Salesforce1 App Developer Guide

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Salesforce1 App Developer Guide

This book introduces you to both the declarative (point-and-click) and the programmatic (code-based) features of Salesforce1. To help you get familiar with the different pieces that make up the Salesforce1 Platform, and to show you how you can optimize existing features such as Visualforce pages and publisher actions for the Salesforce1 mobile experience, this book walks you through the process of enhancing an existing organization to make it mobile-ready.

Table of Contents

Chapter 1

Introduction

In this chapter ...

Mobile has become the new normal for staying connected in both our personal and professional lives. More and more, we're living our lives connected to the Internet, but instead of sitting at a desk, we're connecting on planes, in cabs, in between meetings, in hotels, or even in line for coffee. We follow friends, update status feeds, research local businesses, collaborate with colleagues, email suppliers, and much more—all tasks increasingly performed on the go.

And at the same time, every company is working harder and faster to innovate and stay ahead of the competition. The successful businesses of the future must embrace this mobile-first world and the freedom this mobility provides to get things done, regardless of where you are and what you're doing.

Salesforce1 solves the problem of lack of mobile specialists and lagging innovation with a revolutionary approach to app development for the social and mobile-first world. It delivers breakthrough productivity for all users because it puts the customer—employees, partners, consumers, and devices—at the center of everything.

The result is a fast, connected mobile solution with the potential to be as disruptive as Software as a Service. It's time to build the future today!

Introducing the Salesforce1 Platform

Salesforce1 is a mobile app development platform for everyone. It allows incredible freedom for ISVs, developers, administrators, and every user to innovate.

This approach to unlocking mobile app development for organizations is built for today's needs: mobile and social solutions delivered in days or weeks. Apps are driven by metadata and intelligently provide context to the user experience. These apps deliver information-based mobile device features: addresses can be plotted on maps, phone numbers can be dialed with a simple tap, feed-centric workflows can be created, and much more.

Business users and administrators can develop apps with clicks, not code, complete with powerful workflow rules, approval processes, and dynamic user interfaces. Unlike other solutions where business users often create independent applications in which IT has little visibility into their security or reliability, Salesforce1 provides administrators the tools to centrally manage apps without limiting the business's need to innovate.

Designed for scale with open APIs for extensibility and integration, and powerful developer tools, there's no limit to what developers and ISVs can build on the platform. Salesforce1's flexible development models enable every user to create custom apps backed by mobile back-end services and a unique, yet familiar, mobile user experience. ISVs developing on the Salesforce1 Platform can develop apps that take advantage of advanced packaging and version management controls, complete enterprise marketplace capabilities with the AppExchange, and feed-first discovery of their apps within the Salesforce1 Platform.

Salesforce1 Platform Features

The Salesforce1 Platform brings together Force.com, Heroku, and ExactTarget Fuel into one incredibly powerful family of social, mobile, and cloud services—all built API first.

The Salesforce1 Platform delivers these capabilities:

Social Data

The ability to share, follow, collaborate, and take business actions directly on data within Salesforce1 is at the core of the platform. Users can follow records and data with a single tap. They can be notified of changes in real time, and collaborate directly within the record feed. This feed-based approach to working lets users focus on what's most important to them.

By treating data as social and as an important participant in business, Salesforce1 allows data to share updates, trigger workflows, and be part of the collaboration process with workers, teams, partners, and customers. The result is an unparalleled opportunity to create new business apps and processes for business productivity.

Declarative and Programmatic Development

IT departments have struggled to keep pace with the level of change required for businesses to remain competitive. Too often, IT is resource constrained because they must manage existing on-premises systems while at the same time recruit and retain professional developers—especially those with mobile application development experience.

Salesforce1 solves the problem of speed to delivery by providing intuitive drag-and-drop tools for storing and working with data, defining cloud-based logic with workflows, creating approval processes and formulas, and creating mobile-ready apps.

Professional developers can use the most popular open-source languages, tools, and standards to build completely custom apps and user interfaces. Unlike other platforms, Salesforce1 delivers a unique experience where developers and administrators create apps on the same platform, eliminating the effort required to build complicated integration solutions.

Action-Based App Model

Salesforce1 puts the customer at the center of the development process. Rather than require complicated development cycles, apps can be declared through actions: create an order, set a delivery date, select a route, and so on. Administrators can define default values for actions to streamline apps down to the click of a mouse or swipe of the finger.

Actions defined via the desktop are instantly available in context-sensitive menus on mobile devices. And, for developers building integrations with Salesforce1, actions are automatically enabled with RESTful endpoints capable of accepting either XML or JSON data envelopes.

Connect to Everything with Open APIs

Salesforce provides the connectivity and flexibility to create apps that connect to everything using efficient and scalable APIs that perform over 1.3 billion transactions a day. Every object or data entity is instantly REST-enabled.

Our APIs include access to bulk APIs for data loading, social APIs for ubiquitous collaboration anywhere, cutting-edge streaming APIs to support push notification integrations, and metadata APIs that describe every aspect of your app and business such as permissions, data access policies, field types, and user experience.

Introducing the Salesforce1 Apps

The Salesforce1 apps are Salesforce on-the-go! These enterprise-class mobile apps give your users real-time access to the same information that they see in the office, but organized for getting work done in those precious free moments when they're between customer meetings, waiting for a flight...even when they're in line for coffee.

You can get Salesforce1 in different ways:

- As a downloadable app from the App Store and Google Play™. Users can install it directly on Apple® and Android™ mobile devices.
- As a mobile browser app that runs in supported mobile browsers on Apple and Android mobile devices. This option doesn't require anything to be installed.

Supported Devices

- Apple mobile devices with iOS 7 or later:
  - ◊ iPhone® 4 and later models
  - ◊ iPad® 2 and later models (including the iPad mini)
- Android phones with Android 4.2 or later

The way users access Salesforce1 depends on whether they are using one of the downloadable apps or the mobile browser app.

In this book, we'll be working with the downloadable apps exclusively, which you can download and install from the App Store or Google Play. See "Enable the Salesforce1 Mobile Browser App" in the Salesforce Help for information on the Salesforce1 mobile browser app.

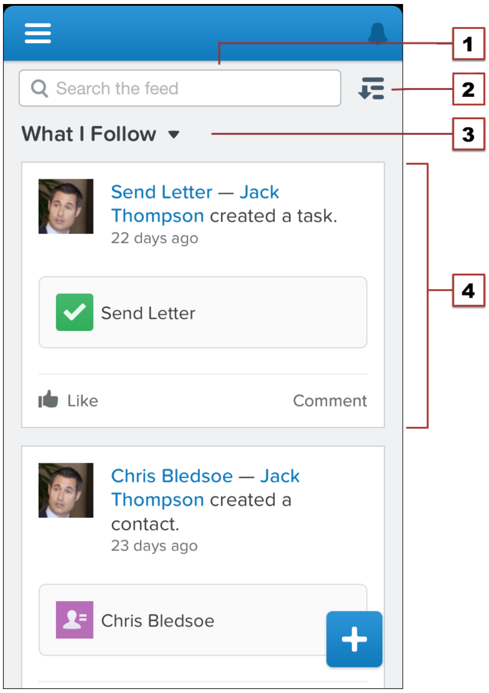
Getting Around in Salesforce1

Let's take a tour of the Salesforce1 app.

When users log in to Salesforce1, the first thing they see is a landing page. The first item in the Salesforce1 navigation menu becomes a users' landing page by default. If your organization has Chatter enabled, and you haven't customized the Salesforce1 navigation menu to change the first item in the menu to something else, the user's feed will be their landing page.

The Feed

The Chatter feed shows users their updates, updates to records and people they follow, and updates in groups they follow. Tapping a feed item displays all of the item's details. Pulling down on the feed reveals the search bar as well as the sort and filter options.

