_plan

Removes the charge plan assignment from the specified entity.

Syntax

```
unassign_charge_plan
  -entity_name="eName"
  -entity_type="eType"
  -[entity_guid="entity guid"]
```

Parameters

- `entity_name`—identifies the entity from which to remove the plan assignment.
- `entity_type`—identifies the entity type of the named entity.
- `entity_guid`—(optional) specifies the globally unique identifier by which the entity is known internally. When there are multiple entities of the same type with the same name, command output lists all such entities with additional details including GUID. Execute the command again, this time using `entity_guid` instead of the other parameters to correctly identify the intended entity.

Examples

```
unassign_charge_plan -entity_name="db1" -entity_type="oracle_database" -
plan_name="plan1"
```

Removes the charge plan assignment from database instance db1 of entity type Oracle Database.

63.1.8 list_cost_centers

Lists all cost centers known to Chargeback or cost centers in various hierarchical displays.

Syntax

```
list_cost_centers
  -[[cost_center_name="cName"]
  -[parent]
  -[children]
  -[top]
  -[leaf]]
```

Parameters

- `cost_center_name`—identifies a specific cost center for which other options can be specified.
- `parent`—displays the cost center parent of the specified cost center.
- `children`—lists all children cost centers of the specified cost center.
- `top`—displays ancestor cost centers of the specified cost center.
- `displays leaf node cost centers of the specified cost center.`

Examples

```
list_cost_centers
```

Cost Center Name	Parent Node	Number
cc1		[2,4,0,0]
cc11	cc1	[2,2,0,0]
cc12	cc1	[0,0,0,0]
cc111	cc11	[0,0,0,0]
cc112	cc11	[0,0,0,0]

The number column represents number of immediate child cost centers, total child cost centers, number of immediate users, total users, reading left to right.

With the above example as a basis, `list_cost_centers` verb options appear as follows:

```
list_cost_centers -cost_center_name="cc11" -parent
```

```
Parent Node
cc1
```

```
list_cost_centers -cost_center_name="cc1" -children
```

```
Children Nodes
cc11
cc12
```

```
list_cost_centers -cost_center_name="cc111" -top
```

```
Hierarchy
[cc1]----->[cc11]----->[cc111]
```

```
list_cost_centers -cost_center_name="cc1" -leaf
```

```
Leaf Nodes
cc111
cc112
cc12
```

63.1.9 assign_cost_center

Assigns a specified cost center to an entity of a particular type.

Syntax

```
assign_cost_center
  -entity_name="eName"
  -entity_type="eType"
  -cost_center_name="cName"
  -[entity_guid="entity guid"]
```

Parameters

- `entity_name`—identifies the entity to which a cost center is to be assigned.
- `entity_type`—identifies the entity type of the named entity.
- `cost_center_name`—specifies the name of an existing cost center to be assigned to the entity.

- `entity_guid`–(optional) specifies the globally unique identifier by which the entity is known internally. When there are multiple entities of the same type with the same name, command output lists all such entities with additional details including GUID. Execute the command again, this time using `entity_guid` instead of the other parameters to correctly identify the intended entity.

Examples

```
assign_cost_center_plan -entity_name="db1" -entity_type="oracle_database" -  
cost_center_name="cc1"
```

Assigns cost center cc1 to database instance db1 of entity type Oracle Database.

63.1.10 unassign_charge_plan

Removes the cost center assignment from the specified entity.

Syntax

```
unassign_cost_center  
-entity_name="eName"  
-entity_type="eType"  
-[entity_guid="entity guid"]
```

Parameters

- `entity_name`–identifies the entity from which to remove the cost center assignment.
- `entity_type`–identifies the entity type of the named entity.
- `entity_guid`–(optional) specifies the globally unique identifier by which the entity is known internally. When there are multiple entities of the same type with the same name, command output lists all such entities with additional details including GUID. Execute the command again, this time using `entity_guid` instead of the other parameters to correctly identify the intended entity.

Examples

```
unassign_cost_center -entity_name="db1" -entity_type="oracle_database" -  
plan_name="plan1"
```

Removes the cost center assignment from database instance db1 of entity type Oracle Database.

63.2 Using Custom Charge Items

The following sections provide some sample commands along with descriptions and examples. These verbs are used in the following circumstances:

- You would like to meter/charge based on the metric extension/custom configuration that you have defined. Custom charge items can also be used for out of box metrics and target properties. Note that Chargeback only supports metric extensions without key columns.
- These custom charge items, when created in Chargeback, allow you to meter or charge for the custom item like any existing charge items that are shipped along

with a plug-in, such as CPU Utilization. Note that the EM_CBA_ADMIN role is required to access these verbs.

63.2.1 list_charge_item_candidates

Lists the items that can be registered to Chargeback.

Syntax

```
emcli list_charge_item_candidates
  -target_type=<target type>
  -source_data_type=<metric|config|property>
  -target_name=<target name>
  -config_name=<config name>
  -config_data_source=<target name>
  -all
```

Parameters

- **target_type**—(required) name of target type. Supported target types include: oracle_database, oracle_vm_guest, host, oracle_pdb, and weblogic_j2eeserver.
- **source_data_type**—valid values are metric, config, and property.
- **target_name**—if specified, metering and charge data are retrieved only for the named target. If you do not specify a valid target name, or if the specified target has not been enabled in the given date range, then no data is generated. If this parameter is not specified, **All** targets for the specified target-type are included.
- **config_name**—required if source_data_type=config.
- **config_data_source**—data source of the configuration. Required if source_data_type=config.
- **all**—displays all items, including out of box metrics of target type. Without this option, only user-defined metric extensions, and configuration extensions are displayed.

Examples

```
emcli list_charge_item_candidates -target_type="oracle_database" -
source_data_type="metric"
```

```
emcli list_charge_item_candidates -target_type="oracle_database" -
source_data_type="config" -target_name="myDatabase" -config_name="myCustomCCS" -
config_data_source="ccsfile"
```

63.2.2 create_charge_item

Creates a charge item for Chargeback.

Syntax

```
emcli create_charge_item -input_file="property_file:<full path of property file>"
```

Parameters

The option [-input_file] is the full path of a file that contains the item properties. The following properties can be defined in the file:

- `target_type`—(required) specifies the target type. Supported target types include: `oracle_database`, `oracle_vm_guest`, `host`, `oracle_pdb`, and `weblogic_j2eeserver`.
- `source_data_type`—(required) specifies the source data type. Valid values are `metric`, `config`, and `property`.
- `item_name`—(required) specifies the name of the item.
- `metric_group`—metric group name as listed in `list_item_candidates`. This is a required property if `source_data_type=metric`.
- `metric_column`—metric column name as listed in `list_item_candidates`. Required property if `source_data_type=metric`.
- `config_view`—config view name as listed in `list_item_candidates`. Required property if `source_data_type=config`.
- `config_key`—config key name as listed in `list_item_candidates`. Required property if `source_data_type=config`.
- `config_column`—config column name as listed in `list_item_candidates`. Required property if `source_data_type=config`.
- `config_data_source`—data source of configuration metric. Required property if `source_data_type=config`.
- `property`—property name as listed in `list_item_candidates`. Required property if `source_data_type=property`.
- `item_displayname`—(required) item display name.
- `unit`—unit display name.
- `aggregation_type`—type of aggregation to use for this item. Applicable only if `data_type=number`. Valid values are `sum` and `avg`. Default value is `avg`.
- `is_config_condition`—Is the item used conditionally in a charge plan. Valid values are `0`, `1`. Default value is `0`.
- `item_category`—category of item. Default value is `instance`. Valid values are `cpu`, `storage`, `memory`, `network`, and `instance`.
- `data_type`—data type. Default value is `number`. Valid values are `string` and `number`.

Examples

```
emcli create_charge_item -input_file="property_file:/home/user/property_file"
Contents of /home/user/property_file:
    target_type=host
    source_data_type=metric
    item_name=total_proc
    metric_group=Load
    metric_column=noOfProcs
    item_displayname=Total Processes
    unit=process
    aggregation_type=avg
    item_category=instance
    data_type=number
```

```
emcli create_charge_item -input_file="property_file:/home/user/property_file"
Contents of /home/user/property_file:
    target_type=oracle_database
    source_data_type=config
    item_name=custom_config
    config_view=myCustomCCS
```

```
config_key=region
config_column=country
config_data_source=regionList.txt
item_display_name=Region of Instance
item_category=instance
data_type=string
```

63.2.3 delete_charge_item

Deletes the custom charge item from Chargeback.

Syntax

```
emcli delete_charge_item -target_type=<target type> -item_name=<Item name>
```

Parameters

- **target_type**—(required) specifies the target type associated with the custom charge item. Supported target types for this release include oracle_database, oracle_vm_guest, host, oracle_pdb, and weblogic_j2eeserver.
- **item_name**—(required) name of the custom charge item to be deleted.

Examples

```
emcli delete_charge_item -target_type="oracle_database" -
item_name="SampleMetricExtension"
```

```
emcli delete_charge_item -target_type="host" -item_name="SampleCustomConfig"
```

63.3 Examples of Custom Charge Item Verb Use

The following sections provide end-to-end examples in the correct use of Custom Charge Item verbs for custom configurations.

63.3.1 Metric Extension (PGA)

In this example, a metric extension "PGA" with a metric column named "PGA Memory" is created for a database instance target to collect PGA size.

Figure 63-1 PGA Memory

Metric Extensions
Metric Extensions enhance Enterprise Manager's monitoring capabilities by enabling you to create new metrics specific to your environment. New metric extensions can be defined in the console.

▶ Show Overview

🔍 Search
Match: All Any

Target Type: Status: Display Oracle Provided Metric Extensions:

Name: Runs On:

Version: Owner:

Pending Operations: 0 Failed Operations: 0

Actions: View

Name	Runs On	Target Type	Display Name	Version	Description
MESPGA	Target	Database Insta...	PGA	1	PGA Memory

1. Log in to EMCLI and use the Chargeback EMCLI verb `list_charge_item_candidates` to list the items that can be registered to Chargeback.

Figure 63-2 list_charge_item_candidates

```
xterm
$emcli list_charge_item_candidates --source_data_type=metric --target_type=oracle_database
Metric Group Metric Group Display Name Metric Column Metric Column Display Name
ME$PGA PGA PGAMemory PGA Memory
$
$
```

2. Create a property file `prop_file` to generate the custom charge item for the PGA Memory metric column.

For this metric, the charge rate will be based on the average value over a number of samples, with `aggregation_type` is set to "avg".

Figure 63-3 Set aggregation_type

```
xterm
target_type=oracle_database
item_displayname=PGA Memory
source_data_type=metric
metric_group=ME$PGA
metric_column=PGAMemory
data_type=number
unit=GB
aggregation_type=avg
item_name=charge_pga_memory
~
~
~
~
~
~
~
~
~
~
~/tmp/prop_file" 10L, 199C
```

3. Create custom item in Chargeback using `create_charge_item` EMCLI verb.

Figure 63-4 Create custom item

```
xterm
$emcli create_charge_item --input_file="property_file:/tmp/prop_file"
Custom item "PGA Memory" is successfully created in Chargeback.
$
$
```

4. After the custom charge item is created, open the Enterprise Manager Cloud Control user interface.

5. Navigate to the Charge Plans page. Click **Create** and select **Plan**.
6. Click **Add** under Entity Types and select the entity type for the chargeback.
7. Click **Add Item** and select the new custom item from the **Item Name** drop-down box. Rates can be set against custom items similar to those set for out-of-box charge items.

Figure 63-5 Create Plan: Custom Plan

Chargeback
Charge Plans > Create Plan
Create Plan: New Plan

Charge Plan:

Effective Date: Nov 1, 2015 - Onward

Peak Time Window:

Entity Types
View ▾ + Add... ✕ Remove

[Database Instance](#)

Database Instance
+ Add Item... ✎ Edit Item... ✕ Remove Item ⚙ Set Up Configurations...

Item	Default Configuration
	Charge
▾ Universal Rate Adjustments	
▸ CPU Rate Factor ?	1x
▸ Memory Rate Factor ?	1x
▸ Storage Rate Factor ?	1x
▾ Recovery Cost	
Recovery Rate	
Recovery Period	
Estimated Instances	
Total	

As the aggregation_type is set to "avg", the charge rate is related to a time period (for example, per GB per time period).

63.3.2 Metric Extension (Application A Orders)

A metric extension named "Application A Orders" with a metric column called "Orders Processed" is created for a database instance target. This metric collects the number of orders processed by Application A.

Figure 63-6 Metric Extensions

Name	Runs On	Target Type	Display Name	Version	Description
MESOrder	Target	Database Insta...	Application A Or...	1	Orders processed for Application A
MESPGA	Target	Database Insta...	PGA	1	PGA Memory

1. Log in to EMCLI and use the Chargeback EMCLI verb `list_charge_item_candidates` to list the items that can be registered to Chargeback.

Figure 63-7 list_charge_item_candidates

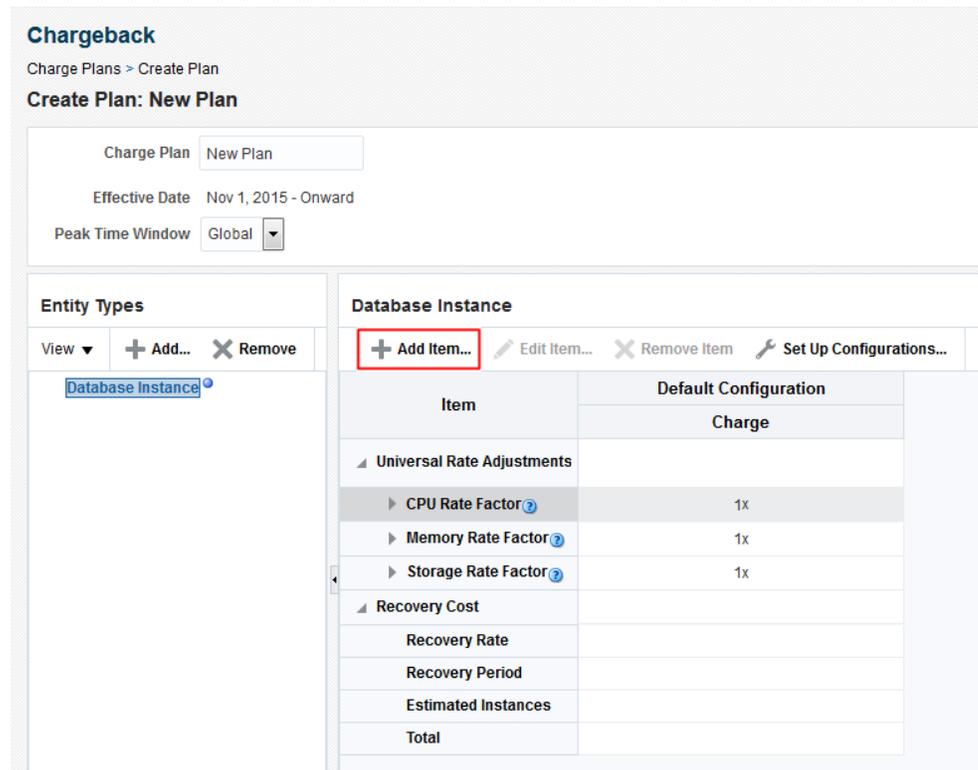
```

xterm
$emcli list_charge_item_candidates -source_data_type=metric -target_type=oracle_database
Metric Group Metric Group Display Name Metric Column Metric Column Display Name
ME$Order Application A Orders OrdersProcessed Orders Processed
$
  
```

2. Create a property file `prop_file2` to generate a custom charge item for the "Orders Processed" metric column.

For this metric, the charge rate will be based on total number of orders processed, with `aggregation_type` set to "sum".

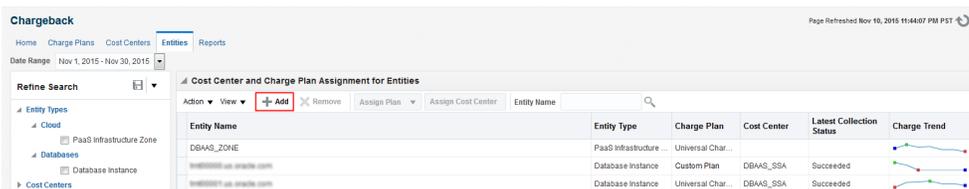
Figure 63-10 Set Rates: Custom Plan



As the aggregation_type is set to "sum", the charge rate does not depend upon time periods but rather on the total value of "Orders Processed".

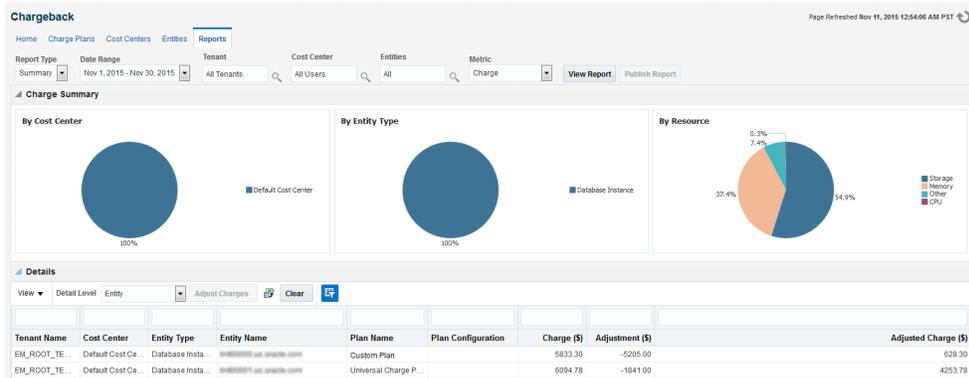
8. Add the database target to Chargeback and assign the "Custom Plan".

Figure 63-11 Cost Center and Charge Plan Assignment



9. Following the daily ETL run, the charge/usage is calculated against new custom items. The charge/usage of custom items can be viewed from the Chargeback report page.

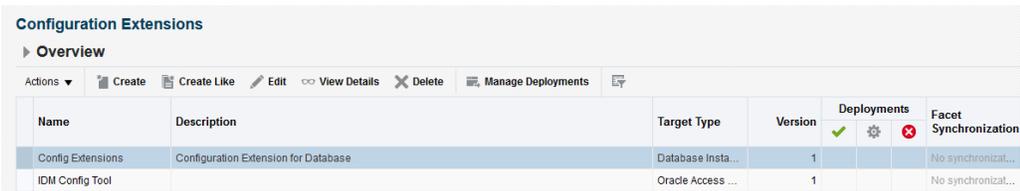
Figure 63-12 Details



63.3.3 Configuration Extensions

A configuration extension named "Config Extensions" is created for the database instance target. This collects the number of high available tablespaces and the name of each high available tablespace as shown below. In this example, the high available tablespaces value is used as the basis of the new custom charge item.

Figure 63-13 Configuration Extensions



1. Log in to EMCLI and use the Chargeback EMCLI verb `list_charge_item_candidates` to list the configuration items that can be registered to Chargeback. Note that `config_name` is the name of the configuration extension shown on the UI ("Config Extensions" in this case). Similarly, `config_data_source` is the name of the config column shown on the UI (in this case "tmp/dbconfig.xml").

Figure 63-14 list_charge_item_candidates

```

$emcli list_charge_item_candidates -source_data_type=config -target_type=oracle_database -config_name="Config Extensions" -config_data_source="tmp/dbconfig.xml" -target_name="Oemrep_Database"
Custom Config Name Custom Config Key Custom Config Column
Config Extensions tablespaces/numberHATablespace count
Config Extensions tablespaces/haTablespace name
Config Extensions tablespaces/haTablespace{2} name

```

2. Create a property file `prop_file1` to generate a custom charge item for the "Number of High Available Tablespaces" metric column.

Note that the `config_key` value comes from the output of the "Custom Config Key" column in the output of the `list_charge_item_candidates` verb described previously. Similarly, the value of the `config_view` should be the value of "Custom Config Name" above.

Figure 63-15 Number of High Available Tablespaces

```
xterm
target_type=oracle_database
item_displayname=Number of High Available Tablespaces
source_data_type=config
config_datasource=tmp/dbconfig.xml
config_view=Config Extensions
config_key=tablespaces/numberHATablespace
config_column=count
target_name=Oemrep_Database
data_type=number
unit=tablespace
item_name=config_ext_ha_tblspcs
~
~
```

3. Create a custom item in Chargeback using the `create_charge_item` EMCLI verb.

Figure 63-16 `create_charge_item`

```
xterm
$vi prop_file1
$emcli create_charge_item -input_file="property_file:/tmp/prop_file1"
Custom item "Number of High Available Tablespaces" is successfully created in Chargeback.
$
```

4. After the custom charge item is created, open the Enterprise Manager Cloud Control user interface.
5. Navigate to the Charge Plans page. Click **Create** and select **Plan**.
6. Click **Add** under Entity Types and select the entity type for the chargeback.
7. Click **Add Item** and select the new custom item from the **Item Name** drop-down box. Rates can be set against custom items similar to those set for out-of-box charge items.

Syntax

```
add_custom_cb_entity_type -target_type=target_type
```

Where *target_type* is a known Enterprise Manager target type for which there is no current Chargeback support; for example, Oracle Apache.

After creating the custom entity type, customize charge items appropriate to the new entity type, following the process described in [Using Custom Charge Items](#).

Charge Item Properties

For example, you might create a custom charge item based on an input property file named `properties_oracle_apache` where the properties are as follows:

```
target_type=oracle_apache
source_data_type=metric
item_name=active_sessions
metric_group=ohs_server
metric_column=sessions.active
item_displayname=Active Sessions
unit=sessions
aggregation_type=avg
item_category=instance
data_type=number
```

The custom charge item is based on the average number of active sessions.

Implementation

Now proceed as follows:

1. Create a charge plan for the Oracle Apache entity type that includes the active sessions customized charge item.
2. Add the Oracle Apache entity type to Chargeback using the Add wizard in the application, as you would for any entity type. The Oracle Apache entity type is available in Target Selector dialog.
3. Assign the charge plan you created in Step 1 to the Oracle Apache entity type.
4. Optional. Assign a cost center to the Oracle Apache entity type.
5. Using the reporting feature to view metering and charge data related to the Oracle Apache entity type.

63.5 Retrieving Metering Data from Enterprise Manager

The Chargeback REST APIs can be used to integrate Enterprise Manager with Billing and Revenue Management systems (including Oracle BRM). They also provide flexible Chargeback mechanisms. Some examples include:

- Integration with a billing system with different rate plans for small, medium, and large configurations.
- To calculate Chargeback for a flexible time period. For example, months starting from 15th and ending on the 15th.
- To rationalize Chargeback based on other attributes that are not captured by Enterprise Manager.

- To adjust or round up Chargeback based on usage. For example charge is calculated for the full-day even if the usage is for the partial day.

63.5.1 get_metering_data

Retrieves Chargeback metering data in the form of comma-separated output with each row or line containing usage (and optionally charge) information for the specified parameters.

Syntax

```
emcli get_metering_data
[-start_date=<start date in mmddyyyy> [-end_date=<end_date in mmddyyyy>]]
[ -target_type=<target type> [-target_name= <target name> ] ]
[ -cost_center=<cost center name> ]
[ -charge]
```

Parameters

All parameters of this verb are optional.

- **start_date**—specifies the start date in `mmddyyyy` format by which to filter data retrieval, commencing at midnight. Default is the start date of the current report cycle.
- **end_date**—specifies the end date in `mmddyyyy` format by which to filter data retrieval, terminating at midnight. Default is the end date of the current report cycle.
- **target_type**—specifies the target types by which to filter data retrieval, provided targets of the specified types have been configured for Chargeback within the specified date range. Default is to retrieve data for all targets of all target types that have been configured for Chargeback within the specified date range.
- **target_name**—retrieves metering and charge data only for the named target of the specified target type. If the target name is invalid or has not been configured for the specified date range, no data retrieval occurs. The default retrieves data for all targets of the specified target type.
- **cost_center**—specifies a cost center name as it appears on the Cost Center tab in Chargeback. Retrieves appropriate metering and charge data provided the cost center name is valid as of the specified date range. Default value is the logged-in user. To retrieve metering and charge data for all cost centers, specify "All Users" (in quotes). Each user is also a consumer (cost center) in Chargeback. The logged-in user's privileges determine metering and charge data retrieved across different targets.
- **charge_**—retrieves both metering and charge data. Default retrieves only metering data.

Note:

The privileges required to view target information in Chargeback are:

- **VIEW_CAT_TARGET:** Allows you to view information for a specific target (active or inactive).
- **VIEW_ANY_CAT_TARGET:** Allows you to view information for any Chargeback target (active or inactive).

63.5.2 Data Retrieval Output

This `get_metering_data` verb generates the following output:

- **CONSUMER_NAME**: Name of the cost-center.
- **TARGET_TYPE**: Type of target.
- **TARGET_NAME**: Name of the target.
- **ITEM_TYPE**: Type of the item or metric. Possible values are: **config**, **fixed**, **metric**, **property**, and **usage**.
- **CATEGORY_NAME**: Possible values are: **cpu**, **memory**, **storage**, **activity**, **instance**, **network**, **service**, and **software**.
- **ENTITY_NAME**: Name of the shared entity (valid when the target is enabled in Chargeback in shared mode).
- **ITEM_DISPLAY_NAME**: Display name of the item or metric (in English language). **Note**: Translation support is currently not available.
- **VALUE_AVERAGE**: Average value for the metric on the given date (valid for numeric metrics).
- **STRING_VALUE**: Value for the metric data (valid for string-based metrics).
- **DATA_TYPE**: Data type of the metric. This can be **string** or **number**.
- **UNIT**: Unit of the metric data (for example, req and GB).
- **COLLECTION_DATE**: Date on which the data is collected from the Enterprise Manager metric or configuration tables.
- **PLAN_NAME**: Name of the Charge Plan associated with the particular target.
- **CHARGE**: Charge value for the specific metric of the target on the particular date.
- **DEFINED_RATE**: Charge rate defined in the charge plan associated with the target.
- **RATE_TYPE**: Type of the rate. Possible values are: **No value (blank)**, **Flat**, **config**, and **usage**.
- **RATE_FACTOR**: Adjustment rate for universal metrics, as defined in the associated extended Chargeplan.
- **CHARGE_RATE_UNIT**: Unit, corresponding to the metric or item, as defined in the Charge Plan for the specific rate. For example, for an item or metric named **CPU Utilization (%)** or **CPU Utilization (%) per service**, the value will be "CPU". For a metric or item named **Base Charge**, the value will be "instance", a metric named 'User Requests', the value will be "req"). If the rate defined in Chargeplan is \$1 per MB per day, the value for this column will be "MB" .
- **CHARGE_TIME_UNIT**: Time unit as defined in the Charge Plan for the specific rate. (such as, hourly, daily, weekly, monthly, yearly). For example, if the rate defined in Charge Plan is \$1 per MB per Day, value for this column will be *daily*.

Example: Sample Output

```
"CONSUMER_NAME", "TARGET_TYPE", "TARGET_NAME", "ITEM_TYPE", "CATEGORY_NAME", "ENTITY_NAME",
"ITEM_DISPLAY_NAME", "STRING_VALUE", "PLAN_NAME", "COLLECTION_DATE", "CHARGE", "VALUE_AVE
RAGE", "DEFINED_RATE", "RATE_TYPE", "RATE_FACTOR", "CHARGE_RATE_UNIT", "CHARGE_TIME_UNIT",
"NORMALIZE_RATE", "ADJUST_RATE", "DATA_TYPE", "UNIT"
```

```
"linbo","oracle_vm_guest","mySite/myWls/AdminServer:agent_push","fixed","instance",
", "Base Charge", "", "zone_plan", 15-OCT-11 00:00:00, 72, 1, "3", "flat",
1, "instance", "hourly", 1, 1, "number", ""
"linbo","oracle_vm_guest","mySite/myWls/AdminServer:agent_push","fixed","instance",
", "Base Charge", "", "zone_plan", 16-OCT-11 00:00:00, 72, 1, "3", "flat",
1, "instance", "hourly", 1, 1, "number", ""
"linbo","oracle_vm_guest","mySite/myWls/AdminServer:agent_push","fixed","instance",
", "Base Charge", "", "zone_plan", 17-OCT-11 00:00:00, 72, 1, "3", "flat",
1, "instance", "hourly", 1, 1, "number", ""
"linbo","oracle_vm_guest","mySite/myWls/AdminServer:agent_push","fixed","instance",
", "Base Charge", "", "zone_plan", 18-OCT-11 00:00:00, 72, 1, "3", "flat",
1, "instance", "hourly", 1, 1, "number", ""
"linbo","oracle_vm_guest","mySite/myWls/
Cluster-0_vm0:assembly1","fixed","instance", " ", "Base Charge", "", "zone_plan", 15-
OCT-11 00:00:00, 72, 1, "3", "flat", 1, "instance", "hourly", 1, 1, "number", ""
```

63.5.3 get_metering_data Examples

Following are examples of verb usage:

- `emcli get_metering_data`: Returns metering information for all targets (active or enabled in Chargeback) for the current report cycle for the logged in user.
- `emcli get_metering_data -charge`: Returns metering and charge information for all targets (active or enabled in Chargeback) for the current report cycle for the logged in user.
- `emcli get_metering_data -start_date=01202011-cost_center=ORG1`: Returns metering information for all targets (active or enabled in Chargeback) starting from 20th January 2011 until the end of the month for the **ORG1** cost-center.
- `emcli get_metering_data -start_date=01152011 -end_date=02152011 -target_type=oracle_database`: Returns metering information for all Oracle DB targets (active or enabled in Chargeback) that are owned by the logged in user, starting from 15th January 2011 until the 15th February 2011.
- `emcli get_metering_data -target_type=host target_name=my_host -cost_center=organization1`: Returns metering and charge information for "my_host" target (of type *host*) for the current report cycle for "organization1" cost-center.
- `emcli get_metering_data -cost_center="All Users"`: Returns metering and charge information for all targets (active or enabled in Chargeback) in the current report cycle for all cost centers.
- Log in as `cba_admin_user` (who is the Chargeback Administrator) and enter the following commands:
 - `emcli get_metering_data`: Returns metering information for all targets (active or enabled in Chargeback) for the current report cycle for the `cba_admin_user`.
 - `emcli get_metering_data -cost_center=ssa_user1`: Returns metering information for all targets (active or enabled in Chargeback) that are owned by the `ssa_user1` in the cost center in the current report cycle.
- If the value specified for the cost center, target type, and / or target name is incorrect, no data is generated. For example, the following commands will not generate data:
 - `emcli get_metering_data -target_type=unknown`

```
— emcli get_metering_data -target_type=oracle_database -  
target_name=unknown_target
```

Note: There is no target with the name **unknown_target** configured in Enterprise Manager.

Introduction to Blueprints

This chapter introduces the cloud blueprints (referred to as blueprints in this chapter) for the Oracle Private Cloud and describes how to use them and create your own blueprints.

It contains the following sections:

- [Introduction to Blueprints](#)
- [Uses of the Blueprint](#)
- [Enterprise Manager Cloud Concepts](#)
- [Blueprint Concepts](#)
- [Deploying a Blueprint](#)
- [Blueprint Deployment Processing](#)
- [Blueprint Examples](#)
- [Conclusion](#)

64.1 Introduction to Blueprints

Blueprints are used to describe a desired set of inter-related cloud resources. Like architectural blueprints, they describe what you want including how they are configured to interact with each other, but not how to build them. For instance, a blueprint does not describe the order in which to create the components. Rather, the blueprint orchestration logic figures that out based on inter-resource dependencies.

As an example, suppose you want to create a set of interacting cloud resources such as a WebLogic server instance, an application, and a database. To do so, you must first create the database and WebLogic server instance, deploy the application, and create a JEE datasource that is to be used by the WebLogic server to connect to the database.

You could perform all these operations manually, through the Enterprise Manager Cloud Self Service Portal. You would request creation of the WebLogic server and database and wait for either to complete. Periodically, you would check the status of the creation requests. Once the WebLogic server is created, you could deploy the application. When both the WebLogic server and database are created, you could create the JEE datasource.

Alternatively, you can use a blueprint that describes the four cloud resources to automate the process. To do so, you request instantiation of the blueprint and provide any input parameter values required by the blueprint. The blueprint initiates the creation of the resources and monitors the creation process to ensure that the dependent resources are automatically created as soon as the required resources are created.

The rest of this chapter introduces the blueprint concepts including how to deploy an existing blueprint as well as how to write your own. You can also refer to the [Cloud Blueprints and Blueprint Reference](#) for more details on blueprints.

64.2 Uses of the Blueprint

A blueprint can be used to automate the creation of service instances. An `EM_SSA_USER` can use blueprints for various reasons:

- To create an application composed of several service instances and related cloud resources.
- To create such sets of instances several times.
- To facilitate instance creation for other `EM_SSA_USERS`.
- To eliminate the manual interactive steps that would otherwise be needed to create the set of instances
- To create a textual representation that can be reviewed and modified by other users.

To summarize, blueprints allow you to automate the creation of a set of service instances.

For example, the Quality Assurance team in an enterprise needs to allocate and release resources required to test a Web application. Instead of manually creating the service instances using the Enterprise Manager Cloud Self Service application, a blueprint can be used to perform this task. One person authors a blueprint so that all QA engineers can simply invoke the blueprint and enter a few input parameter values, after which the resources are created. Each user can watch as the blueprint processor displays the status for creation of each resource.

Another example illustrates the use of a blueprint to address simplicity and consistency concerns. An IT shop has a service template that accepts 8 input parameters. For a specific group of users, the same set of values should be used for 6 of those 8 parameters. A simple blueprint accepts 2 parameters and uses the template to instantiate the instances with the other 6 parameters consistently defined.

64.3 Enterprise Manager Cloud Concepts

The concepts described in this section are Enterprise Manager cloud concepts. They are not introduced as part of blueprints but are concepts used by blueprints. Since they form the basis for blueprints, they are summarized below.

- **Oracle Cloud API:** The Oracle Cloud API (see [Introduction to Cloud APIs](#)) defines a RESTful programming interface to consumers of IaaS, MWaaS, and DBaaS based on Oracle's solution stack. It is the Oracle Cloud API that the blueprint processor uses to create cloud resources based on what's specified by the blueprint.
- **Oracle Cloud Resource Model:** The Oracle Cloud Resource Model (see [Cloud Resource Models](#)) details the types of resources one can manipulate via the Oracle Cloud API and, for each type, both its attributes and the operations that can be performed on instances of a resource type.
- **Cloud Resource Types and Attributes:** The cloud resource model specifies a set of attributes that are common to all cloud resources, such as `uri` (its URI) and `resource_status` (with values such as `READY` and `CREATING`). The model also defines a set of cloud resource types and their attributes. Some resource types discussed later in this document are:

- **DbPlatformInstance:** A database platform instance is created using a template. It has attributes such as zone (location for DBaaS instance) and params,(to specify username and password).
- **JavaPlatformInstance:** A JEE server instance is also created using a template. Similar to DbPlatformInstance, a JavaPlatformInstance has attributes like zone. An example of a MWaaS-specific attribute is `application_instance_deployments`, that identifies all applications deployed to the instance.
- **ApplicationInstanceDeployment:** A resource type that represents an application deployment to a JavaPlatformInstance.
- **Datasource:** A resource type that represents a datasource of a JavaPlatformInstance. It is contained in a JavaPlatformInstance and refers to a DatabaseInstance.
- **Resource Containment:** A cloud resource can contain other resources. For instance, a Datasource of a JavaPlatformInstance is contained in the JavaPlatformInstance, and a template contains all service instances that were created using that template.

Every resource you create will be contained in a parent cloud resource. As part each resource definition in your blueprints, you will identify the resource's container.

64.4 Blueprint Concepts

A blueprint generally describes one or more cloud resources to be created. A user *deploys* a blueprint to create the resources described by the blueprint, at which time he provides any input parameter values used by the blueprint. To create each resource, the blueprint specifies its attribute values, which may be hard-coded, come from blueprint input parameters, or gleaned from other resources. In instantiating all the resources, the blueprint system determines the resource dependencies and uses this to order the resource creation and/or configuration required to properly create the instances described by a blueprint.

- **Input Parameters:** A blueprint can define **input parameters**. Each parameter definition specifies a name, datatype and optional specifications such as default value. A user who deploys a blueprint must specify the value for all parameters not having a default.
- **Resource:** A blueprint **resource** defines how to construct a cloud resource. It specifies a set of attributes and the parent cloud resource that is to contain the newly created resource. Each resource in a blueprint also has a name, which must be unique within a blueprint.
- **Outputs:** If outputs are specified, the specified values are displayed when blueprint deployment completes. Output parameters can be used to display information derived during deployment such as to inform the end user of the URL of a JEE application deployment.
- **Intrinsic Functions:** The blueprint language includes a set of predefined functions, illustrated below.
- **Named Literals:** As a programming convenience, blueprints can include a Data section. This is commonly used to specify symbolic names for literal values.
- **Dependencies:** Blueprint deployment is done by creating resources in parallel when possible, but a resource that depends on another resource can't be created

until the latter resource is created. Such dependencies are often implicit, but blueprint processing identifies dependencies and orchestrates the overall steps.

64.5 Deploying a Blueprint

Prerequisites:

- You have the blueprint file.
- You must have installed the blueprint processor software.

A blueprint file is a text file in which the author has used the blueprint language to describe what is required. You deploy the blueprint by running the blueprint processor. For instance, on Windows you would use a command as follows:

```
bp_processor.py myfile.yml -u myname -c https://myhost/em/cloud
```

In this example, the `-u` option specifies the Enterprise Manager user id. If the password is not specified here, you are prompted for it when you execute the blueprint file. The `-c` option is used to specify the cloud URL. There are numerous other command line options. To view a description of supported options, enter

```
bp_processor.py deploy -h
```

64.6 Blueprint Deployment Processing

When a blueprint is deployed, the runtime logic processes the input parameters and orchestrates the creation of resources, doing so in parallel when possible. It also monitors progress and keeps the user informed. The output you see will depend on the blueprint and your environment. The example below shows the use of a blueprint that deploys a Weblogic server, application, database, and JEE Datasource. The output from running this blueprint should give you a sense for the blueprint processing steps.

```
C:\Users\myname\Dropbox\Code\blueprints>bp_processor.py xyzApp.yml -c
https://... -g deployment_report
...
Cloud user id: ssa_user1
Password:
```

The command you entered above specifies the cloud URL (via the `-c` option) and a directory into which to place the optional deployment report (the `-g` option). You then entered the credentials as prompted to proceed.

```
Blueprint Processor - Invocation Summary
-----
Cloud URI:                https://...
User:                     ssa_user1
Blueprint file:           xyzApp.yml
Timeout:                  90 minutes, 0 seconds
Refresh frequency:       15 seconds
Inputs:
Pause points:            (none)
Debug logging:           False
Instance name:           default_instance_name
Graphical report dir:    deployment_report
Versions:
  Blueprint processor:    12.1.0.5, 10-Oct-2012
```



```

14:25:17 INFO: |   | c |   | . |
14:25:17 INFO: |   | . | e | . |
14:25:17 INFO: |   | . | ep | . | Awaiting creation of MyWebServer
14:25:17 INFO: | e | . |   | . |
14:25:17 INFO: | ep | . |   | . | Awaiting creation of MyWebServer
14:25:33 INFO: |   | . |   | . |
14:25:50 INFO: |   | . |   | . |
.....
14:41:18 INFO: |   | . |   | . |
14:41:33 INFO: |   | . |   | CS |
14:41:33 INFO: |   | . |   | ===== |
14:41:44 INFO: |   | . | ep |   | Awaiting creation of MyDB
14:41:57 INFO: | es | . |   |   |
14:42:00 INFO: | c | . |   |   |
14:42:17 INFO: | . | . |   |   |
....
14:44:44 INFO: | . | . |   |   |
14:45:16 INFO: | CS | . |   |   |
14:45:16 INFO: | ===== | . |   |   |
14:45:32 INFO: |   | . |   |   |
14:45:47 INFO: |   | . |   |   |
14:54:17 INFO: |   | . |   |   |
14:54:17 INFO: |   | CS |   |   |
14:54:17 INFO: |   | ===== |   |   |
14:54:18 INFO: |   |   | es |   |
14:54:19 INFO: |   |   | c |   |
14:54:33 INFO: |   |   | CS |   |
14:54:33 INFO: |   |   | ===== |   |
14:54:33 INFO: |-----|
14:54:33 INFO:
14:54:33 INFO:

```

You can see that the timeline is vertical and the four resources are MyApp, MyDB, MyDS, and MyWebServer.

The MyWebServer resource definition is evaluated (state key: e) first. When this is successful, the creation process begins (state key: c). Parallely, the MyDB resource is evaluated and the creation process is initiated. Then the MyDS resource is evaluated and the blueprint processor determines that the evaluation cannot be completed until the MyWebServer resource is created. The same process is applicable to the MyApp resource. When the MyDB and MyWebServer resources are successfully created (state key: CS), the creation process for MyApp and MyDS resources can proceed.

Next, the Outputs section of our example blueprint is processed:

```

14:54:33 INFO: Output Processing
14:54:33 INFO: -----
14:54:33 INFO:
14:54:33 INFO: Output values specified: 1
14:54:49 INFO:   Value of URL: {u'ms_1': u'http://...}
14:54:49 INFO:

```

In the example above, you can see that the blueprint specifies one output value named "URL" and a value is represented with https://....

