Oracle All Flash FS Storage System

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FLASH STORAGE SYSTEMS

An I/O-bound database could be depriving your company of its most important resource: time. OLTP response time. Query time. Application development time. Backup window time. Concurrent workloads further impact your time and, ultimately, delay your time to market and time to revenue. The Oracle All Flash FS Storage System virtually eliminates database wait events via submillisecond latency to give you back time for activities that drive your company's top-line growth and bottom-line savings.

All flash. All the time. All Flash FS accelerates Oracle Database and Oracle Applications and reduces scalability limitations with industry-best flash capacity providing the flexibility to put very large databases on flash or consolidate hundreds of databases on a single All Flash FS. And, it delivers the most efficient platform at the lowest price, so you don't need to make trade-offs between speed and cost. With All Flash FS, accelerating all of your valuable data with flash—all the time and within your budget—is a reality.

Now you can achieve better business results by improving your customers' experience and increasing productivity across your enterprise—from application users and developers to business analysts and decision makers.

All-Flash Performance

Building on a foundation of flash innovation leadership, the Oracle All Flash FS Storage System is designed from the ground up to exploit the unique performance characteristics of flash storage, combining extreme low latency, extremely high IOPS and throughput, maximum flash scalability, enterprise-class high availability data services, and end-to-end security. All Flash FS scales from 2 to 912 TB of flash storage capacity. This storage system offers granular scaling options to achieve the most efficient $/GB/IOPS and the lowest entry price of any all-flash enterprise-class storage solution. The bottom line is that All Flash FS speeds up OLTP response time, data queries, analytic workloads, and backups without compromising the performance of your production Oracle Database instances. You can now simultaneously perform analytics directly on real-time data streams, enabling better modeling of scenarios, while providing your application development teams with unlimited real-time database copies to complete projects on time with fewer bugs.

KEY FEATURES

- "All flash, all the time" architecture engineered for maximum performance and minimal latency

- Flash "one-click" provisioning with pretuned, pretested settings for Oracle Database and Oracle Applications

- Flash I/O management, which simultaneously optimizes efficiency, performance, and cost according to business value

- Flash domains, which provide 100% data isolation for highly secure multitenant environments

- Flash deployment-ready packaging: from pallet to power-on in minutes, not hours

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- Enterprise-grade storage availability with no single point of failure for mission-critical applications
- All-flash capacity up to 912 TB
- Coengineered with Oracle Database, Oracle Applications, and Oracle VM

KEY BENEFITS

- Accelerate applications and significantly reduce I/O wait times for enhanced customer experience, faster time to market, and improved user productivity.
- Easily run OLTP applications, analytics, and backup workloads without compromising performance or latency.
- Gain enterprise-wide scalability and reduce the number of systems to manage.
- Eliminate trade-offs between performance and price with all-flash storage at the lowest cost.
- Achieve large-scale secure SAN consolidation on flash and cloud-ready multitenancy.
- Simplify and expedite Oracle Database and Oracle Applications implementation and rapidly perpetuate best practices.
- Maximize return on Oracle software investments.

All-Flash Provisioning

Three-minutes from login to pretuned LUN creation. All Flash FS is delivered with predefined application storage profiles that provide flash-tuned, out-of-the-box storage optimization for Oracle Database and Oracle Applications, as well as for non-Oracle enterprise applications. With simple one-click provisioning, you optimize flash performance and manage Oracle Applications with a minimum of administration, simplifying and expediting deployment. All Flash FS application profiles for Oracle Database provisions database components—such as index files, database tables, archive logs, redo logs, control files, and temp files—automatically optimizing Oracle Database performance without requiring detailed knowledge of the database components. New flash application profiles can be added and existing ones can be modified, and all profiles can be exported to other All Flash FS storage systems to standardize storage provisioning across globally dispersed data centers.

All-Flash I/O Management

All Flash FS manages I/O queues based on business priority, not on the archaic first-in, first-out (FIFO) methodology used by the rest of the industry. When system contention is high, Oracle's patented Quality of Service (QoS) algorithm enables multiple databases to efficiently coexist on the same All Flash FS and still get dedicated storage services based on their importance to the business.

All-Flash Security

Flash Storage Domains enable multiple, virtual, all-flash domains to coexist within a single All Flash FS. Each flash domain is a "data container" that isolates data from other storage domains, providing dedicated resources and secure independence in multitenant environments for private or public cloud deployments, regulatory compliance requirements, or chargeback models. With Flash Storage Domains, you can custom-tailor settings for multiple unique environments within a single physical All Flash FS for reduced power, cooling, and management expenses. Furthermore, All Flash FS uses T10-PI for end-to-end data integrity checking from database to flash drive cell.

All-Flash Deployment-Ready Packaging

All Flash FS offers flexible building blocks that can be scaled to 912 TB in a single all-flash system. Built and tested the same as other Oracle engineered systems, All Flash FS ships fully racked, cabled, and tested. It can roll right into your data center upon delivery—from pallet to power-on in less than 30 minutes.

Coengineered with Oracle Database and Oracle Applications

All Flash FS is coengineered with Oracle Database and Oracle Applications, leveraging unique features such as Oracle Database Hybrid Columnar Compression. It delivers the most advanced data reduction for database storage in the industry, compressing data up to 50x and speeding queries up to 5x, while reducing the storage footprint 3x to 5x. HCC is supported only on Oracle storage systems such as All Flash FS.