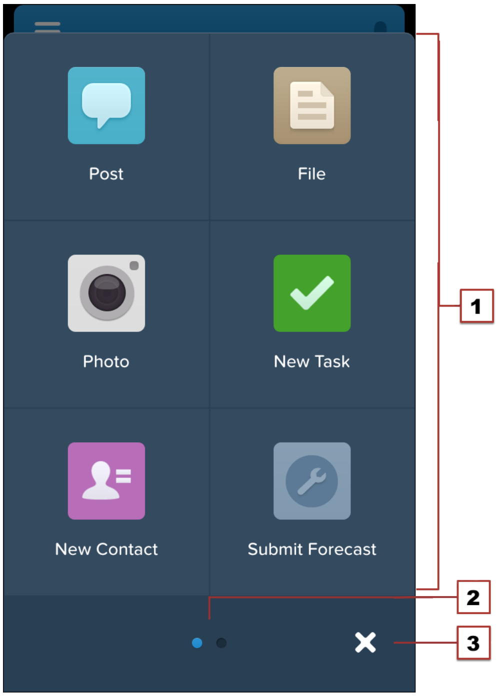

Search the feed
What I Follow
Send Letter — Jack Thompson created a task.
22 days ago
Send Letter
Like
Comment
Chris Bledsoe — Jack Thompson created a contact.
23 days ago
Chris Bledsoe
1
2
3
4

1. Search bar
2. Sort and filter options
3. Feeds drop-down menu
4. Feed item

From the feed, record pages, and from elsewhere in Salesforce1, users tap ➕ to access publisher actions.

The Publisher

Depending on which feed or record page a user is viewing when they tap ➕, they can see different actions. From the feed, for example, they see a set of global publisher actions. From a record page, however, they see a mix of standard Chatter actions—such as Post and File—and object-specific actions assigned to the layout for that record type. Once in the publisher, users can tap any action to open it. They can also tap ☒ to return to the page they were viewing.



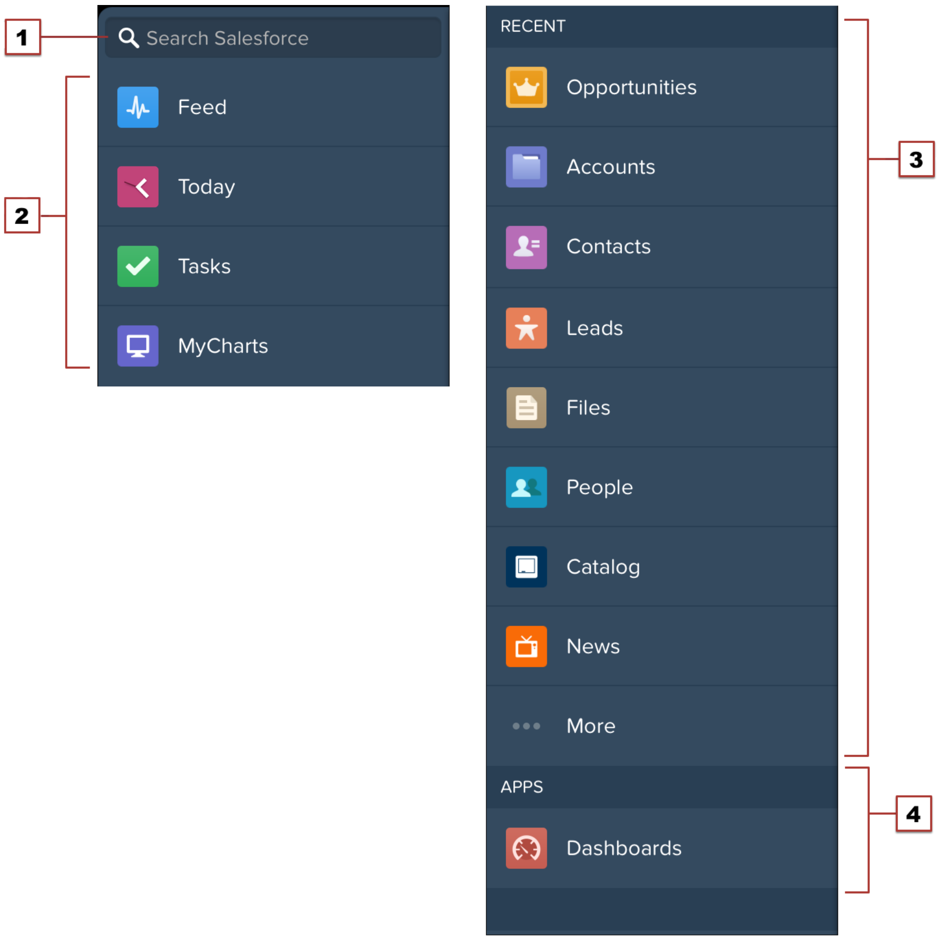
1. Actions
2. Page indicator
3. Cancel

We'll go over creating and customizing actions in Using Publisher Actions in Salesforce1 on page 43.

Salesforce1 Navigation Menu

Anywhere users see ☰ in Salesforce1, they can tap it to access the navigation menu.

What your users see in the menu is determined by how you, as the administrator, have configured it, what's available in your organization, and what users have access to, based on their user permissions and profile. We'll go over changes you can make to the menu in Customizing the Salesforce1 Navigation Menu on page 23.

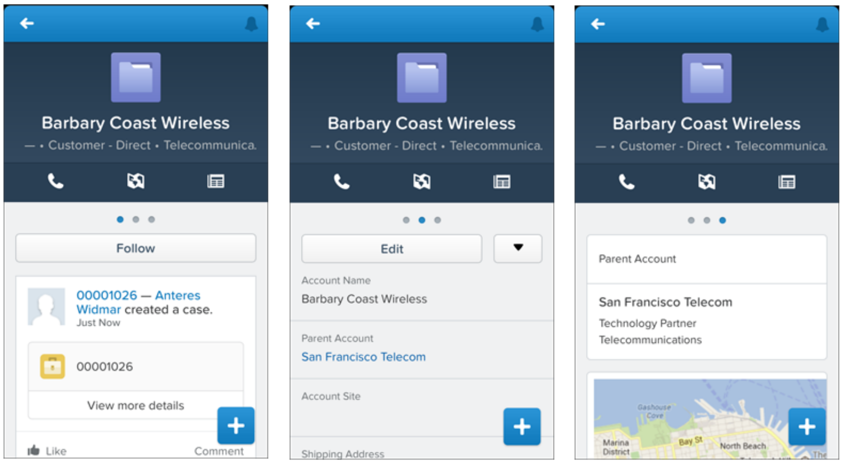


1. Search box
2. Menu items—any items you place above the Smart Search Items element when you customize the navigation menu
3. Smart Search Items—a set of recently-searched objects
4. Apps section—contains any items you place below the Smart Search Items element

From the navigation menu, users can access the feed, objects, apps, tasks, notes, and any other item you've added to the menu. We'll go over the components of the navigation menu in more detail in About the Salesforce1 Navigation Menu on page 24. But for now, let's take a look at records.

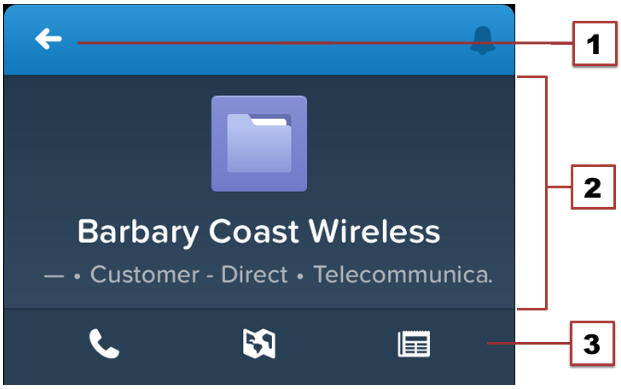
The Record View

The record view is made up of the record feed, detail, and related information pages, which your users can swipe left and right to see. If your organization doesn't have Chatter, the record view only includes the detail and related information pages.



At the top of each record page is the record highlights section. The icon for standard objects is predefined in Salesforce, and you can select the icon for a custom object using the custom object's tab style.

You can customize the fields displayed in the record highlights by using compact layouts, which we'll look at in About Compact Layouts on page 37.



1. Back arrow—returns the user to the previous page
2. Record highlights

3. Record actions bar—contains a set of predefined actions for the record type. Can include Send Email (), Log a Call (), Map (), View Website (), and Read News ().

What else do I need to know?

From the top of most pages, users can access their notifications by tapping .

Users can create a new record by tapping **New** at the top of recent object pages, search pages, and related list pages. They can also create records through publisher actions, if create actions have been set up in the organization.

What About the Other Mobile Apps?

Wondering how the Salesforce1 app relates to the other Salesforce mobile products?

- SalesforceA gives administrators mobile access to essential organization management tasks. Use it to edit, unlock, freeze, and deactivate user accounts, reset passwords, and assign permission sets.
- Chatter Mobile for iOS and Android is now Salesforce1. Chatter Mobile for BlackBerry is still the option for BlackBerry users.
- The Salesforce mobile offerings still include Salesforce Classic. Salesforce Classic users may find that Salesforce1 is a better fit for their needs, but Salesforce Classic remains the best option if you need offline support.