When all the resources have been successfully created, the blueprint processor summarizes the results. This includes the processing summary for each requested resource as well as the timing information for each resource and the overall run:

```

14:54:49 INFO: Blueprint Processing Summary
14:54:49 INFO: -----

```

```

14:54:49 INFO:
14:54:49 INFO: Resource State Summary:
14:54:49 INFO:   MyWebServer: READY
14:54:49 INFO:     URI: /em/cloud/jaas/javaplatforminstancerequest/163
14:54:49 INFO:     Cloud resource state: READY
14:54:49 INFO:     Timing info:
14:54:49 INFO:       Creation start:    14:25:04
14:54:49 INFO:       Creation end:      14:41:33
14:54:49 INFO:       Duration:         16 minutes, 29.6 seconds
14:54:49 INFO:   MyDB: READY
14:54:49 INFO:     URI: /em/cloud/dbaas/dbplatforminstance/byrequest/164
14:54:49 INFO:     Cloud resource state: READY
14:54:49 INFO:     Timing info:
14:54:49 INFO:       Creation start:    14:25:12
14:54:49 INFO:       Creation end:      14:54:17
14:54:49 INFO:       Duration:         29 minutes, 5.7 seconds
14:54:49 INFO:   MyDS: READY
14:54:49 INFO:     URI: /em/cloud/jaas/datasourcerequest/QA_app_DS@201
14:54:49 INFO:     Cloud resource state: READY
14:54:49 INFO:     Timing info:
14:54:49 INFO:       Creation start:    14:54:18
14:54:49 INFO:       Creation end:      14:54:33
14:54:49 INFO:       Duration:         0 minutes, 15.3 seconds
14:54:49 INFO:   MyApp: READY
14:54:49 INFO:     URI:
/em/cloud/jaas/applicationinstancedeploymentrequest/myApp@181
14:54:49 INFO:     Cloud resource state: READY
14:54:49 INFO:     Timing info:
14:54:49 INFO:       Creation start:    14:41:57
14:54:49 INFO:       Creation end:      14:45:16
14:54:49 INFO:       Duration:         3 minutes, 18.9 seconds
14:54:49 INFO:
14:54:49 INFO: Timing Summary (seconds):
14:54:49 INFO:   Client-side CPU time: 0 minutes, 6.474 seconds
14:54:49 INFO:   Elapsed time:
14:54:49 INFO:     Processing time:    29 minutes, 58.0 seconds
14:54:49 INFO:     Paused time:       0 minutes, 1.9 seconds
14:54:49 INFO:     Total elapsed time: 29 minutes, 59.9 seconds
14:54:49 INFO:
14:54:49 INFO: Graphical Report Generation
14:54:49 INFO: -----
14:54:49 INFO:
14:55:37 INFO: Graphical report generated: deployment_report/bp_report.html

C:\Users\myname\Dropbox\Code\blueprints>

```

64.7 Blueprint Examples

This section illustrates the use of the blueprint concepts and syntax by guiding the reader through progressively more complex examples of blueprints. If you do not plan to author any blueprints, you can skip this section.

64.7.1 Blueprint Structure and Basics

A cloud blueprint specifies a set of desired cloud resources and represents these resources via a text file. Blueprints leverage a standard for easily readable data-structured text called YAML.

YAML is a standard notation, like XML and JSON. As with JSON, YAML is used to represent information via lists, dictionaries, and nesting. These concepts are sufficient to capture all blueprint semantics.

64.7.1.1 Simple Blueprint

A blueprint is a document that you can think of as containing sections. The simplest useful blueprint specifies only the **Resources** section and a single resource. In this example, the resource is a database defined by a template.

```
Resources
MyDB:
  Type: application/oracle.com.cloud.common.DbPlatformInstance+json
  Container: ... (refers to db template)
  Properties: ... (provides properties of db)
```

The above blueprint defines one blueprint resource named MyDB. The Type entry specifies the media type for 'database' as defined by the Cloud Resource Model API. The Container entry identifies the parent cloud resource to contain the newly created object. (Per [Cloud Resource Models](#), all cloud resources are created by adding them to existing containers). Being a database service instance, it will be created via the database template used to create the service. How to specify the container will be shown later, so we just use ellipses here. Similarly, the data required by that template is specified in the Properties entry and shown later. Now let us add an 'Inputs' section...

```
Inputs:
  DbZone:
    Type: String
    DefaultValue: Zone1
    Prompt: Zone to use for db
  DbPassword:
    Type: String
    DefaultValue: welcome1
    Prompt: Password to use for db
    Sensitive: True
Resources:
  MyDB:
    Container: ...
    Properties: ...
```

When the user requests deployment of this blueprint, he provides a value for the DbZone parameter or takes the default specified by the blueprint (Zone1). The value of user provided input parameters can be used by other parts of the blueprint, in particular to provide attribute values needed to create resources. More on this later.

64.7.1.2 Simple Resource: Database Service Instance

In a blueprint, one uses blueprint resources to describe the cloud resources to create. For each blueprint resource, the information required by the Cloud Resource Model is provided.

The following blueprint specifies a single resource to create a database service instance:

```
MyDB:
  Type: application/oracle.com.cloud.common.DbPlatformInstance+json
  Container: ...
```

```

Properties:
  zone: ...
  name: jbName
  params:
    username: app_user
    password: change_me

```

Each resource definition in a blueprint specifies a name, a Container into which to add the resource, and Properties used to specify the characteristics of what to create. In this case:

- The **name** of the blueprint resource definition is MyDB. The name is used in the scope of a blueprint, e.g. to inform the user deploying a blueprint about progress for each resource. In more complex cases, we will see that the name can be referenced elsewhere within a blueprint.
- The **Container** entry specifies the URI of the container to which the new resource will be added. To create a database service instance, we identify the service template that corresponds to the kind of database we want. (We'll see how to do that when we introduce the topic of intrinsic functions.)
- The **Properties** entry specifies values needed to create the resource. In this case, the model requires that we specify zone, name, and params properties. These specify the zone in which the instance is to be created, its name, and a list of name/value pairs required by the selected template.

64.7.1.3 Intrinsic Functions

To operate on data, blueprints support the use of intrinsic functions. All function names begin with "f_" and are invoked with a list of arguments. Continuing the above example, we use two intrinsic functions, to return the URI of the desired container and the desired zone.

```

Resources:
  MyDB:
    Type: application/oracle.com.cloud.common.DbPlatformInstance+json
    Container:
      f_getTemplateURI:
        - Small Database Service Template_automation_VIMAL_si
        - dbaas
    Properties:
      zone:
        f_getZoneURI: ...
      name: jbName
      params:
        username: app_user
        password: ...

```

As you can see, the `f_getTemplateURI` function takes 2 arguments, the name of the template and its service type. The current supported service types are: `dbaas`, `jaas`, and `iaas` (Database-, Java-, and Infrastructure-as-a-Service). The `f_getZoneURI` is analogous to the `f_getTemplateURI` but for zones. Other intrinsic functions will be introduced below. The full set of functions is described in [Cloud Blueprints and Blueprint Reference](#).

64.7.1.4 Simple Resource with Parameter

To the above example blueprint, we now add the use of 2 parameters. By doing so, the user who deploys the blueprint, can specify which zone and password to use.

```
Inputs:
  DbZone:
    Type: String
    DefaultValue: Zone1
    Prompt: Zone to use for db
  DbPassword:
    Type: String
    DefaultValue: welcome1
    Prompt: Password to use for db
    Sensitive: True
Resources:
  MyDB:
    Type: application/oracle.com.cloud.common.DbPlatformInstance+json
    Container:
      f_getTemplateURI:
        - Simple DB Template
        - dbaas
    Properties:
      zone:
        f_getZoneURI:
          - f_path:
            - "Inputs.DbZone.Value"
            - dbaas
      params:
        username: app_user
        password:
          f_path:
            - 'Inputs.Password.Value'
```

The Inputs section defines the two input parameters and the values of the parameters are accessed via the `f_path` intrinsic function. The `f_path` function is used to evaluate path expressions to access any data in your blueprint as well as any cloud resource data to which you have access. In our example, the path expression just uses the dot operator to access nested attributes, first access the Inputs attribute (Inputs section) of the blueprint and within that, the `UserId` attribute, and within that the `Value` attribute.

64.7.1.5 Data Section (Named Literals)

Suppose your blueprint creates several databases and suppose that you do not want to prompt the user for the username and password. Furthermore, you want to code your blueprint so that it is easy to change the password later. In a procedural language, you would use a named literal in order to document the intent and so that you can change it once at the top of your code. Within a blueprint, you do this by using the Data section.

```
Data:
  QADBCreds:
    user: sysman
    password: sysman
Resources:
  MyDB1:
    Type: application/oracle.com.cloud.common.DbPlatformInstance+json
    Container:
```

```

    f_getTemplateURI:
      - Small Database Service Template_automation_VIMAL_si
      - dbaas
  Properties:
    zone:
      f_getZoneURI:
        - f_path:
            - "Inputs.DbZone.Value"
        - dbaas
    params:
      username:
        f_path:
          - "Data.QADBCreds.user"
      password:
        f_path:
          - "Data.QADBCreds.password"
      name: jbName

  MyDB2:
    Container:
      ...

```

In the above case, you can see that the Data section takes a YAML structure, which can be traversed via the 'path' function, in the same way shown for Inputs earlier.

64.7.2 Putting It All Together – Multiple Interdependent Resources

In this more elaborate example, we show how one might create a database and an application that uses it. To do so, the blueprint specifies four cloud resources:

- Database service instance
- Java service instance
- Datasource of the Java service instance
- Application of the Java service instance

New constructs are highlighted below

```

Inputs:
  DbZone:
    Type: String
    DefaultValue: Zone1
    Prompt: Zone to use for db
  DbPassword:
    Type: String
    DefaultValue: welcome1
    Prompt: Password to use for db
    Sensitive: True
Macros:
  # Return a name with unique (date-time) suffix
  # The one argument is a 'name' string
  f_myDescriptiveName:
    - 1
    - f_concat:
        - arg_1
        - '_'
        - f_path:
            - f_path:
                - 'Info.time_suffix'
Resources:

```

```
MyDB:
  Type: application/oracle.com.cloud.common.DbPlatformInstance+json
  Container:
    f_getTemplateURI:
      - Small Database Service Template_automation_VIMAL_si
      - dbaas
  Properties:
    zone:
      f_getZoneURI:
        - f_path:
            - "Inputs.DbZone.Value"
        - dbaas
    params:
      username: app_user
      password:
        f_path:
          - "Inputs.DbPassword.Value"
      name: jbName
MyWebServer:
  Container:
    f_getTemplateURI:
      - PS4_LowHeapTemplate
      - jaas
  Properties:
    name:
      f_myDescriptiveName:
        - jb_pf
    zone:
      f_getZoneURI:
        - Zone1
        - jaas
MyDS:
  Type: application/oracle.com.cloud.jaas.DataSource
  Container:
    f_getResourceURI:
      - MyWebServer
  Properties:
    name: QA_app_DS
    jndi_name:
      - jndi_1
      - jndi_2
    jdbc_driver: oracle.jdbc.OracleDriver
    database_type: Oracle
    database_connect_string:
      f_concat:
        - 'jdbc:oracle:thin:@'
        - f_getResourceAttr:
            - MyDB
        - connect_string
    username: app_user
    password:
      f_path:
        - "Inputs.DbPassword.Value"
MyApp:
  Type: application/oracle.com.cloud.jaas.ApplicationInstanceDeployment
  Container:
    f_getResourceURI:
      - MyWebServer
  Properties:
    application_instance_component:
      f_getAppCompURI:
```

```

    - jbcComponent
    - SSA_USER1
    -
    name: myApp
Outputs:
  URL:
    Description: URL of the deployed app
    Value:
      f_getResourceAttr:
        - MyApp
        - http_application_invocation_url

```

64.7.2.1 Macro Section

If you have a sequence of constructs that you tend to repeat, you can use macro expansion to improve the readability of your blueprint. Macros also enable you to encapsulate logic, for instance, you can modify the logic in one place to affect all code that refers to it. Our example blueprint defines a macro named `f_myDescriptiveName`. It takes one string parameter and appends “_” as well as a string representation of the current time.

64.7.2.2 Attributes of Created Resources (Dependencies)

The key new feature introduced by this example is the ability to refer to attributes of created resources. For instance, the Cloud Resource Model for Datasource defines a `database_connect_string` attribute whose value is required to create a Datasource. The contents of the string will not be available until after the database is created, so it is clearly not something the blueprint author can know in advance. Instead, he uses an intrinsic function to refer to the needed property of the newly created database. (Each `DatabasePlatformInstance` exposes a ‘connect_string’ property.) To do this, the Datasource specifies the value of `JDBCConnectString` via the ‘`f_getResourceAttr`’ intrinsic function:

```

MyDS:
  ...
  Properties:
    ...
    database_connect_string:
      f_concat:
        - 'jdbc:oracle:thin:@'
        - f_getResourceAttr:
            - MyDB
            - connect_string

```

In this case, the `f_getResourceAttr` function waits for the `MyDB` resource to be created and then returns the value of its `connect_string` property. Similarly, the creation of a Datasource is done by adding it to the `JavaPlatformInstance` that is created first, so we need to refer to the `JavaPlatformInstance`'s URI.

```

MyDS:
  ...
  Container:
    f_getResourceURI:
      - MyWebServer

```

In this case, the `f_getResourceURI` function waits for the `MyWebServer` resource to be created and then returns its URI. (In addition to adding a Datasource to `MyWebServer`,

we also must add an `ApplicationInstanceDeployment`, so the same approach is used for both.)

Note: Though the `f_path` function can be used to achieve the same effect, the `f_getResourceAttr` knows to wait for the resource creation to succeed and its state be `READY` before attempting to get its attribute.

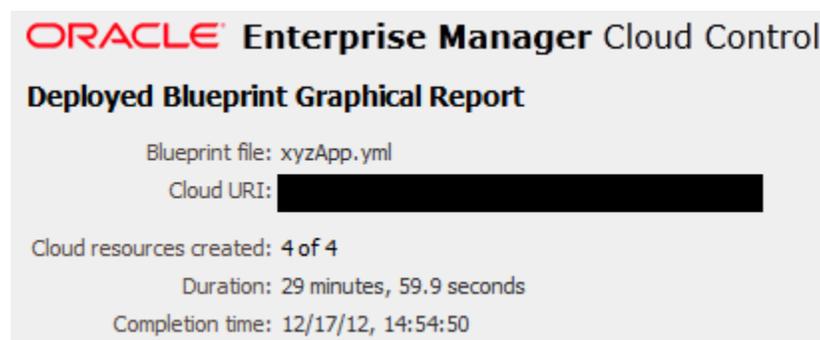
More generally, blueprint resources can refer to other resources and blueprint orchestration accounts for such dependencies, creating resources in parallel when possible.

64.7.3 Visual Depiction of Blueprint Processing

The blueprint processor can also generate an HTML report that includes a graphical representation of the blueprint. This may be used to help understand the overall structure of the blueprint and the relationship of blueprint entities. In addition, the report can include the results of deploying the blueprint.

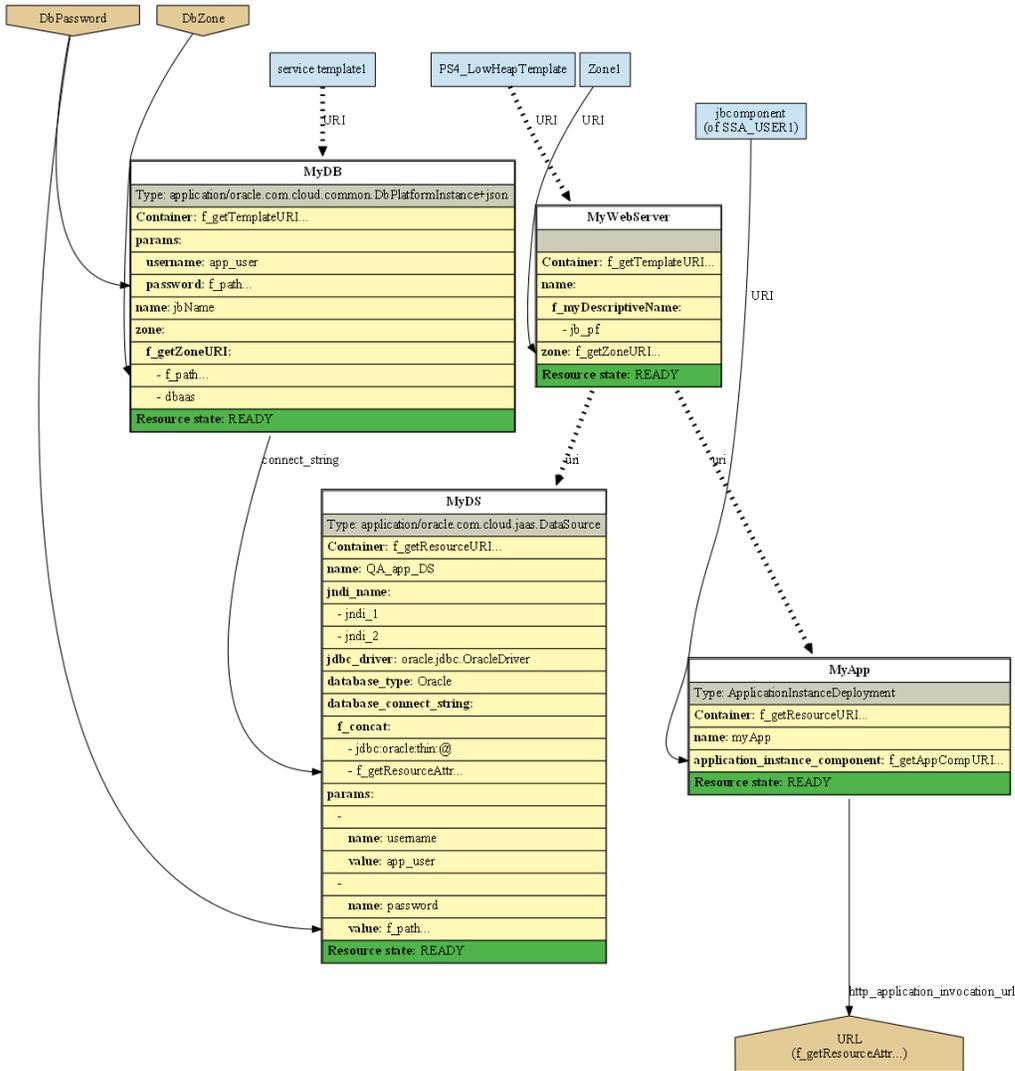
The following example report is for the example blueprint described in [Blueprint Deployment Processing](#). The first part of the report summarizes the run:

Figure 64-1 Blueprint Report Title



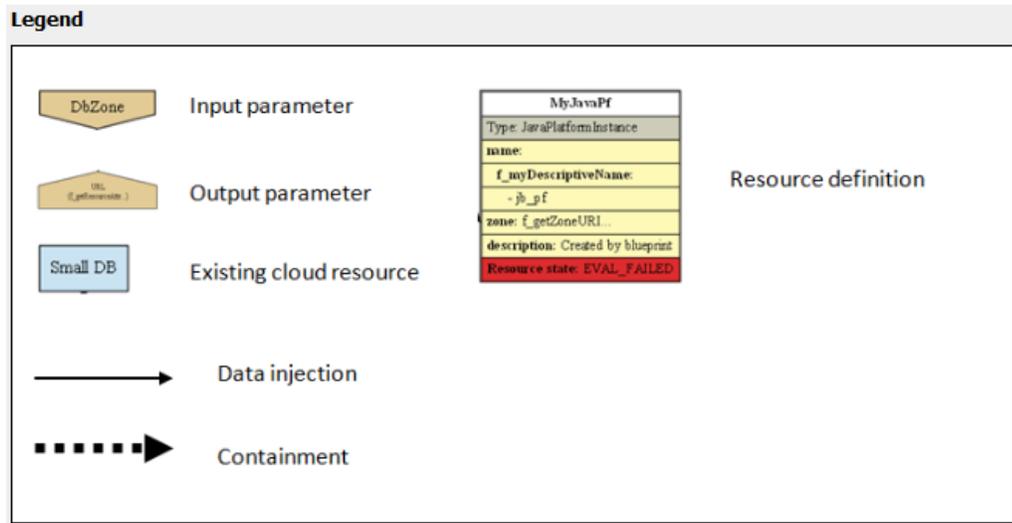
Next is the graphical depiction, in which two types of arcs are used. One depicts containment. For example, the containment of a datasource within a WebLogic server. The other depicts how data is used across the elements of a blueprint. If blueprint deployment is successful, the status of all resources will be `Ready` (green) and you can click on a resource, which links to another report section where you can view the values of its attributes at the time of creation.

Figure 64-2 Blueprint Graphical Depiction



This is followed by a legend to explain the graphical conventions:

Figure 64-3 Blueprint Legend



Finally, each created resource is summarized. (Clicking on a resource definition in the graphical depiction takes you directly to the resource summary for the selected resource.)

Figure 64-4 Blueprint Created Cloud Resources - I

Created Cloud Resources (and their current state)**MyApp (Type: ApplicationInstanceDeployment)**

```

Attribute Name Value
uri /em/cloud/jaas/applicationinstancedeployment/C03DC24FDC8A36E37BEC9229A88CF08B
contained_in {u'status': u'RUNNING', u'media_type': u'application/oracle.com.cloud.jaas.JavaPlatformInstance+json', u'uri': u'/em/cloud/jaas/javaplatforminstance/67A4827A1BB5159E2FDEFF4294F28F4F', u'name': u'jb_pf_14_25_1'}
context_id C03DC24FDC8A36E37BEC9229A88CF08B
http_application_invocation_url {u'ms_1': u'http://slc01rbw.us.oracle.com:21307/derby'}
https_application_invocation_url {u'ms_1': u'https://slc01rbw.us.oracle.com:32893/derby'}
media_type application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json
name MyApp
resource_state {u'state': u'READY'}
service_family_type jaas
status RUNNING

```

MyDB (Type: application/oracle.com.cloud.common.DbPlatformInstance+json)

```

Attribute Name Value
uri /em/cloud/dbaas/dbplatforminstance/byrequest/164
available_space 0.19140625
based_on /em/cloud/dbaas/dbplatformtemplate/D0C4E06F54AA4740E040F20A4C1B51A6
connect_string (DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=slc01rbw.us.oracle.com)(PORT=1522)))(CONNECT_DATA=(SID=sj54f90d)))
context_id 164
created 2012-12-17 11:53:20
database Type oracle_database
db_version 11.2.0.1.0
destination_zone /em/cloud/dbaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51
last_backup null
load 0.0310767354289456
master_username app_user
media_type application/oracle.com.cloud.common.DbPlatformInstance+json
name ██████████
resource_state {u'state': u'READY'}
status RUNNING
total_sessions 31
total_sga 1019.41796875
up_time 0

```

Figure 64-5 Blueprint Created Cloud Resources - II

```

MyDS (Type: application/oracle.com.cloud.jaas.DataSource)
Attribute Name Value
uri /em/cloud/jaas/datasource/QA_app_DS@67A4827A1BB5159E2FDEFF4294F28F4F
contained_in {u'media_type': u'application/oracle.com.cloud.jaas.JavaPlatformInstance+json', u'uri': u'/em/cloud/jaas/javaplatforminstance/67A4827A1BB5159E2FDEFF4294F28F4F', u'name': u'jb_pf_14_25_1', u'context_id': u'67A4827A1BB5159E2FDEFF4294F28F4F'}
context_id QA_app_DS@67A4827A1BB5159E2FDEFF4294F28F4F
database_connect_string jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=██████████)(PORT=1522)))(CONNECT_DATA=(SID=si54f90d)))
jdbc_driver oracle.jdbc.OracleDriver
jndi_name [u'jndi_1']
media_type application/oracle.com.cloud.jaas.DataSource+json
name QA_app_DS
resource_state {u'state': u'READY'}
service_family_type jaas

MyWebServer (Type: application/oracle.com.cloud.jaas.JavaPlatformInstance+json)
Attribute Name Value
uri /em/cloud/jaas/javaplatforminstance/67A4827A1BB5159E2FDEFF4294F28F4F
application_instance_deployments {u'media_type': u'application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json', u'total': u'1', u'elements': [{u'status': u'RUNNING', u'name': u'myApp', u'service_family_type': u'jaas', u'context_id': u'C03DC24FDC8A36E37BEC9229A88CF08B', u'uri': u'/em/cloud/jaas/applicationinstancedeployment/C03DC24FDC8A36E37BEC9229A88CF08B', u'media_type': u'application/oracle.com.cloud.jaas.ApplicationInstanceDeployment+json}]}
based_on {u'service_family_type': u'jaas', u'context_id': u'D0B2A18D85E73A7EE040F20A4C1B696Z', u'uri': u'/em/cloud/jaas/javaplatformtemplate/D0B2A18D85E73A7EE040F20A4C1B696Z', u'media_type': u'application/oracle.com.cloud.jaas.JavaPlatformTemplate+json', u'name': u'PS4_LowHeapTemplate'}
context_id 67A4827A1BB5159E2FDEFF4294F28F4F
data_sources {u'media_type': u'application/oracle.com.cloud.jaas.DataSource+json', u'total': u'1', u'elements': [{u'context_id': u'QA_app_DS@67A4827A1BB5159E2FDEFF4294F28F4F', u'uri': u'/em/cloud/jaas/datasource/QA_app_DS@67A4827A1BB5159E2FDEFF4294F28F4F', u'media_type': u'application/oracle.com.cloud.jaas.DataSource+json', u'name': u'QA_app_DS'}]}
datasource_params [[{u'sensitive': u'false', u'require': u'true', u'type': u'String', u'name': u'username', u'description': u'TODO description i18n'}, {u'sensitive': u'true', u'require': u'true', u'type': u'String', u'name': u'password', u'description': u'TODO description i18n'}]]
jdbc_drivers [u'com.ddtek.jdbc.oracle.OracleDriver', u'oracle.jdbc.xa.client.OracleXADataSource', u'oracle.jdbc.OracleDriver', u'com.ddtek.jdbcx.oracle.OracleDataSource']
media_type application/oracle.com.cloud.jaas.JavaPlatformInstance+json
name jb_pf_14_25_1
resource_state {u'state': u'READY'}
server_count 1
service_family_type jaas
status RUNNING
zone {u'service_family_type': u'jaas', u'context_id': u'A1B44A4EBCC4563125D9D0A3AAE4FD51', u'uri': u'/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51', u'media_type': u'application/oracle.com.cloud.jaas.Zone+json', u'name': u'Zone1'}

```

64.8 Conclusion

This ends the introduction to cloud blueprints. Many features are only described in [Cloud Blueprints and Blueprint Reference](#) including:

- Blueprint macrosPath expressions for browsing the Cloud and blueprint Setting breakpoints and debugging blueprintsHints, tips, and frequently asked questions.

Cloud Blueprints and Blueprint Reference

This chapter serves as a reference to the blueprint processing features of Oracle Enterprise Manager Cloud.

It presents concepts, describes how to install and run the blueprint processor, and documents the blueprint language. Also included are sections to help in your use of the blueprint processor, such as use of the blueprint debugger, what to do when errors are diagnosed, and frequently asked questions. Before reading this document, you must have read [Introduction to Blueprints](#).

 **Note:**

Click [here](#) to view a visual demonstration on how to automate the creation of cloud resources with Cloud Blueprints.

It contains the following sections:

- [Installing the Blueprint Processor](#)
- [Optional Components for Graphical Summary Report](#)
- [Running the Blueprint Processor](#)
- [Blueprint Processing Phases](#)
- [Language Specifics](#)
- [Overview of Blueprint Content](#)
- [Dealing with Errors](#)
- [Simulation Mode](#)
- [Debugging with the Blueprint Processor](#)
- [Tips and Hints](#)

65.1 Installing the Blueprint Processor

Installing the blueprint processor consists of two steps:

- Install Python 2.7, if not already present.
- Install the blueprint processor files.

To use the “-g” option and generate graphical depictions of blueprints, additional software must be installed as described in [Optional Components for Graphical Summary Report](#).

Detailed instructions to install the blueprint processor on Linux and Windows is given below.

**Note:**

Due to schedule constraints, this version of the blueprint processor is not localized and is available only in English.

65.1.1 Linux (Oracle Linux)

Installing the blueprint processor on Oracle Linux involves the following steps:

- Installing Python
- Installing the Blueprint Processor From Zip File
- Testing the Installation

65.1.1.1 Installing Python

- Download a version of Python, version 2.7 or higher (but not 3.x). For instance, use <http://www.python.org/ftp/python/2.7.3/Python-2.7.3.tgz>.
- Untar it, for example by entering the following commands:

```
tar xzf Python-2.7.3.tgz
cd Python-2.7.3
```

- Execute these commands:

```
./configure --prefix=$HOME
make
make install
```

Note: During the configure step, you may see output that includes warnings about some modules that could not be created on your platform, but those modules may not be needed; their absence may not adversely affect use of the blueprint processor.

Python build finished, but the necessary bits to build these modules were not found:

```
bsddb185          dl                imageop
sunaudiodev
```

To find the necessary bits, look in the `setup.py` in `detect_modules()` for the module's name.

```
Failed to build these modules:
sqlite3
```

- The python interpreter should be installed in your home bin directory. Test it. `$HOME/bin/python2.7`
- You should see the Python banner... something like this:

```
Python 2.7.3 (default, May 25 2012, 11:33:27)
[GCC 4.1.2 20080704 (Red Hat 4.1.2-50)] on linux2
Type "help", "copyright", "credits" or "license" for more information.
```

65.1.1.2 Installing the Blueprint Processor from Zip File

- Unzip the blueprint distribution file to a directory, e.g. named bp_installation
- To run the blueprint processor, you must do the following:

cd to the directory, e.g. bp_installation

Enter this command: `python bp_processor.py <filename> <options>`

65.1.1.3 Testing the Installation

- Navigate to the directory that contains the blueprint processor files.
- Enter this command to confirm you can run the blueprint processor, in this case just to see the help text:

```
$HOME/bin/python2.7 bp_processor.py helloWorld.yml -h
```

- You should see the **help** text, as follows:

Usage:

```
bp_processor.py [options] BlueprintFileName
```

Example:

```
bp_processor.py myfile.yml -i "name:Joe" -i "count:2" -u jabauer -c
https://...
```

Options:

```
-h, --help          show this help message and exit
-c CLOUD_URI, --cloud_uri=CLOUD_URI
                    Ex: https://myhost:4473/em/cloud
-u USER, --user=USER user id
-p PASSWORD, --password=PASSWORD
                    password If not provided, you'll be prompted.
-t TIMEOUT, --timeout=TIMEOUT
                    timeout (seconds)
-i INPUT_VALUE, --input_value=INPUT_VALUE
                    <param name>:<param value> e.g. -i "name:Joe Blogs"
-r REFRESH_FREQUENCY, --refresh_frequency=REFRESH_FREQUENCY
                    # of seconds between dots in timeline. Zero: no dots
-n INSTANCE_NAME, --instance_name=INSTANCE_NAME
                    name of blueprint instance to create
-d, --debug         more logging, including http traffic
-E, --pause_error  Drop into debugger if error occurs
-I, --pause_input  Pause before processing Input section
-R, --pause_resource
                  Pause before processing Resource section
-O, --pause_output
                  Pause before processing Output section
-T, --pause_terminate
                  Pause before termination, but after output processing
                  or error
-g GRAPHIC_RESULTS, --graphic_results=GRAPHIC_RESULTS
                  Directory for deployed blueprint graphical report
-G GRAPHIC_BLUEPRINT, --graphic_blueprint=GRAPHIC_BLUEPRINT
                  Directory for undeployed blueprint graphical report
```

- Enter this command to simulate running a blueprint without having to connect to a cloud environment:

```
$HOME/bin/python2.7 bp_processor.py helloWorld.yml
```

You should see something like this...

```
[jabauer@zzzzzzzz blueprints]$ $HOME/bin/python2.7 bp_processor.py
helloWorld.yml

Blueprint Processor - Invocation Summary
-----
Cloud URI:          sim
User:              None
Blueprint file:    helloWorld.yml
Timeout:           90 minutes, 0 seconds
Ellipses frequency: 15 seconds
Inputs:
Pause points:     (none)
Debug logging:    False
Instance name:    default_instance_name

17:10:31 WARNING: No Resources specified in blueprint.  Nothing will be
created

17:10:31 INFO: Output Processing
17:10:31 INFO: -----
17:10:31 INFO:
17:10:31 INFO: Output values specified: 1
17:10:31 INFO:   Value of MyMsg: Hello World
17:10:31 INFO:
17:10:31 INFO: Blueprint Processing Summary
17:10:31 INFO: -----
17:10:31 INFO:
17:10:31 INFO: Timing Summary (seconds):
17:10:31 INFO:   Client-side CPU time: 0.218
17:10:31 INFO:   Elapsed time:
17:10:31 INFO:     Processing time:    0.0
17:10:31 INFO:     Paused time:       0.0
17:10:31 INFO:     Total elapsed time: 0.0
```

65.1.2 Windows

Installing the blueprint processor on Windows involves the following steps:

- Installing Python
- Installing the blueprint processor from Zip File
- Testing the Installation

65.1.2.1 Installing Python

- Go to <http://www.python.org/download/releases/2.7.3>. You will see that there are several options for installing Python.
- Download the MSI Installer. Run it. Accept the defaults suggested by the installer.
- Note the directory into which Python was installed, typically
;%c:\python27
- Add the Python directory to your path, so you can run it from the command line:
 - Windows XP
 - * Start -> My Computer -> Properties

- * Select the **Advanced** tab
- * Click **Environment Variables**
- * You can update the path for 'Current User' and, if you have sufficient privileges, for 'System'. The latter is required if you want all users to be able to run Python.
- * Add this to the end of the Path string:
;c:\python27
- Windows 7 (Windows Vista)
 - * From the **Start** menu, select **My Computer**, then select **Properties**.
 - * Select the **Advanced System Settings** tab on the left.
 - * Click **Environment Variables**.
 - * You can update the path for 'Current User' and, if you have sufficient privileges, for 'System'. The latter is required if you want all users to be able to run Python.
 - * Add this to the end of the Path string:
;c:\python27
 - * Click **OK** as needed (i.e. for two dialog boxes)
- Test the Python installation:
 - Open a new command window. (The new environment variable value will not be visible in previously opened command windows.)
 - Type **python**
 - The Python interpreter should start.
 - Type 'exit()'

65.1.2.2 Installing the Blueprint Processor from Zip File

- Unzip the blueprint distribution file to a directory, e.g. named bp_installation.
- To run the blueprint processor you will...
 - cd to bp_installation
 - Enter this command: `python bp_processor.py <filename> <options>`
 - Alternatively use: `bp_processor.py <filename> <options>`

65.1.2.3 Testing the Installation

- Navigate to the directory that contains the blueprint processor files.
- Enter this command to confirm you can run the blueprint processor, in this case just to see 'help' text:

```
python bp_processor.py helloWorld.yml -h
```

- Enter this command to simulate running a blueprint without having to connect to a cloud environment:

```
python bp_processor.py helloWorld.yml
```

- You should see something like this, in particular the output value “Hello World”:

```
C:\...\>python bp_processor.py interactiveTests\helloWorld.yml

Blueprint Processor - Invocation Summary
-----
Cloud URI:          sim
User:              None
Blueprint file:    helloWorld.yml
Timeout:          90 minutes, 0 seconds
Ellipses frequency: 15 seconds
Inputs:
Pause points:     (none)
Debug logging:    False
Instance name:    default_instance_name

17:10:31 WARNING: No Resources specified in blueprint.  Nothing will be created

17:10:31 INFO: Output Processing
17:10:31 INFO: -----
17:10:31 INFO:
17:10:31 INFO: Output values specified: 1
17:10:31 INFO:   Value of MyMsg: Hello World
17:10:31 INFO:
17:10:31 INFO: Blueprint Processing Summary
17:10:31 INFO: -----
17:10:31 INFO:
17:10:31 INFO: Timing Summary (seconds):
17:10:31 INFO:   Client-side CPU time: 0.218
17:10:31 INFO:   Elapsed time:
17:10:31 INFO:     Processing time:    0.0
17:10:31 INFO:     Paused time:       0.0
17:10:31 INFO:     Total elapsed time: 0.0
```

65.2 Optional Components for Graphical Summary Report

The blueprint processor can generate a summary report that includes a graphical depiction of the blueprint. (To generate such reports, use the `-g` or `-G` option.) For these options to produce reports, the following third party software must be installed.

- **Install GraphViz:** To install GraphViz, see <http://www.graphviz.org>. Download the software for your platform and follow the instructions.
- **Install Pydot:** To install pydot, see <http://code.google.com/p/pydot/>. Download the software (zip or tar file). The blueprint processor was tested using pydot version 1.0.28.

PyDot can be installed using `setuptools`. For example, `sudo easy_install pydot`

You can also use the `setup.py` script in the zip/tar file. From the directory into which you unzipped or untarred the file, run that script: `python setup.py install`

65.3 Running the Blueprint Processor

To deploy a blueprint, you run the blueprint processor and provide the name of the blueprint file plus any desired command options. For a full set of command options, use the command's `-h` option:

Usage:

```
bp_processor.py [options] BlueprintFileName
```

Example:

```
bp_processor.py myfile.yml -i "name:Joe" -i "count:2" -u jabauer -c https://...
```

Options:

```
-h, --help          show this help message and exit
-c CLOUD_URI, --cloud_uri=CLOUD_URI
                   Ex: https://myhost:4473/em/cloud
-u USER, --user=USER user id
-p PASSWORD, --password=PASSWORD
                   password If not provided, you'll be prompted.
-t TIMEOUT, --timeout=TIMEOUT
                   timeout (seconds)
-i INPUT_VALUE, --input_value=INPUT_VALUE
                   <param name>:<param value> e.g. -i "name:Joe Blogs"
-r REFRESH_FREQUENCY, --refresh_frequency=REFRESH_FREQUENCY
                   # of seconds between dots in timeline. Zero: no dots
-n INSTANCE_NAME, --instance_name=INSTANCE_NAME
                   name of blueprint instance to create
-d, --debug         more logging, including http traffic
-E, --pause_error  Drop into debugger if error occurs
-I, --pause_input  Pause before processing Input section
-R, --pause_resource Pause before processing Resource section
-O, --pause_output Pause before processing Output section
-T, --pause_terminate
                   Pause before termination, but after output processing
                   or error
-g GRAPHIC_RESULTS, --graphic_results=GRAPHIC_RESULTS
                   Directory for deployed blueprint graphical report
-G GRAPHIC_BLUEPRINT, --graphic_blueprint=GRAPHIC_BLUEPRINT
                   Directory for undeployed blueprint graphical report
```

Options that are not self explanatory are described below:

- **Input_value:** For each input parameter, you can provide a `-i` or `-input_value` string of the form `<param name>:<value>`. You should use quotation marks around each input parameter specification, e.g. `-i "name:Joe Blogs"`. To provide values for more than one input parameter, use the `-i` command line option more than once. For example, `bp_processor.py _processor.py myfile.yml -i "DbZone:Zone1" -i "DbPassword:myPw"7`
- If an input parameter defined in the blueprint is not provided on the command line, you will be prompted as follows:

`pause_*`: Pause (enter the blueprint debugger), just prior to beginning the Input/Resource/Output processing phases.

In the case of `pause_error`, the debugger is entered in the event of an error. In the case of `pause_terminate`, the debugger is entered prior to terminating the blueprint processor. Use of the debugger commands is described in [Debugging with the Blueprint Processor](#). If no `CLOUD_URI` is specified, the blueprint processing is simulated. See the section titled [Simulation Mode](#).
- **Timeout:** The number of seconds after which the blueprint process must be terminated. (If the processor is waiting for completion of a cloud request, e.g. a POST request, termination occurs when that request completes.)

65.4 Blueprint Processing Phases

Blueprint processing is done in phases. Describing the phases, will help you:

- Understand how blueprints are evaluated and resources created.
- Set pause points at phase transitions. (This can help with cloud browsing and debugging as explained in [Pause Points](#)).
- Connect to the designated Cloud resource.
- Monitor the process. If creation succeeds, other resources may then become unblocked for creation. If creation fails, terminate the resource creation phase.

The phases are:

- **Initialization:** Parse the blueprint.
- **Input Processing:** If the blueprint defines input parameters and if some were not provided on the command line, the user is prompted for the parameter values.
- **Resource Creation:** For each resource defined in the blueprint, verify if the resource has no dependencies on other resources that have not been created yet, initiate creation.
- **Output Processing:** Evaluate and display any output values. (If the resource creation phase was terminated due to errors, some output values may not be available.)

A detailed description of each phase is given below.

65.4.1 Initialization

The blueprint file is read and parsed and a connection to the designated Cloud resource is made. The parsed blueprint content is captured in memory and then augmented. A member named Cloud is added, whose value is the Cloud resource as documented in [Cloud Resource Models](#). Another member named Info, which provides environmental information, is also added. Its value is a set of name/value pairs such as time and a string like '13:02:45' representing the time when processing began. Oracle-provided macros are loaded into the Macros section of the blueprint (except for any whose name conflicts with a blueprint-defined macro).

65.4.2 Input Parameter Evaluation

Input parameter processing is then done and the input parameters set. Any parameters specified in the blueprint that were not provided on the command line are prompted for. Each input parameter value is stored in the Value attribute of the input parameter in the blueprint. The values can be accessed with this path expression: Inputs.<parameterName>.Value. (See [Evaluation Intrinsic](#)s for details.)

65.4.3 Resource Creation

To process the Resources section, each resource is effectively processed in parallel. The following is done for each resource: First, the expression specified for the Container section is evaluated. When successful and when the cloud resource it identifies is in the READY state, all expressions of the resource's Properties subsection are evaluated. (When evaluation of a resource's Properties or Container

section cannot be completed and must wait, the resource is marked and the blueprint processor proceeds to process other resources. Periodically, it reattempts to evaluate this and any other marked resources.)Once all evaluation for a resource definition is complete, the document derived from the Properties section is used to request creation of the cloud resource (i.e. it is POSTed to the container URI). If successful, the URI of the newly created cloud resource is stored in the '_uri' attribute of the blueprint's resource definition. At this point, that URI represents the resource that is being created. The blueprint processor then polls the resource being created to track its status. From a state of CREATING, the resource should eventually transition to a success or failure state. If it transitions to a failure state, the blueprint processor diagnoses the situation and terminates. If creation succeeds and the resource enters the READY state, this may enable evaluation of other resource definitions to proceed. If the timeout value specified on the command line is exceeded, the blueprint processor is terminated. Any cloud resources whose creation was initiated may continue in the 'creating' state for some time before succeeding or failing. In addition to timing out, other failures may occur such as an error evaluating an expression or an error code returned from the cloud, e.g. in response to a creation request. In all such cases, the blueprint processor diagnoses the situation and terminates.