An All Flash FS plugin for Oracle Enterprise Manager 12*c* enables "single pane of glass" management specifically geared to empower Oracle Database administrators to easily and efficiently manage multiple All Flash FS systems across your enterprise.

ORACLE ALL FLASH FS CONTROLLER SPECIFICATIONS

Cache and I/O ports—Oracle All Flash FS Controller (High-Availability Pair)

	Oracle All Flash FS Controller
CPU	4 Intel E5-2620 CPUs (24 cores, 2.0 GHz)
Cache	384 GB RAM cache/32 GB NV-DIMM
Maximum cache hold-up time (after power failure)	Infinite hold-up time (using Oracle FS1 energy storage modules with super capacitors and Oracle-designed flash-backed DIMM modules)
Host ports	12 ports –16 Gbit FC
Storage ports	Standard 12 ports (six 6-Gbit 4-lane SAS-2 HBAs)

ORACLE ALL-FLASH FS1 STORAGE DRIVE ENCLOSURE SPECIFICATIONS

Maximum disk configurations	• *SSD capacity: 912 TB maximum* • *Maximum of 30 drive enclosures*

Drive Enclosure Types

Oracle Storage Drive Enclosure DE2-24P	2U rack size with twenty-four 2.5-inch drive bays

Drive Enclosures

SSD Types/Usage	Drive Enclosure Layout	Total Capacity
SSD (2.5-inch SAS-2)	13 x 400 GB drives	5.2 TB
	7 x 400 GB drives	2.8 TB
	19 x 1.6 TB drives	30.4 TB
	13 x 1.6 TB drives	20.8 TB
	7 x 1.6 TB drives	11.2 TB

ORACLE ALL FLASH FS CONTROLLER DIMENSIONS, POWER, AND ENVIRONMENTAL SPECIFICATIONS

Rack Options	Description
Racked	All components rackmounted, cabled, tested, and shipped as a complete system.
Not racked	All components rackmounted, cabled, and tested. Components then are removed from the rack and packaged individually for installation in a customer's own rack.

Oracle All Flash FS Controller (per node)

Power Specifications	
Frequency	50 Hz–60 Hz
Rated line voltage	100–240 VAC
Rated input current	100–127 VAC 12.0 A, 200–240 VAC 5.9 A
Maximum power	830 Watts

Dimensions/Weight

Height	8.74 cm (3.4 in.) 2U per node
Width	44.5 cm (17.5 in.)
Depth	52.8 cm (20.8 in.) including PDU handles
Weight	18.5 kg (40.8 lb.)

Environmental Specifications	Operating	Nonoperating
Temperature	5°C–35°C	–40°C–70°C
Relative humidity	10%–90% noncondensing	Up to 93% noncondensing

ORACLE ALL FLASH FS STORAGE DRIVE ENCLOSURE DIMENSIONS, POWER, AND ENVIRONMENTAL SPECIFICATIONS

Dimensions	
Height	8.89 cm (3.5 in.) 2U per enclosure

Width	45 cm (17.7 in.)
Depth	55.5 cm (22 in.)
Weight (maximum with all slots populated)	24 kg (52.9 lb.)

Environmental Specifications—Power and Thermal	
Power (varies with drive type and activity)	Typical: 379 watts, maximum: 889 watts
BTU (typical/maximum)	Typical: 1,108 BTU/hr., maximum: 2,385 BTU/hr.

Environmental Specifications	Operating	Nonoperating
Temperature	5°C–35°C	–40°C–70°C
Relative humidity	10%–85% noncondensing	5%–95% noncondensing

ORACLE ALL-FLASH FS1 STORAGE SYSTEM REGULATIONS (MEETS OR EXCEEDS THE FOLLOWING REQUIREMENTS)	
Regulations[1,2,3]	*Product Safety: UL/CSA 60950-1, EN 60950-1, IEC 60950-1 CB Scheme with all country differences* *EMC* *Emissions: FCC CFR 47 Part 15, ICES-003, EN55022, EN61000-3-11, EN61000-3-12* *Immunity: EN55024* *Emissions and Immunity: EN300 386*
Certifications[2]	*North America (NRTL)| European Union (EU)| International CB Scheme* *BIS HSE Exemption (India)| BSMI (Taiwan) |RCM (Australia)* *Customs Union	EAC (Customs Union)	CCC (PRC)* *MSIP (Korea)	VCCI (Japan)*
European Union Directives	*2006/95/EC Low Voltage Directive* *2004/108/EC EMC Directive* *2011/65/EU RoHS Directive* *2012/19/EU WEEE Directive*

All standards and certifications referenced are to the latest official version. For additional detail, please contact your sales representative.

Other country regulations/certifications may apply.

In some cases, as applicable, regulatory and certification compliance were obtained at the component level only.

Warranty

The Oracle All Flash FS comes with a one-year warranty. Visit Oracle Hardware Warranty Support for more information.

Oracle Premier Support

Oracle Premier Support provides complete, integrated support to maximize the return on your Oracle investment—software updates, operational best practices, and support tools deliver rapid problem resolution. See oracle.com/support for more information.

CONTACT US

For more information about the Oracle All Flash FS Storage System, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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