For more detailed information about the full suite of Salesforce mobile apps, see “Salesforce Mobile Products Overview” in the Salesforce Help.

Chapter 2

About This Book

In this chapter ...

This book introduces you to both the declarative (point-and-click) and the programmatic (code-based) features of Salesforce1.

To help you get familiar with the different pieces that make up the Salesforce1 Platform, and to show you how you can optimize existing features—such as Visualforce pages and publisher actions—for the Salesforce1 mobile experience, this book walks you through the process of enhancing an existing organization to make it mobile-ready and mobile-friendly.

Who Is This Book For?

This book is broken up into two major sections. The first, Salesforce1 Administration, is aimed at administrators, and takes you through the declarative Salesforce1 tools in Setup, where you can point-and-click your way through getting your organization ready for the Salesforce1 mobile experience. This includes how to optimize your page layouts for mobile, customize the Salesforce1 navigation menu, create actions, and set up mobile notifications.

The second section, Developing for Salesforce1, is for advanced administrators and developers who are comfortable working with code. To fully understand its chapters, you should be familiar with Visualforce, XML, and canvas apps. We'll walk through optimizing your Visualforce pages for mobile, creating custom actions, and creating custom app home pages for Salesforce1 using Flexible Pages.

Tip: Point-and-click admins, don't let this deter you! We include code samples in most places, so even if you're not an experienced developer, you can still try the steps in each chapter and get a feeling for what can be done with Salesforce1.

How Do I Begin?

It's up to you! You could begin by pointing-and-clicking your way through Configuring Salesforce1 on page 17 and working all the way through Using Publisher Actions in Salesforce1 on page 43. Then, put your developer hat on and create custom actions, or add canvas apps or Flexible Pages to further enhance your users' Salesforce1 experience.

If you're a seasoned developer, you could jump into the deep end first and start right away with Salesforce1 development on page 63.

About the Sample Scenario

The sample scenario for this book builds on the sample Warehouse data and code created in the *Force.com Workbook*. We took that data set and added some extras. We'll use what was built there as a launching point, then add more to bring our sample organization into the mobile world of Salesforce1.

To do this, we'll walk through the steps as if we were someone with administrator privileges at a make-believe company called Acme Wireless.

About Acme Wireless

Let's find out a little bit about our fictional company.

Acme Wireless is a large company that repairs devices such as mobile phones, tablets, and gaming consoles. The company has a number of brick-and-mortar locations where customers can drop off devices for repair. In addition, these storefronts sell device accessories like tablet covers, mobile phone covers, power cords, rechargers, and so on.

Acme Wireless maintains a central warehouse where all the repair parts and accessories are stored. The storefront locations order parts from the warehouse so that they can keep some inventory on hand. When they need a special part that's not in stock, storefronts can special order it from the warehouse.

Acme Wireless is also expanding its repair services by doing on-site service. Mobile technicians will go to various customer locations to provide on-site service, including personal residences, hotels, small business offices, and conference centers.

How Acme Wireless Uses Salesforce

Acme Wireless uses Salesforce to track customers. These are often individuals who visit the storefronts, but can also be small businesses that have contracted with Acme Wireless for device support. Acme Wireless also uses Salesforce to track merchandise items and inventory in the warehouse, as well as to manage its billing and invoicing. They use two custom Web applications: one to track orders and process merchandise for shipment and one to track delivery of shipments to storefront locations.

Employees at Acme Wireless's storefronts and the main office use Chatter internally to communicate about inventory levels, customer accounts, and orders.

How Acme Wireless Wants to Use the Salesforce1 App

Acme Wireless wants to use Salesforce1 to leverage its existing Salesforce organization and enable mobile technicians to access customer and merchandise data. The technicians should be able to see all their repair tickets for the day, locate a customer, look up inventory for any parts needed, order parts, check the status of orders, and so on.

Acme Wireless also wants to enable their truck drivers, delivering products from the warehouses to the storefronts, to track and update their deliveries for the day without having to use a separate app. They also want to give the warehouse workers the ability to track customer orders and process them for shipping.

Acme Wireless also wants to enable Salesforce1 integration with legacy Web applications for order management.

Chapter 3

Setting Up Your Work Environment

In this chapter ...

- Install the Enhanced Warehouse Data Model
- Download the Salesforce1 App

To follow along with the exercises in this book, you'll need a Salesforce account and a Developer Edition organization. If you don't have a Developer Edition organization, go to `developer.force.com` and sign up for a free Developer Edition account. Developer Edition is a fully-functional version of Salesforce that you can use to develop Salesforce apps. Since it's free, there are limits on the amount of users, bandwidth, and storage you're allowed, but it includes all of the features in Salesforce.

After that, you'll need to install the enhanced Warehouse data model into your organization, and then download the Salesforce1 app, if you haven't already.

Install the Enhanced Warehouse Data Model

To prepare your developer organization for the exercises in this book, you need to import the Warehouse data model. You might be familiar with the Warehouse app if you've gone through the tutorials in the *Force.com Workbook*. We took the Warehouse data from that guide and added a few extra things to it to help show you what Salesforce1 can do.

1. Go to `www.salesforce.com` and log in to Salesforce using your Developer Edition credentials.
2. Open a new browser tab or window, and navigate to `https://github.com/forcedotcom/Salesforce1-Dev-Guide-Setup-Package`.

   Do this in the same browser that you used to log into your developer organization with.
3. Open the README file.
4. Click the `bit.ly` link in the README file.

   This is the installation link for the enhanced Warehouse data package. You should be taken directly into your development organization to the Package Installation Details page.
5. Click **Continue**.
6. Click **Next**.
7. Click **Next**.
8. Click **Install**.
9. Wait for the installation to finish.
10. From the Force.com app menu, select Warehouse.
11. Click the Data tab.
12. Click **Create Data**.

All right! The last step is to download the Salesforce1 app, then we'll be ready to roll.

Download the Salesforce1 App

If you've already downloaded Salesforce1, you can skip this step.

1. Go to `www.salesforce.com/mobile/`, and download Salesforce1 for your device.

   You may be prompted to create a security PIN.
2. Open Salesforce1.
3. Log in using your developer organization credentials.

Chapter 4

Configuring Salesforce1

In this chapter ...

Salesforce1 is automatically enabled for all organizations, except those that have auto-enabling turned off.

Salesforce1 doesn't require much configuration at the beginning, but before your users start using Salesforce1, you should:

1. Define which users can access the Salesforce1 mobile apps.
2. Enable notifications.

Since we're in a developer organization, we don't need to worry about enabling users. Review the information about that in the next section, then we'll get started by enabling notifications.

Defining Which Users Can Use Salesforce1

Important: This information is for reference only. We won't be enabling users in this book, but this step is important when configuring Salesforce1 in your production organization.

Downloadable Apps

The Salesforce1 downloadable apps are connected apps. As a result, you can control the users who have access to the apps, as well as other security policies. By default, all users in your organization can log in to the Salesforce1 downloadable apps.

You can control security and access policies for each of the Salesforce1 downloadable apps using settings components that are installed from the managed Salesforce1 and Chatter Apps connected apps package. These components need to be installed in Salesforce:

- Salesforce1 for Android
- Salesforce1 for iOS

These components are automatically installed when one of your users installs a Salesforce1 downloadable app from the App Store or Google Play on his or her mobile device and authenticates with your organization by logging in to the mobile app.

Alternatively, you can manually install the Salesforce1 and Chatter Apps connected apps package so you can review and modify the default security and access settings before rolling out the Salesforce1 downloadable apps to your users.

When the Salesforce1 connected apps components are installed, they're added to the Connected Apps page at **Setup** > **Manage Apps** > **Connected Apps**. Here, you can view and edit the settings for each of the apps, including controlling user access with profiles, permissions, and IP range restrictions. An error message is displayed if a restricted user attempts to log in to a Salesforce1 downloadable app.

Mobile Browser App

You can control whether or not users can access the Salesforce1 mobile browser app when they log in to Salesforce from a mobile browser. By default, the mobile browser app is turned on for your organization.

1. From Setup, click **Mobile Administration** > **Salesforce1** > **Settings**.
2. Select `Enable the Salesforce1 browser app` to allow all users in your organization to access the app. Deselect this option to turn off access to the app.
3. Click **Save**.