65.4.4 Outputs

After all resources have been successfully evaluated, the Outputs section is processed, at which time each named output expression is evaluated and their values printed. Then a graphical report that depicts the blueprint and what got created is generated, if it was requested and a summary of blueprint processing is displayed to the user.

65.5 Language Specifics

A blueprint is a text file that represents a set of cloud resources that are to be created. The text is formatted in YAML or JSON. Both YAML and JSON are notations for representing data structures of lists and name/value pairs, which can be nested. A blueprint is such a structure. (See [YAML] and [JSON] for concise descriptions.) You can use JSON or YAML notation for your blueprints, but we recommend using YAML. With YAML you can write blueprints that are more concise and somewhat easier to read. YAML also offers useful capabilities not present in JSON, such as the ability to include comments. For these reasons, we have chosen to use YAML in the examples that follow. (Incidentally, YAML allows the inclusion of JSON notation in YAML documents, i.e. YAML is a superset of JSON.)

65.6 Overview of Blueprint Content

At the top level, a blueprint may contain any of the following name/value pairs, which can be viewed as blueprint section types:

- Inputs
- Data
- Macros
- Resources
- Outputs

Order of appearance in the blueprint is not significant. No other sections are allowed and each section can appear only once. No section is truly required in a blueprint, but you must include a Resources section with at least one resource definition if you intend to create a cloud resource via the blueprint. A section may only appear once in a blueprint.

65.6.1 Inputs Section

The Inputs section is used to describe input parameters. Each parameter has a unique name and has the following attributes:

- **Type:** "String" or "Number". If "Number" is specified, the input value must be numeric. (Default: "String".)
- **Prompt:** A string to be used when prompting. (Default: The parameter name.)
- **DefaultValue:** The value to use if the user responds to the prompt by simply pressing Enter. (Default: "").
- **Order:** The sequence in which the values need to be entered. If not specified, ordering is arbitrary.
- **Sensitive:** "True" or "False". If "True", what the user enters interactively will not be echoed. (Default: "False".)
- **Value:** Set at runtime, using the value provided by the user (or the default value)

Processing input parameters starts with those input parameter values provided on the command line. For any not provided, the user is prompted.

65.6.1.1 Example 1

```
Inputs:
  UserId:
    DefaultValue: qa_user
    Prompt: User id
    Order: 1
  Password:
    Sensitive: True
    Order: 2
...
```

In this blueprint snippet, the author has defined 2 input parameters. Both are of type String. A default user id is specified but the user must provide a password. If neither is provided on the command line, the use of Order assures that UserId is requested first.

65.6.1.2 Example 2

In this interaction

```
C:\work>bp_processor.py test2.yml -c https://... -u jon -p myPW -t 665
```

```
Blueprint Processor - Invocation Summary
```

```
-----
Cloud URI:           https://xyxy.example.com:15430/em/cloud
User:                ssa_user1
Blueprint file:      xyzApp.yml
Timeout:             90 minutes, 0 seconds
Refresh frequency:  15 seconds
Inputs:
```

```

Pause points:           Inputs
Debug logging:         False
Instance name:         default_instance_name
Graphical report dir:  deployment_report
Versions:
  Blueprint processor:  12.1.0.5, 10-Oct-2012
  Cloud protocol:      10001

```

```

16:19:18 INFO: Connecting to cloud: https://...
User id (qa_user):
Password:
...

```

The user provided no input parameters as part of the command line, so he is prompted for the two values. He pressed **Enter** for the user id, accepting the default of **qa_user**. And he entered a password, which was not echoed.

65.6.1.3 Example 3

The following interaction is almost the same, except that the user id is provided on the command line:

```

C:\work>bp_processor.py test2.yml -c https://... -u jon -p myPW -t 665 -i
"UserId:joe"

```

```

Blueprint Processor - Invocation Summary
-----

```

```

Cloud URI:           https://xyxy.example.com:15430/em/cloud
User:                ssa_user1
Blueprint file:      xyzApp.yml
Timeout:             90 minutes, 0 seconds
Refresh frequency:  15 seconds
Inputs:
Pause points:       Inputs
Debug logging:      False
Instance name:      default_instance_name
Graphical report dir: deployment_report
Versions:
  Blueprint processor: 12.1.0.5, 10-Oct-2012
  Cloud protocol:     10001

```

```

16:19:18 INFO: Connecting to cloud: https://...
16:19:19 WARNING: No Resources specified in blueprint. Nothing will be created
16:19:19 INFO: Creating blueprint instance named default_instance_name
Password:
...

```

In this case, the user is only prompted for a password. Another example can be found at [Example 3 - Default Input Parameter Value via Cloud Lookup](#) which uses an intrinsic function to perform a runtime lookup for the default value.

65.6.2 Resources Section

The Resources section is used to describe the cloud resources you wish to create. Each resource description has a unique name and has the following attributes:

- Container: The URI of the parent cloud resource.

- **Type:** The media type of the resource, as defined by the Cloud Resource Model. (see [Cloud Resource Models](#)). (If the specified Container is a resource that is a subtype of ServiceTemplate, this value is optional and the default type of the ServiceTemplate is assumed.)
- **Properties:** A set of name/value pairs used to specify values required per the Cloud Resource Model.

For each resource you wish to create, you must know its type, its parent, and the properties you must provide to specify its characteristics. For more details, see the [Cloud Resource Models](#).

For instance, a JavaPlatformInstance must specify:

- A container resource, using the URI of a JavaPlatformTemplate. (You choose a template by selecting one that creates an instance most suited to your needs.)
- The properties required by the Cloud Resource Model. For JavaPlatformInstance, these are:
 - Name
 - Zone (the URI of a zone)

Example

In a blueprint, the Resource description of a JavaPlatformInstance might look like this:

```
MyJavaServer1:
  Container:
    f_getTemplateURI:
      - Small WLS
      - jaas
  Properties:
    name: Foo
    zone:
      f_getZoneURI:
        - Zone1
        - jaas
```

The above example does not specify **Type** because, this is optional when the container is a subtype of ServiceTemplate. Had we wanted to explicitly specify the media type, we could have written:

```
MyJavaServer1:
  Type: application/oracle.com.cloud.jaas.JavaPlatformInstance
  Container:
  ...
```

Our example uses the `f_getTemplateURI` and `f_getZoneURI` intrinsic functions to look up the required URI's. Resource definitions have access to numerous such functions as described in [Intrinsic Functions](#). Resource definitions can also use user-defined macros, as described in [Macros Section](#).

65.6.3 Outputs Section

The Outputs section is used to describe the set of "outputs" of a blueprint. In this release, outputs are just used by the blueprint author to specify information to display at the end of a successful deployment. For instance, he may define an output that displays the URL of an application deployed to a JavaPlatformInstance. Each output

description has a unique name and one required attribute named "Value". That attribute generally specifies a blueprint expression whose value would be of interest to the user who instantiates a blueprint. (One may also include a "Description" attribute for each output definition.)

Example

The following Outputs section specifies one output to display:

```
Outputs:
  Application_URL:
    Description: URL of the deployed app
    Value:
      f_getResourceAttr:
        - MyApp
        - http_application_invocation_url
```

In this example, the output definition uses the `f_getResourceAttr` intrinsic function to retrieve the `http_application_invocation_url` attribute of a newly created `ApplicationInstanceDeployment`. (See [Cloud Resource Models](#) for more information on that attribute.)

65.6.4 Data Section

The Data section contains arbitrary YAML text. The data defined in this section can be accessed through intrinsic functions and can be used in various ways during blueprint deployment. For instance, the author of a blueprint may wish to use the concept of named literals to improve the readability and maintainability of a blueprint. He may want to use short descriptive names instead of long literal values such as cryptic URI's. He may also anticipate needing to change a value used by a blueprint, in which case it can be specified once in the Data section and referenced throughout the blueprint.

Example

The following blueprint excerpts show a Data section that contains an item named `db_conn_str`, a long JDBC connect string that is referenced later in the a `DataSource` resource definition.

```
Data:
  db_conn_str: 'jdbc:oracle:thin:sysman/sysman@hostname.zzz.com:15044:smay16'
Resources:
  ...
  MyDataSource:
    Type: application/oracle.com.cloud.jaas.DataSource
    ...
    Properties:
      name: jbTest
      jdbc_driver: oracle.jdbc.OracleDriver
      database_type: Oracle
      database_connect_string:
        f_path:
          - Data.db_conn_str
    ...
```

65.6.5 Macros Section

The notation used in blueprints can be verbose. If you have a sequence of constructs that you tend to repeat, you can use macro expansion to improve the readability of your blueprint. Macros also enable you to encapsulate logic so that changes made one in section get reflected throughout the document. The Macros section is used to define macros that can be invoked/expanded from elsewhere in the blueprint. A macro invocation may occur wherever a function invocation is allowed, indeed, the notation is identical and one cannot tell from the invocation whether it is an intrinsic function or a macro that is being invoked. (In this way, a macro can be used to override an intrinsic function. Also, some Oracle-provided intrinsic functions are implemented as macros.)

Each macro definition has a unique name and its definition specifies two values:

- The number of arguments it uses.
- The textual representation of the macro expansion.

When a macro is invoked, its textual representation replaces the invocation. Wherever the textual representation specifies a value of `arg_<integer>`, the value of that argument is used instead.

Example

Consider this somewhat contrived blueprint:

```
Macros:
  # Return a string that describes a resource being created
  # The one argument is a 'name' string
  f_myDescriptiveName:
    - 1
    - f_concat:
      - "Resource "
      - arg_1
      - " created for blueprint instance "
    - f_path:
      - "Info.instance_name"
    - " on "
    - f_path:
      - "Info.date"
Resources:
  MyJavaServer:
    Container:
      f_getTemplateURI:
        - Small WLS
        - jaas
    Properties:
      name:
        f_myDescriptiveName:
        - MyFirstJavaServer
      zone:
        f_getZoneURI:
          - Zone1
          - jaas
Outputs:
  NameOfServer:
    Value:
      f_path:
        - "Resources.MyJavaServer.Properties.name"
```

The Macros section defines one macro named `f_myDescriptiveName`, which takes one string argument and constructs a larger string adding descriptive information. The macro is then invoked as part of the `MyJavaServer` resource definition. It is invoked with a value of `"MyFirstJavaServer"` and the resource will be created with a 'name' property whose value is `"Resource MyFirstJavaServer created for blueprint instance myQAInstance on 5/9/2012"`.

Blueprint Processor - Invocation Summary

```
-----  
Cloud URI:          https://...  
User:              sysman  
...  
13:32:22 INFO:  
13:32:22 INFO: Output values specified: 1  
13:32:22 INFO:   Value of NameOfServer: Resource MyFirstJavaServer created for  
                blueprint instance myQAInstance on 5/9/2012  
...
```

65.6.6 Expressions

A blueprint uses 'expressions' to compute values at deployment time. In many cases, the expressions are simple literal string values such as a `user_name` attribute whose value is `app_user`. In other cases, values are constructed via user-defined macros (see [Macros Section](#)) and intrinsic functions (see [Intrinsic Functions](#)).

Two intrinsic functions, `f_path` and `f_eval`, are provided to evaluate the two types of expression string:

- Path expression
- Eval (or Blueprint) expression

These expression types are described below. They can be used not only in calls to `f_path` and `f_eval` but also in the blueprint debugger.

65.6.6.1 Path Expressions

Path expressions are similar to JSONPath [JSONpath] and XPath expressions and are used to extract values from blueprints and cloud resources as well as to traverse URI's that link you to other resources. The starting point for evaluating a path expression is generally the in-memory blueprint. Recall that it contains all the information from your blueprint plus these attributes:

- Cloud: the cloud resource, which is defined in [Cloud Resource Models](#) and has attributes that describe the overall cloud as well as those that enable you to traverse to all other cloud resources (to which you have access).
- Info: a section that contains runtime information you may wish to refer to such as the instance name specified when blueprint processing was initiated, the current date, etc. Other blueprint-processor-computed values such as the input parameters provided by the end-user and the URI's of resources once they have been created.

All this information can be accessed via path expressions. The rest of this section summarizes syntax and semantics and provides examples. As you have seen in earlier sections, the `f_path` intrinsic function provides one way to evaluate path expressions. In the examples that follow, we use another mechanism, the blueprint debugger, described further in [Debugging with the Blueprint Processor](#). As you will see, you can use this not only to explore the contents of your blueprint runtime data

but also to explore the contents of the cloud. In the following descriptions, <doc> refers to the YAML data structure on which the operator acts.

In the example: `Cloud.zones.elements[0]`

The value of the runtime blueprint's Cloud attribute is the first <doc>. The dot-operator in '.zones' is applied to that <doc>, yielding a new <doc> whose value is that of the zones attribute of the first <doc>. Numerous examples are provided to illustrate the use of the operators.

65.6.6.2 Operator Summary

- **Dot Operator ("Member of"):** `<doc>.<name>`: As seen in previous examples, the dot operator selects a value from a document. If <doc> has an attribute named <name>, the value of <name> is returned. Otherwise, expression evaluation fails.
- **Square Bracket ("List Indexing"):** `<doc>[<integer>]`: If <doc> is a list of values, the value of the <integer>th element is returned. Otherwise, expression evaluation fails. Indexing is zero-based, i.e. the first element is specified as "`<doc>[0]`".
- **Dollar Sign ("Literal string prefix"):** `<doc> $ <string>`: To begin a path expression with a string literal, use the '\$' prefix, for instance:

```
$"/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51" ->
```

In the above example, you know the URI of a specific resource and use the arrow operator to view its contents.

This syntax is only useful at the beginning of a path expression, but for consistency with the overall path notation, one can place the \$ operator anywhere in a path expression. Other path expression operators operate on the <doc> to the left. The \$ operator simply replaces the left value with the value of the literal string to the right.

In short, the \$ operator returns the literal string value. If the right operand is not a literal string, expression evaluation fails.

- **Arrow ("URI Traversal"):** `<doc> ->`: If <doc> is a URI, traverse to the identified resource and return its document. In other words, perform a GET on the URI specified by <doc>. If <doc> is not a URI or the GET fails, expression evaluation fails.

For instance, in this path expression...

```
Cloud.zones.elements[0].uri->
```

the expression to the left of the arrow operator returns the URI of a zone. The arrow operator is used to traverse to the zone, i.e. it performs a GET on the URI and displays the contents:

```
context_id: A1B44A4EBCC4563125D9D0A3AAE4FD51
description: Zone for Physical Pool
media_type: application/oracle.com.cloud.jaas.Zone+json
name: Zone1
resource_state:
  state: READY
service_family_type: jaas
service_instances:
  elements: []
  media_type: application/oracle.com.cloud.common.ServiceInstance+json
  total: '0'
uri: /em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51
```

In most cases the traversal operator is sufficient, but you can also specify traversal qualifiers. In particular, you can specify a media type and request parameters. These are optional and enclosed in square brackets. Multiple qualifiers can be specified, separated by commas. To specify a media type, use a string (enclosed in quotes or double quotes).

- To specify a request parameter there are two styles:
 - Identifier
 - Identifier = quotedValue

Overall, there are 3 forms of traversal qualifiers

- *quotedValue*:
media type
- *Identifier*:
a request parameter that has no value
- *Identifier = quotedValue*
a request parameter that has a value

For instance, the following path expression traverses to the cloud URI and specifies three qualifiers (a media type and two request parameters).

```
Cloud.uri-> ["application/oracle.com.cloud.common.ServiceTemplateFinds+json",
filters='{"filters": {"service_family_type":"jaas"}', name]
```

The first parameter is the media type to be used to request that the cloud process a filter/query as described in [Cloud Resource Models](#). The remaining two are request parameters, also described in [Cloud Resource Models](#). The second is named 'filters' with a value that specifies the filtering to perform (expressed as a JSON string). The last is named 'name' and has no value. This specifies that the name attribute is to be returned.

65.6.6.3 Example: Viewing all values of Info

As noted above, the Info section contains environmental information that may be of use when constructing your blueprint. This example shows how to see those values that are currently available in the Info section. Suppose you are looking for a value you can use to construct a unique name. You run the blueprint processor and enter debug mode. (You can do this by specifying "-l" on the command line.

```
C:\Users\jabauer\Dropbox\Code\blueprints>bp_processor.py helloWorld.yml
```

```
-c https://xyxy.example.com:15430/em/cloud -u sysman -p sysman -l ...
```

```
Blueprint Processor - Invocation Summary
```

```
-----
Cloud URI:                https://xyxy.example.com:15430/em/cloud
User:                     sysman
Blueprint file:           helloWorld.yml
...
```

```
...Pause point, prior to Input processing...
For command info, enter (h)elp
```

```
Paused: Info
date: 1/11/2013
```

```

date_suffix: '1_11_2013'
instance_name: default_instance_name
time: '16:47:7'
time_suffix: '16_47_7'
uuid: 81dcaf6895fa4fb881e82d1c16ef7025

```

Here, you see that there are 6 values stored in the Info section. There is one named `uuid` that is a universally unique hexadecimal string. You may prefer to go with `time_suffix`, as being sufficiently unique and more readable. More values may be added between the time of writing this document and when the blueprint processor ships, so you can use this technique to see what's available in the version you are using.

65.6.6.4 Examples: Viewing Blueprint Values

Suppose you have a blueprint that begins with...

```

Inputs:
  DbPassword:
    Type: String
    DefaultValue: welcome1
    Prompt: Password to use for db
    Sensitive: True

```

Say you run the blueprint processor and specify command line options to pause just before processing the Inputs and Resources section, e.g. you specify `"-R1"`.

```

...Pause point, prior to Input processing...
For command info, enter (h)elp

```

```

Paused: Inputs.DbPassword
DefaultValue: welcome1
Prompt: Password to use for db
Sensitive: true
Type: String

```

At the first pause point above, you enter the expression `'Inputs.DbPassword'` and see that it has the attributes you specified in your blueprint. That includes `DefaultValue`, `Prompt`, and `Sensitive`. Note that it does not have an attribute named `Value` because input processing has not been performed yet.

```

Paused: c
...continuing...

```

```

Input Parameter Value Entry
-----
  Password to use for db (welcome1):

```

```

...Pause point, prior to processing Resources section...
For command info, enter (h)elp

```

```

Paused: Inputs.DbPassword.Value
welcome1

```

```

Paused: Inputs.DbPassword
DefaultValue: welcome1
Prompt: Password to use for db
Sensitive: true
Type: String
Value: welcome1

```

You then enter **c** to continue and are prompted for a password. You enter one, which is not echoed because you specified that it was **Sensitive**. Then the second (prior to processing the Resources section) pause point is reached. You enter "Inputs.DbPassword.Value" to see the value of your password and then enter "**Inputs.DbPassword**" to see the value of all attributes for the DbPassword input parameter.

65.6.6.5 Examples: Browsing Your Cloud

Path expressions also offer an easy way to explore the resources in the cloud and their attributes. That is because, at the beginning of blueprint processing, the cloud resource (as defined in [Cloud Resource Models](#)) is read and placed into the in-memory blueprint structure. By starting your path expression with **Cloud**, you can browse attributes of the Cloud resource and navigate via URI's to any other resource to which you have access.

To start, we look at the **description** of the cloud to which you connected:

```
Paused: Cloud.description
This represents the Cloud resource of the Oracle Enterprise Manager Cloud Management
solution
Paused
```

Now let us do something more useful, for example, look at the cloud's zones attribute:

```
Paused: Cloud.zones
elements:
- media_type: application/oracle.com.cloud.jaas.Zone+json
  name: Zone1
  service_family_type: jaas
  uri: /em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51
- description: Zone for Physical Pool
  media_type: application/oracle.com.cloud.common.DbZone+json
  name: Zone1 type: self_service_zone
  uri: /em/cloud/dbaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51
- media_type: application/oracle.com.cloud.opc.OpcZone+json
  name: OPC Zone
  service_family_type: opc
  type: opc
  uri: /em/cloud/opc/opczone
media_type: application/oracle.com.cloud.common.Zone+json
total: '3'
```

Here, we see that the 'zones' attribute contains three attributes, elements, media_type, and total. Their meanings are described in [Cloud Resource Models](#).

We wish to focus on the first zone listed, so we use the square bracket (list indexing) syntax:

```
Paused: Cloud.zones.elements[0]
media_type: application/oracle.com.cloud.jaas.Zone+json
name: Zone1
service_family_type: jaas
uri: /em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51
```

We can further specify that we wish to focus on the 'uri' attribute by adding another dot-operator:

```
Paused: Cloud.zones.elements[0].uri
/em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51
```

To view the resource to which that URI refers, we add the arrow (traversal) operator:

```
Paused: Cloud.zones.elements[0].uri->
context_id: A1B44A4EBCC4563125D9D0A3AAE4FD51
description: Zone for Physical Pool
media_type: application/oracle.com.cloud.jaas.Zone+json
name: Zone1
resource_state:
  state: READY
service_family_type: jaas
service_instances:
  elements: []
  media_type: application/oracle.com.cloud.common.ServiceInstance+json
  total: '0'
uri: /em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51
```

As you would expect, you can continue to add to your path expressions, for instance you can write "multi-hop" expressions that traverse multiple URIs, e.g. ...

```
Paused: Cloud.service_templates.elements[0].uri->zones.elements[0].name
Zone1
```

```
Paused: Cloud.service_templates.elements[0].uri->zones.elements[0].uri->
context_id: A1B44A4EBCC4563125D9D0A3AAE4FD51
description: Zone for Physical Pool
media_type: application/oracle.com.cloud.jaas.Zone+json
name: Zone1
resource_state:
  state: READY
service_family_type: jaas
service_instances:
  elements: []
  media_type: application/oracle.com.cloud.common.ServiceInstance+json
  total: '0'
uri: /em/cloud/jaas/zone/A1B44A4EBCC4563125D9D0A3AAE4FD51
```

Paused:

In the above example, the `service_templates` attribute of the Cloud is used to identify the first service template. We then traverse its URI to get to the template, where we identify the first zone in its list of supported zones. We then traverse its URI to get to the full definition of the zone. In most cases the traversal operator is sufficient, but if there is no default media-type defined for the URI, you may need to specify the media-type to be retrieved, as specified in [Cloud Resource Models](#). In the following example, we provide a media type even though it wasn't needed.

```
Paused: Cloud.service_templates.elements[0].uri->
["application/oracle.com.cloud.jaas.JavaPlatformTemplate"]

context_id: D2520A0CFFE348BCE040F20A4C1B2D8F
created: '2013-01-02 09:35:52.0'
default_instance_media_type:
application/oracle.com.cloud.jaas.JavaPlatformInstance+json
...
```

Similarly, you can use the traversal qualifier syntax to specify request parameters as defined in [Cloud Resource Models](#). For example:

```
Paused: Cloud.service_templates.elements[0].uri->[created, resource_state]
created: '2013-01-02 09:35:52.0'
```

```
resource_state:
  state: READY
```

65.6.6.6 Eval or Blueprint Expressions

An 'eval' (aka 'blueprint') expression is any expression you can include in your blueprint.

Example: Simple Intrinsic Function Evaluation

Eval expressions can be evaluated in the debugger via the 'e' or 'eval' command. After entering the command, you enter the lines that comprise the expression followed by an empty line. Suppose you want to experiment with the `f_concat` intrinsic:

```
Paused: e
  Eval: f_concat:
    Eval: - xxx
    Eval: - yyy
    Eval:
xxxxyyy
Paused:
```

You enter the call to `f_concat` (in 3 lines) and the value is printed after you terminate the expression with an empty line.

This time you nest another call:

```
Paused: e
  Eval: f_concat:
    Eval: - xxx
    Eval: - f_path:
    Eval:   - 'Inputs.DbPassword.Value'
    Eval: - yyy
    Eval:
xxxmySecretyyy
Paused:
```

As you can see, this provides a way to experiment with snippets of blueprint.

Example: Lookup Intrinsic Function

In this example, suppose your blueprint includes the use of `f_getTemplateURI` to look up a template URI:

```
Resources:
  MyDB:
    Container:
      f_getTemplateURI:
        - Small DB
        - dbaas
```

If you think the wrong URI is being returned, you can check like this...

```
Paused: e
  Eval:      f_getTemplateURI:
  Eval:      - template1
  Eval:      - jaas
  Eval:
/em/cloud/jaas/javaplatformtemplate/BFAB458D36BDA87EE040E50A038F6D45
Paused:
```

This shows the URI value returned by `f_getTemplateURI` with the arguments you entered.

65.6.7 Intrinsic Functions

Intrinsic functions are functions that blueprints can use to compute/return desired information. For instance, the `f_concat` function returns the concatenation of its string arguments and the `f_getZoneURI` function looks up and returns the URI of a zone. The normal usage of intrinsic functions is to provide values needed as part of the Resources and Outputs sections, but an intrinsic function can be placed wherever a literal value is allowed. For instance, one can use an intrinsic to derive the `DefaultValue` used for an Input parameter.

This section describes the currently available intrinsic functions.

65.6.7.1 Evaluation Intrinsic

These two intrinsics are used to evaluate expressions (of different types) and return a single value.

65.6.7.1.1 `f_path(pathExpr)`

Apply the `pathExpr` string to the blueprint document, returning the specified value.

Parameters

- **pathExpr:** e.g. "member.subMember..."

A path expression that describes how to traverse and extract information from the document. See [Path Expressions](#).

65.6.7.1.1.1 Example - Value from Data Section

To specify a resource's property value using a literal value defined in the Data section of your blueprint ...

```
...
  params:
    MasterUser:
      f_deref:
        - "Data.QADBCreds.user"
  ...
```

65.6.7.1.1.2 Example 2 - Value from Inputs Section

To do the same as above, only using an input parameter value ...

```
...
  params:
    MasterUser:
      f_deref:
        - "Inputs.my_param.value"
  ...
```

65.6.7.1.1.3 Example 3 - Default Input Parameter Value via Cloud Lookup

Intrinsic functions can appear in sections other than the Resources section. For instance, this blueprint shows the use of `f_path` in the Inputs section.

```
Inputs:
  JavaSvcZone:
    DefaultValue:
      f_path:
        - 'Cloud.zones.elements[0].name'
    Type: String
    Prompt: Enter the name of a jaas zone
  ...
```

The blueprint author here wants to provide an arbitrary default zone name, so the path expression selects the first zone that appears in the 'zones' attribute of the cloud. The default value (shown in the prompt) is computed at runtime:

```
Input Parameter Value Entry
-----
Enter the name of a jaas zone (east_coast_zone):
```

65.6.7.1.2 `f_eval`(blueprintExpr)

Evaluate `blueprintExpr`, returning the specified value. See [Eval or Blueprint Expressions](#) for information on blueprint expressions.

Parameters

blueprintExpr: YAML text to be evaluated as if it appeared in a blueprint.

65.6.7.1.2.1 Example (Contrived)

The `f_eval` intrinsic is used internally by the blueprint processor, and it's unlikely you will need to use it. (You just use the blueprint expression directly.) One reason you might want to use this function is if you have a variable whose value is a blueprint expression in the form of a YAML string.

```
Data:
  demoOfYamlMultilineText: |
    This is a multi-
    line text string which is
    carefully indented. :-)
  myBlueprintExpressionText: |
    f_concat:
      - 'Mister '
      - 'Mxyzptlk'
Outputs:
  demoOfYamlMultilineText:
    Value:
      f_path:
        - 'Data.demoOfYamlMultilineText'
  myBlueprintExpressionText:
    Value:
      f_path:
        - 'Data.myBlueprintExpressionText'
  useOfEvalonExpressionText:
    Value:
      f_eval:
        - f_path:
            - 'Data.myBlueprintExpressionText'
```

Which results in this output:

```
18:49:58 INFO: Output Processing
18:49:58 INFO: -----
18:49:58 INFO:
18:49:58 INFO: Output values specified: 3
18:49:58 INFO:   Value of demoOfYamlMultilineText: This is a multi-
line text string which is
carefully indented. :-)
18:49:58 INFO:   Value of myBlueprintExpressionText: f_concat:
- 'Mister '
- 'Mxyzptlk'
18:49:58 INFO:   Value of useOfEvalonExpressionText: Mister Mxyzptlk
```

65.6.7.2 Resource Access Intrinsics

These intrinsics are used to access resource attributes. As part of their operation, unlike `f_path`, they assure that the resource is in the `READY` state, waiting if needed.

65.6.7.2.1 `f_getResourceAttr`(bpResName, pathExpr)

Get the value of a cloud resource attribute after it is `READY`.

Parameters

- **bpResName:** Resource name (specified in blueprint)
- **pathExpr:** Same semantics as used in `f_deref`, only against the document of the cloud resource identified by `bpResName`.
- **Returns:** result of evaluating `pathExpr` of the resource, once it is created and its `resource_state` is `READY`.

Example 1

To add an application to a MW platform, an Application resource can use this Container clause...

```
Container:
  f_getResourceAttr:
    - myJavaPlatform
    - uri
```

Example 2

To access the name of the zone in which your MW platform was created, you can write...

```
f_getResourceAttr:
- myPlatform
- zone.name
```

65.6.7.2.1.1 `f_getResourceURI`(bpResName)

Get the URI for a blueprint-defined resource. This is just a shorthand for using `f_getResourceAttr` with the specified attribute being `'uri'`.

Parameters

- **bpResName:** Name used in the blueprint resource definition.

- **Returns:** URI

Example

To define a Datasource resource that is to be contained in a JavaPlatformInstance resource created elsewhere in your blueprint...

```
MyDatasource:
  Type: Datasource
  Container:
    f_getResourceURI:
      - MyJavaServer
```

65.6.7.3 Lookup Intrinsic

These intrinsic search for a template, zone, or application component, returning its URI.

65.6.7.3.1 f_getTemplateURI(name, type)

Get the URI for a template, based on its name and type.

Parameters

- **name:** Template name
- **type:** A service type name. The current list of allowed values is iaas, jaas, and dbaas
- **Returns:** URI

Example

A blueprint resource to create a database using template simpleDb, could be written...

```
Container:
  f_getTemplateURI:
    - simpleDb
    - dbaas
```

65.6.7.3.1.1 f_getZoneURI(name, type)

Get the URI for a zone, based on its name and type.

Parameters

- **name:** Zone name
- **type:** A service type name. The current list of allowed values is iaas, jaas, and dbaas
- **Returns:** URI

Example

To get the URI of zone EMEA_db_zone...

```
f_getZoneURI:
  - EMEA_db_zone
  - dbaas
```

65.6.7.3.1.2 f_getAppCompURI(name, owner, version) ...

Get the URI for an application component, based on its name, owner, and version.

Parameters

- **name:** Application component name
- **owner:** Owner of application component
- **version:** Version of application component. If blank, the latest version is used.
- **Returns:** URI

Example

To get the URI of the most recent version of the application component jbcComponent, owned by SSA_USER1 ...

```
f_getAppCompURI:  
- jbcComponent  
- SSA_USER1  
-
```

Note that the third argument is required.

65.6.7.4 Debugging Intrinsic

These intrinsic are used to establish breakpoints or printpoints.

65.6.7.4.1

f_break(expression, [breakpointMessage])

Pause evaluation of the blueprint, print optional message, and enter blueprint debugger.

Parameters

- **expression:** any blueprint expression
- **breakpointMessage:** Message to be printed when the intrinsic function is invoked, just prior to entering the debugger.
- **Returns:** Value of expression. This is computed when the 'continue' command is entered.

Note: See [Debugging with the Blueprint Processor](#) for examples and other information on how to use breakpoints to help debug your blueprints.

65.6.7.4.2 f_print(expression, [printpointMessage])

Print a line that displays the value of expression. Pause evaluation of the blueprint, print optional message, and enter blueprint debugger.

Parameters

- **expression:** any blueprint expression

- **printpointMessage**: Message to be printed when the intrinsic function is invoked, just prior to entering the debugger.
- **Returns**: Value of expression.

Note: The line printed looks like this:

```
>>> Printpoint [<printpoint message>]:
```

```
Value = <expression>
```

See [Debugging with the Blueprint Processor](#) for examples and other information on how to use breakpoints to help debug your blueprints.

65.6.7.5 Other Intrinsic

f_concat(string1, ... stringN):

Returns the concatenation of the string arguments.

Parameters

string*: A string to be concatenated with the other string arguments

Example

To set the description of a JavaPlatformInstance to "Created by blueprint FOO on <current date>" ...

```
Resources:
  MyJavaServer:
    ...
  Properties:
    description:
      f_concat:
        - "Created by blueprint FOO on "
        - f_path:
          - "Info.date"
    ...
```

65.7 Dealing with Errors

This section illustrates various types of errors you may encounter and, by example, how to interpret/resolve the issues.

65.7.1 YAML Syntax Errors

Any syntax errors encountered by the YAML parser are diagnosed by the parser. Consider this blueprint snippet...

```
# Example of YAML syntax error
Data:
  userId: Lex
  password: changeMe
  ...
```

In the above example, the YAML parser would detect an indentation error and diagnose it like this:

```

18:55:59 ERROR: Error loading blueprint YAML:
while parsing a block mapping
  in "<string>", line 2, column 1:
    Data:
    ^
expected <block end>, but found '<block mapping start>'
  in "<string>", line 4, column 3:
    password: changeMe
    ^

```

The second half of the diagnostic, the “expected” part, is usually the most helpful. In this case, it tells you the error was detected at the token ‘password’, what it was expecting, and what it found. One common error to avoid is the use of tabs in the YAML file. YAML does not allow tab characters.

65.7.2 Protocol Version Mismatch

A diagnostic like this...

Blueprint Processor - Invocation Summary

```

-----
Cloud URI:          http://xyxy.example.com:4473/em
User:              sysman
Blueprint file:    examples/evalintrinsic.yml
Timeout:          90 minutes, 0 seconds
Refresh frequency: 15 seconds
Inputs:
Pause points:     Inputs, Termination
Debug logging:    False
Instance name:    default_instance_name
Versions:
  Blueprint processor: 12.1.0.4 May 25
  Cloud protocol:     10001

```

```

19:05:06 INFO: Connecting to cloud: http://xyxy.example.com:4473/em
19:05:07 ERROR: Cloud protocol version mismatch. Expected 10001. Found None.

```

The diagnostic in bold, indicates that the blueprint processor was able to connect to the site but did not get the expected response. In particular, the site returned no `x-specification-version` value as part of the HTTP response. This can happen if you specified an incorrect cloud URI. For instance, in the above example, the URI was not of the form

<https://host:port/em/cloud>

A common mistake is to omit the “/cloud”. Also, do not forget to use *https*, not *http*. If the diagnostic indicates it found a protocol version that is lower than the one expected, that may indicate that you are using a version of the blueprint processor that requires a more recent version of Enterprise Manager.

65.7.3 Expression Evaluation Error

As part of blueprint processing, an attempt to evaluate an expression may result in an error. Examples of errors include:

- Passing the wrong number of parameters to an intrinsic function
- Referring to a non-existent intrinsic function

- Referring to a non-existent cloud resource such as a zone or template

When an expression evaluation error occurs, the issue is diagnosed and the expression is displayed. For instance, consider this contrived blueprint:

```
Outputs:
  ExampleValue:
    Value:
      f_concat:
        - MyApp
```

To keep the example short, the blueprint only has an Outputs section and one expression, which is a call to `f_concat`. Notice that `f_concat` requires at least two parameters, but only one is provided. When the blueprint processor is run for this blueprint, this is displayed:

```
15:26:25 INFO: Output Processing
15:26:25 INFO: -----
15:26:25 INFO:
15:26:25 INFO: Output values specified: 1
15:26:25 ERROR: Value of ExampleValue: Expression could not be evaluated.
Error is...
15:26:25 ERROR: Function/macro concat requires parameter count between 2 and 99,
not 1
15:26:25 ERROR: Expression being evaluated at the time:
15:26:25 ERROR:   {'f_concat': ['MyApp']}
15:26:25 INFO:
```

The blueprint processor attempts to print the value of 'ExampleError' when the error occurs. After displaying the diagnostic, the expression being evaluated at the time of the error is displayed (in JSON notation). Expressions are generally nested, and the error may occur within a subexpression. In that case, the diagnostic includes an expression stack, so that you can see the specific expression in error as well as the outer context. For instance, consider this contrived blueprint:

```
Outputs:
  ExampleValue:
    Value:
      f_concat:
        - aaa
        - bbb
      - f_concat:
        - ccc
```

Notice that the expression involves two uses of `f_concat`. The outer use is correct, but there is an error with the inner use. When the blueprint processor is run for this blueprint, this is displayed:

```
15:42:50 INFO: Output Processing
15:42:50 INFO: -----
15:42:50 INFO:
15:42:50 INFO: Output values specified: 1
15:42:50 ERROR: Value of ExampleValue: Expression could not be evaluated.
Error is...
15:42:50 ERROR: Function/macro concat requires parameter count between 2 and 99,
not 1
15:42:50 ERROR: Expression evaluation stack follows (with failed expression at
bottom) ...
15:42:50 ERROR: -----
15:42:50 ERROR: | Expr: {'f_concat': ['aaa', 'bbb', {'f_concat': ['ccc']}]}
15:42:50 ERROR: | Expr: {'f_concat': ['ccc']}
```

```
15:42:50 ERROR: -----
15:42:50 INFO:
```

The expression evaluation stack shows the outer expression at the top and the expression with the error at the bottom. This stack only has two levels but in general there are many levels and each level of evaluation is shown. (The next example illustrates a multi-level expression evaluation stack.) When a macro is evaluated, its definition is expanded and this expansion is shown in the expression evaluation stack. For instance, consider this contrived blueprint:

```
Outputs:
  ExampleValue:
    Value:
      f_getZoneURI:
        - myZone
        - jaas
```

In this case, the expression is a call to `f_getZoneURI` and the error is that the zone `'myZone'` does not exist. When the blueprint processor is run for this blueprint, this is displayed:

```
15:57:17 INFO: Output Processing
15:57:17 INFO: -----
15:57:17 INFO:
15:57:17 INFO: Output values specified: 1
15:57:18 ERROR: Value of ExampleValue: Expression could not be evaluated.
Error is...
15:57:18 ERROR: Name not found: myZone
15:57:18 ERROR: find_one for predicate {'f_EQ': [{'f_pathc': ['name']], 'myZone'}}
failed
15:57:18 ERROR: Expression evaluation stack follows (with failed expression at
bottom) ...
15:57:18 ERROR: -----
15:57:18 ERROR: | Expr: {'f_getZoneURI': ['myZone', 'jaas']}
15:57:18 ERROR: | Expr: {'f_pathc': [{'f_findByName': [{'f_pathc': [{'f
f_findByName': [{'f_path': ['Cloud.service_family_types.elements']], 'jaas']],
'.uri-.zones.elements']], 'myZone']], '.uri']}
15:57:18 ERROR: | Expr: {'f_findByName': [{'f_pathc': [{'f_findByName': [{'f
f_path': ['Cloud.service_family_types.elements']], 'jaas']],
'.uri->.zones.elements']], 'myZone']}
15:57:18 ERROR: | Expr: {'f_findOne': [{'f_pathc': [{'f_findByName': [{'f_path':
['Cloud.service_family_types.elements']], 'jaas']], '.uri->.zones.elements']],
{'f_EQ': [{'f_pathc': ['name']], 'myZone'}], {'f_concat': ['Name not found: ',
'myZone']}]}}
15:57:18 ERROR: -----
15:57:18 INFO:
```

When the error is detected, a diagnostic is displayed: "Name not found: myZone". In this case, the error should be clear and you need not bother reading further.

But to illustrate how macro expansion and multi-level nested expressions are shown in the expression evaluation stack, we continue walking through the example. The top line of the stack shows the outer expression, which is what was specified in the blueprint as the expression for `'Value:.'`. Because the `f_getZoneURI` intrinsic is implemented as a macro, line 2 of the expression evaluation stack shows the expression after macro expansion. (It is long, so line wrapping is needed.)

Line 3 shows the subset of line 2 that was being evaluated when the error occurred and line 4 shows the same expression after the `f_findByName` macro was expanded.

 **Note:**

Intrinsic macros use some internal functions, which is why you see names like `f_pathc`.

65.7.4 Cloud Resource Creation Error

In the previous example, the failure to create a resource was detected some time after the request was accepted. In some cases, the request to create may fail immediately. If an error occurs while attempting to create a resource, you will see a diagnostic that identifies the resource, the error code, and some diagnostic text. In the following example, the attempt to create a resource name `MyJavaPf` failed with an HTTP code of 500. Reading further, you can see diagnostic text like, "cannot process request for ...", "Unable to start the Instance deployment", and "stack_trace_cause": "java.lang.IllegalArgumentException: Unable to service executable from service template..."

```

14:43:37 INFO:           MyJavaPf
14:43:37 INFO:           /
14:43:37 INFO:           /   MyDatasource
14:43:37 INFO:           /   /
14:43:37 INFO:           -----
14:43:37 INFO:           | e |   |
14:43:38 INFO:           | es |   |
14:43:42 ERROR: Failure creating resource MyJavaPf: 500
{
  "messages" :
  [
    {
      "date" : "2012-05-22T18:43:42+0000" ,
      "text" : "cannot process request for
oracle.sysman.emInternalSDK.ssa.cloudapi.ResourceInteraction@767d6a37 on
/em/cloud/jaas/
javaplatformtemplate/C086733BCCF2A4F3E040F10A716049A8" ,
      "hint" : " Unable to start the Instance deployment" ,
      "stack_trace_cause" : "java.lang.IllegalArgumentException: Unable to
service executable from service template : C086733BCCF2A
4F3E040F10A716049A8\n\tat
oracle.sysman.ssa.mwaas.model.util.remoteop.DPSubmissionHelper.
_createRequestMwaasSetup(DPSubmissionHelper.
java:359)\n\tat oracle.sysman.ssa.mwaas.model.util.remoteop.DPSubmissionHelper.
_submitMwaasSetupServiceRequest(DPSubmissionHelper.
java:616)\n\tat
oracle.sysman.ssa.mwaas.model.util.remoteop.DPSubmissionHelper.submitMwaasSetupSe
rviceRequest(DPSubmissionHelper.
java:712)\n\tat
oracle.sysman.ssa.cloudapi.jaas.JavaPlatformInstance.GenerateJavaPlatformInstance
(JavaPlatformInstance.java:369)\n\tat
oracle.sysman.ssa.cloudapi.jaas.JavaPlatformTemplate.processRequest(JavaPlatformTemp
late.java:128)\n\tat oracle.sysman.ssa.cloudapi.jaas.J
aasServiceProvider.processRequest(JaasServiceProvider.java:520)\n\tat
oracle.sysman.emInternalSDK.ssa.cloudapi.EMCloudServlet.perform
(EMCloudServlet.java:226)\n\tat
oracle.sysman.emInternalSDK.ssa.cloudapi.EMCloudServlet.performPost
(EMCloudServlet.j" ,
      "stack_trace" :

```

```

"oracle.sysman.emInternalSDK.ssa.cloudapi.CloudServiceException: Unable to start
the Instance deployment\n\t
at
oracle.sysman.ssa.cloudapi.jaas.JavaPlatformInstance.GenerateJavaPlatformInstance
(JavaPlatformInstance.java:373)\n\tat oracle.sysm
an.ssa.cloudapi.jaas.JavaPlatformTemplate.processRequest(JavaPlatformTemplate.
java:128)\n\tat oracle.sysman.ssa.cloudapi.jaas.JaasSer
viceProvider.processRequest(JaasServiceProvider.java:520)\n\tat
oracle.sysman.emInternalSDK.ssa.cloudapi.EMCloudServlet.
perform(EMCloudServlet.java:226)\n\tat
oracle.sysman.emInternalSDK.ssa.cloudapi.EMCloudServlet.performPost
EMCloudServlet.java:363)\n\tat oracle.
sysman.emInternalSDK.ssa.cloudapi.rest.AbstractRestServlet.doPost(AbstractRestServ
let.java:134)\n\tat javax.servlet.http.HttpServlet.service(HttpServlet.java:727)\n
\tat
javax.servlet.http.HttpServlet.service(HttpServlet.java:820)\n\tat
weblogic.servlet.internal.
StubSecurityHelper$ServletServiceAction.run(StubSecurityHelper.java:227)\n\tat
weblogic.servlet.internal.StubSecurityHe
}
}
]
}

14:43:42 INFO: | CF | |
14:43:42 INFO: -----
14:43:42 INFO:
14:43:42 ERROR: Create of resource MyJavaPf failed

```

In this example, the HTTP code is 500. Any code that begins with a 5 indicates that the cloud server encountered an unexpected exception. This could be due to an environment issue or even a bug in the server software. Since a 5xx code reflects a server error, you should contact the self service administrator. In other cases, you may see a 4xx error code, which is returned when the client seems to have erred. In such cases, you should check the 'hint' and 'message' information for clues as to what went wrong, because you may be able to correct an error you made. The blueprint processor lists the diagnostic information it receives, but for security reasons, the cloud server may not provide sufficient information to diagnose the issue. In this case, you should contact the self service administrator, who in turn can often diagnose the issue by reviewing the log files for the cloud request.

65.8 Simulation Mode

The blueprint processor simulation mode can be used to aid in developing and testing blueprints. In this mode, the requests normally sent to the cloud server are simulated as well as the results returned by the server. Otherwise the blueprint processing logic is the same. To run the blueprint processor in this mode, you simply do not specify a cloud URI, i.e. do not use the `-c` option on the command line.

One benefit of simulation mode is the speed with which you can run a blueprint and try variations. Normal running of blueprints involves cloud requests for which the processing may be quite time consuming. When in simulation mode, the default behavior is that requests to create each resource consume 2 seconds and then succeed. Another benefit is the ability to test various possibilities. For each resource, you can specify the simulated processing time as well as whether the request succeeds or fails. To do this for a given resource, use the Simulation attribute when defining a resource. For example:

```

MyJavaServer1:
  Container:
    f_getTemplateURI:
      - Small WLS
      - jaas
  Properties:
    destination_zone:
      f_getZoneURI:
        - MyZone
        - jaas
  params:
    user: app_user
    password: pw_you_should_change
  Simulation:
    delay: 3
    result: f

```

In the above example, creation of MyJavaServer1 will fail after 3 seconds.

65.9 Debugging with the Blueprint Processor

In addition to running the blueprint processor such that it deploys the blueprint and runs to completion, there are mechanisms you can use to debug blueprints. These are akin to mechanisms you may have used for debugging other applications, like print statements and the use of a debugger to interactively display values used by your application. To enter the debugger at a particular point of execution, you can use either of two mechanisms. The simpler approach, which will usually be sufficient, is to use command line options that cause execution to pause between processing phases. These are called “pause points” and are described below. The alternative approach enables you to break at a more specific point, such as just prior to evaluating an expression for a specific resource’s property. To do this, you edit the blueprint to include a breakpoint. When either a pause point or breakpoint is reached, control is transferred to the “debugger”. In the debugger, you enter various commands to display contents of the blueprint as well as that of the cloud to which you are connected.

65.9.1 Printing Intermediate Results

The essence of blueprint processing is to evaluate expressions and create resources once all required expressions have been evaluated. At any point during evaluation of an expression, you may wish to see some intermediate results to confirm the value is what you expected. To do so, you use the intrinsic function `f_print`.

Wherever an expression can appear in a blueprint, you simply nest it in a call to `print`. Optionally, you can include a second text message argument. When `print` is encountered, the text message and expression value are printed.

Examples This (contrived) example shows how you plan to use a lookup table to access a template name for use in a call to `f_getTemplateURI`.

```

Data:
  MyTemplates:
    - {name: DbTemplate, type: dbaas}
    - {name: MWTemplate, type: jaas}
  ...
Resources:
  MyDB:
    Container:

```

```

    f_getTemplateURI:
      - f_path:
        - 'Data.MyTemplates[0].name'
      - dbaas
    Properties:
  ...

```

Suppose the code is not behaving as you intend, and you want to view the intermediate results before passing the name to `f_getTemplateURI`. Wrap the expression in a call to `f_print` like this:

```

Data:
  MyTemplates:
    - {name: DbTemplate, type: dbaas}
    - {name: MWTemplate, type: jaas}
  ...
Resources:
  MyDB:
    Container:
      f_getTemplateURI:
        - f_print:
          - f_path:
            - 'Data.MyTemplates[0].name'
          - dbaas
    Properties:
  ...

```

```

At runtime, the value of the expression is printed:16:52:05  INFO:
16:52:05  INFO: Resource State Timeline
16:52:05  INFO: -----
...
16:52:05  INFO:
16:52:05  INFO:           MyDB
16:52:05  INFO:           /
16:52:05  INFO:     -----
16:52:05  INFO:   | e |
>>> Print-point:
      Value = DbTemplate
...

```

A print point message can also be provided, which is useful when you have multiple print points in your blueprint:

```

Data:
  MyTemplates:
    - {name: DbTemplate, type: dbaas}
    - {name: MWTemplate, type: jaas}
  ...
Resources:
  MyDB:
    Container:
      f_getTemplateURI:
        - f_print:
          - f_path:
            - 'Data.MyTemplates[0].name'
          - My printpoint for template name
          - dbaas
    Properties:
  ...

```

At runtime, the value of the expression is printed:

```

16:52:05 INFO:
16:52:05 INFO: Resource State Timeline
16:52:05 INFO: -----
...
16:52:05 INFO:
16:52:05 INFO:         MyDB
16:52:05 INFO:         /
16:52:05 INFO:         -----
16:52:05 INFO:         | e |
>>> Print-point: My printpoint for template name
        Value = DbTemplate
...

```

65.9.2 Pause Points

The easiest way to specify points at which to enter the debugger by using **pause points**. These are specified via command line options as described in [Running the Blueprint Processor](#). You can specify that the blueprint processor pause and the debugger entered at any of these points:

- Prior to evaluating the Input section and prompting for Input parameters
- Prior to evaluating the Resources section
- Prior to evaluating the Output section
- Prior to termination, but after output processing or detecting an error that will terminate processing
- When an error is encountered, just prior to termination

Once the debugger is entered, you can use the commands described in [Debugger Commands](#) below. To continue blueprint execution, enter the **continue** command.

Example 1

Suppose you just want to browse the cloud resources at your server. Specify the `-l` option, which drops you into the debugger before attempting any blueprint processing

Example 2

It is often useful to specify the `'-E'` (or `'—error_debug'`) option, which drops you in the debugger if an error is encountered. (Otherwise, execution simply terminates.)

65.9.3 Breakpoints

Breakpoints are defined via the `f_breakpoint` intrinsic function as described in [Debugging Intrinsic](#)s. Whenever evaluation encounters an `f_breakpoint` invocation, the optional text string parameter value is printed and the debugger entered.

65.9.4 Debugger Commands

When you enter the debugger, you will see a prompt of `Paused:`. At this prompt, there are several commands you can use including `help` or `h`. For example:

```

Paused: h
Commands are...
p[ath] <path expression>: evaluate path expr
e[val]:                   read & evaluate blueprint expression
c[ontinue]:               continue blueprint instantiation

```

```

x[it]:          exit blueprint processor
h[elp]:        (this command)
If first token isn't a command, the line is treated as a path expression
Paused:

```

65.9.4.1 Path Command

The **path** command is used to evaluate arbitrary path expressions as described earlier in [Path Expressions](#). (Unlike other debugger commands, the “p” or “path” keyword is not required.)

Example: Viewing values in blueprint

You can view values in your blueprint such as the value of an input parameter:

```

C:\bp> bp_processor.py -c https://...:15430/em/cloud -u sysman -p sysman -R
xyzApp.yml ...Blueprint Processor - Invocation Summary

```

```

-----
Cloud URI:          https://xyxy.example.com:15430/em/cloud
User:              sysman
Blueprint file:    xyzApp.yml
Timeout:          90 minutes, 0 seconds
Refresh frequency: 15 seconds
Inputs:
Pause points:     Resources
Debug logging:    False
Instance name:    default_instance_name
Graphical report dir:
Versions:
  Blueprint processor: 12.1.0.5, 10-Oct-2012
  Cloud protocol:     10001

```

```

18:28:14 INFO: Connecting to cloud: https://xyxy.example.com:15430/em/cloud

```

```

Input Parameter Value Entry
-----

```

```

Zone to use for db (Zone1):
Password to use for db (welcome1):

```

```

...Pause point, prior to processing Resources section...
For command info, enter (h)elp

```

```

Paused: path Inputs

```

```

DbPassword:
  DefaultValue: welcome1
  Prompt: Password to use for db
  Sensitive: true
  Type: String
  Value: mySecret
DbZone:
  DefaultValue: Zone1
  Prompt: Zone to use for db
  Type: String
  Value: Zone1

```

```

Paused: Inputs.DbPassword.Value
mySecret

```

```

Paused:

```

In the above example, the simple test blueprint specifies two input parameters, DbZone and DbPassword.

- When prompted, you accepted the default, for the first parameter by pressing **Enter**. For the second, you entered your password.
- Notice that your command line options included “-R”, which tells the blueprint processor to pause just prior to evaluating the Resources section of your blueprint. The **Paused** prompt appears, and you enter the **path** command with the path expression **Inputs**. The value of the Inputs section of the blueprint is then printed, namely the 2 input parameters and their values. The values include both those provided by the blueprint and the current runtime values, in this case **Zone1** and **mySecret**.
- You then simply entered a path expression. The **path** command is assumed if no explicit command is entered.

65.9.4.2 Continue Command

The continue command is used to resume blueprint processing. Example

Continuing the previous example...

```
Paused: Inputs.MyNum
{Sensitive: true, Type: Number, Value: '123'}
```

```
Paused: continue
```

65.9.4.3 Exit Command

The **exit** command terminates the blueprint processor.

65.9.4.4 Eval Command

The **eval** command is used to evaluate any expression you can include in your blueprint.

Example

Suppose you are debugging your blueprint and it appears to be failing when looking up a template by name. You can use the **eval** command to evaluate expressions that appear in your blueprint. First you try executing the expression of interest as it appears in your blueprint:

```
Paused: e
  Eval: f_getTemplateURI:
  Eval:   - JaaS Template
  Eval:   - jaas
  Eval:
18:05:01 ERROR: Name not found: JaaS Template
Expression evaluation stack follows (with failed expression & diagnostic at
bottom) ...
-----
|   Expr: {'f_getTemplateURI': ['JaaS Template', 'jaas']}
|   Expr: {'f_path': [{'f_findByName': [{'f_path': [{'f_findByName': [{'f_path':
['Cloud.service_types.elements']}, 'jaas']}, '.uri->
.service_templates.elements']}, 'JaaS Template']}, '.uri']}
|   Expr: {'f_findByName': [{'f_path': [{'f_findByName': [{'f_path':
['Cloud.service_types.elements']}, 'jaas']}, '.uri->.service
```

```

_templates.elements']], 'JaaS Template'}}
| Expr: {'f_findOne': [{'f_path': [{'f_findByName': [{'f_path': ['Cloud.service
_types.elements']], 'jaas']], '.uri->.service_
_templates.elements']], {'f_EQ': [{'f_path': ['name']], 'JaaS Template']],
{'f_concat': ['Name not found: ', 'JaaS Template']}]}}
| End of stack for error message: Name not found: JaaS Template
-----
Paused:

```

In the above example, you first enter the **eval** or **e** command. Then you enter the expression. Note that indentation is significant, as it always is in YAML. You see the same diagnostic you got when processing your blueprint, but now you can experiment with other values. Eventually, you realize that the template was created with two spaces in the name. You try with that name. It works, and the result of the expression evaluation, in this case a URI, is displayed.

```

Paused: e
  Eval: f_getTemplateURI:
  Eval:   - JaaS Template
  Eval:   - jaas
  Eval:
/em/cloud/jaas/javaplatformtemplate/C086733BCCF2A4F3E040F10A716049A8
Paused:

```

65.10 Tips and Hints

This section lists a few tips and hints that may be useful while working with blueprints

65.10.1 Editing YAML - Notepad ++ Example

YAML documents use indentation to denote containment semantics. This may affect your choice of editor or editing options. For instance, YAML does not allow tabs, so you should disable any editor options that cause automatic tab insertion. As an example, suppose you use Notepad++ (<http://notepad-plus-plus.org>). You would set the "replace by spaces" setting in Preferences -> Language Menu/Tab Settings. Better still, if your file has a suffix of ".yaml", Notepad++ sets options to be suitable for YAML. For instance, it colorizes the text based on YAML syntax. If you do not use ".yaml", you can manually set the language to YAML. (Settings -> Preferences -> Language Menu -> ...)

65.10.2 YAML Duplicate and Name / Value Pairs

YAML requires that name/value pairs at the same level use unique names. Any duplicates override earlier occurrences. For instance, these two blueprints are equivalent:

```

Data:
  Password: doNotChangeMe
  UserId: QA_user
  Password: changeMe
Resources:
  ...

Data:
  UserId: QA_user
  Password: changeMe

```

Resources

...

65.10.3 Explicit Dependencies

Suppose your blueprint defines two resources X and Y. If creation of X depends on the successful creation of Y, there will usually be a data-dependency between the two. However, if that's not the case, you can include anywhere in the definition of ResourceX an expression like ...

```
f_getResourceAttr:  
- ResourceY  
- uri
```

65.10.4 Hint: Use '-T' Option

While developing and testing your blueprint, it's a good idea to use the -T command line option. This tells the blueprint processor to drop you into the debugger prior to terminating for any reason. Should any results be unexpected, whether an outright error or just unexpected output, you can use the debugger to investigate.

65.10.5 Help Forums

Other questions? Post them at <https://forums.oracle.com/forums/forum.jspa?forumID=220>.

Infrastructure as a Service REST APIs

This chapter describes the resource models for Infrastructure as a Service (IaaS) REST APIs and their responses.

The first section provides a summary of all the REST APIs covered in this chapter whereas the following sections provide the IaaS resource models and other details.

- [Summary of Infrastructure as a Service REST APIs](#)
- [Infrastructure as a Service Resource Model](#)
 - [Changes for Infrastructure as a Service](#)
 - [IaaS Zone \[application/oracle.com.cloud.iaas.Zone\]](#)
 - [AssemblyInstance \[application/oracle.com.cloud.common.AssemblyInstance+json\]](#)
 - [Scalability Group \[application/oracle.com.cloud.common.ScalabilityGroup+json\]](#)
 - [VM \[application/oracle.com.cloud.common.VM+json\]](#)
 - [VNet \[application/oracle.com.cloud.common.VNet+json\]](#)
 - [NetworkInterface \[application/oracle.com.cloud.common.NetworkInterface+json\]](#)
 - [VMTemplate \[application/oracle.com.cloud.common.VMTemplate+json\]](#)
 - [AssemblyTemplate \[application/oracle.com.cloud.common.AssemblyTemplate+json\]](#)
 - [IaaS Service Family Type \[application/oracle.com.cloud.iaas.IaaSServiceFamilyType+json\]](#)
 - [IaaS Quota Definition \[application/oracle.com.cloud.iaas.Quota+json\]](#)
- [Infrastructure as a Service REST API Examples](#)
- [Support for Version 1000](#)

66.1 Summary of Infrastructure as a Service REST APIs

The table below shows a summary of all the IaaS REST APIs covered in this chapter.

Table 66-1 Summary of IaaS REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
Service Instance - VM	Table 66-6	Viewing Details of the VM Creation Status	Creating a VM	Updating a VM Service Instance	Deleting a Service Instance
Service Instance - Assembly Instance	Table 66-4	Creating an Assembly Instance	Creating an Assembly Instance	Supported	Supported

Table 66-1 (Cont.) Summary of IaaS REST APIs

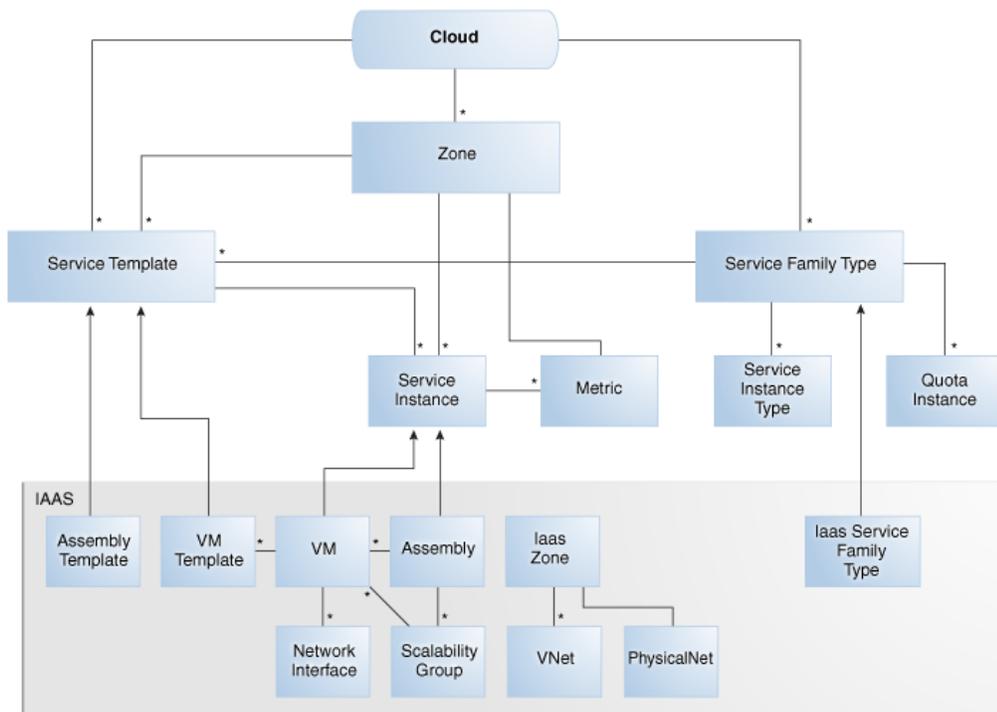
Resource	Data Model	GET	POST	PUT	DELETE
Support for version 10000	Not applicable	Support for Version 1000	Supported	Supported	Supported
Service Templates	<ul style="list-style-type: none"> Table 66-9 Table 66-10 	Searching Service Templates	Searching Service Templates	Supported	Supported

Note:
In the table above, "supported" indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

66.2 Infrastructure as a Service Resource Model

Infrastructure as a Service supports the compute, network, and storage resources that form the basics of IT components. The IaaS resource model supports common cloud interactions on these resources. The following diagram illustrates the high level resource relationships and how they are related to the common resources:

Figure 66-1 IaaS Resource Model



The following describes the resource models that are supported by the IaaS family type.

66.2.1 Changes for Infrastructure as a Service

The following describes the high level updates to the resources for Infrastructure as a Service:

Table 66-2 Cloud Service Portal 12.1.0.5

Abstract	Description
Supports VMTemplate and AssemblyTemplate in ServiceTemplateFinds	Infrastructure as a service provides implementation for the filtering and searching of VMTemplate and AssemblyTemplate resources.
Supports cloning a VM	An VM resource can be created from another VM directly.
Supports saving a VM as a template	An VMTemplate resource can be created from a VM resource.
Supports Infrastructure Quota	Provides quota information and quota usage for Infrastructure as a service resources.

66.2.2 IaaS Zone [application/oracle.com.cloud.iaas.Zone]

This extends application/oracle.com.cloud.common.Zone. This resource represents the view of an IaaS Zone that supports IaaS resources.

Table 66-3 IaaS Zone Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	A GET against this URI refreshes the client representation of the Zone definition to this user.	1	12.1.0.4
name	String	Name of the Zone. SHALL be a UNICODE string to support different languages	1	12.1.0.4
description	String	Human readable description of the Zone. SHALL be a UNICODE string to support different languages. The media type of the resource. "application/oracle.com.cloud.iaas.Zone"	0..1	12.1.0.4
resource_state	ResourceState	The resource state of the resource.	0..1	12.1.0.4
service_family_type	String	The name of the service family type that this zone is associated with. It is "iaas" for this.	0..1	12.1.0.4
service_templates	Collection <ServiceTemplate>	Collection of the service templates that this zone supports and can be deployed into. Currently, VMTemplate and AssemblyTemplate are types of the members.	0..1	12.1.0.4
service_instances	Collection <ServiceInstance>	Collection of the service instances that are in this zone.	0..1	12.1.0.4

Table 66-3 (Cont.) IaaS Zone Data Model

Field	Type	Description	Occurs	Supported since release
vnets	Collection <VNet>	Collection of the virtual networks that are associated with this zone.	0..1	12.1.0.4
backends	Collection <Physical Net>	Physical network available for the users that are associated with this zone.	0..1	12.1.0.6
media_type	String	The media type of the resource. "application/oracle.com.cloud.iaas.Zone"	1	12.1.0.4

66.2.3 AssemblyInstance [application/oracle.com.cloud.common.AssemblyInstance+json]

Extends: application/oracle.com.cloud.common.ServiceInstance

An AssemblyInstance is a logical grouping of resources from a deployment request of an Assembly template. The lifecycle of the resources in an AssemblyInstance can be managed centrally through the assembly instance.



Note:

A service template of Assembly type is deployed into an AssemblyInstance.

The following table describes the AssemblyInstance Data Model.

Table 66-4 AssemblyInstance Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	GET against this URI refreshes the client representation of the Assembly Instance definition.	1	12.1.0.2
name	String	Name of the Assembly Instance as given by the user. It is a UNICODE string to support different languages.	1	12.1.0.2
description	String	Human readable description of the Assembly Instance given by the user. It is a UNICODE string to support different languages.	0..1	12.1.0.2
based_on	URI	URI of the service template of which this AssemblyInstance is based on.	0..1	12.1.0.2
scalability_groups	Collection<ScalabilityGroup>	List of scalability groups that are included in this Assembly Instance.	0..1	12.1.0.2

Table 66-4 (Cont.) AssemblyInstance Data Model

Field	Type	Description	Occurs	Supported since release
servers	Collection<VM>	List of VMs that are directly included in this Assembly Instance.	0..1	12.1.0.2
status	String	Indicates the status of the Assembly Instance. This field contains the semantics that the service provider implements. For example, a service provider may implement an ONLINE status to indicate that all the entities, recursively, are in an ONLINE status. Or a service provider may implement an ONLINE status to indicate that critical entities are in an ONLINE status.	0..1	12.1.0.2
resource_state	ResourceState	Validity of the other Assembly Instance fields on a GET should be guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1	12.1.0.1
created	Timestamp	Date and time, in ISO 8601 format, when the Assembly Instance was created.	0..1	12.1.0.2
expiry	Timestamp	Date and time, in ISO 8601 format, when the Assembly Instance should expire. If not specified, the Assembly Instance never expires.	0..1	12.1.0.2
params	{}	Vendor specific configuration parameters for this deployment.	0..1	12.1.0.2
deployment_plan	String	Vendor specific configuration parameters for this deployment in the prescribed XML format from the corresponding AssemblyTemplate that this AssemblyInstance is based on. When this is specified in the POST request, the content of this attribute will be processed to substitute the parameters for deploying an AssemblyInstance.	0..1	12.1.0.2
media_type	String	The media type of the resource.	1	12.1.0.4

66.2.4 Scalability Group [application/oracle.com.cloud.common.ScalabilityGroup+json]

Extends: application/oracle.com.cloud.common.ServiceInstance

The Scalability Group is a collection of servers and corresponding virtual networks. Scalability Group contains a collection of homogenous entities. The cloud service provider should enforce the semantics of "sameness". Operations such as `scale_out` and `scale_in` of the scalability group may be supported by the provider in the homogenous scalability group.

The following table describes the ScalabilityGroup Data Model.

Table 66-5 ScalabilityGroup Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	GET against this URI refreshes the client representation of the scalability group definition.	1	12.1.0.2
name	String	Name of the scalability group as given by the user. It is a UNICODE string to support different languages.	1	12.1.0.2
description	String	Human readable description of the scalability group given by the user. It is a UNICODE string to support different languages.	0..1	12.1.0.2
nodes	Collection<URI>	List of URIs that represent the entities making up this scalability group.	1	12.1.0.2
count	Integer	Count of the nodes that are in the scalability group.	1	12.1.0.2
status	String	Indicates the status of the scalability group. This field contains the vendor dependent semantics that the service provider implements. For example, a service provider may implement an ONLINE status to indicate that all the entities, recursively, are in an ONLINE status. Or a service provider may implement an ONLINE status to indicate that at least one entity is in an ONLINE status.	0..1	12.1.0.2
resource_state	ResourceState	Validity of the other scalability group fields is guaranteed only when the resource state is READY. Otherwise, the client shall not assume the validity of the fields.	1	12.1.0.2
created	Timestamp	Date and time, in ISO 8601 format, when the scalability group is created.	1	12.1.0.2
max	Signed Integer	Maximum number of nodes this scalability group can hold. If not provided, the client should assume it is unlimited, which is the specified with as the value "-1".	0..1	12.1.0.2
min	Integer	Minimal number of nodes this scalability group should hold to be considered a functional scalability group. If not specified, the client should assume it is 1.	0..1	12.1.0.2
homogenous	Boolean	TRUE when the scalability group contains homogenous entities and FALSE otherwise.	1	12.1.0.2

66.2.5 VM [application/oracle.com.cloud.common.VM+json]

Extends: application/oracle.com.cloud.common.ServiceInstance

A VM is a computing container providing a complete system platform that supports the execution of a complete OS stack. The following table describes the VM Data Model.

Table 66-6 VM Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	GET against this URI refreshes the client representation of the VM definition.	1	12.1.0.1
name	String	Name of the VM as given by the user or generated by the platform.	1	12.1.0.1
description	String	Human readable description of the Server given by the user or generated by the platform. It is a UNICODE string to support different languages.	0..1	12.1.0.1
status	String	Current running status of this Server. The service provider can overwrite the valid values for this field and may implement status operations.	1	12.1.0.1
based_on	URI	URI of the service template on which this Server is based.	0..1	12.1.0.1
hostname	String	Qualified host name of this Server when available.	0..1	12.1.0.2
cpu	[Number,Number]	Numeric sizing of the CPU where the first number indicates the count of the CPU cores and the second number indicates the CPU speed in MHz per core.	1	12.1.0.1
memory	Number	Numeric sizing of the RAM in MByte.	1	12.1.0.1
disks	{String,Number}	Name and size in GB of local disks.	0..1	12.1.0.2
interfaces	Collection<NetworkInterface>	Network interfaces associated with this Server.	1	12.1.0.2
params	{ }	Vendor specific configuration parameters for this Server.	0..1	12.1.0.1
resource_state	ResourceState	Validity of the other Server fields is guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	1	12.1.0.1
created	Timestamp	Date and time, in ISO 8601 format, when the Server was created.	1	12.1.0.1
type	String	Type of server that represents this computational container (PHYSICAL, VIRTUAL).	1	12.1.0.1
os	String	OS information of the Server where appropriate.	0..1	12.1.0.1
media_type	String	The media type of the resource.	1	12.1.0.4
saved_templates	Collection<VMTemplate>	The collection of VMTemplate that were created based on this VM resource.	0..1	12.1.0.5

The status field of the VM Data Model should contain the running status of the VM. It is expected that the service provider implements at least the following valid values:

- STOPPED
- STOPPING

- STARTING
- STARTED
- SUSPENDED
- SUSPENDING
- RESUMING
- RESTARTING
- DELETED

66.2.6 VNet [application/oracle.com.cloud.common.VNet+json]

A VNet is a service that is capable of providing network addresses, routing rules, security constraints, and access limits.

The following table describes the VNet Data Model.

Table 66-7 VNet Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	GET against this URI refreshes the client representation of the VNet definition.	1	12.1.0.2
name	String	Name of the VNet as given by the user or generated by the platform. It is a UNICODE string to support different languages.	1	12.1.0.2
description	String	Human readable description of the VNet given by the user or generated by the platform. It is a UNICODE string to support different languages.	0..1	12.1.0.2
created	Timestamp	Date and time, in ISO 8601 format, when this VNet was created.	1	12.1.0.2
interfaces	Collection<NetworkInterface>	List of NetworkInterface resources that are part of the VNet.	0..1	12.1.0.2

66.2.7 NetworkInterface [application/oracle.com.cloud.common.NetworkInterface+json]

An instance of the network interface is identified by a network end point and consists of a complete address that can be interpreted by the underlying network infrastructure.

The following table describes the NetworkInterface Data Model.

Table 66-8 NetworkInterface Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	GET against this URI refreshes the client representation of the NetworkInterface definition.	1	12.1.0.2

Table 66-8 (Cont.) NetworkInterface Data Model

Field	Type	Description	Occurs	Supported since release
name	String	Name of the NetworkInterface as given by the user or generated by the platform. It is a UNICODE string to support different languages.	1	12.1.0.2
description	String	Human readable description of the NetworkInterface given by the user or generated by the platform. It is a UNICODE string to support different languages.	0..1	12.1.0.2
address	String	Address of this interface. If an IP based protocol, specified as a dotted notation IPv4 or IPv6 address.	1	12.1.0.2
resource_state	ResourceState	The validity of the other NetworkInterface fields is guaranteed only when the resource state is READY. Otherwise, the client should not assume the validity of the fields.	0..1	12.1.0.2
mac	String	The MAC address of the network interface where appropriate.	0..1	12.1.0.2

66.2.8 VMTemplate [application/oracle.com.cloud.common.VMTemplate+json]

Extends: application/oracle.com.cloud.common.ServiceTemplate

VMTemplate is a class of ServiceTemplate. It is permissible to accept the ServiceTemplate media type on an instance of VMTemplate. VMTemplate is a preconfigured deployable entity that realizes a VM resource. The following table describes the VMTemplate Data Model.

Table 66-9 VMTemplate Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	A GET against this URI refreshes the client representation of the VMTemplate definition to this user.	1	12.1.0.1
name	String	A human readable name, given to the VMTemplate.	1	12.1.0.1
description	String	A brief description, given to the ServiceTemplate. SHALL be a UNICODE string to support different languages.	0..1	12.1.0.1
type	String	The String that describes the type of the VM Template. This has value "Template".	1	12.1.0.1
created	Timestamp	Date and time, in ISO 8601 format, when the VMTemplate was created.	1	12.1.0.1

Table 66-9 (Cont.) VMTemplate Data Model

Field	Type	Description	Occurs	Supported since release
service_family_type	String	The name of the service family type that this service template is categorized under. This has value "iaas".	0..1	12.1.0.4
default_instance_media_type	String	The default media type of the service instance that can be created using this template. This has value "application/oracle.com.cloud.common.VM".	0..1	12.1.0.4
resource_state	ResourceState	Only a service template with READY state can be deployed.	0..1	12.1.0.1
deployment_params	List of Deployment Parameters	Contains the list of data structure of Deployment Parameters to indicate the parameters that may be specified during the service instance deployment using this template.	0..1	12.1.0.4
zones	List of Zones	Contains the list of Zone resources that this service template can be used to create service instances with.	0..1	12.1.0.2
service_instances	Collection<?>	Contains the list of service instances that are created with this template.	0..1	12.1.0.4

66.2.9 AssemblyTemplate [application/oracle.com.cloud.common.AssemblyTemplate+json]

Extends: application/oracle.com.cloud.common.ServiceTemplate+json

AssemblyTemplate is a class of ServiceTemplate. It is permissible to accept the ServiceTemplate media type on an instance of AssemblyTemplate.

AssemblyTemplate is a deployable entity that realizes an AssemblyInstance resource that may contain multiple resources that are interconnected. The following table describes the AssemblyTemplate Data Model.

Table 66-10 AssemblyTemplate Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	A GET against this URI refreshes the client representation of the AssemblyTemplate definition to this user.	1	12.1.0.2
name	String	A human readable name, given to the AssemblyTemplate.	1	12.1.0.2
description	String	A brief description, given to the AssemblyTemplate. SHALL be a UNICODE string to support different languages.	0..1	12.1.0.2

Table 66-10 (Cont.) AssemblyTemplate Data Model

Field	Type	Description	Occurs	Supported since release
type	String	The String that describes the type of the Assembly Template. This has value "Assembly".	1	12.1.0.2
created	Timestamp	Date and time, in ISO 8601 format, when the AssemblyTemplate was created.	1	12.1.0.2
service_family_type	String	The name of the service family type that this service template is categorized under. This has value "iaas".	0..1	12.1.0.4
default_instance_media_type	String	The default media type of the service instance that can be created using this template. This has value "application/oracle.com.cloud.common.AssemblyInstance".	0..1	12.1.0.4
resource_state	ResourceState	Only a service template with READY state can be deployed.	0..1	12.1.0.1
deployment_params	List of Deployment Parameters	Contains the list of data structure of Deployment Parameters to indicate the parameters that may be specified during the service instance deployment using this template.	0..1	12.1.0.4
zones	List of Zones	Contains the list of Zone resources that this service template can be used to create service instances with.	0..1	12.1.0.2
service_instances	Collection<?>	Contains the list of service instances that are created with this template.	0..1	12.1.0.4
definition	String	Contains the definition of the assembly template. This would be the OVF xml metadata representing the assembly template.	0..1	12.1.0.1
ovfdescriptor	String	Same as definition.	0..1	12.1.0.1
deploy_plans	List of Deployment Plans	Contains the list of Deployment Plans that are associated with the assembly instance. The deployment plans are pre-filled configuration metadata.	0..1	12.1.0.2

The following table describes the structure of the Deployment Plan.

Table 66-11 Deployment Plan Structure

Field	Type	Description	Occurs
name	String	The name of the deployment plan.	1
description	String	The description of the deployment plan.	0..1
xml	String	The deployment plan XML.	1

66.2.10 IaaSServiceFamilyType [application/oracle.com.cloud.iaas.IaaSServiceFamilyType+json]

Extends: application/oracle.com.cloud.common.ServiceFamilyType+json

The Infrastructure service family type describes the common service family type attributes and also the infrastructure specific attributes. The following table describes the IaaS Service Family Type Data Model.

Table 66-12 AssemblyTemplate Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	A GET against this URI refreshes the client representation of the ServiceFamilyType definition to this user.	1	12.1.0.4
name	String	A human readable name, given to the ServiceFamilyType.	1	12.1.0.4
description	String	A human readable description of the Service Family Type. SHALL be a UNICODE string to support different languages.	0..1	12.1.0.4
resource_state	ResourceState	The resource state of the resource.	0..1	12.1.0.4
media_type	String	The media type of the resource.	1	12.1.0.4
service_templates	Collection <ServiceTemplate>	The collection of service templates that are of this service family type.	0..1	12.1.0.4
zones	Collection <Zone>	The collection of zones that support service instances of this service family type.	0..1	12.1.0.4
instance_types	Collection <InstanceType>	The collection of instance types that are supported by this service family type.	0..1	12.1.0.4
quota_usages	Collection <QuotaUsage>	The collection of quota usages of the perspective family type of the authenticated user.	0..1	12.1.0.5
quota_def	Json Object	The family type specific quota metadata information, this may include some permission information. The structure of this object would be documented in the perspective family type resource model.	0..1	12.1.0.5
instance_options	List of VM Size Options	The list of VM size options that may be available to the authenticated user.	0..1	12.1.0.4

The following table describes the structure of the VM Size option:

Table 66-13 VM Size Option Structure

Field	Type	Description	Occurs	Supported since release
name	String	The name of the VM Size. This may be used as the parameter for VM resource creations.	1	12.1.0.4
id	String	The ID of the VM Size.	1	12.1.0.4
cpu	Number	The amount of CPU.	1	12.1.0.4
memory	Number	The amount of Memory in MB.	1	12.1.0.4
local_storage	Number	The amount of local storage in GB.	1	12.1.0.4

The IaaS supports the following Quota Usage.

Table 66-14 Quota Usage for IaaS

Quota	Description	Supported since release
CPU	The number of CPUs in discrete units.	12.1.0.5
RAM	Memory size in MB.	12.1.0.5
Local Storage	The amount of storage local to the server in GB.	12.1.0.5
Extra Storage	The amount of storage external to the server in GB.	12.1.0.5
SWLIB Storage	The amount of storage in the Enterprise Manager Software Library.	12.1.0.5
Server	The number of servers in discrete units.	12.1.0.5

The IaaS Quota definition is described in the media type application/oracle.com.cloud.iaas.Quota.

66.2.11 IaaS Quota Definition [application/oracle.com.cloud.iaas.Quota+json]

This resource describes the definition for the IaaS quota. The following table describes the IaaS Quota Definition Data Model

Table 66-15 IaaS Quota Definition Data Model

Field	Type	Description	Occurs	Supported since release
uri	URI	A GET against this URI refreshes the client representation of the IaaS Quota definition to this user.	1	12.1.0.5
allowedSaveAsTemplate	Boolean	Indicates whether the authenticated user has permission to save a VM as a template.	1	12.1.0.5

Table 66-15 (Cont.) IaaS Quota Definition Data Model

Field	Type	Description	Occurs	Supported since release
allowedSaveToSwlib	Boolean	Indicates whether the authenticated user has permission to save entities to the Enterprise Manager software library.	1	12.1.0.5
allowedSaveToSwlibOnExpiry	Boolean	Indicates whether the authenticated user has permission to save VM as a template into the Enterprise Manager software library when the VM expires.	1	12.1.0.5
resourceQuotas	Collection <ResourceQuota>	The quotas of resources defined for the authenticated user.	1	12.1.0.5

The following describes the structure of the Resource Quota

Table 66-16 Structure of the Resource Quota

Field	Type	Description	Occurs	Supported since release
name	String	The name of the resource.	1	12.1.0.5
description	String	The description of the resource.	0..1	12.1.0.5
maxAllowed	Number	The maximum number of units that the authenticated resource is allocated. If this value is negative or not defined, the user does not have any limit on the amount that can be used.	0..1	12.1.0.5
unit	String	The measurement unit of the resource.	1	12.1.0.5

66.3 Infrastructure as a Service REST API Examples

The following sections provide examples of the different operations supported by the IaaS REST APIs:

- [Creating a Service Instance](#)
 - [Creating a VM](#)
 - * [POST to the IaaS Zone on which the VM is to reside](#)
 - * [POST to the VM Template on Which the VM is to be Based on](#)
 - [Viewing Details of the VM Creation Status](#)
 - [Creating an Assembly Instance](#)
- [Updating a VM Service Instance](#)
 - [Changing the VM Status](#)
 - [Changing the VM Size](#)
 - [Adding a VM Disk](#)
- [Deleting a Service Instance](#)

- [Listing Service Instances](#)
- [Searching Service Templates](#)

66.3.1 Creating a Service Instance

This section describes how to create a service instance using the Cloud resources.

66.3.1.1 Creating a VM

As VM is a service instance in the service family type "iaas", you need to identify the zone of the same family type in which to create the VM. There are two approaches to creating a VM:

1. [POST to the IaaS Zone on which the VM is to reside](#)
2. [POST to the VM Template on Which the VM is to be Based on](#)

Note the attributes in the submitted body for the POST. The pattern is the same for other service instance creations. Because the intention is clear, the "zone" attribute is not required while POSTing to the "iaas" Zone. Similarly, the "based_on" attribute is not needed when POSTing to the VMTemplate.