When this option is turned on, users who log in to Salesforce from a supported mobile browser are always automatically directed to the Salesforce1 interface. If you want your users to access the full Salesforce site from mobile browsers instead, deselect this option.

When the mobile browser app is enabled, individual users can turn off the Salesforce1 redirection for themselves in one of these places:

- From the navigation menu in the mobile browser app, by tapping **Full Site**.
- In the full site, by deselecting the `Salesforce1 User` checkbox from either **My Settings** > **Personal** > **Advanced User Details** or **Setup** > **My Personal Information** > **Personal Information**.

Automatic redirection to the Salesforce1 mobile browser app is available in supported mobile browsers only. Logging in from an unsupported mobile browser loads the full Salesforce site.

About Notifications

Notifications let your users know when certain events occur in Salesforce, for example when they receive approval requests or when someone mentions them in Chatter.

Two types of notifications can appear to Salesforce1 users.

In-app notifications

In-app notifications keep users aware of relevant activity while they're using Salesforce1. By tapping 🔔, a user can view the 20 most recent notifications received within the last 90 days.

If Salesforce Communities is enabled for your organization, users see notifications from all communities they're members of. To help users easily identify which community a notification came from, the community name is listed after the time stamp.

Push notifications

Push notifications are alerts that appear on a mobile device when a user has installed the Salesforce1 downloadable app but isn't using it. These alerts can consist of text, icons, and sounds, depending on the device type. If an administrator enables push notifications for your organization, users can choose individually whether to receive push notifications on their devices.

Note: Some notifications include text that your users enter in Salesforce. To ensure that sensitive information isn't distributed through a third-party service without proper authorization, push notifications include minimal content (such as a user's name) unless you enable full content in push notifications.

For example, suppose an in-app notification reads: “Allison Wheeler mentioned you: @John Smith, heads-up! New sales strategy for Acme account.” By default, the equivalent push notification would be “Allison Wheeler mentioned you.” However, if you enabled full content in push notifications, this push notification would include the same (full) content as the in-app notification.

By enabling the option to include full content in push notifications, you’re agreeing on behalf of your company to the terms and conditions displayed when you save the setting. For details, see Notifications Overview in the Salesforce help.

As the first task in our fresh new development organization, let’s set up notifications for all the Acme Wireless mobile users.

Try It Out: Enable Notifications

We want all the Salesforce1 users in the Acme Wireless organization to receive notifications about events happening in the full Salesforce site, such as approval requests, or when they’re mentioned.

1. From Setup, click **Mobile Administration** > **Notifications** > **Settings**.
2. If they’re not already selected, select both **Enable in-app notifications** and **Enable push notifications**.
3. Click **Save**.

Note: Enabling notifications is an all-or-nothing process. Either they’re on for everyone, or off for everyone. Mobile users can’t customize, enable, or disable notifications for themselves.

Tell Me More: Approval Request Notifications

Users can receive approval requests as notifications in Salesforce1. But there are some caveats.

- Salesforce1 notifications for approval requests aren’t sent to queues.
- Unlike notifications for approval requests in email, notifications for approval requests in Salesforce1 are sent only to users who have access to the record being approved. Assigned approvers who don’t have record access can still receive email approval notifications, but they can’t complete the approval request until someone grants them record access.
- Individual users can opt in or out of approval request notifications in both email and Salesforce1 via the `Receive Approval Request Emails` user field.

Now that we've addressed notifications, let's look at the Salesforce1 navigation menu.

Chapter 5

Customizing the Salesforce1 Navigation Menu

In this chapter ...

Before we can send our users out on their mobile adventure in Salesforce1, they need a map—the thing that's going to point the way to their destination.

The Salesforce1 navigation menu is that map. And it's up to you to draw it for them.

Help your mobile users get things done faster and more easily by configuring which items appear in the navigation menu and in which order.

About the Salesforce1 Navigation Menu

Anywhere your users see the ☰ icon in Salesforce1, they can tap it to access the menu. As an administrator, you can customize what the menu contains.

What You Can Include

Depending on how your organization is configured and what they have access to, your users could see multiple items in their navigation menu.

- Canvas apps—Displays for organizations that have enabled a canvas app to appear in the Salesforce1 navigation menu.
- Dashboards—Availability depends on edition and user permissions. If it's not included as a distinct node in the menu, then it's automatically included in the set of Smart Search Items.
- Feed—Displays for organizations that have Chatter enabled.
- Flexible Pages—Custom Salesforce1 app home pages. For more information, see What is a Flexible Page? on page 148 in the *Salesforce1 App Developer Guide*.
- Groups—Displays for organizations that have Chatter enabled. If it's not included as a distinct node in the menu, then it's automatically included in the set of Smart Search Items.
- People—Displays for organizations that have Chatter enabled. If it's not included as a distinct node in the menu, then it's automatically included in the set of Smart Search Items.
- Smart Search Items—Represents a set of searchable objects the user has viewed or worked with recently in the full Salesforce site. These items display in the Recent section of the menu.

  Note: If your users don't yet have a history of recent objects, they see these default objects in the Recent section initially: accounts, cases, contacts, leads, and opportunities. It can take up to 15 days for objects they work with to appear in the Recent section. To make objects appear under Recent sooner, they can pin them from the search results screen in the full Salesforce site.

- Tasks—Lists of a user's open and closed tasks, and tasks that have been delegated.
- Today—An app that helps users plan for and manage their day, by integrating calendar events from their mobile device with their Salesforce tasks, contacts, person accounts, and user records. Available in the Salesforce1 downloadable apps only.
- Visualforce page tabs

  Note: Only Visualforce pages with the `Available for Salesforce mobile apps` checkbox selected will display in Salesforce1.

We won't get into Visualforce pages in these exercises, but to learn more about them and how they work in Salesforce1, see Extending Salesforce1 with Visualforce Pages on page 75 in the *Salesforce1 App Developer Guide*.

Things to Keep in Mind

- The first item in the Selected list becomes your users' Salesforce1 landing page.
- There isn't a way to set different menu configurations for different types of users.
- When organizing the menu items, put the items that users will want most at the top. The Smart Search Items element can expand into a set of eight or more menu items in the mobile experience, and it may end up pushing other elements below the scroll point if you put it near the top of the menu. Anything you put below the Smart Search Items element will appear in the Apps section of the navigation menu.
- Before you can include Visualforce pages or Flexible Pages in the Salesforce1 navigation menu, you must create tabs for them in Setup at **Create** > **Tabs**.
- Anything that is represented by a tab in Salesforce—such as objects, Visualforce pages, the Feed, People, or Groups—is visible for a user based on their profile settings. If a user is assigned to a profile that has the Groups tab set to Tab Hidden, for example, the user won't see the Groups menu item in Salesforce1, even though an administrator has assigned it to the menu.

Try It Out: Configuring the Salesforce1 Navigation Menu

1. From Setup, click **Mobile Administration** > **Mobile Navigation**.
   Some items are automatically added to the menu.

   The order in which you put the items in the Selected list is the order that they display in the navigation menu. Also, the first item you put in the list becomes your users' Salesforce1 landing page. The Acme Wireless mobile technicians will probably be using the Today and Tasks menu items the most, so we want to put those at the top.

2. Using the **Up** or **Down** arrows, arrange the top items in the Selected list like so:

   - Today
   - Tasks
   - Feed
   - Smart Search Items
   - Dashboards

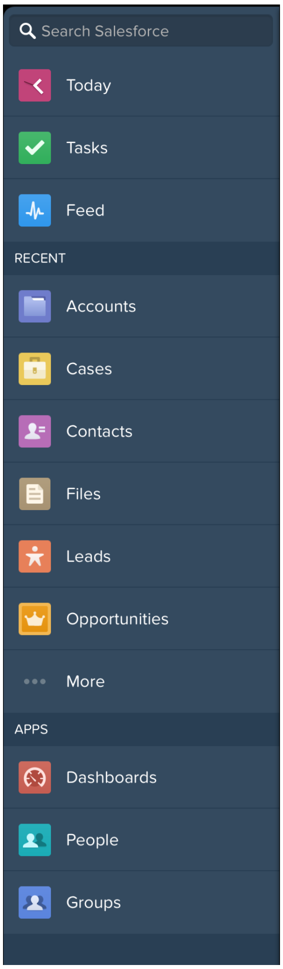
   Now whenever a mobile technician logs in to Salesforce1, the Today page will be the first thing they see.
3. Click **Save**.

Let's go look at our changes.