66.3.1.1.1 POST to the IaaS Zone on which the VM is to reside

The following shows the configuration for POSTing to IaaS Zone:

Table 66-17 POST Request Configuration for Creating a VM by Passing a Request on the IaaS Zone

Feature	Description
URI	/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI= Content-Type: application/oracle.com.cloud.common.VM+json
Body	<pre>{ "based_on": "/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1", "cpu" : [2,0], "memory" : "512", "params":{ "server_prefix": "ZONEPOST", "vnc_password": "welcome1", "root_password": "welcome1" } }</pre>
Request method	POST
Supported since release	12.1.0.1 Cloud Service Portal plug-in

A sample of the response received from the above interaction is shown below.

```
{
  "uri" : "/em/cloud/iaas/server/byrequest/102" ,
  "name" : "VDOSI VM Creation 1345392541850" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
      [
        {
          "text" : "The Request with ID '102' is scheduled with Job Id
'C79997609390CB9BE040578CDA817D96' " ,
          "date" : "2012-08-19T16:09:02+0000"
        }
      ]
  } ,
  "context_id" : "102" ,
  "media_type" : "application/oracle.com.cloud.common.VM+json" ,
  "service_family_type" : "iaas" ,
  "created" : "2012-08-19T16:09:02+0000"
}
```

66.3.1.1.2 POST to the VM Template on Which the VM is to be Based on

The following describes the configurations for POSTing to the VMTemplate:

Table 66-18 POST Request Configuration for Creating a VM by Passing a Request on the VM Template

Feature	Description
URI	/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.VM+json
Body	{ "zone": "/em/cloud/iaas/zone/D73AF0D42C8459E11419862797D1F37D", "cpu" : [2,0], "memory" : "512", "params": { "server_prefix": "STPOST", "vnc_password": "welcome1", "root_password": "welcome1" }}
Request method	POST
Supported since release	12.1.0.4 Cloud Service Portal plug-in

A sample of the response received from the above interaction is shown below.

```
{
  "uri" : "/em/cloud/iaas/server/byrequest/101" ,
  "name" : "VDOSI VM Creation 1345391921407" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
      [
        {
          "text" : "The Request with ID '101' is scheduled with Job Id
'C7999760937CCB9BE040578CDA817D96' " ,
        }
      ]
  }
}
```

```

        "date" : "2012-08-19T15:58:47+0000"
      }
    ] ,
    "context_id" : "101" ,
    "media_type" : "application/oracle.com.cloud.common.VM+json" ,
    "service_family_type" : "iaas" ,
    "created" : "2012-08-19T15:58:42+0000"
  }
}

```

This response is the same as the previous version.

If the zone is not specified, then it is not possible for the Web service to determine where the VM should be deployed. The following interaction illustrates this:

Table 66-19 POST Request Configuration for Creating a VM by Passing a Request on the VM Template without mentioning the Zone

Feature	Description
URL	https://example.com/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.VM+json
Body	<pre> { "cpu" : [2,0], "memory" : "512", "params":{ "server_prefix":"STPOST", "vnc_password":"welcome1", "root_password":"welcome1" } } </pre>
Request method	POST

The following is the response from the Web service:

```

{
  "messages" :
  [
    {
      "hint" : "'zone' attribute needs to be specified to complete 'POST' request for 'application/oracle.com.cloud.common.VM' resource" ,
      "stack_trace" :
"oracle.sysman.emInternalSDK.ssa.cloudapi.rest.RestControllerException: 'zone' attribute needs to be specified to complete 'POST' request for 'application/oracle.com.cloud.common.VM' resource\n\tat oracle.sysman.ssa.cloudapi.iaas.VMRequest.GenerateVMFromDeployment(VMRequest.java:149)\n\tat oracle.sysman.ssa.cloudapi.iaas.VMTemplate.processRequest(VMTemplate.java:93)\n\tat oracle.sysman.ssa.cloudapi.iaas.IaaSServiceProvider.processRequest(IaaSServiceProvider.java:582)\n\tat oracle.sysman.emInternalSDK.ssa.cloudapi.EMCloudServlet.perform(EMCloudServlet.java:236)\n\tat oracle.sysman.emInternalSDK.ssa.cloudapi.EMCloudServlet.performPost(EMCloudServlet.java:

```

```

va:385)\n\tat
oracle.sysman.emInternalSDK.ssa.cloudapi.rest.AbstractRestServlet.doPost(AbstractRest
Servlet.java:137)\n\tat javax.servlet.http.HttpServlet.service(HttpServlet.java:
727)\n\tat javax.servlet.http.HttpServlet.service(HttpServlet.java:820)\n\tat
weblogic.servlet.internal.StubSecurityHelper$ServletServiceAction.run(StubSecurityHel
per.java:227)\n\tat webl" ,
    "text" : "Did not successfully execute 'POST' resource operation on
'application/oracle.com.cloud.common.Cloud' identified by '/em/cloud/iaas/
servicetemplate/vm/oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Template:C76CEB5563EA5E13E040578CDA817FAF:0.1' " ,
    "date" : "2012-08-19T16:02:51+0000"
    }
}
}

```

66.3.1.2 Viewing Details of the VM Creation Status

After passing the POST request to create the VM, you can issue the GET request on the resource identified by the return URI to keep track of the VM creation status. See the table below for a sample GET request configuration for viewing the VM creation details.

Table 66-20 GET Request Configuration for Viewing Details of the VM Creation Status

Feature	Description
URI	/em/cloud/iaas/server/byrequest/101
Request header	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Method	GET

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/iaas/server/byrequest/101" ,
  "name" : "VDOSI VM Creation 1345391921407" ,
  "resource_state" : {
    "state" : "CREATING" ,
    "messages" :
    [
      {
        "text" : "The Request with ID '101' is being processed, and has Job Id
'C7999760937CCB9BE040578CDA817D96' " ,
        "date" : "2012-08-19T16:14:11+0000"
      }
    ]
  } ,
  "context_id" : "101" ,
  "media_type" : "application/oracle.com.cloud.common.VM+json" ,
  "service_family_type" : "iaas" ,
  "created" : "2012-08-19T15:58:42+0000"
}

```

Note that the `resource_state` attribute is showing `CREATING` state to indicate the VM is still being created. Once the VM is created, the same GET will return the VM resource with "READY" state, as shown below:

```
{
  "uri" : "/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095" ,
  "name" : "STPOST" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "C5CA59AF9386975E8AEA45B0F040F095" ,
  "media_type" : "application/oracle.com.cloud.common.VM+json" ,
  "metrics" : {
    "media_type" : "application/oracle.com.cloud.common.Metric+json" ,
    "total" : "4" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/metric/iaas%3Avm%3ACPU_Utilization
%3AC5CA59AF9386975E8AEA45B0F040F095" ,
        "name" : "CPU_Utilization" ,
        "media_type" : "application/oracle.com.cloud.common.Metric+json" ,
        "type" : "NUMBER" ,
        "current_value" : "" ,
        "current_time" : "2012-08-19T16:17:02+0000"
      } ,
      {
        "uri" : "/em/cloud/metric/iaas%3Avm%3ATotal_Network_Throughput
%3AC5CA59AF9386975E8AEA45B0F040F095" ,
        "name" : "Total_Network_Throughput" ,
        "media_type" : "application/oracle.com.cloud.common.Metric+json" ,
        "type" : "NUMBER" ,
        "current_value" : "" ,
        "current_time" : "2012-08-19T16:17:02+0000"
      } ,
      {
        "uri" : "/em/cloud/metric/iaas%3Avm%3ATotal_Disk_Throughput
%3AC5CA59AF9386975E8AEA45B0F040F095" ,
        "name" : "Total_Disk_Throughput" ,
        "media_type" : "application/oracle.com.cloud.common.Metric+json" ,
        "type" : "NUMBER" ,
        "current_value" : "" ,
        "current_time" : "2012-08-19T16:17:02+0000"
      } ,
      {
        "uri" : "/em/cloud/metric/iaas%3Avm%3AFilesystem_Total_Used
%3AC5CA59AF9386975E8AEA45B0F040F095" ,
        "name" : "Filesystem_Total_Used" ,
        "media_type" : "application/oracle.com.cloud.common.Metric+json" ,
        "type" : "NUMBER" ,
        "current_value" : "" ,
        "current_time" : "2012-08-19T16:17:02+0000"
      }
    ]
  } ,
  "service_family_type" : "iaas" ,
  "status" : "STARTED" ,
  "created" : "2012-08-19T16:15:21+0000" ,
  "hostname" : "dadvm0052.xyxy.example.com" ,
  "cpu" :
  [
```

```

    "2" ,
    "0"
  ] ,
  "memory" : "512" ,
  "disks" :
  [
    [
      "default_disk" ,
      "10240"
    ] ,
    [
      "7e8a5d25-7995-40c9-9b16-9274cc2d64f3.img (2)" ,
      "6918"
    ] ,
    [
      "fcacf377c-ed3e-4823-a9b3-6b4d2289e215.img (2)" ,
      "192"
    ] ,
    [
      "f5dba62c-eb49-40c6-af0b-06187b2b9856.img (2)" ,
      "5120"
    ]
  ] ,
  "interfaces" : {
    "media_type" : "application/oracle.com.cloud.common.NetworkInterface+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "name" : "cloud_network" ,
        "address" : "10.229.136.185" ,
        "mac" : "00:21:f6:5f:73:33"
      }
    ]
  } ,
  "os" : "None" ,
  "type" : "VIRTUAL"
}

```

66.3.1.3 Creating an Assembly Instance

Similar to VM creation, assembly instance creation can also be POSTed to both a Zone and an AssemblyTemplate.

The GET request configuration to view the Assembly instance resource details is shown below.

Table 66-21 GET Request Configuration for Viewing Details of the Assembly Instance Resource

Feature	Description
URI	/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC75E88B04D7FEDEDE040578CDA810E49%3A0.1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None

Table 66-21 (Cont.) GET Request Configuration for Viewing Details of the Assembly Instance Resource

Feature	Description
Request method	GET
Supported since release	12.1.0.4 Cloud Service Portal plug-in

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC75E88B04D7FEDEDE040578CDA810E49%3A0.1" ,
  "name" : "sidb_assembly" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "oracle:defaultService:em:provisioning:1:cmp:Virtualization:Assembly:C75E88B04D7FEDEDE040578CDA810E49:0.1" ,
  "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate+json" ,
  "type" : "Assembly" ,
  "created" : "2012-08-16T11:02:38+0000" ,
  "default_instance_media_type" : "application/oracle.com.cloud.common.AssemblyInstance+json" ,
  "zones" : {
    "media_type" : "application/oracle.com.cloud.iaas.Zone+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/iaas/zone/D73AF0D42C8459E11419862797D1F37D" ,
        "name" : "cloud_zone" ,
        "media_type" : "application/oracle.com.cloud.iaas.Zone+json" ,
        "service_family_type" : "iaas" ,
        "type" : "VM_ZONE"
      }
    ]
  } ,
  "service_instances" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceInstance+json" ,
    "total" : "0" ,
    "elements" :
    [
      ]
    } ,
  "deployment_params" :
  [
    {
      "name" : "zone" ,
      "description" : "'zone' attribute is the URI of the zone that the 'application/oracle.com.cloud.common.AssemblyInstance' resource is to be created in" ,
      "type" : "STRING" ,
      "require" : "false" ,
      "sensitive" : "false"
    }
  ]
}
```

```

        "name" : "based_on" ,
        "description" : "'based_on' attribute is the URI of the service template or
format String of the originated source which the deployed 'application/
oracle.com.cloud.common.AssemblyInstance' resource is to be followed" ,
        "type" : "STRING" ,
        "require" : "false" ,
        "sensitive" : "false"
    } ,
    {
        "name" : "deployment_plan" ,
        "description" : "'deployment_plan' attribute describes the configuration of
which the deployed 'application/oracle.com.cloud.common.AssemblyInstance' resource
is to be used in the XML deployment plan format" ,
        "type" : "STRING" ,
        "require" : "false" ,
        "sensitive" : "false"
    }
} ,
"directory" : "COMP_Components" ,
"updated" : "2012-08-16T11:02:38+0000" ,
"creator" : "DMBHAT1" ,
"last_modified_by" : "DMBHAT1" ,
"componenttype" : "Virtualization" ,
"oracle_owned" : "false" ,
"deploy_plans" :
[
    {
        "name" : "cloud_zone" ,
        "description" : "Default Assembly Deployment Plan for Service Template
'sidb_assembly' on Zone 'cloud_zone'" ,
        "context_id" : "D73AF0D42C8459E11419862797D1F37D" ,
        "xml" : "<?xml version='1.0' encoding='UTF-8'
standalone='yes'>\n<ns2:ConfigurationData
xmlns:ns2='http://www.oracle.com/sysman/vt/RequestConfigData'>\n
<AssemblyDeployment assemblyInstanceName='DEFAULT_PLEASE_CHANGE'>\n
<SourceBinary type='TYPE_SWLIB'
name='oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Assembly:C75E88B04D7FEDEDE040578CDA810E49:0.1'>\n
<DeploymentTarget type='oracle_vm_zone'
name='D73AF0D42C8459E11419862797D1F37D'>\n
<AcceptedAllEULAs>false</AcceptedAllEULAs>\n
<InstallEMAgent>false</InstallEMAgent>\n
<DisableCleanup>false</DisableCleanup>\n
<EMAgentConfig installUserPassword=' ' installUserName='oracle'>\n
<AssemblyNetworkConfig>\n
<AssemblyNetwork name='network-1'>\n
</AssemblyNetworkConfig>\n
<VirtualSystemCollectionConfig id='sidbasmA_linuxx64_11203psu1'>\n
<ProductConfiguration>\n
<Product>\n
<Properties/>\n
<EMAgent>false</EMAgent>\n<
/Product>\n
</ProductConfiguration>\n
<VirtualSystemConfig agentPushInstallationEnabled='true' agentInstallationType=
'Push Agent Installation' vmInstance='true' targetName=
'sidbasmA_linuxx64_11203psu1/sidbasm:%assembly_instance_name%' id=
'sidbasmA_linuxx64_11203psu1/sidbasm'>\n
<ProductConfiguration>\n
<Product>\n
<Properties>\n

```

```

<Property id=\"ocm.runConfiguration\">\n<Name>ocm.runConfiguration</Name>
\n<Required>>false</Required>\n<Value>>false</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"ocm.metalinkCsiRegistration.CSI\">
\n<Name>ocm.metalinkCsiRegistration.CSI</Name>\n<Required>>false</Required>\n<Value></
Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"ocm.metalinkCsiRegistration.metalinkId\">
\n<Name>ocm.metalinkCsiRegistration.metalinkId</Name>\n<Required>>false</Required>
\n<Value></Value>\n<Secret>>false</Secret>\n
</Property>\n
Property id=\"ocm.proxyPassword\">\n<Name>ocm.proxyPassword</Name>\n<Required>>false</
Required>\n<Value> </Value>\n<Secret>>true</Secret>\n
</Property>\n
<Property id=\"ocm.metalinkCsiRegistration.countryCode\">
\n<Name>ocm.metalinkCsiRegistration.countryCode</Name>\n<Required>>false</Required>
\n<Value></Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"system-fileset|db_asm_disk_7|
size-units\">\n<Name>system-fileset|db_asm_disk_7|size-units</Name>
\n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"system-fileset|db_asm_disk_1|
size-units\">\n<Name>system-fileset|db_asm_disk_1|size-units</Name>
\n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"system-fileset|db_asm_disk_3|
size-units\">\n<Name>system-fileset|db_asm_disk_3|size-units</Name>
\n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"system-fileset|db_asm_disk_0|
size\">\n<Name>system-fileset|db_asm_disk_0|size</Name>\n<Required>>false</Required>
\n<Value>2836</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"system-fileset|db_asm_disk_1|
size\">\n<Name>system-fileset|db_asm_disk_1|size</Name>\n<Required>>false</Required>
\n<Value>2836</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"asm-password\">\n<Name>asm-
password</Name>\n<Required>>true</Required>\n<Value> </Value>\n<Secret>>true</Secret>
\n
</Property>\n
<Property id=\"system-fileset|db_asm_disk_7|
size\">\n<Name>system-fileset|db_asm_disk_7|size</Name>\n<Required>>false</Required>
\n<Value>2836</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=
\"ocm.metalinkEmailRegistration.metalinkEmailId\">
\n<Name>ocm.metalinkEmailRegistration.metalinkEmailId</Name>\n<Required>>false</
Required>\n<Value></Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"input|listener-1|global-db-
name\">\n<Name>input|listener-1|global-db-name</Name>\n<Required>>false</Required>
\n<Value>orcl.us.example.com</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"system-fileset|db_asm_disk_4|
size-units\">\n<Name>system-fileset|db_asm_disk_4|size-units</Name>
\n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"ocm.proxyHost\">
\n<Name>ocm.proxyHost</Name>\n<Required>>false</Required>\n<Value></Value>
\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"ocm.repeaterURI\">
\n<Name>ocm.repeaterURI</Name>\n<Required>>false</Required>\n<Value></Value>
\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"system-fileset|db_asm_disk_2|
size-units\">\n<Name>system-fileset|db_asm_disk_2|size-units</Name>
\n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</Secret>\n
</Property>\n
<Property id=\"input|listener-1|port\">
\n<Name>input|listener-1|port</Name>\n<Required>>false</Required>\n<Value>1521</Value>
\n<Secret>>false</Secret>\n
</Property>\n
<Property id=
\"ocm.anonymousEmailRegistration.emailId\">
\n<Name>ocm.anonymousEmailRegistration.emailId</Name>\n<Required>>false</Required>
\n<Value></Value>\n<Secret>>false</Secret>\n

```

```

</Property>\n                                <Property id="db-account-password">
\n<Name>db-account-password</Name>\n<Required>>true</Required>\n<Value> </Value>
\n<Secret>true</Secret>\n
</Property>\n                                <Property id="system-fileset|db_asm_disk_3|
size">\n<Name>system-fileset|db_asm_disk_3|size</Name>\n<Required>>false</Required>
\n<Value>2836</Value>\n<Secret>>false</Secret>\n
</Property>\n                                <Property id="system-fileset|db_asm_disk_2|
size">\n<Name>system-fileset|db_asm_disk_2|size</Name>\n<Required>>false</Required>
\n<Value>2836</Value>\n<Secret>>false</Secret>\n
</Property>\n                                <Property id="ocm.proxyPort">
\n<Name>ocm.proxyPort</Name>\n<Required>>false</Required>\n<Value></Value>
\n<Secret>>false</Secret>\n
</Property>\n                                <Property id="ocm.proxyUsername">
\n<Name>ocm.proxyUsername</Name>\n<Required>>false</Required>\n<Value></Value>
\n<Secret>>false</Secret>\n
</Property>\n                                <Property id="system-fileset|db_asm_disk_6|
size">\n<Name>system-fileset|db_asm_disk_6|size</Name>\n<Required>>false</Required>
\n<Value>2836</Value>\n<Secret>>false</Secret>\n
</Property>\n                                <Property id="system-fileset|db_asm_disk_5|
size">\n<Name>system-fileset|db_asm_disk_5|size</Name>\n<Required>>false</Required>
\n<Value>2836</Value>\n<Secret>>false</Secret>\n
</Property>\n                                <Property id="system-fileset|db_asm_disk_4|
size">\n<Name>system-fileset|db_asm_disk_4|size</Name>\n<Required>>false</Required>
\n<Value>2836</Value>\n<Secret>>false</Secret>\n
</Property>\n                                <Property id=
\n"ocm.metalinkEmailRegistration.metalinkPassword">
\n<Name>ocm.metalinkEmailRegistration.metalinkPassword</Name>\n<Required>>false</
Required>\n<Value> </Value>\n<Secret>true</Secret>\n
</Property>\n                                <Property id="system-fileset|db_asm_disk_6|
size-units">\n<Name>system-fileset|db_asm_disk_6|size-units</Name>
\n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</Secret>\n
</Property>\n                                <Property id="system-fileset|db_asm_disk_5|
size-units">\n<Name>system-fileset|db_asm_disk_5|size-units</Name>
\n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</Secret>\n
</Property>\n                                <Property id="system-fileset|db_asm_disk_0|
size-units">\n<Name>system-fileset|db_asm_disk_0|size-units</Name>
\n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</Secret>\n
</Property>\n
</Properties>\n <EMAgent>>false</EMAgent>\n
</Product>\n                                </ProductConfiguration>\n
<HardwareConfiguration>\n
<Memory>2048</Memory>\n
<VCPUs>1</VCPUs>\n
<HaEnabled>>false</HaEnabled>\n
<StartAfterCreation>true</StartAfterCreation>\n
<CPUSchedulingPriority>50</CPUSchedulingPriority>\n
<CPUCap>100</CPUCap>\n                                <LocalDisks>\n
<disk fromDefinition="true" name="2xZNMmSH5oZYW_System">\n
<Size>5122</Size>\n
<Mode>Read-Write</Mode>\n
<CreatedByVmSize>>false</CreatedByVmSize>\n
</disk>\n                                <disk fromDefinition="true" name="AB">\n
<Size>0</Size>\n                                <Mode>Read-Write</Mode>\n
<CreatedByVmSize>>false</CreatedByVmSize>\n                                </disk>\n
<disk fromDefinition="true" name="2xZNMmSH5oZYW_sys-asm_base">\n
<Size>502</Size>\n                                <Mode>Read-Write</Mode>\n
<CreatedByVmSize>>false</CreatedByVmSize>\n                                </disk>\n
<disk fromDefinition="true" name="2xZNMmSH5oZYW_sys-asm_home">\n
<Size>10307</Size>\n                                <Mode>Read-Write</Mode>\n
<CreatedByVmSize>>false</CreatedByVmSize>\n                                </disk>\n
<disk fromDefinition="true" name="2xZNMmSH5oZYW_sys-db_base">\n

```

```

<Size>502</Size>\n                                <Mode>Read-Write</Mode>\n
<CreatedByVmSize>>false</CreatedByVmSize>\n                                </disk>\n
<disk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_sys-db_home\">\n
<Size>9068</Size>\n                                <Mode>Read-Write</Mode>\n
<CreatedByVmSize>>false</CreatedByVmSize>\n                                </disk>\n
</LocalDisks>\n                                <SharedDisks>\n
<SharedDisk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_db_asm_disk_0\"/>\n
<SharedDisk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_db_asm_disk_1\"/>\n
<SharedDisk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_db_asm_disk_2\"/>\n
<SharedDisk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_db_asm_disk_3\"/>\n
<SharedDisk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_db_asm_disk_4\"/>\n
<SharedDisk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_db_asm_disk_5\"/>\n
<SharedDisk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_db_asm_disk_6\"/>\n
<SharedDisk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_db_asm_disk_7\"/>\n
</SharedDisks>\n                                <Nics>\n
<NetworkInterface fromDefinition=\"true\" name=\"eth0\">\n
<IPAssignmentMode>Dhcp</IPAssignmentMode>\n
<QoS>Any_Network_QoS_Type</QoS>\n
<AssemblyNetwork name=\"network-1\"/>\n
</NetworkInterface>\n                                </Nics>\n
<RootPassword> </RootPassword>\n
<LogLocation>/assemblybuilder/logs</LogLocation>\n
<VmSize>Custom</VmSize>\n
<NetworkConfigurationTimeout>60</NetworkConfigurationTimeout>\n
<ProductConfigurationTimeout>60</ProductConfigurationTimeout>\n
</HardwareConfiguration>\n                                </VirtualSystemConfig>\n
</VirtualSystemCollectionConfig>\n
</AssemblyDeployment>\n</ns2:ConfigurationData>\n"
    } ,
    {
      "uri" : "/em/cloud/iaas/servicetemplate/deploymentplan/oracle
%3AdefaultService%3Aem%3Aprovisioning%3A1%3Aacmp%3AVirtualization%3ADeployment+Plan
%3AC7790791F0831736E040578CDA815673%3A0.1" ,
      "name" : "sidb_deployplan" ,
      "media_type" : "application/oracle.com.cloud.iaas.DeploymentPlan+json" ,
      "type" : "Deployment Plan"
    }
  ]
}

```

The "deploy_plans" attribute contains both the default deployment plan for each zone and the preconfigured deployment plans that are accessible by the user for this service template. To create an assembly instance, the deployment plan should be used.

The configuration specified in the "params" is the primary configuration. In addition, deployment plans can be used to describe detailed product and resource configurations. There are some product configurations where "<Required>>true</Required>", and they should also be updated to capture the product configuration values.

The following table shows an example of a POST request to create an assembly instance:

Table 66-22 POST Request Configuration for Creating an Assembly Instance

Feature	Description
URL	/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AC75E88B04D7FEDEDE040578CDA810E49%3A0.1
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.AssemblyInstance+json

Table 66-22 (Cont.) POST Request Configuration for Creating an Assembly Instance

Feature	Description
Body	<pre> { "zone": "/em/cloud/iaas/zone/D73AF0D42C8459E11419862797D1F37D", "params": { "vnc_password": "welcome1", "root_password": "welcome1", "assembly_instance_name": "AITEST" }, "deployment_plan": "<?xml version='1.0' encoding='UTF-8' standalone='yes'?'>\n<ns2:ConfigurationData xmlns:ns2='http:// www.oracle.com/sysman/vt/RequestConfigData'>\n <AssemblyDeployment assemblyInstanceName='DEFAULT_PLEASE_CHANGE'> \n <SourceBinary type='TYPE_SWLIB' name= \"oracle:defaultService:em:provisioning: 1:cmp:Virtualization:Assembly:C75E88B04D7FEDEDE040578CDA810E49:0.1\"/ >\n <DeploymentTarget type='oracle_vm_zone' name= \"D73AF0D42C8459E11419862797D1F37D\"/>\n <AcceptedAllEULAs>>false</AcceptedAllEULAs>\n <InstallEMAgent>>false</InstallEMAgent>\n <DisableCleanup>>false</DisableCleanup>\n <EMAgentConfig installUserPassword=' ' installUserName='oracle '/'>\n <AssemblyNetworkConfig>\n <AssemblyNetwork name='network-1'/'>\n </AssemblyNetworkConfig>\n <VirtualSystemCollectionConfig id='sidbasmA_linuxx64_11203psul'> \n <ProductConfiguration>\n <Product>\n <Properties/>\n <EMAgent>>false</EMAgent>\n </Product>\n </ProductConfiguration>\n <VirtualSystemConfig agentPushInstallationEnabled='true' agentInstallationType='Push Agent Installation' vmInstance='true ' targetName='sidbasmA_linuxx64_11203psul/sidbasm: %assembly_instance_name%' id='sidbasmA_linuxx64_11203psul/sidbasm '>\n <ProductConfiguration>\n <Product>\n <Properties>\n <Property id='ocm.runConfiguration'>\n<Name>ocm.runConfiguration</ Name>\n<Required>>false</Required>\n<Value>>false</Value> \n<Secret>>false</Secret>\n </Property> \n <Property id='ocm.metalinkCsiRegistration.CSI'> \n<Name>ocm.metalinkCsiRegistration.CSI</Name>\n<Required>>false</ Required>\n<Value></Value>\n<Secret>>false</Secret> \n </Property>\n <Property id='ocm.metalinkCsiRegistration.metalinkId'> \n<Name>ocm.metalinkCsiRegistration.metalinkId</Name> \n<Required>>false</Required>\n<Value></Value>\n<Secret>>false</Secret> </pre>

Table 66-22 (Cont.) POST Request Configuration for Creating an Assembly Instance

Feature	Description
	<pre> \n </Property>\n <Property id=\"ocm.proxyPassword\">\n<Name>ocm.proxyPassword</Name> \n<Required>>false</Required>\n<Value> </Value>\n<Secret>>true</Secret>\n </Property>\n <Property id=\"ocm.metalinkCsiRegistration.countryCode\"> \n<Name>ocm.metalinkCsiRegistration.countryCode</Name> \n<Required>>false</Required>\n<Value></Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"system-fileset db_asm_disk_7 size-units\"> \n<Name>system-fileset db_asm_disk_7 size-units</Name> \n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</ Secret>\n </Property>\n <Property id=\"system-fileset db_asm_disk_1 size-units\"> \n<Name>system-fileset db_asm_disk_1 size-units</Name> \n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</ Secret>\n </Property>\n <Property id=\"system-fileset db_asm_disk_3 size-units\"> \n<Name>system-fileset db_asm_disk_3 size-units</Name> \n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</ Secret>\n </Property>\n <Property id=\"system-fileset db_asm_disk_0 size\">\n<Name>system- fileset db_asm_disk_0 size</Name>\n<Required>>false</Required> \n<Value>2836</Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"system-fileset db_asm_disk_1 size\">\n<Name>system- fileset db_asm_disk_1 size</Name>\n<Required>>false</Required> \n<Value>2836</Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"asm-password\">\n<Name>asm-password</Name> \n<Required>>true</Required>\n<Value>welcome1</Value>\n<Secret>>true</ Secret>\n </Property> \n <Property id=\"system-fileset db_asm_disk_7 size\">\n<Name>system- fileset db_asm_disk_7 size</Name>\n<Required>>false</Required> \n<Value>2836</Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"ocm.metalinkEmailRegistration.metalinkEmailId\"> \n<Name>ocm.metalinkEmailRegistration.metalinkEmailId</Name> \n<Required>>false</Required>\n<Value></Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"input listener-1 global-db-name\">\n<Name>input listener-1 global-db-name</Name>\n<Required>>false</Required> \n<Value>orcl.us.example.com</Value>\n<Secret>>false</Secret>\n </pre>

Table 66-22 (Cont.) POST Request Configuration for Creating an Assembly Instance

Feature	Description
	<pre> </Property>\n <Property id=\"system-fileset db_asm_disk_4 size-units\"> \n<Name>system-fileset db_asm_disk_4 size-units</Name> \n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</ Secret>\n </Property>\n <Property id=\"ocm.proxyHost\">\n<Name>ocm.proxyHost</Name> \n<Required>>false</Required>\n<Value></Value>\n<Secret>>false</Secret> \n </Property> \n <Property id=\"ocm.repeaterURI\">\n<Name>ocm.repeaterURI</Name> \n<Required>>false</Required>\n<Value></Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"system-fileset db_asm_disk_2 size-units\"> \n<Name>system-fileset db_asm_disk_2 size-units</Name> \n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</ Secret>\n </Property>\n <Property id=\"input listener-1 port\">\n<Name>input listener-1 port</Name>\n<Required>>false</Required>\n<Value>1521</Value> \n<Secret>>false</Secret>\n </Property> \n <Property id=\"ocm.anonymousEmailRegistration.emailId\"> \n<Name>ocm.anonymousEmailRegistration.emailId</Name> \n<Required>>false</Required>\n<Value></Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"db-account-password\">\n<Name>db-account-password</ Name>\n<Required>>true</Required>\n<Value>welcome1</Value> \n<Secret>>true</Secret>\n </Property> \n <Property id=\"system-fileset db_asm_disk_3 size\">\n<Name>system- fileset db_asm_disk_3 size</Name>\n<Required>>false</Required> \n<Value>2836</Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"system-fileset db_asm_disk_2 size\">\n<Name>system- fileset db_asm_disk_2 size</Name>\n<Required>>false</Required> \n<Value>2836</Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"ocm.proxyPort\">\n<Name>ocm.proxyPort</Name> \n<Required>>false</Required>\n<Value></Value>\n<Secret>>false</Secret> \n </Property> \n <Property id=\"ocm.proxyUsername\">\n<Name>ocm.proxyUsername</Name> \n<Required>>false</Required>\n<Value></Value>\n<Secret>>false</Secret> \n </Property> \n <Property id=\"system-fileset db_asm_disk_6 size\">\n<Name>system- fileset db_asm_disk_6 size</Name>\n<Required>>false</Required> \n<Value>2836</Value>\n<Secret>>false</Secret> \n </Property>\n </pre>

Table 66-22 (Cont.) POST Request Configuration for Creating an Assembly Instance

Feature	Description
	<pre> <Property id=\"system-fileset db_asm_disk_5 size\">\n<Name>system- fileset db_asm_disk_5 size</Name>\n<Required>>false</Required> \n<Value>2836</Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"system-fileset db_asm_disk_4 size\">\n<Name>system- fileset db_asm_disk_4 size</Name>\n<Required>>false</Required> \n<Value>2836</Value>\n<Secret>>false</Secret> \n </Property>\n <Property id=\"ocm.metalinkEmailRegistration.metalinkPassword\"> \n<Name>ocm.metalinkEmailRegistration.metalinkPassword</Name> \n<Required>>false</Required>\n<Value> </Value>\n<Secret>>true</Secret>\n </Property>\n <Property id=\"system-fileset db_asm_disk_6 size-units\"> \n<Name>system-fileset db_asm_disk_6 size-units</Name> \n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</ Secret>\n </Property>\n <Property id=\"system-fileset db_asm_disk_5 size-units\"> \n<Name>system-fileset db_asm_disk_5 size-units</Name> \n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</ Secret>\n </Property>\n <Property id=\"system-fileset db_asm_disk_0 size-units\"> \n<Name>system-fileset db_asm_disk_0 size-units</Name> \n<Required>>false</Required>\n<Value>MB</Value>\n<Secret>>false</ Secret>\n </Property>\n </Properties>\n <EMAgent>>false</EMAgent>\n </Product>\n </ProductConfiguration>\n <HardwareConfiguration>\n <Memory>2048</Memory>\n <VCPUs>1</VCPUs>\n <HaEnabled>>false</HaEnabled>\n <StartAfterCreation>>true</StartAfterCreation>\n <CPUSchedulingPriority>50</CPUSchedulingPriority> \n <CPUCap>100</CPUCap>\n <LocalDisks>\n <disk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_System\"> \n <Size>5122</Size>\n <Mode>Read-Write</Mode>\n <CreatedByVmSize>>false</CreatedByVmSize>\n </disk>\n <disk fromDefinition=\"true\" name=\"AB\">\n <Size>0</Size> \n <Mode>Read-Write</Mode>\n <CreatedByVmSize>>false</CreatedByVmSize> \n </pre>

Table 66-22 (Cont.) POST Request Configuration for Creating an Assembly Instance

Feature	Description
	<pre> </disk>\n <disk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_sys-asm_base\">\n <Size>502</Size>\n <Mode>Read-Write</Mode>\n <CreatedByVmSize>>false</CreatedByVmSize> \n </disk>\n <disk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_sys-asm_home\">\n <Size>10307</Size>\n <Mode>Read-Write</Mode>\n <CreatedByVmSize>>false</CreatedByVmSize> \n </disk>\n <disk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_sys-db_base\">\n <Size>502</Size>\n <Mode>Read-Write</Mode>\n <CreatedByVmSize>>false</CreatedByVmSize> \n </disk>\n <disk fromDefinition=\"true\" name=\"2xZNMmSH5oZYW_sys-db_home\">\n <Size>9068</Size>\n <Mode>Read-Write</Mode>\n <CreatedByVmSize>>false</CreatedByVmSize> \n </disk>\n </LocalDisks>\n <SharedDisks>\n <SharedDisk fromDefinition=\"true\" name= \"2xZNMmSH5oZYW_db_asm_disk_0\"/>\n <SharedDisk fromDefinition=\"true\" name= \"2xZNMmSH5oZYW_db_asm_disk_1\"/>\n <SharedDisk fromDefinition=\"true\" name= \"2xZNMmSH5oZYW_db_asm_disk_2\"/>\n <SharedDisk fromDefinition=\"true\" name= \"2xZNMmSH5oZYW_db_asm_disk_3\"/>\n <SharedDisk fromDefinition=\"true\" name= \"2xZNMmSH5oZYW_db_asm_disk_4\"/>\n <SharedDisk fromDefinition=\"true\" name= \"2xZNMmSH5oZYW_db_asm_disk_5\"/>\n <SharedDisk fromDefinition=\"true\" name= \"2xZNMmSH5oZYW_db_asm_disk_6\"/>\n <SharedDisk fromDefinition=\"true\" name= \"2xZNMmSH5oZYW_db_asm_disk_7\"/>\n </SharedDisks>\n <Nics>\n <NetworkInterface fromDefinition=\"true\" name=\"eth0\"> \n <IPAssignmentMode>Dhcp</IPAssignmentMode> \n <QoS>Any_Network_QoS_Type</QoS>\n <AssemblyNetwork name=\"network-1\"/>\n </NetworkInterface>\n </Nics>\n <RootPassword> </RootPassword>\n <LogLocation>/assemblybuilder/logs</LogLocation> \n <VmSize>Custom</VmSize>\n <NetworkConfigurationTimeout>60</NetworkConfigurationTimeout> \n <ProductConfigurationTimeout>60</ProductConfigurationTimeout> \n </pre>

Table 66-22 (Cont.) POST Request Configuration for Creating an Assembly Instance

Feature	Description
	<pre></HardwareConfiguration>\n </VirtualSystemConfig>\n </VirtualSystemCollectionConfig>\n </AssemblyDeployment>\n</ns2:ConfigurationData>\n" }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/iaas/assemblyrequest/223" ,
  "name" : "VDOSI Assembly Creation 1345575147280" ,
  "resource_state" : {
    "state" : "INITIATED" ,
    "messages" :
    [
      {
        "text" : "The Request with ID '223' is scheduled with Job Id
'C7CB0EBE83C22D70E040578CDA812E66' " ,
        "date" : "2012-08-21T18:52:31+0000"
      }
    ]
  } ,
  "context_id" : "223" ,
  "media_type" : "application/oracle.com.cloud.common.AssemblyInstance+json" ,
  "service_family_type" : "iaas" ,
  "status" : "SCHEDULED" ,
  "created" : "2012-08-21T18:52:28+0000"
}
```

To track the status of the Assembly Instance creation issue a GET request on the returned URI. See the table below for details.

Table 66-23 GET Request Configuration for Viewing Details of the Assembly Instance Creation Status

Feature	Description
URL	/em/cloud/iaas/assemblyrequest/223
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET
Supported since release	12.1.0.4 Cloud Service Portal plug-in

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/iaas/assemblyrequest/223" ,
  "name" : "VDOSI Assembly Creation 1345575147280" ,
  "resource_state" : {
    "state" : "CREATING" ,
    "messages" :
    [
      {
        "text" : "The Request with ID '223' is being processed, and has Job Id
'C7CB0EBE83C22D70E040578CDA812E66' " ,
        "date" : "2012-08-21T18:54:25+0000"
      }
    ]
  } ,
  "context_id" : "223" ,
  "media_type" : "application/oracle.com.cloud.common.AssemblyInstance+json" ,
  "service_family_type" : "iaas" ,
  "status" : "EXECUTING" ,
  "created" : "2012-08-21T18:52:28+0000"
}

```

The status indicates that the process is being executed. After the assembly instance is created successfully, the response received is similar to what is shown below.

```

{
  "uri" : "/em/cloud/iaas/assembly/C0AACCD8234BBAFBA7AF6CD3865B1FD3" ,
  "name" : "AITEST" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "223" ,
  "media_type" : "application/oracle.com.cloud.common.AssemblyInstance+json" ,
  "service_family_type" : "iaas" ,
  "based_on" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3Avirtualization%3Aassembly%3AC75E88B04D7FEDEDE040578CDA810E49%3A0.1" ,
  "reference" : {
    "ovf:id" : "sidbasmA_linuxx64_11203psu1"
  } ,
  "scalability_groups" : {
    "media_type" : "application/oracle.com.cloud.common.ScalabilityGroup+json" ,
    "total" : "0" ,
    "elements" :
    [
      ]
    } ,
  "servers" : {
    "media_type" : "application/oracle.com.cloud.common.VM+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/iaas/server/vm/B28680F24303A42D6909FFC0F79F306C" ,
        "name" : "sidbasmA_linuxx64_11203psu1/sidbasM:DEPPLAN_1345575147280" ,
        "media_type" : "application/oracle.com.cloud.common.VM+json" ,
        "status" : "STARTED"
      }
    ]
  } ,
  "deployment_plan" : "<?xml version=\"1.0\" encoding=\"UTF-8\" standalone=\"yes\"?>
\n<ns2:ConfigurationData xmlns:ns2=\"http://www.oracle.com/sysman/vt/
RequestConfigData\">\n  <AssemblyDeployment assemblyInstanceName=\"AITEST\">

```

```

\n      <SourceBinary type=\ "TYPE_SWLIB" name=
\noracle:defaultService:em:provisioning:
l:cmp:Virtualization:Assembly:C75E88B04D7FEDEDE040578CDA810E49:0.1\ "/>\n
<DeploymentTarget type=\ "oracle_vm_zone" name=\ "D73AF0D42C8459E11419862797D1F37D" />\n
\n      <AcceptedAllEULAs>false</AcceptedAllEULAs>\n      <InstallEMAgent>false</
InstallEMAgent>\n      <DisableCleanup>false</DisableCleanup>\n
<EMAgentConfig installUserPassword=\ " \ " installUserName=\ "oracle" />\n
<AssemblyNetworkConfig>\n      <AssemblyNetwork name=\ "network-1" />\n
</AssemblyNetworkConfig>\n      <VirtualSystemCollectionConfig id=
\n"sidbasmA_linuxx64_11203psul" >\n      <ProductConfiguration>
\n      <Product>\n      <Properties/>\n
<EMAgent>false</EMAgent>\n      </Product>\n      </
ProductConfiguration>\n      <VirtualSystemConfig agentPushInstallationEnabled=
\n"true" agentInstallationType=\ "Push Agent Installation" vmInstance=\ "true"
targetName=\ "sidbasmA_linuxx64_11203psul/sidbasm:%assembly_instance_name%" id=
\n"sidbasmA_linuxx64_11203psul/sidbasm" >\n
      <ProductConfiguration>\n      <Product>
\n      <Properties>\n      <Property id=
\n"ocm.runConfiguration" >\n<Name>ocm.runConfiguration</Name>\n<Required>false</
Required>\n<Value>false</Value>\n<Secret>false</Secret>\n
</Property>\n      <Property id=
\n"ocm.metalinkCsiRegistration.CSI" >\n<Name>ocm.metalinkCsiRegistration.CSI</Name>
\n<Required>false</Required>\n<Value></Value>\n<Secret>false</Secret>
\n      </Property>\n      <Property id=
\n"ocm.metalinkCsiRegistration.metalinkId" >
\n<Name>ocm.metalinkCsiRegistration.metalinkId</Name>\n<Required>false</Required>
\n<Value></Value>\n<Secret>false</Secret>\n      </Property>
\n      <Property id=\ "ocm.proxyPassword" >
\n<Name>ocm.proxyPassword</Name>\n<Required>false</Required>\n<Value> </Value>
\n<Secret>true</Secret>\n      </Property>
\n      <Property id=\ "ocm.metalinkCsiRegistration.countryCode
\n" >\n<Name>ocm.metalinkCsiRegistration.countryCode</Name>\n<Required>false</Required>
\n<Value></Value>\n<Secret>false</Secret>\n      </Property>
\n      <Property id=\ "system-fileset|db_asm_disk_7|size-units
\n" >\n<Name>system-fileset|db_asm_disk_7|size-units</Name>\n<Required>false</Required>
\n<Value>MB</Value>\n<Secret>false</Secret>\n
      </Property>\n      <Property id=
\n"system-fileset|db_asm_disk_1|size-units" >\n<Name>system-fileset|db_asm_disk_1|
size-units</Name>\n<Required>false</Required>\n<Value>MB</Value>\n<Secret>false</
Secret>\n      </Property>\n
<Property id=\ "system-fileset|db_asm_disk_3|size-units" >\n<Name>system-fileset|
db_asm_disk_3|size-units</Name>\n<Required>false</Required>\n<Value>MB</Value>
\n<Secret>false</Secret>\n      </Property>
\n      <Property id=\ "system-fileset|db_asm_disk_0|size" >
\n<Name>system-fileset|db_asm_disk_0|size</Name>\n<Required>false</Required>
\n<Value>2836</Value>\n<Secret>false</Secret>\n      </
Property>\n      <Property id=\ "system-fileset|db_asm_disk_1|
size" >\n<Name>system-fileset|db_asm_disk_1|size</Name>\n<Required>false</Required>
\n<Value>2836</Value>\n<Secret>false</Secret>\n      </
Property>\n      <Property id=\ "asm-password" >\n<Name>asm-
password</Name>\n<Required>true</Required>\n<Value> </Value>
\n<ValueGuid>C7CC61AC07DC6E58E040578CDA8145F9</ValueGuid>\n<Secret>true</Secret>\n
      </Property>\n      <Property id=
\n"system-fileset|db_asm_disk_7|size" >\n<Name>system-fileset|db_asm_disk_7|size</
Name>\n<Required>false</Required>\n<Value>2836</Value>\n<Secret>false</Secret>
\n      </Property>\n      <Property id=
\n"ocm.metalinkEmailRegistration.metalinkEmailId" >
\n<Name>ocm.metalinkEmailRegistration.metalinkEmailId</Name>\n<Required>false</
Required>\n<Value></Value>\n<Secret>false</Secret>\n      </
Property>\n      <Property id=\ "input|listener-1|global-db-name
\n" >\n<Name>input|listener-1|global-db-name</Name>\n<Required>false</Required>

```

```

\<Value>orcl.us.example.com</Value>\<Secret>>false</Secret>
\n
      </Property>\n
      <Property id=
\"system-fileset|db_asm_disk_4|size-units\">\<Name>system-fileset|db_asm_disk_4|
size-units</Name>\<Required>>false</Required>\<Value>MB</Value>\<Secret>>false</
Secret>\n
      </Property>\n
<Property id=\"ocm.proxyHost\">\<Name>ocm.proxyHost</Name>\<Required>>false</
Required>\<Value></Value>\<Secret>>false</Secret>\n
      </Property>\n
      <Property id=\"ocm.repeaterURI\">
\n<Name>ocm.repeaterURI</Name>\<Required>>false</Required>\<Value></Value>
\n<Secret>>false</Secret>\n
      </Property>\n
      <Property id=
\"system-fileset|db_asm_disk_2|size-units\">\<Name>system-fileset|db_asm_disk_2|
size-units</Name>\<Required>>false</Required>\<Value>MB</Value>\<Secret>>false</
Secret>\n
      </Property>\n
<Property id=\"input|listener-1|port\">\<Name>input|listener-1|port</Name>
\n<Required>>false</Required>\<Value>1521</Value>\<Secret>>false</Secret>
\n
      </Property>\n
      <Property id=
\"ocm.anonymousEmailRegistration.emailId\">
\n<Name>ocm.anonymousEmailRegistration.emailId</Name>\<Required>>false</Required>
\n<Value></Value>\<Secret>>false</Secret>\n
      </Property>
\n
      <Property id=\"db-account-password\">\<Name>db-
account-password</Name>\<Required>>true</Required>\<Value> </Value>
\n<ValueGuid>C7CC61AC07DF6E58E040578CDA8145F9</ValueGuid>\<Secret>>true</Secret>
\n
      </Property>\n
      <Property id=
\"system-fileset|db_asm_disk_3|size\">\<Name>system-fileset|db_asm_disk_3|size</
Name>\<Required>>false</Required>\<Value>2836</Value>\<Secret>>false</Secret>
\n
      </Property>\n
      <Property id=
\"system-fileset|db_asm_disk_2|size\">\<Name>system-fileset|db_asm_disk_2|size</
Name>\<Required>>false</Required>\<Value>2836</Value>\<Secret>>false</Secret>\n
      </Property>\n
      <Property id=
\"ocm.proxyPort\">\<Name>ocm.proxyPort</Name>\<Required>>false</Required>\<Value></
Value>\<Secret>>false</Secret>\n
      </Property>
\n
      <Property id=\"ocm.proxyUsername\">
\n<Name>ocm.proxyUsername</Name>\<Required>>false</Required>\<Value></Value>
\n<Secret>>false</Secret>\n
      </Property>
\n
      <Property id=\"system-fileset|db_asm_disk_6|size\">
\n<Name>system-fileset|db_asm_disk_6|size</Name>\<Required>>false</Required>
\n<Value>2836</Value>\<Secret>>false</Secret>\n
      </Property>\n
      <Property id=\"system-fileset|db_asm_disk_5|
size\">\<Name>system-fileset|db_asm_disk_5|size</Name>\<Required>>false</Required>
\n<Value>2836</Value>\<Secret>>false</Secret>\n
      </Property>\n
      <Property id=\"system-fileset|db_asm_disk_4|
size\">\<Name>system-fileset|db_asm_disk_4|size</Name>\<Required>>false</Required>
\n<Value>2836</Value>\<Secret>>false</Secret>\n
      </Property>\n
      <Property id=
\"ocm.metalinkEmailRegistration.metalinkPassword\">
\n<Name>ocm.metalinkEmailRegistration.metalinkPassword</Name>\<Required>>false</
Required>\<Value>
\n<Secret>true</Secret>\n
      </Property>
\n
      <Property id=\"system-fileset|db_asm_disk_6|size-units
\">\<Name>system-fileset|db_asm_disk_6|size-units</Name>\<Required>>false</Required>
\n<Value>MB</Value>\<Secret>>false</Secret>\n
      </Property>
\n
      <Property id=\"system-fileset|db_asm_disk_5|size-units
\">\<Name>system-fileset|db_asm_disk_5|size-units</Name>\<Required>>false</Required>
\n<Value>MB</Value>\<Secret>>false</Secret>\n
      </Property>
\n
      <Property id=\"system-fileset|db_asm_disk_0|size-units
\">\<Name>system-fileset|db_asm_disk_0|size-units</Name>\<Required>>false</Required>
\n<Value>MB</Value>\<Secret>>false</Secret>\n
      </Property>
\n
      </Properties>\n
      <EMAgent>>false</
EMAgent>\n
      </Product>\n
      </ProductConfiguration>
\n
      <HardwareConfiguration>\n
      <Memory>2048</Memory>

```

```

\n
      <VCPU>1</VCPU>\n
      <HaEnabled>>false</
HaEnabled>\n
      <StartAfterCreation>>true</StartAfterCreation>
\n
      <CPUSchedulingPriority>50</CPUSchedulingPriority>
\n
      <CPUCap>100</CPUCap>\n
      <LocalDisks>\n
      <disk fromDefinition="\true
\n
      name="\2xZNMmSH5oZYW_System">\n
      <Size>5122</Size>
\n
      <Mode>Read-Write</Mode>\n
<CreatedByVmSize>>false</CreatedByVmSize>\n
      </disk>
\n
      <disk fromDefinition="\true" name="\AB">
\n
      <Size>0</Size>\n
      <Mode>Read-
Write</Mode>\n
      <CreatedByVmSize>>false</CreatedByVmSize>
\n
      </disk>\n
      <disk fromDefinition=
\n
      "\true" name="\2xZNMmSH5oZYW_sys-asm_base">\n
      <Size>502</Size>\n
      <Mode>Read-Write</Mode>
\n
      <CreatedByVmSize>>false</CreatedByVmSize>
\n
      </disk>\n
      <disk fromDefinition=
\n
      "\true" name="\2xZNMmSH5oZYW_sys-asm_home">\n
      <Size>10307</Size>\n
      <Mode>Read-Write</Mode>
\n
      <CreatedByVmSize>>false</CreatedByVmSize>
\n
      </disk>\n
      <disk fromDefinition=
\n
      "\true" name="\2xZNMmSH5oZYW_sys-db_base">\n
      <Size>502</
Size>\n
      <Mode>Read-Write</Mode>
\n
      <CreatedByVmSize>>false</CreatedByVmSize>
\n
      </disk>\n
      <disk fromDefinition=
\n
      "\true" name="\2xZNMmSH5oZYW_sys-db_home">\n
      <Size>9068</Size>\n
      <Mode>Read-Write</Mode>\n
      <CreatedByVmSize>>false</
CreatedByVmSize>\n
      </disk>\n
      </LocalDisks>
\n
      <SharedDisks>\n
      <SharedDisk
fromDefinition="\true" name="\2xZNMmSH5oZYW_db_asm_disk_0"/>
\n
      <SharedDisk fromDefinition="\true" name=
\n
      "\2xZNMmSH5oZYW_db_asm_disk_1"/>\n
      <SharedDisk
fromDefinition="\true" name="\2xZNMmSH5oZYW_db_asm_disk_2"/>
\n
      <SharedDisk fromDefinition="\true" name=
\n
      "\2xZNMmSH5oZYW_db_asm_disk_3"/>\n
      <SharedDisk
fromDefinition="\true" name="\2xZNMmSH5oZYW_db_asm_disk_4"/>
\n
      <SharedDisk fromDefinition="\true" name=
\n
      "\2xZNMmSH5oZYW_db_asm_disk_5"/>\n
      <SharedDisk
fromDefinition="\true" name="\2xZNMmSH5oZYW_db_asm_disk_6"/>
\n
      <SharedDisk fromDefinition="\true" name=
\n
      "\2xZNMmSH5oZYW_db_asm_disk_7"/>\n
      </SharedDisks>
\n
      <Nics>\n
      <NetworkInterface
fromDefinition="\true" name="\eth0">\n
      <IPAssignmentMode>Dhcp</IPAssignmentMode>\n
      <QoS>Any_Network_QoS_Type</QoS>\n
      <AssemblyNetwork name="\network-1"/>
\n
      </NetworkInterface>\n
      </Nics>
\n
      <RootPassword> </RootPassword>\n
      <RootPasswordGuid>C7CC61AC07D96E58E040578CDA8145F9</RootPasswordGuid>
\n
      <LogLocation>/assemblybuilder/logs</LogLocation>
\n
      <VmSize>Custom</VmSize>\n
      <NetworkConfigurationTimeout>60</NetworkConfigurationTimeout>\n
      <ProductConfigurationTimeout>60</ProductConfigurationTimeout>\n
      </
HardwareConfiguration>\n
      </VirtualSystemConfig>\n
      </
VirtualSystemCollectionConfig>\n
      </AssemblyDeployment>\n</ns2:ConfigurationData>
\n"
}

```

66.3.2 Updating a VM Service Instance

A service instance may be resized, its status updated, or additional resources added.

The VM resource supports the following changes:

- The "status" can be updated (for example, from STARTED to STOPPED or from STOPPED to STARTED). See, [Changing the VM Status](#).
- The "cpu" and "memory" can be updated (for example to resize the VM). See, [Changing the VM Size](#).

 **Note:**

For the 12.1.0.4 Cloud Self Service Portal release, VM is no longer required to be STOPPED before modifying the "cpu" and "memory".

- Additional resources, for example a VM disk can be added. See, [Adding a VM Disk](#).
- Any updates supported on the VM resource from 10000 version are also supported on the 10001 version of the resource.

66.3.2.1 Changing the VM Status

The following shows the GET of the VM's status:

Table 66-24 GET Request Configuration for Viewing the Current Status of the VM

Feature	Description
URI	/em/cloud/iaas/server/byrequest/101?status,uri
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET
Supported since release	12.1.0.1 Cloud Service Portal plug-in

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095" ,
  "status" : "STARTED"
}
```

To update the status, use the PUT method to the resource "uri". Note that the "uri" attribute is the one that directly references to the resource.

Table 66-25 PUT Request Configuration for Stopping the VM

Feature	Description
URI	/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.VM+json
Body	{ "status" : "STOPPED" }
Request method	PUT
Supported since release	12.1.0.1 Cloud Service Portal plug-in

The Web service response displays the 200 response code, along with the current VM attributes.

To confirm the status of the VM issue the following GET request on the VM:

Table 66-26 GET Request Configuration for Confirming the Status Change of the VM

Feature	Description
URI	/em/cloud/iaas/server/byrequest/101?status,uri
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET
Supported since release	12.1.0.1 Cloud Service Portal plug-in

The Web service returns the following:

```
{
  "uri" : "/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095" ,
  "status" : "STOPPED"
}
```

Attempting to submit a PUT transient status value would result in the following:

Table 66-27 PUT Request Configuration for Attempting a Transient Status Value

Feature	Description
URI	/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095
Request header	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.VM+json

Table 66-27 (Cont.) PUT Request Configuration for Attempting a Transient Status Value

Feature	Description
Body	<pre>{ "status" : "STOPPING" }</pre>
Request method	PUT
Supported since release	12.1.0.1 Cloud Service Portal plug-in

The following shows the Web service response:

```
{
  "messages" :
  [
    {
      "date" : "2012-08-19T17:22:04+0000" ,
      "stack_trace" :
      "oracle.sysman.emInternalSDK.ssa.cloudapi.rest.RestServletException: Status
      'STOPPING' specified by the PUT request is transient, and is not a valid status\n
      \tat oracle.sysman.ssa.cloudapi.iaas.VM.processVMStatusChange(VM.java:331)\n\tat
      oracle.sysman.ssa.cloudapi.iaas.VM.processVMChanges(VM.java:253)\n\tat
      oracle.sysman.ssa.cloudapi.iaas.VM.processRequest(VM.java:227)\n\tat
      oracle.sysman.ssa.cloudapi.iaas.IaasServiceProvider.processRequest(IaasServiceProvide
      r.java:582)\n\tat
      oracle.sysman.emInternalSDK.ssa.cloudapi.EMCloudServlet.perform(EMCloudServlet.java:
      236)\n\tat
      oracle.sysman.emInternalSDK.ssa.cloudapi.EMCloudServlet.performPut(EMCloudServlet.jav
      a:351)\n\tat
      oracle.sysman.emInternalSDK.ssa.cloudapi.rest.AbstractRestServlet.doPut(AbstractRestS
      ervlet.java:163)\n\tat javax.servlet.http.HttpServlet.service(HttpServlet.java:730)\n
      \tat javax.servlet.http.HttpServlet.service(HttpServlet.java:820)\n\tat
      weblogic.servlet.internal.StubSecurityHelper$ServletServiceAction.run(StubSecurityHel
      per.java:227)\n\tat we" ,
      "hint" : "Status 'STOPPING' specified by the PUT request is transient, and
      is not a valid status" ,
      "text" : "Did not successfully execute 'PUT' resource operation on
      'application/oracle.com.cloud.common.Cloud' identified by '/em/cloud/iaas/server/vm/
      C5CA59AF9386975E8AEA45B0F040F095' "
    }
  ]
}
```

Attempting to submit the existing status to the VM will result in the following interaction:

Table 66-28 PUT Request Configuration for Changing the VM Status to the Current Status

Feature	Description
URI	/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095?resource_state

Table 66-28 (Cont.) PUT Request Configuration for Changing the VM Status to the Current Status

Feature	Description
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.VM+json
Body	<pre>{ "status" : "STOPPED" }</pre>
Request method	PUT
Supported since release	12.1.0.1 Cloud Service Portal plug-in

The web service responds with the following:

```
{
  "resource_state" : {
    "state" : "READY" ,
    "messages" :
    [
      {
        "date" : "2012-08-19T17:23:49+0000" ,
        "text" : "Current Virtual Machine Status 'STOPPED' is the same as the
requested status. Status change is not needed"
      }
    ]
  }
}
```

When modifying a service instance, the messages communicated will be encapsulated in the resource_state attribute. For example, to START the VM again, the following PUT request can be issued:

Table 66-29 PUT Request Configuration for Starting the VM

Feature	Description
URL	https://example.com/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095?resource_state
Headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.VM+json
Body	<pre>{ "status" : "STARTED" }</pre>
Method	PUT
Supported since release	12.1.0.1 Cloud Service Portal plug-in

The web service will respond with the following:

```

{
  "resource_state" : {
    "state" : "READY" ,
    "messages" :
    [
      {
        "date" : "2012-08-19T17:25:29+0000" ,
        "text" : "'START' resource operation on 'application/
oracle.com.cloud.common.VM' identified by 'C5CA59AF9386975E8AEA45B0F040F095' is
successfully submitted with reference 'C7A2713B9A4D29C1E040578CDA817561'"
      }
    ]
  }
}

```

66.3.2.2 Changing the VM Size

The CPU and Memory of a VM can be adjusted to increase or decrease the capacity. For example, to adjust the VM's CPU to 1 vCPU and increase the memory from 512 to 1024, the following PUT request can be issued:

Table 66-30 PUT Request Configuration for Changing the Size of the VM

Feature	Description
URI	/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095?resource_state
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.VM+json
Body	{ "cpu":[1,0], "memory":"1024" }
Request method	PUT
Supported since release	12.1.0.1 Cloud Service Portal plug-in

A sample of the response received is shown below.

```

{
  "resource_state" : {
    "state" : "READY" ,
    "messages" :
    [
      {
        "text" : "'PUT' resource operation on 'application/
oracle.com.cloud.common.VM' identified by 'C5CA59AF9386975E8AEA45B0F040F095' is
successfully submitted with reference '106'" ,
        "date" : "2012-08-20T01:15:28+0000"
      }
    ]
  }
}

```

After some time, the new capacity is reflected in the VM resource through the GET request:

Table 66-31 GET Request Configuration for Viewing the Current Size of the VM

Feature	Description
URI	/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095?resource_state,cpu,memory,status
Request header	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "resource_state" : {
    "state" : "READY"
  },
  "status" : "STARTED",
  "cpu" :
  [
    "1",
    "0"
  ],
  "memory" : "1024"
}
```

66.3.2.3 Adding a VM Disk

An additional disk may be added to the VM resource. For example, to add two additional disks, the following PUT request can be issued:

Table 66-32 PUT Request Configuration for Adding a VM Disk

Feature	Description
URI	/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095?resource_state
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.VM+json
Body	<pre>{ "disks": [["additional_1", "5120"], ["additional_2", "10240"]] }</pre>
Parameters/Constraints	If an entry in the "disks" attribute is new, then a new disk would be added. If an entry in the "disks" attribute exists already, then, it would be ignored.
Request method	PUT
Supported since release	12.1.0.5 Cloud Service Portal plug-in

A sample of the response received is shown below.

```

"resource_state" : {
  "state" : "READY" ,
  "messages" :
  [
    {
      "text" : "'PUT' resource operation on 'application/
oracle.com.cloud.common.VM' identified by ' C5CA59AF9386975E8AEA45B0F040F095' is
successfully submitted with reference '2' " ,
      "date" : "2013-02-26T19:53:15+0000"
    }
  ]
}

```

After some time, the new disks are reflected in the VM resource using the GET request.

Table 66-33 GET Request Configuration for Verifying Addition of New Disks in the VM Resource

Feature	Description
URI	/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095?resource_state,disks
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the Web service response is shown below.

```

{
  "resource_state" : {
    "state" : "READY"
  } ,
  "disks" :
  [
    [
      "system.img (2)" ,
      "1400"
    ] ,
    [
      "default_disk" ,
      "10240"
    ] ,
    [
      "additional_1" ,
      "5120"
    ] ,
    [
      "additional_2" ,
      "10240"
    ]
  ]
}

```

66.3.3 Deleting a Service Instance

The DELETE request on the URI of the resource can be issued to delete a Service Instance. For example, the following DELETE request is issued:

Table 66-34 Delete Request Configuration for Deleting a Service Instance

Feature	Description
URI	/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	DELETE
Supported since release	12.1.0.1 Cloud Service Portal plug-in

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095" ,
  "resource_state" : {
    "state" : "READY" ,
    "messages" :
    [
      {
        "text" : "'DELETE' resource operation on 'application/
oracle.com.cloud.common.VM' identified by 'C5CA59AF9386975E8AEA45B0F040F095' is
successfully submitted with reference 'C7A83335CB63DA7BE040578CDA814DDC' " ,
        "date" : "2012-08-20T01:24:38+0000"
      }
    ]
  } ,
  "context_id" : "C5CA59AF9386975E8AEA45B0F040F095" ,
  "media_type" : "application/oracle.com.cloud.common.VM+json" ,
  "service_family_type" : "iaas"
}
```

After some time, the GET request on the VM URI will result in the following interaction:

Table 66-35 GET Request Configuration for Verifying the Status of the VM

Feature	Description
URI	/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET

A sample of the web service returned response is shown below.

```
{
  "uri" : "/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "context_id" : "C5CA59AF9386975E8AEA45B0F040F095" ,
  "media_type" : "application/oracle.com.cloud.common.VM+json" ,
  "service_family_type" : "iaas" ,
  "status" : "DELETED"
}
```

Note the "status" of the VM has the "DELETED" value.

66.3.4 Listing Service Instances

There are various references to service instances in the resource model, and they are all in context of the resource themselves. For example, "service_instances" in the Zone resource would list the elements that are in that Zone, while "service_instances" in the ServiceTemplate resource would list the elements that are based on that service template.

For example, the following list the service instances in a zone.

Table 66-36 GET Request Configuration for Viewing Service Instances in a Zone

Feature	Description
URI	/em/cloud/iaas/zone/D73AF0D42C8459E11419862797D1F37D?service_instances
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Request method	GET
Supported since release	12.1.0.4 Cloud Service Portal plug-in

The following response is received:

```
{
  "service_instances" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceInstance+json" ,
    "total" : "2" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/iaas/server/vm/523CAE80A305928C9C5BE8A67A4181FD" ,
        "name" : "ZONEPOST" ,
        "media_type" : "application/oracle.com.cloud.common.VM+json" ,
        "status" : "STARTED"
      } ,
      {
        "uri" : "/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095" ,
        "name" : "STPOST" ,
        "media_type" : "application/oracle.com.cloud.common.VM+json" ,
        "status" : "STARTED"
      }
    ]
  }
}
```

```

    ]
  }
}

```

Similarly, you can list the service instances from the service templates:

Table 66-37 GET Request Configuration for Viewing Service Instances Under a Service Template

Feature	Description
URL	/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate%3AC76CEB5563EA5E13E040578CDA817FAF%3A0.1?service_instances
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET
Supported since release	12.1.0.4 Cloud Service Portal plug-in

A sample of the response received is shown below.

```

{
  "service_instances" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceInstance+json" ,
    "total" : "2" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/iaas/server/vm/C5CA59AF9386975E8AEA45B0F040F095" ,
        "name" : "STPOST" ,
        "media_type" : "application/oracle.com.cloud.common.VM+json" ,
        "status" : "STARTED"
      } ,
      {
        "uri" : "/em/cloud/iaas/server/vm/523CAE80A305928C9C5BE8A67A4181FD" ,
        "name" : "ZONEPOST" ,
        "media_type" : "application/oracle.com.cloud.common.VM+json" ,
        "status" : "STARTED"
      }
    ]
  }
}

```

66.3.5 Searching Service Templates

Searching for a service template through cloud can be performed by constructing ServiceTemplateFinds resource. ServiceTemplateFinds is synonymous to a "report" that contains elements satisfying the condition specified.

For example, the following will return service template with the name OEL in it

Table 66-38 POST Request Configuration for Filtering Service Templates

Feature	Description
URI	/em/cloud
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.ServiceTemplateFinds+jsonAccept : application/oracle.com.cloud.common.ServiceTemplateFinds+json
Body	<pre>{ "filters":{ "name":"OEL" } }</pre>
Request method	POST
Supported since release	12.1.0.5 Cloud Service Portal plug-in release

A sample of the response received is shown below.

```
{
  "uri" : "/em/cloud/finds/service_template/
bWVkaWFfdHlwZSUyNTNEYXBwbGljYXRpb241MjUyRm9yYWNsZS5jb20uY2xvdWQuY29tbW9uLlNl
%0AcnZpY2VUZWlwbGF0ZSUyRm5hbWU1MjUzRE9FTA%3D%3D" ,
  "name" : "Service Template Finds" ,
  "media_type" : "application/oracle.com.cloud.common.ServiceTemplateFinds+json" ,
  "description" : "This is a Resource Finds for 'Service Template Finds' with media
type 'application/oracle.com.cloud.common.ServiceTemplateFinds+json'" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "filters" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate" ,
    "name" : "OEL"
  } ,
  "finds" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/iaas/servicetemplate/vm/oracle%3AdefaultService%3Aem
%3Aprovisioning%3A1%3Acmp%3AVirtualization%3ATemplate
%3AD6A66B2DCAEAE177E040F20AB0527449%3A0.1" ,
        "name" : "OEL4.0 For Testing" ,
        "media_type" : "application/oracle.com.cloud.common.VMTemplate+json" ,
        "type" : "Template"
      }
    ]
  }
}
```

Currently, the following attributes are supported by the "filters":

Table 66-39 Filters

Attributes	Description	Since
media_type	The specific service template media to search for. This would be an exact match of the media type.	12.1.0.5 Cloud Service Portal Plugin (IaaS service family type only)
name	A service template would be returned if the name contains the specified string, case insensitive (so, OEL and oel in the example above would return the same result).	12.1.0.5 Cloud Service Portal Plugin (IaaS service family type only)

If an attribute specified is not recognized by the system, it will be ignored. For example, the following will return service templates containing the name DUMMY:

Table 66-40 POST Request Configuration for an Unrecognized Attribute

Feature	Description
URI	/em/cloud
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=Content-Type: application/oracle.com.cloud.common.ServiceTemplateFinds+jsonAccept : application/oracle.com.cloud.common.ServiceTemplateFinds+json
Body	<pre>{ "filters":{ "name":"DUMMY" } }</pre>
Request method	POST
Supported since release	12.1.0.5 Cloud Service Portal plug-in

The response received is shown below.

```
{
  "uri" : "/em/cloud/finds/service_template/
bWVkaWFfdHlwZSUyNTNEYXBwbGljYXRpb24lMjUyRm9yYWNsZS5jb20uY2xvdWQuY29tbW9uL1Nl
%0AcnZpY2VUZWlwbGF0ZSUyRm5hbWU1MjUzRERVTU1Z" ,
  "name" : "Service Template Finds" ,
  "media_type" : "application/oracle.com.cloud.common.ServiceTemplateFinds+json" ,
  "description" : "This is a Resource Finds for 'Service Template Finds' with media
type 'application/oracle.com.cloud.common.ServiceTemplateFinds+json'" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "filters" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate" ,
    "name" : "DUMMY"
  } ,
  "finds" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate" ,
    "total" : "0" ,
```

```

    "elements" :
      [
      ]
    }
  }
}

```

Since there were no service templates with "DUMMY" as part of its name, no service templates are returned.

Please note, once the resource ServiceTemplateFinds is created, its URI can be used for performing the same query by issuing a GET request. If new templates were added that also satisfy the conditions, it would be returned as well.

For example, let's use the DUMMY example's URI, and this time, a service template with "DUMMY" in its name was created.

Table 66-41 GET Request Configuration for Filtering Service Templates Using the URI of a Preset POST Filter

Feature	Description
URI	/em/cloud/finds/service_template/ bWVkaWFfdHlwZSUyNTNEYXBwbGljYXRpb24lMjUyRm9yYWNsZS5jb20uY2xvdWQuY29tbW9uLlNl%0AcnZpY2VUZw1wbGF0ZSUyRm5hbWUIMjUzRERVTU1Z
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=
Body	None
Request method	GET
Supported since	12.1.0.5 Cloud Service Portal plug-in release

Shown below is the response of the GET request after the service template was created and published by the administrator:

```

{
  "uri" : "/em/cloud/finds/service_template/  
bWVkaWFfdHlwZSUyNTNEYXBwbGljYXRpb24lMjUyRm9yYWNsZS5jb20uY2xvdWQuY29tbW9uLlNl%0AcnZpY2VUZw1wbGF0ZSUyRm5hbWUIMjUzRERVTU1Z" ,
  "name" : "Service Template Finds" ,
  "media_type" : "application/oracle.com.cloud.common.ServiceTemplateFinds+json" ,
  "description" : "This is a Resource Finds for 'Service Template Finds' with media  
type 'application/oracle.com.cloud.common.ServiceTemplateFinds+json'" ,
  "resource_state" : {
    "state" : "READY"
  } ,
  "filters" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate" ,
    "name" : "DUMMY"
  } ,
  "finds" : {
    "media_type" : "application/oracle.com.cloud.common.ServiceTemplate" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/iaas/servicetemplate/assembly/oracle%3AdefaultService%3Aem%3Aprovisioning%3A1%3Acmp%3AVirtualization%3AAssembly%3AD6A7D3D84B605D11E040F20AB0524E1C%3A0.1" ,
        "name" : "Dummy OEL Assembly" ,

```

```

        "media_type" : "application/oracle.com.cloud.common.AssemblyTemplate
+json" ,
        "type" : "Assembly"
    }
  ]
}

```

66.4 Support for Version 1000

As the document previous noted, this 12.1.0.4 Cloud Service Portal Plugin supports the specification version 10000. To start, issue the following HTTP request on the Enterprise Manager:

Table 66-42 GET Request Configuration for Viewing Details of the Cloud Resource for Version 10000

Feature	Description
URI	/em/cloud
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=X-Specification-Version: 10000Accept: application/oracle.com.cloud.common.Cloud+json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud" ,
  "name" : "Infrastructure Cloud" ,
  "description" : "Infrastructure Cloud with Self Service Portal and Virtualization
Managements" , "service_templates" : {
    "uri" : "/em/cloud/collection/servicetemplates" ,
    "type" : "application/oracle.com.cloud.common.ServiceTemplate+json" ,
    "total" : "7" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/servicetemplate/oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Assembly:C75E88B04D7FEDEDE040578CDA810E49:0.1" ,
        "name" : "sidb_assembly" ,
        "type" : "Assembly" ,
        "version" : "0.1"
      } ,
      {
        "uri" : "/em/cloud/servicetemplate/oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Assembly:C769B1F361529309E040578CDA813D57:0.1" ,
        "name" : "wls_assembly" ,
        "type" : "Assembly" ,
        "version" : "0.1"
      } ,
      {
        "uri" : "/em/cloud/servicetemplate/oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Template:C76CEB5563EA5E13E040578CDA817FAF:0.1" ,
        "name" : "template_sanity" ,
        "type" : "Template" ,

```

```

        "version" : "0.1"
      } ,
      {
        "uri" : "/em/cloud/servicetemplate/oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Assembly:C76F733BC7A41AF7E040578CDA812CDC:0.1" ,
        "name" : "fmw_venkat" ,
        "type" : "Assembly" ,
        "version" : "0.1"
      } ,
      {
        "uri" : "/em/cloud/servicetemplate/oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Assembly:C76C144A4A245B62E040578CDA8163B9:0.1" ,
        "name" : "fmw_abby" ,
        "type" : "Assembly" ,
        "version" : "0.1"
      } ,
      {
        "uri" : "/em/cloud/servicetemplate/oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Assembly:C77122B0A916D95CE040578CDA814854:0.1" ,
        "name" : "sidbasmA_abby" ,
        "type" : "Assembly" ,
        "version" : "0.1"
      } ,
      {
        "uri" : "/em/cloud/servicetemplate/oracle:defaultService:em:provisioning:
1:cmp:Virtualization:Assembly:C76C8792DE2A0937E040578CDA81795E:0.1" ,
        "name" : "WLS_abby" ,
        "type" : "Assembly" ,
        "version" : "0.1"
      }
    ]
  } ,
  "zones" : {
    "uri" : "/em/cloud/collection/zones" ,
    "type" : "application/oracle.com.cloud.common.Zone+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/zone/D73AF0D42C8459E11419862797D1F37D" ,
        "name" : "cloud_zone" ,
        "type" : "oracle_vm_zone"
      }
    ]
  } ,
  "vdcs" : {
    "uri" : "/em/cloud/collection/vdcs" ,
    "type" : "application/oracle.com.cloud.common.VDC+json" ,
    "total" : "1" ,
    "elements" :
    [
      {
        "uri" : "/em/cloud/vdc/default/D73AF0D42C8459E11419862797D1F37D" ,
        "name" : "Oracle Enterprise Manager Virtual Data Center on Zone
cloud_zone"
      }
    ]
  } ,
  "instance_options" : {
    "uri" : "/em/cloud/collection/instanceoptions" ,
    "type" : "application/oracle.com.cloud.common.InstanceOption+json" ,

```

```

"total" : "3" ,
"elements" :
[
  {
    "uri" : "/em/cloud/instanceoption/virtual_machine_size/2" ,
    "name" : "Medium" ,
    "type" : "virtual_machine_size" ,
    "memory" : "8192" ,
    "cpu" : "4" ,
    "local_storage" : "512000"
  } ,
  {
    "uri" : "/em/cloud/instanceoption/virtual_machine_size/3" ,
    "name" : "Large" ,
    "type" : "virtual_machine_size" ,
    "memory" : "15360" ,
    "cpu" : "8" ,
    "local_storage" : "1024000"
  } ,
  {
    "uri" : "/em/cloud/instanceoption/virtual_machine_size/1" ,
    "name" : "Small" ,
    "type" : "virtual_machine_size" ,
    "memory" : "4096" ,
    "cpu" : "2" ,
    "local_storage" : "256000"
  }
]
} ,
"resource_state" : {
  "state" : "READY"
}
}

```

Similarly, to return the list of resources in the VDC, the following can be issued (note that X-specification-version must be included in the header whenever working with 10000 version resources):

Table 66-43 GET Request Configuration for Viewing Details of the VDC Resources

Feature	Description
URI	/em/cloud/vdc/default/D73AF0D42C8459E11419862797D1F37D
Request headers	Authorization: basic ZGVtb3VzZXI6ZGVtb3VzZXI=X-Specification-Version: 10000Accept: application/oracle.com.cloud.common.VDC+json
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
  "uri" : "/em/cloud/vdc/default/D73AF0D42C8459E11419862797D1F37D" ,
  "name" : "Oracle Enterprise Manager Virtual Data Center on Zone cloud_zone" ,
  "description" : "Virtual Data Center is a logical grouping of virtualized assets
in a particular zone" ,
  "scalability_groups" : {

```

```

        "uri" : "/em/cloud/vdc/default/D73AF0D42C8459E11419862797D1F37D?
scalability_groups" ,
        "type" : "application/oracle.com.cloud.common.ScalabilityGroup+json" ,
        "total" : "0" ,
        "elements" :
        [
            ]
        } ,
        "servers" : {
            "uri" : "/em/cloud/vdc/default/D73AF0D42C8459E11419862797D1F37D?servers" ,
            "type" : "application/oracle.com.cloud.common.Server+json" ,
            "total" : "0" ,
            "elements" :
            [
                ]
            } ,
        "vnets" : {
            "uri" : "/em/cloud/vdc/default/D73AF0D42C8459E11419862797D1F37D?vnets" ,
            "type" : "application/oracle.com.cloud.common.VNet+json" ,
            "total" : "3" ,
            "elements" :
            [
                {
                    "uri" : "/em/cloud/vnet/D73AF0D42C8459E11419862797D1F37D/
oracle:defaultService:em:provisioning:1:netConfig:C76CEADBBBE6B23FE040578CDA817FB1" ,
                    "name" : "venkat_profile" ,
                    "id" : "oracle:defaultService:em:provisioning:
1:netConfig:C76CEADBBBE6B23FE040578CDA817FB1"
                } ,
                {
                    "uri" : "/em/cloud/vnet/D73AF0D42C8459E11419862797D1F37D/
oracle:defaultService:em:provisioning:1:netConfig:C77076C8FDEC6BD7E040578CDA813B2B" ,
                    "name" : "nwprofile_abby" ,
                    "id" : "oracle:defaultService:em:provisioning:
1:netConfig:C77076C8FDEC6BD7E040578CDA813B2B"
                } ,
                {
                    "uri" : "/em/cloud/vnet/D73AF0D42C8459E11419862797D1F37D/
oracle:defaultService:em:provisioning:1:netConfig:C76F741AFD7EB760E040578CDA812CD8" ,
                    "name" : "bmp_profile" ,
                    "id" : "oracle:defaultService:em:provisioning:
1:netConfig:C76F741AFD7EB760E040578CDA812CD8"
                }
            ]
        } ,
        "zone" : "/em/cloud/zone/D73AF0D42C8459E11419862797D1F37D" ,
        "resource_state" : {
            "state" : "READY"
        } ,
        "assembly_instances" : {
            "uri" : "/em/cloud/vdc/default/D73AF0D42C8459E11419862797D1F37D?assemblies" ,
            "type" : "application/oracle.com.cloud.common.AssemblyInstance+json" ,
            "total" : "11" ,
            "elements" :
            [
                {
                    "uri" : "/em/cloud/assembly/byrequest/64" ,
                    "name" : "WLS_abby" ,
                    "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
                    "guid" : "FD4F3945CDD6BD6EEEEFFAB064735ECDD"
                } ,
                {

```

```
        "uri" : "/em/cloud/assembly/byrequest/81" ,
        "name" : "WLS_abby_0" ,
        "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
        "guid" : "79006B5C36F6ED90FC82EB58BB9580F2"
    } ,
    {
        "uri" : "/em/cloud/assembly/byrequest/82" ,
        "name" : "fmw_abby" ,
        "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
        "guid" : "C7852B2D7740F4FAE040578CDA811EF3"
    } ,
    {
        "uri" : "/em/cloud/assembly/byrequest/26" ,
        "name" : "latest_attempt_wls_withagent_dinesh" ,
        "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
        "guid" : "4DE0D2D8C81D0C09E665484BA9DBE668"
    } ,
    {
        "uri" : "/em/cloud/assembly/byrequest/61" ,
        "name" : "sidb_assembly" ,
        "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
        "guid" : "235D95A93ABA2B50AFF5486540F48690"
    } ,
    {
        "uri" : "/em/cloud/assembly/byrequest/62" ,
        "name" : "sidb_assembly_0" ,
        "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
        "guid" : "BFA65EC9A5FB97AD2B971EE8FB5E91AC"
    } ,
    {
        "uri" : "/em/cloud/assembly/byrequest/27" ,
        "name" : "venkat_fmw" ,
        "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
        "guid" : "3DBE707B981DEDA5380ED6DBD8BF399C"
    } ,
    {
        "uri" : "/em/cloud/assembly/byrequest/23" ,
        "name" : "venkat_nw_profile" ,
        "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
        "guid" : "05C1F96EE6FBD049BFE1D57AA89CB0D0"
    } ,
    {
        "uri" : "/em/cloud/assembly/byrequest/1" ,
        "name" : "venkat_sidb" ,
        "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
        "guid" : "3A5C3917D18E276BDC7D08949F1851D1"
    } ,
    {
        "uri" : "/em/cloud/assembly/byrequest/22" ,
        "name" : "wls_dinesh_32bit_agent" ,
        "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
        "guid" : "896B27C0963AF3B5C5C69D62614D63ED"
```

```

    } ,
    {
      "uri" : "/em/cloud/assembly/byrequest/21" ,
      "name" : "wls_vt_dinesh" ,
      "contained_in" : "/em/cloud/vdc/default/
D73AF0D42C8459E11419862797D1F37D" ,
      "guid" : "E54B51C4FCFF6C56AE393C3B1EEA8464"
    }
  ]
} ,
"dbplatform_instances" : {
  "uri" : "/em/cloud/vdc/default/D73AF0D42C8459E11419862797D1F37D?
dbplatform_instances" ,
  "type" : "application/oracle.com.cloud.common.DbPlatformInstance+json" ,
  "total" : "0" ,
  "elements" :
  [
  ]
}
}

```

If the X-Specification-Version header was not specified, the response received would be similar to the following:

```

{
  "messages" :
  [
    {
      "text" : "Media Type 'application/oracle.com.cloud.common.VDC' specified in
the request cannot be supported by the Cloud Resource. Cloud Resource supports Media
Type 'application/oracle.com.cloud.common.Cloud+json'" ,
      "date" : "2012-08-19T15:17:08+0000"
    }
  ]
}

```

 **Note:**

Only Infrastructure Service resources are supported on 10000 version.
Features supported are the same as the previous version.

Testing as a Service REST APIs

This chapter describes the resource models for Testing as a Service (TaaS) REST API and the REST request/response interactions.

This chapter contains the sections listed below. The first section provides a summary of all the REST APIs covered in this chapter, whereas the following sections provide an introduction to TaaS, the TaaS resource models and the REST API examples.

- [Summary of Testing as a Service REST APIs](#)
- [Introduction to Testing as a Service REST API](#)
- [Testing as a Service Resource Model](#)
 - [Application Resource](#)
 - [TestDriverType Resource](#)
 - [TestDriver Resource](#)
 - [QuotaUsage Resource](#)
 - [TestAsset](#)
 - [OltScenario](#)
 - [CustomParameters](#)
 - [OFTAssetScript Resource](#)
 - [OfAssetScriptCsvDatabanks](#)
 - [OfPlaybackSettings Resource](#)
 - [OfDatabaseDatabanks](#)
 - [TestEnvironment](#)
 - [Test](#)
 - [Trial](#)
 - [Metric](#)
 - [MetricValue](#)
 - [OltSession](#)
 - [OltCounter](#)
 - [OltCounterValue](#)
 - [OfTrialAssetExecution](#)
 - [TestDriverInstance](#)
 - [TestEnvironmentInstance Resource](#)
 - [Operation](#)
 - [TestType](#)
 - [Target](#)

- OltAgent
- Testing as a Service REST API Examples

67.1 Summary of Testing as a Service REST APIs

The table below shows a summary of all the TaaS REST APIs covered in this chapter.

Table 67-1 Summary of TaaS REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
Application Resource	Table 67-2	<ul style="list-style-type: none"> • Viewing Details of all Applications • Querying an Application by Context ID 	Not supported	Not supported	Not supported
Test driver type	Table 67-4	Querying Test Driver Type by Context ID	Not supported	Not supported	Not supported
Test driver	Table 67-6	<ul style="list-style-type: none"> • Viewing Details of all Test Drivers • Querying Test Driver Type by Context ID 	Not supported	Not supported	Not supported
Quota usage	Table 67-9	Supported	Not supported	Not supported	Not supported
Test asset	Table 67-11	<ul style="list-style-type: none"> • Viewing Details of All Test Assets • Querying a Test Asset by Context ID 	Not supported	Not supported	Not supported
OLT scenario	Table 67-16	Supported	Not supported	Not supported	Not supported
Custom parameters	Table 67-19	Supported	Not supported	Not supported	Not supported
OFT asset script	Table 67-22	Supported	Not supported	Not supported	Not supported
OFT asset script CSV databanks	Table 67-26	Supported	Not supported	Not supported	Not supported
OFT playback settings	Table 67-29	Supported	Not supported	Not supported	Not supported
OFT database databanks	Table 67-31	Supported	Not supported	Not supported	Not supported

Table 67-1 (Cont.) Summary of TaaS REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
Test environment	Table 67-34	<ul style="list-style-type: none"> Viewing Details of all Test Environments Querying a Test Environment by Context ID 	Not supported	Not supported	Not supported
Test	Table 67-36	<ul style="list-style-type: none"> Viewing Details of All Tests Querying a Test by Context ID 	Creating a Test	Updating a Test	Deleting a Test
Trial	Table 67-40	<ul style="list-style-type: none"> Viewing Details of All Trials Querying a Trial by Context ID 	Creating a New Trial	Updating a Trial	Deleting a Trial
Metric	Table 67-47	Supported	Not supported	Not supported	Not supported
Metric value	Table 67-49	Supported	Not supported	Not supported	Not supported
OLT session	Table 67-51	Supported	Not supported	Not supported	Not supported
OLT counter	Table 67-53	Supported	Not supported	Not supported	Not supported
OLT counter value	Table 67-55	Supported	Not supported	Not supported	Not supported
OFT trial asset execution	Table 67-57	Supported	Not supported	Not supported	Not supported
Test driver instance	Table 67-64	<ul style="list-style-type: none"> Viewing Details of All Test Driver Instances Querying a Test Driver Instance by Context ID 	Creating a Test Driver Instance	Not supported	Deleting a Stopped Test Driver Instance
Test environment instance	Table 67-66	<ul style="list-style-type: none"> Viewing Details of all Test Environment Instances Querying a Test Environment Instance by Context ID 	<ul style="list-style-type: none"> Creating a Test Environment Instance Executing an Operation on Test Environment / Driver Instance 	Not supported	Deleting a Stopped Test Environment Instance
Operation	Table 67-68	Supported	Supported	Not supported	Not supported
Test type	Table 67-71	Supported	Not supported	Not supported	Not supported

Table 67-1 (Cont.) Summary of TaaS REST APIs

Resource	Data Model	GET	POST	PUT	DELETE
Target	Table 67-73	Supported	Not supported	Not supported	Not supported
OLT agent	Table 67-75	Supported	Not supported	Not supported	Not supported



Note:

In the table above, “supported” indicates that the operation is supported on the resource. However, there is no example in the chapter for this operation.

67.2 Introduction to Testing as a Service REST API

Using the TaaS REST API, you can:

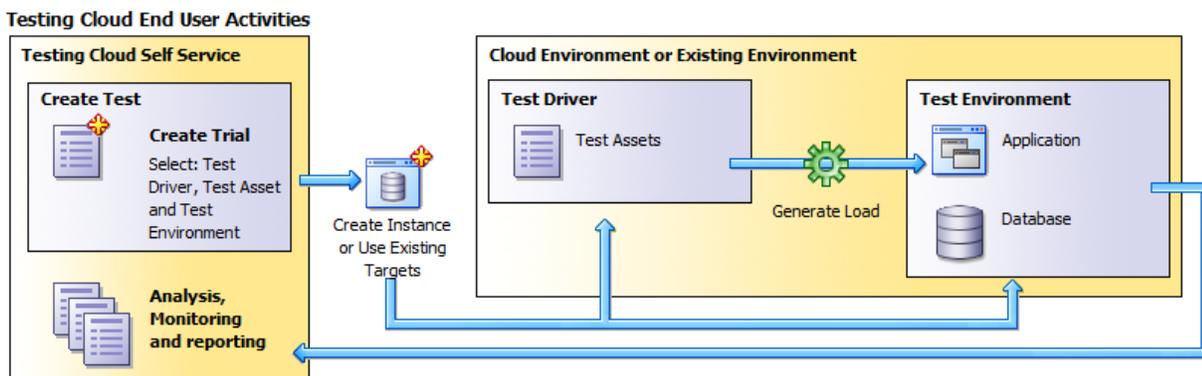
- Interact with the TaaS application without accessing the TaaS user interface.
- Run TaaS functions in script form.
- Easily integrate TaaS with your existing applications and systems.

The TaaS REST API is implemented using the RESTful (Representational State Transfer) Web Service. A complete explanation about the Cloud REST APIs is available in [Introduction to Cloud APIs](#).

67.2.1 How to Use Testing as a Service REST API

The following diagram shows how a Tester uses Testing as a Service:

Figure 67-1 Testing Cloud End User Activities



Here are a few tasks and operations you can perform using the TaaS REST API:

- Tests
List/view/create/update/delete tests and list all trials that belong to a test.

- Quota and Usage
See overall quota usage of a user.
- Trials
View/create/update/delete trials of a trial and its operations/details on Trial Home page.
- Test Asset/Test Environment
List/view test asset and test environments being published to TaaS user.
- Test Driver/Environment Instances
List/view/create/update/delete/start/stop instances of test driver and test environment.

67.2.2 How Resource Models Are Used in TaaS

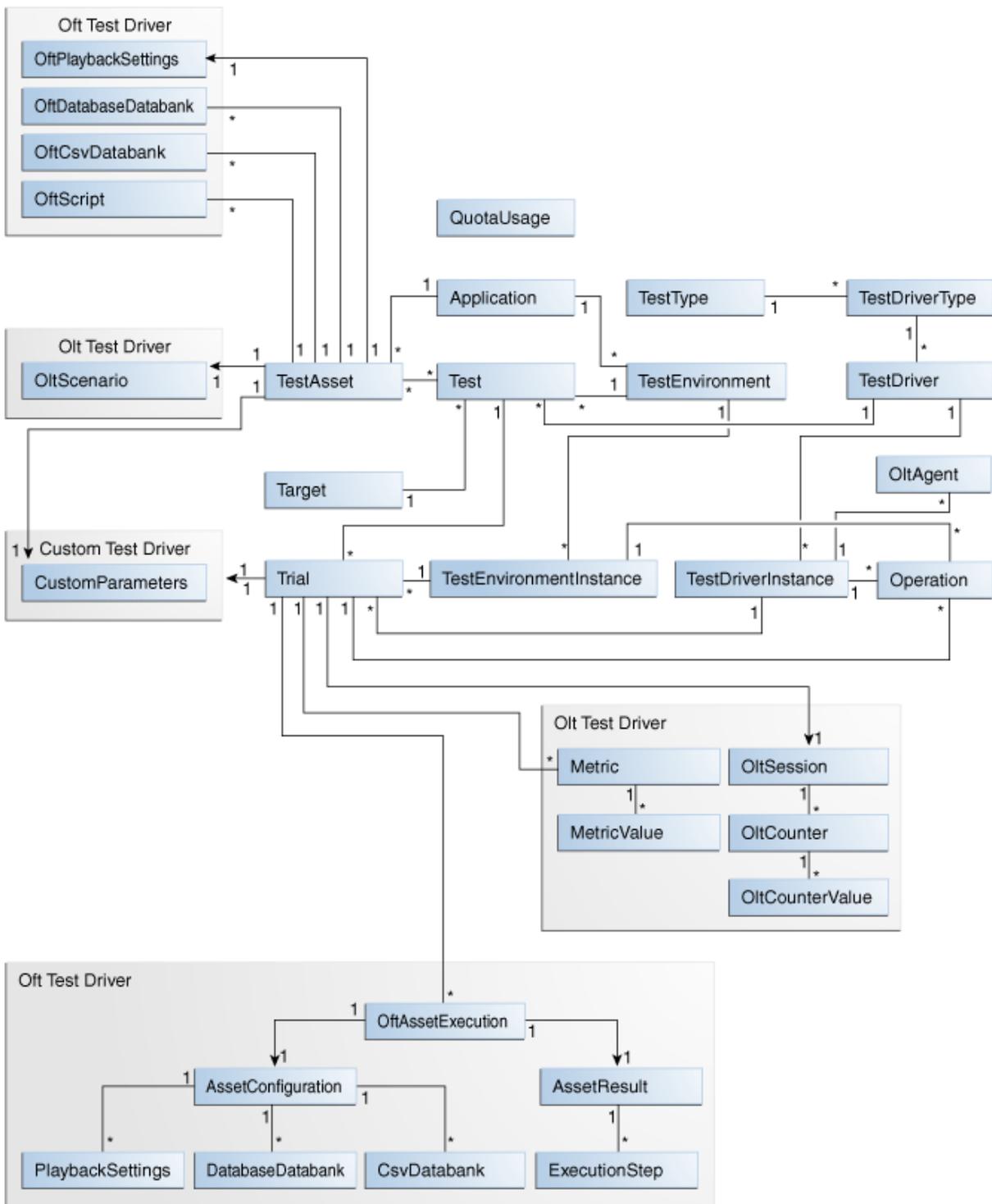
The purpose of using Testing as a Service is to create tests and then run trials using the tests. [Figure 67-2](#) shows the resources used to define tests and the trials.

Simply put:

1. Test driver types are used when defining test assets.
2. Test assets, test environments, targets, and test drivers are used when defining tests.
3. Tests, test environment instances, and test driver instances are used when defining trials.

[Figure 67-2](#) shows these resources and their relationships.

Figure 67-2 TaaS Resources Relationship Diagram



67.3 Testing as a Service Resource Model

Most resources have common attributes such as `context_id` and `uri`. `context_id` is an identifier which could be a GUID or a unique ID of the corresponding entity in the database table.

Methods GET/POST/PUT/DELETE (corresponding to read/create/update/delete methods) are standard HTTP methods. Usually GET means find/query, POST means create, PUT means update, and DELETE means delete/remove. For example, when a field is marked as '[POST] required', this means that when you create a resource (use the POST method), you must provide this field.

The available resources are:

- [Application Resource](#)
- [TestDriverType Resource](#)
- [TestDriver Resource](#)
- [QuotaUsage Resource](#)
- [TestAsset](#)
- [OltScenario](#)
- [CustomParameters](#)
- [OFTAssetScript Resource](#)
- [OfAssetScriptCsvDatabanks](#)
- [OfPlaybackSettings Resource](#)
- [OfDatabaseDatabanks](#)
- [TestEnvironment](#)
- [Test](#)
- [Trial](#)
- [Metric](#)
- [MetricValue](#)
- [OltSession](#)
- [OltCounter](#)
- [OltCounterValue](#)
- [OfTrialAssetExecution](#)
- [TestDriverInstance](#)
- [TestEnvironmentInstance Resource](#)
- [Operation](#)
- [TestType](#)
- [Target](#)
- [OltAgent](#)

67.3.1 Application Resource

Application types are used by Test Designers when creating Test Assets and Test Environments. The application type is metadata used to organize test related activities

The following table describes the Application resource model.

Table 67-2 Application Resource Data Model

Field	Type	Description
uri	String	URI of the resource
name	String	Name of the application
contextId(id)	Long	Context ID of the application

The following table lists the methods supported in the Application resource.

Table 67-3 Supported Methods for Application Resource

Method	Description	Sample URI
LIST (GET without contextId)	Returns a list of applications	/em/websvcs/restful/extws/cloudservices/taas/v1/applications
GET	Returns an application by ID.	/em/websvcs/restful/extws/cloudservices/taas/v1/applications/1

67.3.2 TestDriverType Resource

The TestDriverType (Test Driver Type) resource defines the type of Test Driver.

Table 67-4 TestDriverType Resource Data Model

Field	Type	Description
uri	String	URI of the resource
name	String	Name of the custom test driver type
contextId(id)	Long	Context ID of the test driver type
testTypeUri	String	URI of test type (Oracle Load Testing, Oracle Functional Testing, or Custom)
testTypeName	String	Name of test type

The following table lists the methods supported in the TestDriverType resource.

Table 67-5 Supported Methods for TestDriverType Resource

Method	Description	Sample URI
LIST (GET without context_id)	Returns a list of a test driver types	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_types
GET	Returns a test driver type by ID.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_types/1

67.3.3 TestDriver Resource

The TestDriver (Test Driver) resource is the package of software that Enterprise Manager uses to generate tests or workload against test systems based on a deployment plan.

Table 67-6 TestDriver Resource Data Model

Field	Type	Description
uri	String	URI of the resource
name	String	Name of the test driver
testDriverTypeUri	String	URI of the test driver type being set to this test driver
testDriverTypeName	String	Test driver type name of the test driver
version	String	Version of the test driver
description	String	Description of the test driver
contextId(guid)	String	Context ID of the test driver
resultsStorage	String	Result storage type of the Oracle Functional Testing test driver
resultFileSystem	OftRfsEntity	Detailed result file system information for Oracle Functional Testing test driver, if the 'resultsStorage' attribute is 'rfs'.

Table 67-7 Supported Methods for the TestDriver Resource

Method	Description	Sample URI
LIST (GET without context_id)	Returns a list of test drivers	/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers
GET	Returns a test driver by GUID	/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers/C0D0F1A8F11A2EA1E040E50A42BB70CF

OftRfsEntity Subtype

The OftRfsEntity (Oracle Functional Testing RFS Entity) subtype represents a NFS (Network File System) that provides the file storage service, and optional access to the stored file with HTTP protocol, for the end user.

Table 67-8 OffRfsEntity Subtype

Field	Type	Description
name	String	Name of the result file system
exportPath	String	Export path for the result file system
httpAccessUrl	String	HTTP URL to access the result file system

67.3.4 QuotaUsage Resource

The QuotaUsage (Quota Usage) resource represents usage quotas for Testers by specific roles, including the Number of Guest VMs (Virtual Machines), Number of CPUs, Memory (GB), Storage Size (GB), and Number of VUs (Virtual Users).

Table 67-9 QuotaUsage Resource Data Model

Field	Type	Description
uri	String	URI of the resource
maxNumberOfGuestVM	Long	Maximum number of guest Virtual Machines that are allowed to be assigned to the role
maxNumberOfCpu	Long	Maximum number of CPUs that are allowed to be assigned to the role
maxMemory	Double	Maximum amount of memory that is allowed to be assigned to the role
maxStorageSize	Double	Maximum amount of storage that is allowed to be assigned to the role
maxNumberOfVU	Long	Maximum number Virtual Users that are allowed to be assigned to the role
numberOfCpu	Long	Number of CPUs used
numberOfGuestVM	Long	Number of guest Virtual Machines used
memory	Double	Amount of memory
storageSize	Double	Amount of storage used
numberOfVU	Long	Number of Virtual Users used

The following table lists the methods supported in the QuotaUsage resource.

Table 67-10 Supported Methods for QuotaUsage Resource

Method	Description	Sample URI
GET	Returns quota and usage of current user.	/em/websvcs/restful/extws/cloudservices/taas/v1/quota_usage/user_quota_usage

67.3.5 TestAsset

A Test Asset is a collection of test artifacts (scenarios, scripts, tests) that can be executed on a test environment. A test asset defines the actions that need to be executed to reproduce the workload against the test environment.

Table 67-11 Test Asset Resource Data Model

Field	Type	Description
uri	String	URI of the resource
name	String	Name of the test asset
testDriverTypeUri	String	URI of the test driver type of the test asset. (Oracle Functional Testing, Oracle Load Testing, or Custom test drivers)
testDriverTypeName	String	Name of the test driver type of the test asset (Oracle Functional Testing, Oracle Load Testing or Custom test drivers)
applicationUri	String	URI of the application being associated with this test asset
applicationName	String	Name of the application being associated with this test asset
tags	String	Tags of the test asset. A tag is a keyword assigned to an asset. Tags help describe the test asset and allows it to be found again in browsing or searching.
lastModified	String (ISO 8601 date)	Last time the test asset was modified
owner	String	User name of the owner
contextId(guid)	String	Context ID of the test asset
oltTestAssetSettings	OltTestAssetSettings	Specific test asset settings for Oracle Load Testing test asset.
oftTestAssetSettings	OfTestAssetSettings	Specific test asset settings for Oracle Functional Testing test asset
customTestAssetSettings	CustomTestAssetSettings	Specific test asset settings for Custom test asset

The following table lists the methods supported in the TestAsset resource.

Table 67-12 Supported Methods for TestAsset Resource

Method	Description	Sample URI
LIST (GET without context_id)	Returns a list of test assets being published to current user	/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets
GET	Returns attributes of test asset by GUID.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/C0D0F1A8F11A2EA1E040E50A42BB70CF

OltTestAssetSettings Subtype

Use the OltTestAssetSettings subtype to provide specific test settings for the Oracle Load Testing test asset.

Table 67-13 OltTestAssetSettings Subtype

Field	Type	Description
vuCountEditable	Boolean	Whether script VU counts are editable
rampupSettingEditable	Boolean	Whether rampup is editable
endConditionEditable	Boolean	Whether end condition is editable
oltScenarioFileDownloadUri	String	URI of the Oracle Load Testing test scenario file download location
oltScenarioUri	String	URI of the Oracle Load Testing scenario details

OfTestAssetSettings Subtype

Use OfTestAssetSettings subtype to provide specific test settings for the Oracle Functional Testing test asset.

Table 67-14 OfTestAssetSettings Subtype

Field	Type	Description
scriptDetailsUri	String	URI for the Oracle Functional Testing script details
scriptFileUri	String	URI used to indicate the download URL for the Oracle Functional Testing script zip file

CustomTestAssetSettings Subtype

Use the CustomTestAssetSettings subtype to provide specific test settings for the Oracle Custom test asset.

Table 67-15 CustomTestAssetSettings Subtype

Field	Type	Description
scriptFileDownloadUri	String	URI of the custom script file download location
customParametersUri	String	URI of the custom parameters

67.3.6 OltScenario

OltScenario (Oracle Load Testing OLT Scenario) represents detail scenario information for an Oracle Load Testing Test Asset.

Table 67-16 OltScenario Resource Data Model

Field	Type	Description
uri	String	URI of the resource
testAssetContextId	String	Context ID of the test asset
testAssetUri	String	URI of the test asset
hardwareEstimationAvailable	Boolean	Whether hardware estimation is available for this scenario
rampupDescription	String	Description of test asset default rampup setting
endConditionDescription	String	Description of test asset default end condition
scriptVuCounts	OltScript	VU counts for scripts in the scenario

The following table lists the method supported in the OltScenario resource.

Table 67-17 Supported Method for OltScenario Resource

Description	Sample URI
Returns Oracle Load Testing Scenario	em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/DF34956DD08E27AE040F50A351D3DB5/olt_scenario

OltScript Subtype

Use the OltScript subtype to identify the Oracle Load Testing script.

Table 67-18 OltScript Subtype

Field	Type	Description
name	String	Name of the script
vuCount	Integer	Number of virtual user count

67.3.7 CustomParameters

Custom Parameters is a collection of custom parameter settings for custom Test Asset or custom Trial.

Table 67-19 CustomParameters Resource Data Model

Field	Type	Description
uri	String	URI of the resource

Table 67-19 (Cont.) CustomParameters Resource Data Model

Field	Type	Description
parameters	List of CustomParameter	List of custom parameters

The following table lists the method supported in the CustomParameters resource.

Table 67-20 Supported Method for CustomParameter Resource

Method	Description	Sample URI
GET	Returns custom parameters	<ul style="list-style-type: none"> From custom test asset: em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/DF34956DD08E27AE040F50A351D3DB5/custom_parameters From custom trial: em/websvcs/restful/extws/cloudservices/taas/v1/trials/E06DE62ACC497B71E040F50A351D66D0/custom_parameters

CustomParameter Subtype

The customParameter subtype is used in custom test asset or custom trial. Each customParameter represents a custom defined parameter.

Table 67-21 CustomParameter Subtype

Field	Type	Description
name	String	Name of the parameter
value	String	Value of the parameter
defaultValue	String	Default value of the parameter
configurable	Boolean	Is the parameter configurable

67.3.8 OFTAssetScript Resource

OFTAssetScript (Oracle Functional Testing Asset Script) represents the detailed data for a script (in zip format) of an Oracle Functional Testing test asset. URI for more detailed data (if available), for example, the Open Script script information, databanks, playback settings, are retrievable from this resource.

Table 67-22 OFTAssetScript Resource Data Model

Field	Type	Description
uri	String	URI of the resource
testAssetContextId	String	Context ID for the test asset
testAssetUri	String	URI for the test asset

Table 67-22 (Cont.) OFTAssetScript Resource Data Model

Field	Type	Description
scripts	List of OftScriptEntity	List of detailed data for each Open Script script inside this asset script zip file
urlsInsideScripts	List of String	List of URLs inside the Open Script scripts of this Oracle Functional Testing asset script zip file
csvDatabanksUri	String	URI for the resource that represents the comma-separated value (CSV) databanks
playbackSettingsUri	String	URI for the resource that represents the playback settings
dbDatabanksUri	String	URI the resource that represents the database databanks

The following table lists the methods supported in the OFTAssetScript resource.

Table 67-23 Supported Methods for OFTAssetScript Resource

Method	Description	Sample URI
GET	Returns Oracle Functional Testing test asset script by asset GUID.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/E3F48FC047CCE9E5E040F50A2D1E128E/oft_script_details

OftScriptEntity Subtype

Use the OftScriptEntity subtype to provide the specific details for the Oracle Functional Testing script entity.

Table 67-24 OftScriptEntity Subtype

Field	Type	Description
name	String	Name of the Open Script script
type	String	Type of Open Script script
version	String	Version of the Open Script script
encrypted	Boolean	Indicates if the script is encrypted or not
modules	List of OftScriptModuleEntity	Modules defined and used in this Open Script script

OftScriptModuleEntity Subtype

Use the OftScriptModuleEntity subtype to provide the specific details for the Oracle Functional Testing script module entity.

Table 67-25 OftScriptModuleEntity Subtype

Field	Type	Description
name	String	Name of the Open Script module

67.3.9 OftAssetScriptCsvDatabanks

The OftAssetScriptCsvDatabanks (Oracle Functional Testing Asset Script Comma-Separated Values Databanks) resource represents a list of CSV databank. The OFT Asset Script CSV Databanks resource is represented with type CsvDatabankCollection.

Databanks are used to hold unlimited amounts of input data that can be automatically fed into your Web application.

Table 67-26 OftAssetScriptCsvDatabanks Resource Data Model

Field	Type	Description
uri	String	URI of the resource
testAssetContextId	String	Context ID of the test asset
testAssetUri	String	URI for the test asset
scriptDetails	String	URI for the asset script details
csvDatabanks	List of OftAssetCsvDatabankEntity	List of detailed data for all CSV databanks inside the Oracle Functional Testing asset script

The following table lists the method supported in the OftAssetScriptCsvDatabanks resource.

Table 67-27 Supported Method for OftAssetScriptCsvDatabanks Resource

Method	Description	Sample URI
LIST (GET without context_id)	Returns a list of csv databanks for the specified test asset script	/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/E3F48FC047CCE9E5E040F50A2D1E128E/oft_script_details/csv_data_banks

CsvDatabank Subtype

Use the CsvDatabank subtype to provide the specific details for the Oracle Functional Testing asset script resource.

Table 67-28 CsvDatabank Subtype

Field	Type	Description
name	String	Name of the csv databank
contents	String	Contents inside the comma-separated value (CSV) databank

67.3.10 OftPlaybackSettings Resource

The OftPlaybackSettings (Oracle Functional Testing Playback Settings) resource represents all the playback settings configuration for a script.

Table 67-29 OftPlaybackSettings Resource Data Model

Field	Type	Description
uri	String	URI of the resource
testAsset ContextId	String	Context ID for the test asset
TestAsset Uri	String	URI for the test asset
scriptData ilsUri	Script	URI for the asset script details
values	String	Playback settings configuration contents for the asset script

The following table lists the method supported in the OftPlaybackSettings resource.

Table 67-30 Supported Methods for OftPlaybackSetting Resource

Method	Description	Sample URI
GET	Returns playback settings for specified Oracle Functional Testing asset script	/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/E3F48FC047CCE9E5E040F50A2D1E128E/oft_script_details/playback_settings

67.3.11 OftDatabaseDatabanks

The OftDatabaseDatabanks (Oracle Functional Testing Database Databanks) resource represents a list of database databanks for a specified Oracle Functional Testing test asset. OftDatabaseDatabanks is represented with type DbDatabankCollection.

Databanks are used to hold unlimited amounts of input data that can be automatically fed into your Web application.

Table 67-31 OftDatabaseDatabanks Resource Data Model

Field	Type	Description
uri	String	URI of the resource
testAssetContextId	String	Context ID for the test asset
testAssetUri	String	URI for the test asset
scriptDetailsUri	String	URI for the asset script details
databaseDatabanks	List of OftScriptDbData bankEntity	List of detailed data for all database databanks inside the Oracle Functional Testing asset script

The following table lists the methods supported in the OftDatabaseDatabanks resource.

Table 67-32 Supported Methods for OftDatabaseDatabanks Resource

Method	Description	Sample URI
LIST (GET without id parameter)	Returns a list of database databanks for the specified test asset script	/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/E3F708CCD6CAC1E6E040F50A2D1E4ADE/oft_script_details/db_data_banks

OftScriptDbDatabankEntity Subtype

Use the OftScriptDbDatabankEntity subtype to provide the specific details for the Oracle Functional Testing script database databank entity resource.

Table 67-33 OftScriptDbDatabankEntity Subtype

Field	Type	Description
alias	String	Alias of the database databank
driver	String	Driver for the database databank
connectUrl	String	Connection URL for the database databank
userName	String	User name for the database databank
sql	String	SQL string defined inside the database databank

67.3.12 TestEnvironment

TestEnvironment is a collection of resources that represents the entire application stack.

Table 67-34 TestEnvironment Resource Data Model

Field	Type	Description
uri	String	URI of the resource

Table 67-34 (Cont.) TestEnvironment Resource Data Model

Field	Type	Description
name	String	Name of the test environment
applicationUri	String	URI of the application of this test environment.
applicationName	String	Name of the application of this test environment
tags	String	Tags of the test environment
owner	String	User name of the owner of this test environment
description	String	Description of the test environment
lastModified	String (ISO 8601 date)	Last modified date of the test environment
contextId	String	Context ID (GUID) of the test environment

The following table lists the methods supported in the TestEnvironment resource.

Table 67-35 Supported Methods for TestEnvironment Resource

Method	Description	Sample URI
LIST (GET without ID parameter)	Returns a list of test environments being published to current user	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environments
GET	Returns test environment by GUID	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environments/C0D0F1A8F11A2EA1E040E50A42BB70CF

67.3.13 Test

Note: Test is a parent resource of the Trial resource.

Testers use this resource to create tests from test assets and test environments to perform testing activities. Testers create tests using test assets and environments that have been assigned to them by the Test Administrator.

Table 67-36 Test Resource Data Model

Field	Type	Description
uri	String	URI of the resource
name	String	Name of the test. When using the POST method, name is required. When using the PUT method, name is optional.
testDriverTypeUri	String	URI of the test driver type
testDriverTypeName	String	Name of the test driver type
description	String	Description of the test. [POST] [PUT] optional

Table 67-36 (Cont.) Test Resource Data Model

Field	Type	Description
testAssets	List of AssetInTest Entity	List of the test assets of this test. For Oracle Load Testing or custom test, one asset is used. For Oracle Functional Testing test, one or more test assets could be defined.[POST][PUT] required
testEnvironment Uri	String	URI of the test environment of this test
testEnvironment Name	String	Name of the test environment of this test
useEnvironment Library	Boolean	Returns <i>true</i> if the associated test environment is from 'my library'. Returns <i>false</i> if the associated test environment is an existing Enterprise Manager target
systemTargetUri	String	Returns <i>true</i> if the associated test environment is from 'my library'. Returns <i>false</i> if the associated test environment is an existing Enterprise Manager target
testDriverUri	String	URI of the test driver of this test
testDriverName	String	Name of the test driver of this test
replaceUrls	List of ReplaceUrl	A list of replace URLs for this test asset. Only for Oracle Functional Testing test, multi (more than one) replace URLs are supported. [POST][PUT] optional, if null using default setting.
trialsUri	String	URI of all trials of this test
contextId(guid)	String	GUID of the test
testEnvironment ContextId	String	GUID of the test environment. [POST][PUT] optional.
systemTargetContextId	String	GUID of the Enterprise Manager target. [POST][PUT] optional.
testDriverContext Id	String	GUID of the test driver. [POST][PUT] optional.

The following table lists the methods supported in the Test resource.

Table 67-37 Supported Methods for Test Resource

Method	Description	Sample URI
LIST (GET without context_id)	Returns a list of tests of the current user	/em/websvcs/restful/extws/cloudservices/taas/v1/tests
GET	Returns test by GUID as context_id	/em/websvcs/restful/extws/cloudservices/taas/v1/tests/C0D0F1A8F11A2EA1E040E50A42BB70CF
POST	Create a new test. context_id should be null in request. It returns the URI of new created test.	/em/websvcs/restful/extws/cloudservices/taas/v1/tests/

Table 67-37 (Cont.) Supported Methods for Test Resource

Method	Description	Sample URI
PUT	Update attributes of a test	/em/websvcs/restful/extws/cloudservices/taas/v1/tests/C0D0F1A8F11A2EA1E040E50A42BB70CF
DELETE	Delete a test	/em/websvcs/restful/extws/cloudservices/taas/v1/tests/C0D0F1A8F11A2EA1E040E50A42BB70CF

AssetInTestEntity Subtype

Use the AssetInTestEntity subtype to provide the specific details for the test asset used in the Test resource.

Table 67-38 AssetInTestEntity Subtype

Field	Type	Description
testAssetContextId	String	Context ID of the test asset resource
testAssetUri	String	GUID of the test environment. [POST][PUT] optional.
testAssetName	String	Name of the test asset

ReplaceUrl Subtype

Represents a URL replacing a recorded script within test asset. While a trial is running, a URL starting with the specified segment will be replaced by the given string before the URL request is sent.

Table 67-39 ReplaceUrl Subtype

Field	Type	Description
originalUrl	String	Original recorded URL in the script of the Test Asset. This field is optional for the POST and PUT methods.
newUrl	String	New URL to replace original URL This field is optional for the POST and PUT methods.
replaceType	String	Value of KEEP_SAME, FROM_APPLIANCE, SPECIFIED. KEEP_SAME: newUrl is ignored. FROM_APPLIANCE newUrl is set from test environment appliance. SPECIFIED: originalUrl is replaced by newUrl that provided by user.

67.3.14 Trial

Note: Trial is a child resource of Test.

Testers to create and run trials from the test instances that have been created. The Tester runs trials on the test asset and environment, monitors ongoing trials, and analyzes the results of completed trials.

Table 67-40 Trial Resource Model Data Model

Field	Type	Description
uri	String	URI of the resource
name	String	Name of the trial. [POST] required [PUT] optional
testUri	String	URI of the associated test
testName	String	Name of the associated test
testContextId	String	Context ID of the test. [POST][PUT] required
testEnvironmentInstanceContextId	String	Context ID of the test environment instance. [POST][PUT] required if Test Environment is selected by its Test, and testEnvironmentInstanceName testEnvironmentInstancePassword are not provided
testEnvironmentInstanceUri	String	URI of the associated test environment instance
testEnvironmentInstanceName	String	Name of the associated test environment instance. [POST] [PUT] required if Test Environment is selected by its Test, and testEnvironmentInstanceContextId is not provided
testEnvironmentInstancePassword	String	Password of the new environment instance is going to create. [POST][PUT] required if Test Environment is selected by its Test, and testEnvironmentInstanceContextId is not provided
testEnvironmentInstanceStopDelaySeconds	Long	Stop test environment instance delay seconds after trial complete. [POST][PUT] optional
testEnvironmentInstanceDeleteDelaySeconds	Long	Delete test environment instance delay seconds after trial complete. [POST][PUT] optional, ignored if the testEnvironmentInstanceContextId is provided.
testDriverInstanceContextId	String	Context ID of the test driver instance. [POST][PUT] required if testDriverInstanceName and testDriverInstancePassword are not provided
testDriverInstanceUri	String	URI of the test driver instance
testDriverInstanceName	String	Name of test driver instance. [POST][PUT] required if testDriverInstanceContextId is not provided.
testDriverInstancePassword	String	Password of the new test driver instance is going to create. [POST][PUT] required if testDriverInstanceContextId is not provided.
testDriverInstanceStopDelaySeconds	Long	Delay seconds to stop the test driver instance after trial complete. [POST][PUT] optional
testDriverInstanceDeleteDelaySeconds	Long	Delay seconds to delete test driver instance after trial is complete. [POST][PUT] optional, ignored if the testDriverInstanceContextId is provided.
description	String	Description of the trial. [POST][PUT] optional
owner	String	User name of the user of this trial
status	String	Status of this trial
startTime	String (ISO 8601 date time)	Scheduled start time of this trial. [POST][PUT] optional

Table 67-40 (Cont.) Trial Resource Model Data Model

Field	Type	Description
endTime	String (ISO 8601 date time)	End time of this trial.
testingExistedSystem	Boolean	Test is defined as testing existed target system
executionLog	String	Execution log of the trial
metricsUri	String	URI of the Enterprise Manager metrics collected by the trial.
awrDownloadUri	String	URI of the AWR report download place generated by the trial.
operationsUri	String	URI of the operations available for the trial.
contextId(guid)	String	GUID of the trial
oltTrialSettings	String	Specific trial settings for Oracle Load Testing. [POST][PUT] optional, using default setting from test asset if null
customTrialSettings	String	Specific trial settings for Custom.[POST][PUT] optional, using default setting from test asset if null.
oftAssetExecutions	String	Specific Oracle Functional Testing trial asset execution configuration and result data. [POST][PUT] optional, using default settings from test assets if this is null

The following table lists the methods supported in the Trial resource.

Table 67-41 Supported Methods for Trial Resource

Method	Description	Sample URI
LIST (GET without context_id parameter)	Returns a list of trials of a test being owned by current user.	/em/websvcs/restful/extws/cloudservices/taas/v1/trials
GET	Returns a trial by context_id (GUID)	/em/websvcs/restful/extws/cloudservices/taas/v1/trials/C0D0F1A8F11A2EA1E040E50A42BB70CE
POST	Creates a new trial	/em/websvcs/restful/extws/cloudservices/taas/v1/trials
PUT	Updates a trial by context_id.	/em/websvcs/restful/extws/cloudservices/taas/v1/trials/C0D0F1A8F11A2EA1E040E50A42BB70CE
DELETE	Deletes a trial by context_id.	/em/websvcs/restful/extws/cloudservices/taas/v1/trials/C0D0F1A8F11A2EA1E040E50A42BB70CE

OltTrialSettings Subtype

Use the OltTrialSettings subtype to provide specific trial settings for the Oracle Load Testing trial.

Table 67-42 Oracle Load Testing Trial Settings Subtype

Field	Type	Description
oltSessionName	String	Name of the Oracle Load Testing session
oltSessionUri	String	URI of the Oracle Load Testing session resource
rampup	OltRampup	Oracle Load Testing rampup setting. [POST][PUT] optional, using default setting from test asset if null
endCondition	OltEndCondition	Oracle Load Testing trial end condition setting. [POST][PUT] optional, using default setting from test asset if null
scriptVuCounts	OltScript	Script VU counts setting. Refer to the details on OltScript in OltTestAssetSettings. [POST][PUT] optional, using default setting from test asset if null
numberOfAgentDeployments	Long	Number of agent deployments

OltRampup Subtype

Use the OltRampup subtype to provide the specific details for the rampup settings used in the Oracle Load Testing trial. OltRampup represents the rate at which an OLT trial starts running virtual users.

Table 67-43 OltRampup Subtype

Field	Type	Description
rampupOption	Integer	Rampup setting option. Value from 1,2,3,4. <ol style="list-style-type: none"> 1. X user every X seconds 2. X user every X iterations 3. X percent every X seconds 4. X percent every X iterations
user	Integer	Number of users [POST][PUT] required if rampupOption 1,2
percent	Double	Number of percent [POST][PUT] required if rampupOption 3,4 <i>percent</i> - Specifies a percentage of the virtual users to start at a time based on the <i>After</i> setting. <i>After every</i> - Specifies how often the specified number or percentage of virtual users start running. <i>After every</i> has the following options: seconds, iterations.
seconds	Long	Number of seconds [POST][PUT] required if rampupOption 1,3
iterations	Long	Number of iterations [POST][PUT] required if rampupOption 2,4

OltEndCondition Subtype

Use the OltEndCondition subtype to provide the specific end conditions used in the Oracle Load Testing trial.

Table 67-44 OltEndCondition Subtype

Field	Type	Description
endConditionOption	Integer	End condition option. Value from 1,2. 1: end after X seconds 2: end after X iterations
afterSeconds	Long	Number of seconds. [POST][PUT] required if endConditionOption 1
afterIterations	Long	Number of iterations. [POST][PUT] required if endConditionOption 2

CustomTrialSettings Subtype

Use the CustomTrial Settings subtype to provide the specific custom trial settings used in the trial resource.

Table 67-45 CustomTrialSettings Subtype

Field	Type	Description
resultAvailable	Boolean	States whether the custom result is available. This field is read only.
resultStatus	String	Status of custom result. Value from RESULT_PASSED, RESULT_FAILED, RESULT_PASSED_WITH_WARN
resultDownloadUri	String	URI of result file download place.
customParametersUri	String	URI of custom parameters.
parameters	List of CustomParameter	The custom parameters setting for custom trial. Refer to CustomParameter definition on CutomTestAssetSettings. [POST][PUT] optional, using default setting from test asset if null.

OftAssetExecutionCollection Subtype

Use the OftAssetExecutionCollection subtype to provide the specific Oracle Functional Testing asset execution collection settings used in the trial resource.

Table 67-46 OftAssetExecutionCollection Subtype

Field	Type	Description
trialContextId	String	Context ID for the trial
trialUri	String	URI for the trial
totalAssets	Integer	Number of total assets for this trial.
passedAssets	Integer	Number of passed assets for this trial.
failedAssets	Integer	Number of failed assets for this trial.

Table 67-46 (Cont.) OftAssetExecutionCollection Subtype

Field	Type	Description
warningAssets	Integer	Number of warning assets for this trial.
notExecutedAssets	Integer	Number of not executed assets for this trial.
assetExecutions	List of OftTrialAssetExecution	List of executions that represent the execution and playback of all asset scripts for this trial.

67.3.15 Metric

Enterprise Manager target metric monitored by a Trial.

Table 67-47 Metric Resource Data Model

Field	Type	Description
uri	String	URI of the resource
contextId(trial_metric_id)	String	Trial metric ID of the metric.
trialContextId	Long	Context ID the trial refers to
trialUri	String	URI of the trial
metricName	String	Name of the metric
metricValuesUri	String	URI of MetricValues

The following table lists the methods supported in the Metric resource.

Table 67-48 Supported Methods for Metric Resource

Method	Description	Sample URI
LIST (GET without context_id parameter)	Returns a list of metrics	em/websvcs/restful/extws/cloudservices/taas/v1/trials/E0306FAA6635149DE040F50A351D0350/metrics
GET	Returns a metric	em/websvcs/restful/extws/cloudservices/taas/v1/metrics/1085

67.3.16 MetricValue

Note: Enterprise Manager metric value.

The value of a metric at a specific time stamp.

Table 67-49 MetricValue Resource Data Model

Field	Type	Description
metricContextId	String	Trial metric ID of the metric
metricUri	String	URI of the metric
metricName	String	Name of the metric
metricValue	Double	Number of metric value
collectionDate	String (ISO 8601 date)	Date and time value when metric value is collected.

The following table lists the method supported in the MetricValue resource.

Table 67-50 Supported Method for MetricValue Resource

Method	Description	Sample URI
LIST (GET without context_id parameter)	Returns a list of metric values	em/websvcs/restful/extws/cloudservices/taas/v1/metrics/1085/metric_values

67.3.17 OltSession

Note: Only application to Oracle Load Testing trial.

The OltSession (Oracle Load Testing Session) associated with a Oracle Load Testing trial.

Table 67-51 OltSession Resource Data Model

Field	Type	Description
uri	String	URI of this entity
contextId(olt session run id)	String	Session run ID of the Oracle Load Testing session
trialUri	String	URI of the trial
trialContextId	String	Context of the trial
oltCountersUri	String	URI of the Oracle Load Testing counters
sessionName	String	Name of the Oracle Load Testing session
startTime	String (ISO 8601 date)	Start time of the session
finishTime	String (ISO 8601 date)	Finish time of the session

The following table lists the methods supported in the OltSession resource.

Table 67-52 Supported Methods for OltSession Resource

Method	Description	Sample URI
GET	Returns an Oracle Load Testing session	em/websvcs/restful/extws/cloudservices/taas/v1/trials/E082496BD7336A9EE040F50A351D4F28/olt_session

67.3.18 OltCounter

Note: Only applicable to Oracle Load Testing trial.

The OltCounter (Oracle Load Testing Counter) monitored by Oracle Load Testing trial.

Table 67-53 OltCounter Resource Data Model

Field	Type	Description
uri	String	URI of this entity
oltSessionContextId	String	ID of the counter
oltSessionUri	String	URI of the Oracle Load Testing session
counterName	String	Name of the counter. For example, Hits/sec, Number of VUs, and Trans/sec
objectName	String	Script object name of the counter
instanceName	String	Step instance name of the counter. E.g. {Run: MedRecAppScript}. {[2] Oracle WebLogic Server - Medical Record Sample Application}
niceName	String	User-friendly display name of the counter
oltCounterValuesUri	String	URI of OltCounterValues

The following table lists the methods supported in the OltCounter resource.

Table 67-54 Supported Methods for OltCounter Resource

Method	Description	Sample URI
LIST (GET without context_id parameter)	Returns a list of Oracle Load Testing counters	em/websvcs/restful/extws/cloudservices/taas/v1/olt_sessions/81/olt_counters
GET	Returns an Oracle Load Testing counter	em/websvcs/restful/extws/cloudservices/taas/v1/olt_counters/81/1671

67.3.19 OltCounterValue

The value of Oracle Load Testing counter at specific time stamp.

Table 67-55 OltCounterValue Resource Data Model

Field	Type	Description
oltSessionUri	String	URI of the Oracle Load Testing session
oltCounterUri	String	URI of the Oracle Load Testing counter
counterValue	Double	Value of the counter
counterTime	String (ISO 8601 date)	Time the counter value is collected.

The following table lists the method supported in the OltCounterValue resource.

Table 67-56 Supported Method for OltCounterValue Resource

Method	Description	Sample URI
LIST (GET without context_id parameter)	Returns a list of Oracle Load Testing counters	em/websvcs/restful/extws/cloudservices/taas/v1/olt_counters/81/1671/olt_counter_values

67.3.20 OffTrialAssetExecution

This resource represents details (configuration and results) of an Oracle Functional Testing test asset script execution (playback).

Table 67-57 OffTrialAssetExecution Resource Data Model

Field	Type	Description
uri	String	URI of the resource
contextId	String	Context ID for the Oracle Functional Testing trial asset execution.
trialContextId	String	Context ID of the Oracle Functional Testing trial
trialUri	String	URI of the Oracle Functional Testing trial
assetContextId	String	Context ID of the asset
assetUri	String	URI of the asset
configuration	AssetConfigurationEntity	Configuration of the Oracle Functional Testing trial asset execution.
executionResult	AssetResultEntity	Result of the Oracle Functional Testing trial asset execution.

The following table lists the method supported in the OffTrialAssetExecution resource.

Table 67-58 Supported Method for OffTrialAssetExecution Resource

Method	Description	Sample URI
GET	Returns data of an Oracle Functional Testing trial execution by trial and execution context ID	/em/websvcs/restful/extws/cloudservices/taas/v1/trials/E3F85B2946C890BAE040F50A2D1E2D1B/executions/E3F85B2946C890BAE040F50A2D1E2D1B

AssetConfigurationEntity Subtype

Use the AssetConfigurationEntity subtype to provide the specific asset configuration entity settings used in the Oracle Functional Testing Trial Asset Execution resource.

Table 67-59 AssetConfigurationEntity Subtype

Field	Type	Description
runAlways	Boolean	Configure if the execution will always run without considering previous errors.
continueOnWarning	Boolean	Configure if the execution will always run without considering previous errors.
continueOnError	Boolean	Configure if the execution will continue to run in the event there are errors in the previous execution.
playbackSettings	List of PlaybackSettingEntity	List of playback settings configuration.
csvDatabanks	List of CsvDatabankEntity	List of csv databanks configuration.
databaseDatabanks	List of DbDatabankEntity	List of database databanks configuration.
playbackSettingsUri	String	URI to access the modified playback settings configuration
csvDatabanksUri	String	URI to access the modified csv databanks configuration
dbDatabanksUri	String	URI to access the modified database databanks configuration

PlaybackSettingEntity Subtype

Use the PlaybackSettingEntity subtype to provide the specific playback entity settings used in the Oracle Functional Testing Trial Asset Execution resource.

Table 67-60 PlaybackSettingEntity Subtype

Field	Type	Description
name	String	Name of the playback setting field
value	String	Value of the playback setting field

CsvDatabankEntity Subtype

Use the CsvDatabankEntity subtype to provide the specific comma-separated databank entity settings used in the Oracle Functional Testing Trial Asset Execution resource.

Table 67-61 CSV Databank Entity Subtype

Field	Type	Description
name	String	Name of the csv databank
contents	String	Contents of the csv databank file

DbDatabankEntity Subtype

Use the DbDatabankEntity subtype to provide the specific database databank entity settings used in the Oracle Functional Testing Trial Asset Execution resource.

Table 67-62 Database Databank Entity Subtype

Field	Type	Description
alias	String	Alias of the database databank
driver	String	Driver of the database databank
connectUrl	String	Connection URL for the database databank.
userName	String	User name for the database databank.
password	String	Password for the database databank. [GET] not available for GET method.
sql	String	SQL string defined inside the database databank.

AssetResultEntity Subtype

Use the AssetResultEntity subtype to provide the specific asset result entity settings used in the Oracle Functional Testing Trial Asset Execution resource.

Table 67-63 Asset Result Entity Subtype

Field	Type	Description
trialContextId	String	Context ID for the trial
assetContextId	String	Context ID for the asset
executionResultUri	String	URI for the trial asset execution result.
overallResult	String	Overall result of the execution
status	String	Status of the asset result
iterations	Integer	Total iterations of the asset script execution.
totalUserDefinedTests	Integer	Amount of total user defined tests.
passedUserDefinedTests	Integer	Amount of passed user defined tests.

Table 67-63 (Cont.) Asset Result Entity Subtype

Field	Type	Description
failedUserDefinedTests	Integer	Amount of failed user defined tests
warningUserDefinedTests	Integer	Amount of warning user defined tests.
totalScriptActions	Integer	Amount of total script actions.
passedScriptActions	Integer	Amount of passed script actions.
failedScriptActions	Integer	Amount of failed script actions.
warningScriptActions	Integer	Amount of warning script actions.
totalSteps	Integer	Amount of total steps
execOrder	Integer	Order of this execution inside the Oracle Functional Testing trial all assets executions.
uniqueName	String	Unique name of the asset execution.
scriptName	String	Name of the script.
resultStorage	String	Result storage (local or rfs) of the asset execution.
zipResultUri	String	URI to the execution result zip
rfsLocation	String	Location of the asset execution stored on rfs.
stepDetailsUri	String	URI to the steps details of the executions.

67.3.21 TestDriverInstance

The instance of Test Driver.

Table 67-64 TestDriverInstance Resource Data Model

Field	Type	Description
uri	String	URI of the resource
name	String	Name of the test driver instance. [POST] required
status	String	Status of the test driver instance.
testDriverUri	String	URI of the test driver of the instance.
testDriverContextId	String	ID of the test driver. [POST] required
testDriverName	String	Name of the test driver of the instance.
owner	String	Owner of the test driver instance.
creationDate	String (ISO 8601 date)	Creation date of the test driver instance.
contextId(id)	Long	Context ID of the test driver instance
testDriverInstancePassword	String	Password of the new test driver instance. [POST] required

Table 67-64 (Cont.) TestDriverInstance Resource Data Model

Field	Type	Description
scheduledStartTime	String (ISO 8601 date)	Scheduled start time of the new instance. [POST] optional
scheduledDeleteTime	String (ISO 8601 date)	Scheduled delete time of the new instance. [POST] optional
operationsUri	String	URI of all available operations.

The following table lists the methods supported in the TestDriverInstance resource.

Table 67-65 Supported Methods for Test Driver Instance Resource

Method	Description	Sample URI
LIST (GET without context_id parameter)	List all test driver instances.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances
GET	Returns data of a test driver instance by context ID.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/C0D0F1A8F11A2EA1E040E50A42BB70CF
POST	Create a test driver instance.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances
DELETE	Delete the test driver instance by context ID.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/C0D0F1A8F11A2EA1E040E50A42BB70CF

67.3.22 TestEnvironmentInstance Resource

The instance of Test Environment.

Table 67-66 TestEnvironmentInstance Resource Data Model

Field	Type	Description
uri	String	URI of the resource
name	String	Name of the test environment instance. [POST] required
status	String	Status of the test environment instance
testEnvironmentContextId	String	Context id of the test environment. [POST] required
testEnvironmentUri	String	URI of the test environment of this instance.
testEnvironmentName	String	Name of the test environment of this instance.
owner	String	Owner of the test environment instance.

Table 67-66 (Cont.) TestEnvironmentInstance Resource Data Model

Field	Type	Description
creationDate	String (ISO 8601 date)	Creation date of the instance.
contextId	Long	ID of the test environment instance
testEnvironmentInstance Password	String	Password of the new test driver instance. [POST] required
scheduledStartTime	String (ISO 8601 date)	Scheduled start time of the new instance. [POST] optional
scheduledDeleteTime	String (ISO 8601 date)	Scheduled delete time of the new instance. [POST] optional
operationsUri	String	URI of available operations.

The following table lists the methods supported in the TestEnvironmentInstance resource.

Table 67-67 Supported Methods for Test Environment Instance Resource

Method	Description	Sample URI
LIST (GET without context_id parameter)	List all test environment instances.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances
GET	Returns data of a test environment instance by context ID.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances/C0D0F1A8F11A2EA1E040E50A42BB70CF
POST	Create a test environment instance.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances
DELETE	Delete the test environment instance by context id.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances/C0D0F1A8F11A2EA1E040E50A42BB70CF

67.3.23 Operation

An Operation represents one allowed operation on a resource, for example, TestEnvironmentInstance/TestDriverInstance/Trial.

The supported operations for test environment instance are: start, stop, restart.

The supported operations for test driver instance are: start, stop, restart, add_agents, remove_agent, acquire_agent.

The supported operation for trial is stop.

Table 67-68 Operation Resource Data Model

Field	Type	Description
uri	String	URI of the operation
name	String	Name of the operation
method	String	Method of the operation (POST)
parameters	List of OperationParameter	Parameters for Method

The following table lists the methods supported in the Operation resource.

Table 67-69 Supported Methods for Operation Resource

Method	Description	Sample URI
LIST (GET without context_id parameter)	List all operations of test environment/driver instances	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances/COD0F1A8F11A2EA1E040E50A42BB70CF/operations
POST	Perform an operation on instance.	<ol style="list-style-type: none"> /em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances/COD0F1A8F11A2EA1E040E50A42BB70CF/operations/start /em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances/COD0F1A8F11A2EA1E040E50A42BB70CF/operations/stop /em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/COD0F1A8F11A2EA1E040E50A42BB70CF/operations/add_agents Parameter:number of agent want to add. /em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/COD0F1A8F11A2EA1E040E50A42BB70CF/operations/remove_agent Parameters:context id of agent. /em/websvcs/restful/extws/cloudservices/taas/v1/tests/COD0F1A8F11A2EA1E040E50A42BB70CF/trials/COD0F1A8F11A2EA1E040E50A42BB70CF/operations/stop /em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/COD0F1A8F11A2EA1E040E50A42BB70CF/operations/acquire_agent Parameters:context id of agent.

OperationParameter Subtype

Use the OperationParameter subtype to provide the specific operation parameter settings used in the Operation resource.

Table 67-70 OperationParameter Subtype

Field	Type	Description
name	String	Name of the parameter
value	String	The parameter value
defaultValue	String	Default parameter value
isRequiredValue	Boolean	Whether the parameter is required
possibleValues	List of String	Possible values for the parameter
description	String	Description of parameter

67.3.24 TestType

The type of Test

Table 67-71 TestType Resource Data Model

Field	Type	Description
uri	String	URI of the resource
name	String	Test type name
contextId(id)	Long	ID of the test type

The following table lists the methods supported in the TestType resource.

Table 67-72 Supported Methods for Test Type Resource Model

Method	Description	Sample URI
LIST (GET without context_id parameter)	List all test types.	/em/websvcs/restful/extws/cloudservices/taas/v1/test_types
GET	Returns a test type	/em/websvcs/restful/extws/cloudservices/taas/v1/test_types/1

67.3.25 Target

Enterprise Manager target.

Table 67-73 Target Resource Data Model

Field	Type	Description
uri	String	URI of the resource

Table 67-73 (Cont.) Target Resource Data Model

Field	Type	Description
contextId	String	GUID of the target
targetName	String	Name of the target
targetType	String	Type of the target
status	Integer	Status of the target
statusDisplay	String	The display status of the target. For example, up, down, and so on
hostName	String	The host name of the target that on

The following table lists the methods supported in the Target resource.

Table 67-74 Supported Methods for Target Resource

Method	Description	Sample URI
LIST	Returns a list of targets	/em/websvcs/restful/extws/cloudservices/taas/v1/targets
GET	Returns a target	/em/websvcs/restful/extws/cloudservices/taas/v1/targets/C0D0F1A8F11A2EA1E040E50A42BB70CF

67.3.26 OltAgent

OltAgent (Oracle Load Testing Agent) represents an agent machine that can be used to run an Oracle Load Testing trial.

Table 67-75 OltAgent Resource Data Model

Field	Type	Description
uri	String	URI of the OLT agent
contextId	String	GUID of the OLT agent
hostName	String	Name of the OLT agent
status	String	Status of the OLT agent
ip	String	IP address of the OLT agent
port	String	Port of Agent service of Olt Agent
version	String	Version of OLT Agent
cpu	String	CPU count of OLT Agent
memory	String	Memory of OLT Agent, unit is MB.
storage	String	Storage of OLT Agent, unit is MB.

The following table lists the methods supported in the OltAgent resource.

Table 67-76 Supported Methods for OltAgent Resource

Method	Description	Sample URI
LIST	Returns a list of OLT Agent	<code>/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/C0D0F1A8F11A2EA1E040E50A42BB70CF/OltAgents</code>
GET	Returns an Agent	<code>/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/C0D0F1A8F11A2EA1E040E50A42BB70CF/OltAgents/C0D0F1A8F11A2EA1E040E50A42BB70CF</code>

67.4 Testing as a Service REST API Examples

The following are examples of how to use the TaaS REST API.

- [Viewing Details of all Applications](#)
- [Querying an Application by Context ID](#)
- [Viewing Details of All Test Assets](#)
- [Querying a Test Asset by Context ID](#)
- [Viewing Details of all Test Environments](#)
- [Querying a Test Environment by Context ID](#)
- [Viewing Details of all Test Drivers](#)
- [Querying a Test Driver by Context ID](#)
- [Querying Test Driver Type by Context ID](#)
- [Viewing Details of all Test Environment Instances](#)
- [Querying a Test Environment Instance by Context ID](#)
- [Creating a Test Environment Instance](#)
- [Executing an Operation on Test Environment / Driver Instance](#)
- [Deleting a Stopped Test Environment Instance](#)
- [Viewing Details of All Test Driver Instances](#)
- [Querying a Test Driver Instance by Context ID](#)
- [Creating a Test Driver Instance](#)
- [Deleting a Stopped Test Driver Instance](#)
- [Viewing Details of All Tests](#)
- [Querying a Test by Context ID](#)
- [Creating a Test](#)
- [Deleting a Test](#)
- [Viewing Details of All Trials](#)

- [Querying a Trial by Context ID](#)
- [Creating a New Trial](#)
- [Updating a Trial](#)
- [Deleting a Trial](#)

67.4.1 Viewing Details of all Applications

The table below shows the GET request configuration.

Table 67-77 GET Request Configuration for Listing all Applications

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/applications
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
applications",
  "items": {
    "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
applications/1",
    "contextId": "1",
    "name": "medrec"
  }
}
```