Test Out the Salesforce1 Navigation Menu

1. Open the Salesforce1 app on your mobile device.
2. Tap ☰ to access the navigation menu.
3. Pull down and release the navigation menu to refresh it.
   You should see the Today, Tasks, and Feed items at the top, and then the Recent section, which is created from the Smart Search Items element.
4. Scroll down to the Apps section.

   This section contains any menu item that was put below the Smart Search Items element, whether it's really an "app" or not.



Now that we've addressed the Salesforce1 navigation menu, let's look at configuring our data for mobile.

Tell Me More: The Salesforce1 Navigation Menu

Some objects are excluded from the Recent section, even if you accessed them recently.

- Your tasks and events
- People, groups, and dashboards, if these items were added directly to the navigation menu
- List views, which are shown only on the record search page, not in the navigation menu or in global search

- Objects that aren't available in Salesforce1, including custom objects that aren't included in a Salesforce app

About the Dashboards, People, and Groups Menu Items

If you don't add the Dashboards, People, or Groups menu items to the Selected list for the navigation menu, then they're automatically included in the Smart Search Items set of objects and show up in the Recent section of the menu in Salesforce1. If you do add Dashboards, People, or Groups individually to the Selected list for the navigation menu, then they show up outside of the Recent section and they can be customized in the Salesforce1 menu just like Tasks, Today, and the other individual menu items.

Pin an Object into the Recent Section

Users can customize the objects that appear in the Recent section of the Salesforce1 navigation menu. If they search for an object in the full Salesforce site, they can hover their mouse over the object name and click to pin it to the top of the search results. The order of pinned objects in the full site determines the order of the objects that stick to the top of the Recent section of the Salesforce1 menu. However, pinning objects in this way causes the unpinned objects remaining in the Recent Items section to drop beneath the **More...** element.

Chapter 6

Customizing How Your Data Shows Up in Salesforce1

In this chapter ...

We've done the basic configuration for the Salesforce1 app; now it's time to consider how we can optimize things in the full Salesforce site to give our users the best possible mobile experience. First, we'll customize how our Salesforce data shows up when presented in a mobile context.

There are two factors in Salesforce that affect how information displays in Salesforce1. One has been around for a while: page layouts. The other is newer: compact layouts. We'll go over both in this chapter.

How Page Layouts Work in Salesforce1

You can use the enhanced page layout editor in the full Salesforce site to customize the layout of an object's record detail pages and adjust which fields and related lists appear.

In Salesforce1, page layouts drive these areas of the mobile experience:

Record Related Information and Detail Pages

When you view a record in Salesforce1, you see the fields, Visualforce pages, and related lists that are based on the record type and the user's profile. Related lists show up as single-line cards containing the name of the page or related list. Tapping the related list card displays its details.

Mobile Cards

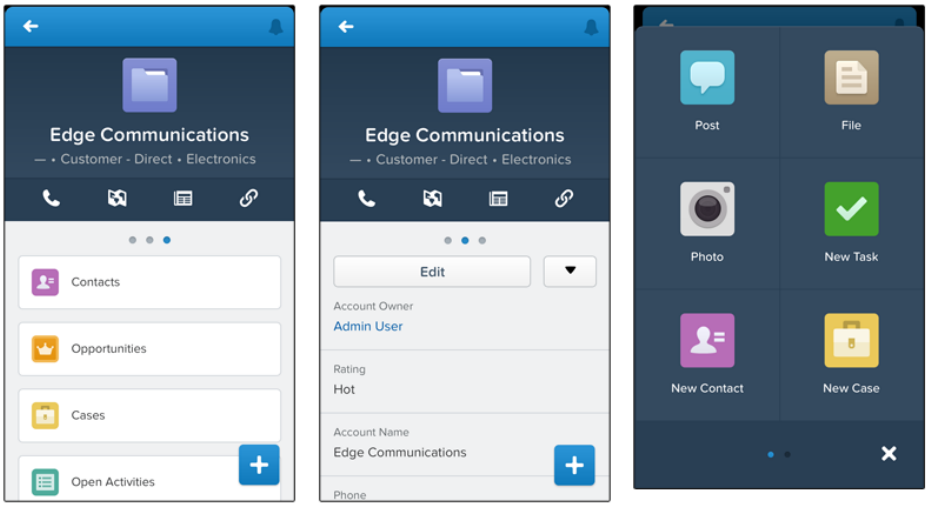
You can add *expanded lookups*, *components*, and Visualforce pages to the Mobile Cards section of your page layout to have them show up as mobile cards in Salesforce1. The elements you place in this section don't show up on a record's detail page in the full Salesforce site. They only appear on the record's related information page in Salesforce1.

Note: Only Visualforce pages with the `Available for Salesforce mobile apps` checkbox selected will display in Salesforce1.

Publisher Actions

In Salesforce1, actions you configure on the page layout show up in the publisher, which users access by tapping +.

Here are the record related information page, record detail page, and publisher for a sample account, Edge Communications:

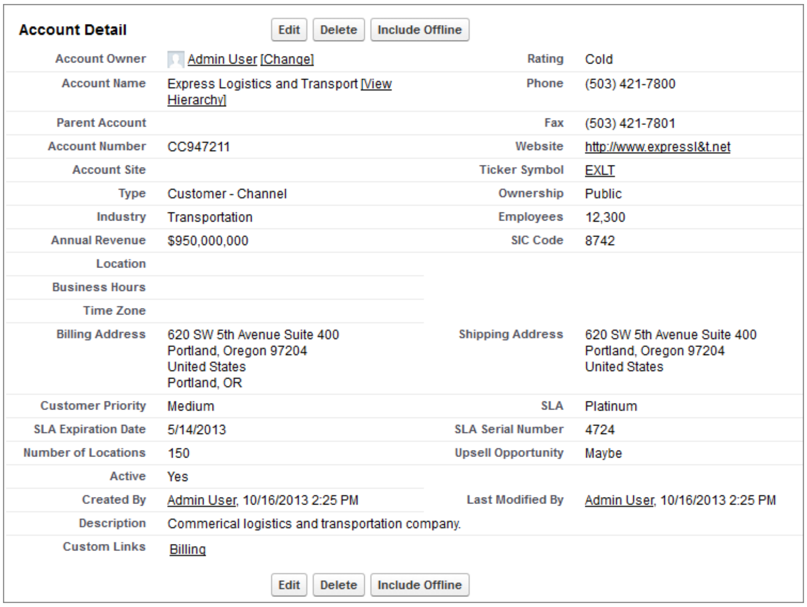


We'll go over publisher actions in a later chapter. For now, let's focus on record pages and mobile cards.

Rethinking Your Page Layouts for Mobile

Page layouts containing dozens of fields and lots of related lists might be manageable when viewing records on a computer screen, but on a small mobile device, viewing that same record can be overwhelming. People accessing information using a mobile device are looking for a quick way to get what they need, and making your users sift through hundreds of fields and related lists just doesn't make sense.

For example, in our Warehouse data model, our custom page layout has 32 standard and custom fields. That may not seem like many, but in a mobile context, fields add up quickly. In the full Salesforce site, an account record detail page using the Warehouse Schema Account Layout looks like this:

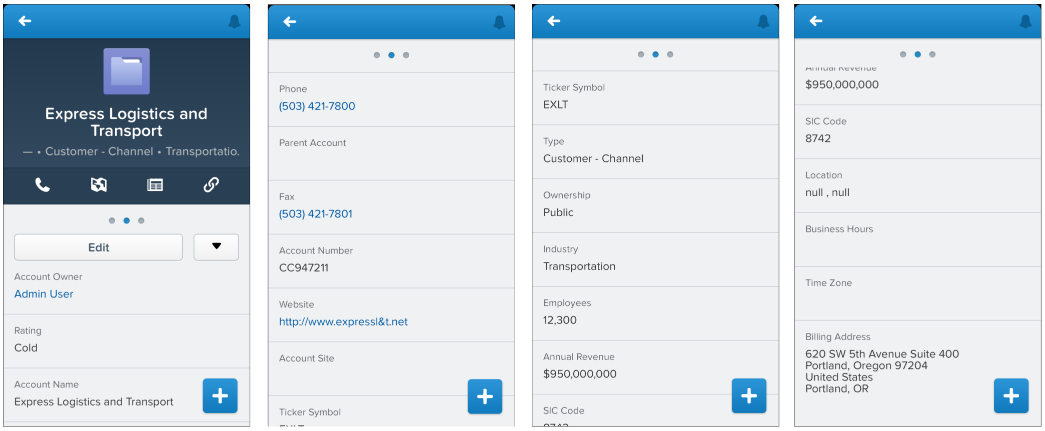


Account Detail Edit Delete Include Offline

Account Owner	Admin User [Change]	Rating	Cold
Account Name	Express Logistics and Transport [View Hierarchy]	Phone	(503) 421-7800
Parent Account		Fax	(503) 421-7801
Account Number	CC947211	Website	http://www.expressl&t.net
Account Site		Ticker Symbol	EXLT
Type	Customer - Channel	Ownership	Public
Industry	Transportation	Employees	12,300
Annual Revenue	$950,000,000	SIC Code	8742
Location			
Business Hours			
Time Zone			
Billing Address	620 SW 5th Avenue Suite 400 Portland, Oregon 97204 United States Portland, OR	Shipping Address	620 SW 5th Avenue Suite 400 Portland, Oregon 97204 United States
Customer Priority	Medium	SLA	Platinum
SLA Expiration Date	5/14/2013	SLA Serial Number	4724
Number of Locations	150	Upsell Opportunity	Maybe
Active	Yes		
Created By	Admin User, 10/16/2013 2:25 PM	Last Modified By	Admin User, 10/16/2013 2:25 PM
Description	Commerical logistics and transportation company.		
Custom Links	Billing		