67.4.2 Querying an Application by Context ID

The table below shows the GET request configuration.

Table 67-78 GET Request Configuration for Querying an Application by Context ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/applications/1
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
applications/1", "contextId": "1",
  "name": "medrec"
}
```

67.4.3 Viewing Details of All Test Assets

The table below shows the GET request configuration.

Table 67-79 GET Request Configuration for Listing all Test Assets

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_assets", "items": {
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_assets/DCBDEA617F62EC63E040F20AA0512492", "contextId":
"DCBDEA617F62EC63E040F20AA0512492",
"name": "Asset001",
"testDriverTypeUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_driver_types/1", "testDriverTypeName": "OLT",
"applicationUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/applications/1", "applicationName": "medrec",
"lastModified": "1368603913000",
"owner": "TAASUSER1",
"vuCountEditable": "true",
"rampupSettingEditable": "true",
"endConditionEditable": "true"
}
}
```

67.4.4 Querying a Test Asset by Context ID

The table below shows the GET request configuration.

Table 67-80 GET Request Configuration for Querying a Test Assets by Context ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/ DCBDEA617F62EC63E040F20AA0512492
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_assets/DCBDEA617F62EC63E040F20AA0512492", "contextId":
"DCBDEA617F62EC63E040F20AA0512492",
```

```

"name": "Asset001",
"testDriverTypeUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_driver_types/1", "testDriverTypeName": "OLT",
"applicationUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/applications/1", "applicationName": "medrec",
"lastModified": "1368603913000",
"owner": "TAASUSER1",
"oltScenario": {
"scripts": {
"name": "MedReclScript",
"vuCount": "1"
},
"rampupOptionIndex": "3",
"rampupOptionLabel": "X Percent every Y Seconds",
"rampupUserOrPercent": "10.0",
"rampupSecondOrIteration": "10.0",
"endCondition": "As defined in the scenario: After each user plays 2 Iterations"
},
"vuCountEditable": "true",
"rampupSettingEditable": "true",
"endConditionEditable": "true"
}

```

67.4.5 Viewing Details of all Test Environments

The table below shows the GET request configuration.

Table 67-81 GET Request Configuration for Viewing all the Test Environments

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environments
Body	None
Request method	GET

A sample of the response received is shown below.

```

{
"uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environments", "items": {
"uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environments/DCBDF6F2FFC90069E040F20AA051215F", "contextId":
"DCBDF6F2FFC90069E040F20AA051215F",
"name": "MedrecEnv",
"applicationUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/applications/1", "applicationName": "medrec",
"owner": "TAASUSER1",
"lastModified": "1368604061000"
}
}

```

67.4.6 Querying a Test Environment by Context ID

The table below shows the GET request configuration.

Table 67-82 GET Request Configuration for Querying a Test Environment by Context ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "contextId": "DCBDF6F2FFC90069E040F20AA051215F",
  "name": "MedrecEnv",
  "applicationUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/applications/1", "applicationName": "medrec",
  "owner": "TAASUSER1",
  "lastModified": "1368604061000"
}
```

67.4.7 Viewing Details of all Test Drivers

The table below shows the GET request configuration.

Table 67-83 GET Request Configuration for Listing all Test Drivers

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers", "items": {
    "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "contextId": "DCBD49A045FFD35BE040F20AA05150F5",
    "name": "Default OLT",
    "testDriverTypeUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_types/1", "testDriverTypeName": "OLT"
  }
}
```

67.4.8 Querying a Test Driver by Context ID

The table below shows the GET request configuration.

Table 67-84 GET Request Configuration for Querying a Test Driver by Context ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers/DCBD49A045FFD35BE040F20AA05150F5
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "contextId": "DCBD49A045FFD35BE040F20AA05150F5",
  "name": "Default OLT",
  "testDriverTypeUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_types/1", "testDriverTypeName": "OLT"
}
```

67.4.9 Querying Test Driver Type by Context ID

The table below shows the GET request configuration.

Table 67-85 GET Request Configuration for Querying a Test Driver Type by Context ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_types/1
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_types/1", "contextId": "1",
  "name": "OLT",
  "testTypeUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_types/1", "testTypeName": "OLT"
}
```

67.4.10 Viewing Details of all Test Environment Instances

The table below shows the GET request configuration.

Table 67-86 GET Request Configuration for Viewing all Test Environment Instances

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environment_instances", "items": [
  {
    "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environment_instances/1", "contextId": "1",
    "name": "Medrec_11",
    "status": "Ready",
    "testEnvironmentUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName":
"MedrecEnv",
    "owner": "TAASUSER1",
    "creationDate": "1368604209000",
    "operations": {
      "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environment_instances/1/operations", "\\\ "items": [
        {
          "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environment_instances/1/operations/stop", "\\\ "contextId": "stop",
          "method": "POST"
        },
        {
          "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environment_instances/1/operations/restart", "contextId": "restart",
          "method": "POST"
        }
      ]
    }
  }
]
```

67.4.11 Querying a Test Environment Instance by Context ID

The table below shows the GET request configuration.

Table 67-87 GET Request Configuration for Querying a Test Environment Instance by Context ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/ test_environment_instances/1
Body	None

Table 67-87 (Cont.) GET Request Configuration for Querying a Test Environment Instance by Context ID

Feature	Description
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environment_instances/1", "contextId": "1",
  "name": "Medrec_11",
  "status": "Ready",
  "testEnvironmentUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName":
"MedrecEnv",
  "owner": "TAASUSER1",
  "creationDate": "1368604209000",
  "operations": {
    "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environment_instances/1/operations", "items": [
      {
        "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environment_instances/1/operations/stop", "contextId": "stop",
        "method": "POST"
      },
      {
        "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_environment_instances/1/operations/restart", "contextId": "restart",
        "method": "POST"
      }
    ]
  }
}
```

67.4.12 Creating a Test Environment Instance

The table below shows the POST request configuration.

Table 67-88 POST Request Configuration for Creating a Test Environment Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances
Body	<pre>{ "name": "testEnvInst1", "testEnvironmentContextId": "DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentInstancePassword": "Oracle123" "scheduledStartTime": null, "scheduledDeleteTime": null }</pre>

Table 67-88 (Cont.) POST Request Configuration for Creating a Test Environment Instance

Feature	Description
Request method	POST

A sample of the response received is shown below.

Method: POST

URI: `https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances`

Request:

Response:

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances/41", "contextId": "41",
  "name": "testEnvInst1",
  "status": "Scheduled",
  "testEnvironmentUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName": "MedrecEnv",
  "owner": "TAASUSER1",
  "creationDate": "1368772865392",
  "operations": {
    "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances/41/operations" }
}
```

67.4.13 Executing an Operation on Test Environment / Driver Instance

Note:

The executable operation depends on the status of the test environment instance. Operations are start, stop, and restart.

The table below shows the POST request configuration.

Table 67-89 POST Request Configuration for Executing an Operation on a Test Environment / Driver Instance

Feature	Description
URI	<code>/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances/1/operations/stop</code>
Body	None
Request method	POST

A sample of the response received is shown below.

```
Operation request has been submitted.
```

67.4.14 Deleting a Stopped Test Environment Instance

The table below shows the DELETE request configuration.

Table 67-90 DELETE Request Configuration for Deleting a Stopped Test Environment Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_environment_instances/21
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
TestEnvironmentInstanceEntity has been deleted.Context Id:21
```

67.4.15 Viewing Details of All Test Driver Instances

The table below shows the GET request configuration.

Table 67-91 GET Request Configuration for Viewing all Test Driver Instances

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances
Body	None
Request method	GET

A sample of the response received is shown below.

```
{ "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances", "items": { "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/1", "contextId": "1", "name": "ManualTDInst", "status": "Ready", "testDriverUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT", "owner": "TAASUSER1", "creationDate": "1368576000000", "operations": { "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/1/operations", "items": [ { "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/1/operations/stop", "contextId": "stop", "method": "POST" }, { "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/1/operations/restart", "contextId": "restart", "method": "POST" } ] } } }
```

67.4.16 Querying a Test Driver Instance by Context ID

The table below shows the GET request configuration.

Table 67-92 GET Request Configuration for Querying a Test Driver Instance by Context ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/1
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_driver_instances/1", "contextId": "1",
  "name": "ManualTDInst",
  "status": "Ready",
  "testDriverUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT",
  "owner": "TAASUSER1",
  "creationDate": "1368576000000",
  "operations": {
    "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_driver_instances/1/operations", "items": [
      {
        "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_driver_instances/1/operations/stop", "contextId": "stop",
        "method": "POST"
      },
      {
        "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_driver_instances/1/operations/restart", "contextId": "restart",
        "method": "POST"
      }
    ]
  }
}
```

67.4.17 Creating a Test Driver Instance

The table below shows the POST request configuration.

Table 67-93 POST Request Configuration for Creating a Test Driver Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/1
Body	{ <pre>"name": "testDriverInst1", "testDriverContextId": "DCBD49A045FFD35BE040F20AA05150F5", "testDriverInstancePassword": "Oracle123" "scheduledStartTime": null, "scheduledDeleteTime": null }</pre>

Table 67-93 (Cont.) POST Request Configuration for Creating a Test Driver Instance

Feature	Description
Request method	POST

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
  test_driver_instances/25", "contextId": "25",
  "name": "testDrvInst1",
  "status": "NotAvailable",
  "testDriverUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
  test_drivers", "owner": "TAASUSER1",
  "creationDate": "1368774079487",
  "operations": {
    "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
    test_driver_instances/25/operations" }
}
```

67.4.18 Deleting a Stopped Test Driver Instance

The table below shows the DELETE request configuration.

Table 67-94 DELETE Request Configuration for Deleting a Stopped Test Driver Instance

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_instances/25
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
TestDriverInstanceEntity has been deleted. Context Id:25
```

67.4.19 Viewing Details of All Tests

The table below shows the GET request configuration.

Table 67-95 GET Request Configuration for Viewing all Tests

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/tests
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/tests",
  "items": [
    {
      "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/tests/DCC7AC5803CF97B2E040F20AA05152EC", "contextId": "DCC7AC5803CF97B2E040F20AA05152EC",
      "name": "Test1",
      "testDriverTypeContextId": "1",

      "testDriverTypeUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_types/1", "testDriverTypeName": "OFT",
      "testAssets": {
        "testAssetContextId": "DCBDEA617F62EC63E040F20AA0512492",
        "testAssetUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/DCBDEA617F62EC63E040F20AA0512492",
        "testAssetName": "Asset001"
      },
      "testEnvironmentContextId": "DCBDF6F2FFC90069E040F20AA051215F",
      "testEnvironmentUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "\\
      "testEnvironmentName": "MedrecEnv",
      "useEnvironmentLibrary": "false"
      "testDriverContextId": "DCBD49A045FFD35BE040F20AA05150F5",
      "testDriverUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT",
      "mappingUrls": "xx.example.com:7011|FROM_APPLIANCE|MedRec/MedRec1/MedRecServer",
      "trialsUri": "://slc03rgd:5416/em/websvcs/restful/extws/cloudservices/taas/v1/tests/DCC7AC5803CF97B2E040F20AA05152EC/trials"
    }
  ]
}
```

67.4.20 Querying a Test by Context ID

The table below shows the GET request configuration.

Table 67-96 GET Request Configuration for Querying a Test by Context ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/tests/DCC7AC5803CF97B2E040F20AA05152EC
Body	None
Request method	GET

A sample of the response received is shown below.

```
{
  "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/tests/DCC7AC5803CF97B2E040F20AA05152EC", "contextId": "DCC7AC5803CF97B2E040F20AA05152EC",
  "name": "Test1",
  "testDriverTypeContextId": "1",
  "testDriverTypeUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_driver_types/1", "testDriverTypeName": "OLT",
  "testAssets": {
```

```
"testAssetContextId": "DCBDEA617F62EC63E040F20AA0512492",
"testAssetUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_assets/DCBDEA617F62EC63E040F20AA0512492",
"testAssetName": "Asset001"
},
"testEnvironmentContextId": "DCBDF6F2FFC90069E040F20AA051215F",
"testEnvironmentUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName":
"MedrecEnv",
"useEnvironmentLibrary": "false",
"testDriverContextId": "DCBD49A045FFD35BE040F20AA05150F5",
"testDriverUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT",
"replaceUrls": {
"originalUrl": "testserver2.us.example.com",
"newUrl": "MedRec/MedRec1/MedRecServer",
"replaceType": "FROM_APPLIANCE"
},
"trialsUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
tests/DCC7AC5803CF97B2E040F20AA05152EC/trials" }
```

67.4.21 Creating a Test

The table below shows the POST request configuration.

Table 67-97 POST Request Configuration for Creating a Test

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/tests
Body	<pre>{ "name": "Test100", "testAssets": { "testAssetContextId": "DCBDEA617F62EC63E040F20AA0512492" }, "testEnvironmentContextId": "DCBDF6F2FFC90069E040F20AA051215F", "testDriverContextId": "DCBD49A045FFD35BE040F20AA05150F5", "replaceUrls": { "originalUrl": "testserver2.us.example.com", "replaceType": "FROM_APPLIANCE" } }</pre>
Request method	POST

A sample of the response received is shown below.

```
{
"uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/tests/
DCE58A1CBF8B0D06E040F20AA0511AB5", "contextId": "DCE58A1CBF8B0D06E040F20AA0511AB5",
"name": "Test100",
"testDriverTypeContextId": "1",
"testDriverTypeUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_driver_types/1", "testDriverTypeName": "OLT",
"testAssets": {
"testAssetContextId": "DCBDEA617F62EC63E040F20AA0512492",
"testAssetUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
```

```

test_assets/DCBDEA617F62EC63E040F20AA0512492",
"testAssetName": "Asset001"
},
"testEnvironmentContextId": "DCBDF6F2FFC90069E040F20AA051215F",
"testEnvironmentUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName":
"MedrecEnv",
"useEnvironmentLibrary": "false",
"testDriverContextId": "DCBD49A045FFD35BE040F20AA05150F5",
"testDriverUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT",
"replaceUrls": {
"originalUrl": "testserver2.us.example.com",
"replaceType": "FROM_APPLIANCE"
},
"trialsUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
tests/DCE58A1CBF8B0D06E040F20AA0511AB5/trials" }

```

67.4.22 Updating a Test

The table below shows the PUT request configuration.

Table 67-98 PUT Request Configuration for Updating a Test

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/tests/ DCE58A1CBF8B0D06E040F20AA0511AB5
Body	<pre> { "name": "Test101", "testAssets":{ "testAssetContextId": "DCBDEA617F62EC63E040F20AA0512492", }, "testEnvironmentContextId": "DCBDF6F2FFC90069E040F20AA051215F", "testDriverContextId" : "DCBD49A045FFD35BE040F20AA05150F5" } </pre>
Request method	PUT

A sample of the response received is shown below.

```

{
"uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/tests/
DCE58A1CBF8B0D06E040F20AA0511AB5", "contextId": "DCE58A1CBF8B0D06E040F20AA0511AB5",
"name": "Test101",
"testDriverTypeContextId": "1",
"testDriverTypeUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_driver_types/1", "testDriverTypeName": "OLT",
"testAssets":{
"testAssetContextId": "DCBDEA617F62EC63E040F20AA0512492",
"testAssetUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_assets/DCBDEA617F62EC63E040F20AA0512492", "testAssetName": "Asset001"
},
"testEnvironmentContextId": "DCBDF6F2FFC90069E040F20AA051215F",
"testEnvironmentUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName":
"MedrecEnv",

```

```
"useEnvironmentLibrary": "false",
"testDriverContextId": "DCBD49A045FFD35BE040F20AA05150F5",
"testDriverUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT",
"replaceUrls": {
"originalUrl": "burepv14.us.example.com:7011",
"replaceType": "FROM_APPLIANCE",
"newUrl": "MedRec/MedRec1/MedRecServer"
},
"trialsUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
tests/DCE58A1CBF8B0D06E040F20AA0511AB5/trials" }
```

67.4.23 Deleting a Test

The table below shows the DELETE request configuration.

Table 67-99 DELETE Request Configuration for Deleting a Test

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/tests/DCE58A1CBF8B0D06E040F20AA0511AB5
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
TestEntity has been deleted. Context Id:DCE58A1CBF8B0D06E040F20AA0511AB5
```

67.4.24 Viewing Details of All Trials

The table below shows the GET request configuration.

Table 67-100 GET Request Configuration for Viewing all the Trials

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/trials
Body	None
Request method	GET

A sample of the response received is shown below.

```
{ "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
trials", "items": [ { "uri": "https://example.com/em/websvcs/restful/extws/
cloudservices/taas/v1/trials/DCC75B3C889F0463E040F20AA0514349", "contextId":
"DCC75B3C889F0463E040F20AA0514349", "name": "Trial1", "owner": "TAASUSER1",
"status": "ERROR_SUBMITTING", "startTime": "1368671518000", "testUri": "https://
example.com/em/websvcs/restful/extws/cloudservices/taas/v1/tests/
DCC7AC5803CF97B2E040F20AA05152EC", "testName": "Test1", "testContextId":
"DCC7AC5803CF97B2E040F20AA05152EC", "testAssetUri": "https://example.com/em/websvcs/
restful/extws/cloudservices/taas/v1/test_assets/DCBDEA617F62EC63E040F20AA0512492",
"testAssetName": "Asset001", "testEnvironmentUri": "https://example.com/em/websvcs/
restful/extws/cloudservices/taas/v1/test_environments/
```

```
DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName": "MedrecEnv",
"testEnvironmentInstanceUri": "https://example.com/em/websvcs/restful/extws/
cloudservices/taas/v1/test_environment_instances/1", "testEnvironmentInstanceName":
"MedrecEnv", "testEnvironmentInstanceContextId": "1", "testDriverUri": "https://
example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers/
DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT",
"testDriverInstanceUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_driver_instances/1", "testDriverInstanceContextId":
"1", "testDriverInstanceName": "ManualTDInst", "oltTrialSettings":
{ "scriptVuCounts": { "name": "MedReclScript", "value": "1" }, "rampupOptionIndex":
"3", "rampupOptionLabel": "X Percent every Y Seconds", "rampupUserOrPercent": "0.1",
"rampupSecondOrIteration": "5.0" } } ] }
```

67.4.25 Querying a Trial by Context ID

The table below shows the GET request configuration.

Table 67-101 GET Request Configuration for Querying a Trail by Context ID

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/trials/ DCC75B3C889F0463E040F20AA0514349
Body	None
Request method	GET

A sample of the response received is shown below.

```
{ "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/trials/
DCC75B3C889F0463E040F20AA0514349", "contextId": "DCC75B3C889F0463E040F20AA0514349",
"name": "Trial1", "owner": "TAASUSER1", "status": "ERROR_SUBMITTING", "startTime":
"1368671518000", "testUri": "https://example.com/em/websvcs/restful/extws/
cloudservices/taas/v1/tests/DCC7AC5803CF97B2E040F20AA05152EC", "testName": "Test1",
"testContextId": "DCC7AC5803CF97B2E040F20AA05152EC", "testAssetUri": "https://
example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/
DCBDEA617F62EC63E040F20AA0512492", "testAssetName": "Asset001",
"testEnvironmentUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName":
"MedrecEnv", "testEnvironmentInstanceUri": "https://example.com/em/websvcs/restful/
extws/cloudservices/taas/v1/test_environment_instances/1",
"testEnvironmentInstanceName": "MedrecEnv", "testEnvironmentInstanceContextId": "1",
"testDriverUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT",
"testDriverInstanceUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_driver_instances/1", "testDriverInstanceContextId": "1",
"testDriverInstanceName": "ManualTDInst", "oltTrialSettings": { "scriptVuCounts":
{ "name": "MedReclScript", "value": "1" }, "rampupOptionIndex": "3",
"rampupOptionLabel": "X Percent every
Y Seconds", "rampupUserOrPercent": "0.1", "rampupSecondOrIteration": "5.0" } }
```

67.4.26 Creating a New Trial

The table below shows the POST request configuration.

Table 67-102 POST Request Configuration for Creating a Trail

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/trials
Body	<pre>{ "name": "APITrial1", "testContextId": "DCC7AC5803CF97B2E040F20AA05152EC", "testEnvironmentInstanceContextId": "1", "testDriverInstanceContextId": "1", "startTime": null, "oltTrialSettings": { "scriptVuCounts": { "name": "MedReclScript", "value": "3" }, "rampupOptionIndex": "3", "rampupUserOrPercent": "0.1", "rampupSecondOrIteration": "5.0" } } }</pre>
Request method	POST

A sample of the response received is shown below.

```
{ "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/trials/
DCE58A1CBF8D0D06E040F20AA0511AB5", "contextId": "DCE58A1CBF8D0D06E040F20AA0511AB5",
"name": "APITrial1", "owner": "TAASUSER1", "status": "SCHEDULED", "startTime":
"1368800849000", "testUri": "https://example.com/em/websvcs/restful/extws/
cloudservices/taas/v1/tests/DCC7AC5803CF97B2E040F20AA05152EC", "testName": "Test1",
"testContextId": "DCC7AC5803CF97B2E040F20AA05152EC", "testAssetUri": "https://
example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_assets/
DCBDEA617F62EC63E040F20AA0512492", "testAssetName": "Asset001",
"testEnvironmentUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_environments/DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName":
"MedrecEnv", "testEnvironmentInstanceUri": "https://example.com/em/websvcs/restful/
extws/cloudservices/taas/v1/test_environment_instances/1",
"testEnvironmentInstanceName": "MedrecEnv", "testEnvironmentInstanceContextId": "1",
"testDriverUri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/
test_drivers/DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT",
"testDriverInstanceUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_driver_instances/1", "testDriverInstanceContextId": "1",
"testDriverInstanceName": "ManualTDInst", "oltTrialSettings": { "scriptVuCounts":
{ "name": "MedReclScript", "value": "3" }, "rampupOptionIndex": "3",
"rampupOptionLabel": "X Percent every Y Seconds",
"rampupUserOrPercent": "0.1", "rampupSecondOrIteration": "5.0" } }
```

67.4.27 Updating a Trial

Note:

This is applicable only if the trial is in "Scheduled" status.

The table below shows the PUT request configuration.

Table 67-103 PUT Request Configuration for Updating a Trail

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/trials/ DCE58A1CBF8D0D06E040F20AA0511AB5
Body	<pre>{ "name": "NewTrialName", "testContextId": "DCC7AC5803CF97B2E040F20AA05152EC", "testEnvironmentInstanceContextId": "1", "testDriverInstanceContextId": "1", "startTime":1398800849000, "oltTrialSettings": { "scriptVuCounts": { "name": "MedReclScript", "value": "3" }, "rampupOptionIndex": "3", "rampupUserOrPercent": "0.1", "rampupSecondOrIteration": "5.0" } }</pre>
Request method	PUT

A sample of the response received is shown below.

```
{ "uri": "https://example.com/em/websvcs/restful/extws/cloudservices/taas/v1/trials/
DCE58A1CBF8D0D06E040F20AA0511AB5", "contextId": "DCE58A1CBF8D0D06E040F20AA0511AB5",
"name": "NewTrialName", "owner": "TAASUSER1", "status": "SCHEDULED", "startTime":
"1398800849000", "testUri": "https://example.com/em/websvcs/restful/extws/
cloudservices/taas/v1/tests/DCC7AC5803CF97B2E040F20AA05152EC", "testName": "Test1",
"testContextId": "DCC7AC5803CF97B2E040F20AA05152EC", "testAssetContextId":
"DCBDEA617F62EC63E040F20AA0512492", "testAssetUri": "https://example.com/em/websvcs/
restful/extws/cloudservices/taas/v1/test_assets/DCBDEA617F62EC63E040F20AA0512492",
"testAssetName": "Asset001", "testEnvironmentUri": "https://example.com/em/websvcs/
restful/extws/cloudservices/taas/v1/test_environments/
DCBDF6F2FFC90069E040F20AA051215F", "testEnvironmentName": "MedrecEnv",
"testEnvironmentInstanceUri": "https://example.com/em/websvcs/restful/extws/
cloudservices/taas/v1/test_environment_instances/1", "testEnvironmentInstanceName":
"MedrecEnv", "testEnvironmentInstanceContextId": "1", "testDriverUri": "https://
example.com/em/websvcs/restful/extws/cloudservices/taas/v1/test_drivers/
DCBD49A045FFD35BE040F20AA05150F5", "testDriverName": "Default OLT",
"testDriverInstanceUri": "https://example.com/em/websvcs/restful/extws/cloudservices/
taas/v1/test_driver_instances/1", "testDriverInstanceContextId": "1",
"testDriverInstanceName": "ManualTDInst", "oltTrialSettings": { "scriptVuCounts":
{ "name": "MedReclScript", "value": "3" }, "rampupOptionIndex":
"3", "rampupOptionLabel": "X Percent every Y Seconds", "rampupUserOrPercent": "0.1",
"rampupSecondOrIteration": "5.0" } }
```

67.4.28 Deleting a Trial

The table below shows the DELETE request configuration.

Table 67-104 DELETE Request Configuration for Deleting a Trail

Feature	Description
URI	/em/websvcs/restful/extws/cloudservices/taas/v1/trials/ DCE5F68EEF937640E040F20AA0514029
Body	None
Request method	DELETE

A sample of the response received is shown below.

```
TrialEntity has been deleted. Context Id:DCE5F68EEF937640E040F20AA0514029
```

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