Edit Delete Include Offline

In Salesforce1, the same account detail page looks like this:



Express Logistics and Transport
— • Customer - Channel • Transportatio.

Edit

Account Owner
Admin User

Rating
Cold

Account Name
Express Logistics and Transport

Phone
(503) 421-7800

Parent Account

Fax
(503) 421-7801

Account Number
CC947211

Website
http://www.expressl&t.net

Account Site

Ticker Symbol

Ticker Symbol
EXLT

Type
Customer - Channel

Ownership
Public

Industry
Transportation

Employees
12,300

Annual Revenue
$950,000,000

SIC Code

Annual Revenue
$950,000,000

SIC Code
8742

Location
null , null

Business Hours

Time Zone

Billing Address
620 SW 5th Avenue Suite 400
Portland, Oregon 97204
United States
Portland, OR

Four pages of scrolling, and that's from a page layout with only 32 fields! If you were a mobile user trying to find specific fields in a record detail with dozens of fields on your phone, you'd have to scroll... and scroll... and scroll. It's not the best user experience, and it's definitely not good for your user's productivity.

You have two options for handling page layouts for your mobile users: re-engineer your existing page layouts, or create new page layouts that are mobile-friendly from the outset.

We'll look at both options. First, we'll walk through creating a fresh mobile-friendly page layout, then we'll discuss tips and tricks for optimizing existing long layouts for a mobile audience.

Try It Out: Create a Custom Page Layout for the Mobile Technicians Profile

Users like the mobile technicians at Acme Wireless will spend the majority of their time accessing Salesforce from a mobile device. We can create a streamlined, mobile-optimized page layout assigned to the Mobile Technician profile, with only the items they need when on-site, and, voilà! Instant productivity boost.

In addition, using the specialized Mobile Cards section of the page layout, we can enhance the Salesforce1 record's related information page by adding Visualforce pages and lookup cards.

1. From Setup, click **Customize** > **Accounts** > **Page Layouts**.
2. Click **New**.
3. Leave the Existing Page Layout drop-down list set to –None–.

   We want to start with a clean slate for this page layout, so we're choosing not to clone an existing page layout.
4. Enter `Account Mobile Technician Layout` in the `Page Layout Name` field.
5. Click **Save**.

   Required fields and "Always on Layout" fields are pre-populated onto the page layout. We just need to add a few more that are pertinent to the mobile technicians.
6. Drag these fields from the palette into the Account Detail portion of the page, below the existing fields:

   - Account Site
   - Shipping Address
   - Business Hours
   - Phone
7. Click the Visualforce Pages category and drag Account Location into the Mobile Cards section.

   This is a preconfigured Visualforce page that shows the user the location of the selected account on a Google map. In Salesforce1, this will show up as a mobile card on the account record related information page.

   Note: Only Visualforce pages with the `Available for Salesforce mobile apps` checkbox selected will display in Salesforce1. Mobile-enabled Visualforce pages show up as slightly different-colored elements in the palette than their non-mobile-enabled counterparts. Also, hovering your mouse over a Visualforce page element in the palette shows whether it's mobile-enabled or not.

For more detailed information about using Visualforce in Salesforce1, check out the Extending Salesforce1 with Visualforce Pages chapter on page 75 in the *Salesforce1 App Developer Guide*.

8. Click the Expanded Lookups category and drag `Parent Account` into the Mobile Cards section.

   `Parent Account` is a lookup field, and putting it into the Mobile Cards section makes it display as a related lookup card on the account's related information page in Salesforce1.

9. Click the Related Lists category and drag the Cases and Contacts related lists to the Related Lists section.

   Related lists show up on the record related information page in Salesforce1. When the mobile technicians navigate to an account's related information page, they'll see preview cards for the related lists that they can tap to get more information about the cases and contacts for that location.

10. Click **Save**.
11. Click **No** when asked if you want to override users' customized related lists.
12. Click **Page Layout Assignment**.
13. Click **Edit Assignment**.

    This is the step where you would normally assign the new mobile-optimized page layout to a user profile for the mobile technicians. However, since you're logged in as a system administrator, and we want to show you the changes you're making in Salesforce1, we're going to have you assign it to the System Administrator profile instead.

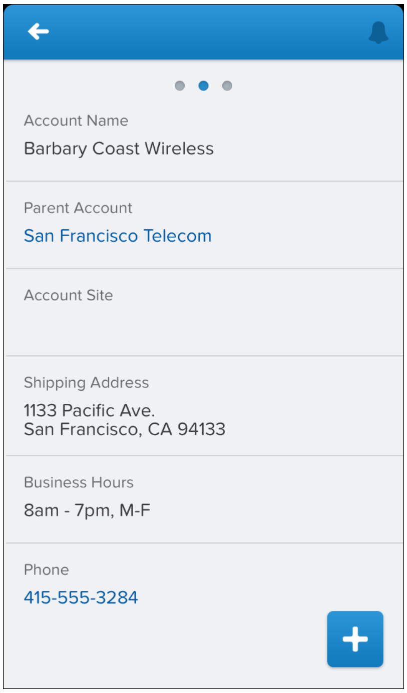
14. Click the System Administrator line item to select it.
15. Select Account Mobile Technician Layout from the Page Layout to Use drop-down list.
    The System Administrator profile should now be assigned to the Account Mobile Technician Layout.
16. Click **Save**.

Now let's check out what we did in the Salesforce1 app.

Test the Page Layout

1. Open the Salesforce1 app on your mobile device and log in.
2. Tap ☰ to access the navigation menu.

3. In the Recent section, tap **Accounts**. You may have to tap **More...** to find it.
4. Tap the Search bar.
5. Enter `Bar`.
6. Tap **Search**.
7. Tap the **Barbary Coast Wireless** record preview card.
   You're on the record detail page, which is the default view when accessing a record. Scroll down a bit, and you should see the same fields we added to the page layout, in the same order.



Account Name
Barbary Coast Wireless

Parent Account
San Francisco Telecom

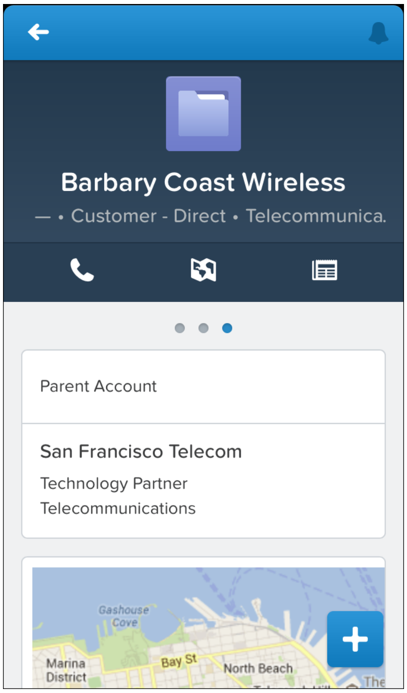
Account Site

Shipping Address
1133 Pacific Ave.
San Francisco, CA 94133

Business Hours
8am - 7pm, M-F

Phone
415-555-3284

8. Swipe left to the related information page.
   You should see the Parent Account lookup card and the preview card for the Visualforce page first.



Scroll down and you should also see the related lists that we added to the page layout. Tap a related list to see its details.

Now that we've created this specialized page layout and added the fields our mobile technicians will need, their jobs will be much easier when they go on site. When they visit an account record's related information page in Salesforce1, they won't have to shuffle through a long list of unnecessary fields to find the ones they really want. And, since we added the Visualforce page as a mobile card, they'll be able to see the location of an account on a Google map.

In the Publisher Actions chapter on page 43, we'll enhance this page layout with special actions we've created just for our mobile technicians. But for now, let's go over some recommendations for paring down existing page layouts to make them more mobile friendly.

Tips for Optimizing Page Layouts for Mobile

In many cases, creating a new mobile-only page layout may not make sense. Here are some tips and tricks to making your existing page layouts more mobile friendly.

When optimizing a page layout, consider:

- What are the important things to see at a glance?
- What are the important moments for your users when they're working in Salesforce1?

- What can you automate so your users don't have to do it?

The Key: Organize and Minimize Fields

- Use sections to organize information logically, putting the most important things at the top of the page so they show up first. Your users don't want to search for fields individually. Organizing similar fields in sections will help your users find what they need. They can then easily scroll down the page to the section they care about.
- For accounts, contacts, and leads, you don't need to put phone or email fields near the top. They're already quickly accessible via the 📞 and ✉ icons on each record page.
- You don't need to keep fields in one column, as the page will render dynamically based on the device that's viewing it. A phone will reorder the fields into a single column, and a tablet or desktop will show two columns.
- Put the most important fields into the compact layout—which drives record highlights and record preview cards in Salesforce1—so they're available right up front, and so your mobile users don't have to drill into the record detail. We'll get into compact layouts in more detail soon.
- Keep the number of required fields to a minimum. Setting a field to required means it must appear on the detail page of all page layouts, so consider whether each field is truly required. You might have to convince stakeholders that a field isn't actually necessary for a record to be saved.
- If available in your organization, think about using record types so that fields that aren't common to all records don't have to appear on all records.
- To reduce the number of fields on a screen, consider using default values for new records instead of having the user enter the data.

We've gone over page layouts. Now let's get into another kind of layout, created especially for mobile: the compact layout.

About Compact Layouts

In the last section, we learned how page layouts affect the look and content of records in the Salesforce1 app. But page layouts aren't the only thing used to help customize how your Salesforce data appears in a mobile environment.

Compact layouts are used in Salesforce1 to display a record's key fields at a glance. Compact layouts are designed for viewing records on touchscreen mobile devices, where space is limited and quick recognition of records is important.

In the full Salesforce site, compact layouts determine which fields appear in the Chatter feed item that appears after a user creates a record with a publisher action.

In Salesforce1, compact layouts determine the fields that show up in:

- An object's record highlights area
- An object's record preview cards (but not the preview cards shown in search results)
- Enhanced lookup cards on a record's related information page

The first four fields you assign to your compact layout populate the record highlights section at the top of each record view in Salesforce1, so we'll put the fields we think our mobile technicians most want to see into the list.

Creating and customizing compact layouts for objects isn't required for Salesforce1, because system defaults are provided out of the box. However, if you want to customize which fields show up on object record headers—and elsewhere—for your mobile users, it's a good idea to go ahead and do it. Let's give it a try.

Try It Out: Create a Compact Layout

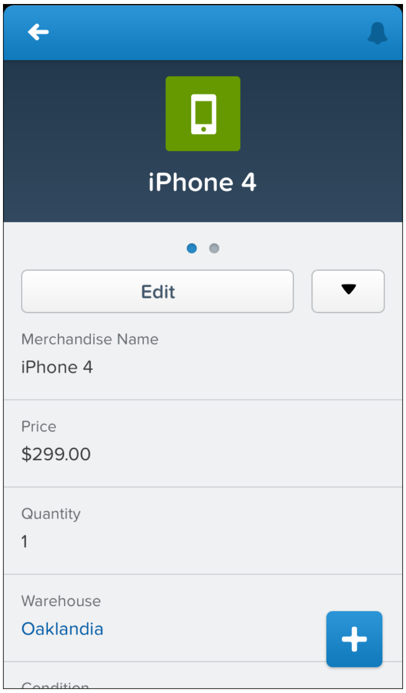
If you don't create custom compact layouts, records display using a read-only, predefined system default compact layout. Once you create custom compact layouts, you can set one as the primary compact layout for the object.

We'll create a custom compact layout, and then set it as the primary compact layout for the Merchandise object. Our new compact layout is used to render important merchandise record fields first in Salesforce1 for the Acme Wireless mobile technicians.

Before we can see compact layouts in action, though, we need a Merchandise record in our organization. Let's quickly create one.

1. From the Force.com app menu, select Warehouse.
2. Click the Merchandise tab.
3. Click **New**.
4. For `Merchandise Name`, enter `iPhone 4`.
5. For `Price`, enter `299`.
6. Click the `Warehouse` lookup, and select **Oaklandia**.
7. For `Quantity`, enter `1`.
8. Select Refurbished from the Condition drop-down list.
9. Click **Save**.

Currently, the Merchandise object uses its system default compact layout, which only has the `Merchandise Name` field assigned. Here's what our iPhone 4 record looks like in Salesforce1:



Let's add more fields alongside that "iPhone4" so our mobile users can see more pertinent information right at the top of the Merchandise record pages.

1. In Setup, click **Create** > **Objects**.

   Tip: Merchandise is a custom object. If we were creating a custom compact layout for a standard object, the path in Setup would be **Customize** > ***`Object`*** > **Compact Layouts**.

2. Click the Merchandise object name.
3. Scroll down to the Compact Layouts related list and click **New**.
4. In the `Label` field, enter `Customized Compact Layout`.
5. Select these fields for the compact layout, then click **Add**.

   When on site, these are the most important fields for our mobile technicians to see. You can select and add them individually or select them as a group using CTRL-click.

   - `Condition`
   - `Merchandise Name`
   - `Price`
   - `Quantity`

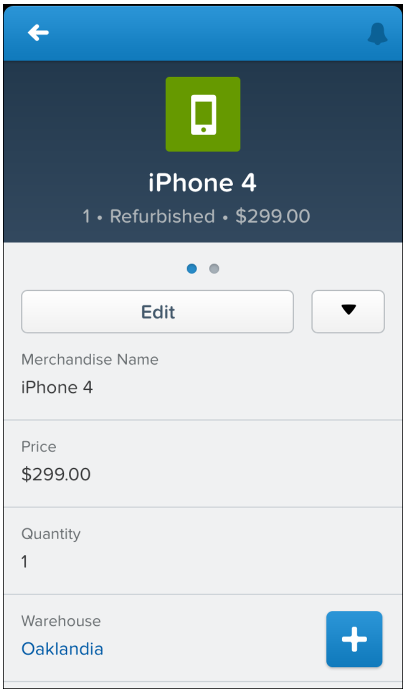
6. Using the **Up** or **Down** buttons, adjust the list so that the fields are in this order: `Merchandise Name`, `Quantity`, `Condition`, `Price`.
7. Click **Save**.
   Now we need to set our compact layout as the primary.
8. Click **Compact Layout Assignment**.
   You can see that the primary compact layout is set to the System Default here. We need to change that.
9. Click **Edit Assignment**.
10. Select the compact layout we just created to use as the primary compact layout.
11. Click **Save**.

We've customized a compact layout for the Merchandise object. Now let's see what its related information page looks like in Salesforce1.

Test the Compact Layout

When you customize a compact layout and assign it as the default, as we just did, the changes are reflected in Salesforce1 immediately.

1. Open the Salesforce1 app on your mobile device.
2. Tap to access the navigation menu.
3. In the Recent section, tap **Merchandise**. You may have to tap **More...** to find it.
4. Tap the **iPhone 4** item.



Merchandise Name
iPhone 4

Price
$299.00

Quantity
1

Warehouse
Oaklandia

As you can see, the record highlights area has the fields from our newly-created custom compact layout. Instead of seeing just the merchandise name, as on the system default layout, the Acme Wireless mobile technicians can now see much more: that there is one refurbished iPhone 4 in stock at the warehouse, and it costs $299.00.

Tell Me More: Compact Layouts

We've gone over a lot about compact layouts, but here are a few more more tidbits about how they work.

Compact layouts support all field types except:

- text area
- long text area
- rich text area
- multi-select picklist

Users who don't have access to certain fields in Salesforce won't see them on the compact layout.

Removing a field from a page layout doesn't remove it from the object's compact layout. The two layout types are independent.

Compact Layouts and Record Types

If you have record types associated with an object, you can override the primary compact layout assignment and assign specific compact layouts to different record types. If you don't set any record type overrides, all record types use the object's primary compact layout by default.

To find out more about compact layouts and record types, see "Assigning Compact Layouts to Record Types" in the Salesforce Help.

Chapter 7

Using Publisher Actions in Salesforce1

In this chapter ...

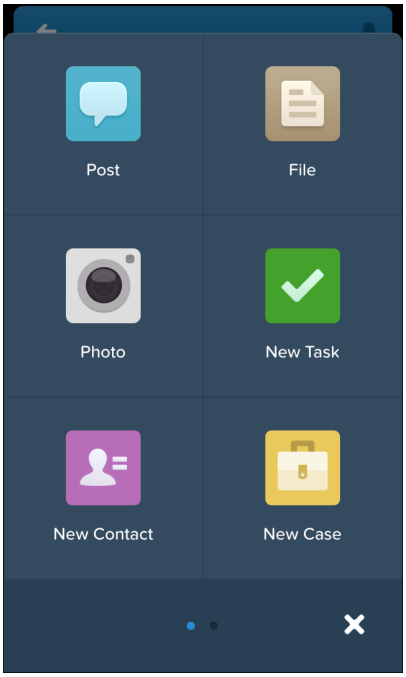
As an administrator, you can enable valuable micro-moments for all of your users by creating unique publisher actions. When thinking about what actions you might want to create specifically for Salesforce1, ask your users what they wish they could do in the mobile context. For example, an administrator at a food service company could create an "Emergency Order" action that allows their delivery drivers to immediately order extra or missing food items from their mobile phone while still at a customer site. Creating actions for Salesforce1 can drive adoption in your organization and make you a hero to your users!

In this chapter, we'll learn about types and categories of actions, how to create and customize them in Salesforce using point-and-click tools, and how they can help mobile users get essential work done while away from the office.

About Publisher Actions

The publisher actions feature lets you create actions and add them to the Chatter publisher on the home page, on the Chatter tab, in Chatter groups, and on record detail pages. You can also customize the order in which the standard Chatter actions appear, including Post, File, Link, and Poll. In addition, actions have their own action layouts, which let you specify which fields are included in the action, and in which order.

In the Salesforce1 app, actions show up in the publisher, which is accessible by tapping +.



There are three types of actions you can create using point-and-click tools in Salesforce.

- *Create actions* let users create records. They're different from the Quick Create and Create New features on the home page, because create actions respect validation rules and field requiredness, and you can choose each action's fields.
- *Log a call actions* let users record the details of phone calls or other customer interactions. These call logs are saved as completed tasks.
- *Update actions* let users make changes to a record from the record's feed or from the publisher.

Developers can create a fourth type of action: a custom action. *Custom actions* are Visualforce pages or canvas apps with functionality you define. For example, you might create a custom action to let users write comments longer than 5000 characters, or one that integrates a video conferencing application so support agents can communicate visually with customers.

For create, log-a-call, and custom actions—which we'll go over at the end of this chapter—you can create either object-specific actions or global actions. Update actions must be object-specific.

Object-Specific Actions

Object-specific create actions let users create records that are automatically associated with related records. For example, you might set up an object-specific action on the Account object to allow users to create contacts. If a user creates a contact on the detail page for Acme, Inc., that contact will automatically be associated with Acme. You can only add an object-specific action to page layouts for that object.

Global Actions

Global create actions let users create object records, but there's no automatic relationship between the record that's created and any other record. You can add global actions to page layouts for the home page, the Chatter tab, Chatter groups, and record detail pages.

Add global log-a-call actions to global layouts to let users record call details from the publisher on the home page, the Chatter tab, and in Chatter groups. They can also record call details directly from their phone while in Salesforce1.

Note: You can't create global actions that create a record for objects that are the detail object in a master-detail relationship. Actions to create detail objects must be object-specific actions.

For a list of supported objects for object-specific and global actions, see "Publisher Actions Overview" in the Salesforce Help.

Publisher Action Categories

Actions fall into four different categories. You may see some but not others, depending on the age and configuration of your organization.

Standard actions

Standard actions are actions that are included automatically when Chatter is enabled: Post, File, Link, Poll, and, in organizations that use work.com, Thanks. Standard actions can also include any you've created for your organization using point-and-click methods, such as create or log-a-call actions.

Default actions

Default actions are create actions—actions that allow users to create new records—that are automatically set up to make the process of configuring publisher actions much simpler.

In organizations created after Winter '14, these actions are automatically added to the default global publisher layout and to the default publisher layout on these objects:

- Account
- Case
- Contact
- Lead
- Opportunity

In organizations created before Winter '14, these actions are available in the palette on the page layout editor for these layouts, but they're not automatically added to any publisher layouts.

Since our Development organization is new, it contains a set of default actions. You can check out the default global actions in Setup at **Create** > **Global Actions**.

For a list of which default actions appear on which object, see "Default Actions Overview" in the Salesforce Help.

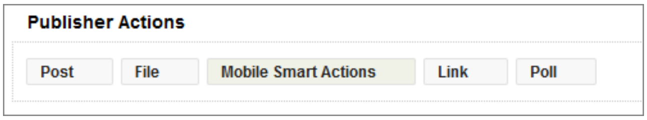
Mobile smart actions

Mobile smart actions are also a set of pre-configured actions, just like default actions, and are supported on the same list of objects. However, they appear in pre-Winter '14 organizations, and are only available in Salesforce1.

In organizations created before Winter '14 that didn't have publisher actions enabled when Winter '14 was released, mobile smart actions are automatically added to the publisher on page layouts for account, case, contact, lead, and opportunity, and to the global publisher layout.

Mobile smart actions are available in the page layout editor for new organizations and existing organizations that had publisher actions enabled when Winter '14 was released, but they're not automatically added to the publisher on any page layouts in those organizations.

Mobile smart actions appear as a single element in the Publisher Actions section of the page layout editor. In Salesforce1, the Mobile Smart Actions element expands to a set of distinct create actions, which allow users to create records directly in the feed.



Mobile smart actions are automatically populated with all of your organization's required fields on the relevant object, regardless of how many fields there are. For example, the New Case action in the mobile smart action bundle includes all required case fields. You can't edit the fields on mobile smart actions; the fields that appear will change only if you change which fields on an object are required.

Mobile smart actions don't appear in the publisher on any page in the full Salesforce site, regardless of which page layouts you add them to; they appear only to users in Salesforce1.

For more information on mobile smart actions, and a list of what the mobile smart action element on each supported object expands to include, see "Mobile Smart Actions Overview" in the Salesforce Help.

Custom actions

Custom actions are Visualforce pages or canvas apps with functionality you define. For example, you might create a custom action to let users write comments longer than 5000 characters, or one that integrates a video conferencing application so support agents can communicate visually with customers.

We'll touch briefly on custom actions later in About Custom Actions on page 57, but you can find out much more about them in the Adding Functionality with Visualforce Custom Actions chapter of the *Salesforce1 App Developer Guide*.

Point and Click Your Way to Publisher Actions

In the next set of tasks, we'll create an object-specific action. But that's only the first step. There are a few things we need to do after that to make sure the action shows up where it's supposed to in both the Salesforce1 app and the full Salesforce site, and that it's optimized for a mobile experience.

These are the steps you need to follow when setting up actions. We'll go through all of them.

1. Create a global or object-specific action.
2. If you created an object-specific action, add it to one or more of that object's page layouts.
3. Customize the action's layout, choosing the fields users see when they use it.
4. Set predefined field values for required fields, where possible.

Let's get started!

Try It Out: Create an Object-Specific Action

Object-specific create actions let users create records that are automatically associated with related records.

Let's give the mobile technicians at Acme Wireless a way to quickly log a case while still on site with a customer. If we put a record create action on the Account object with Case as the target object, the technicians can browse to the customer account record on their mobile device, and log cases directly from there.

1. In Setup, go to **Customize** > **Accounts** > **Buttons, Links, and Actions**.
2. Click **New Action**.
3. For Action Type, select Create a Record.
4. For Target Object, select Case.
5. For `Label`, enter `Create a Case`.
6. Click **Save**.

After saving, we're dropped directly into the action layout editor, where we can customize the fields assigned to the action. We'll get to action layouts shortly. But before we do, there's one more thing we need to do: assign the action to an account page layout.

Try It Out: Assign the Action to the Account Page Layout

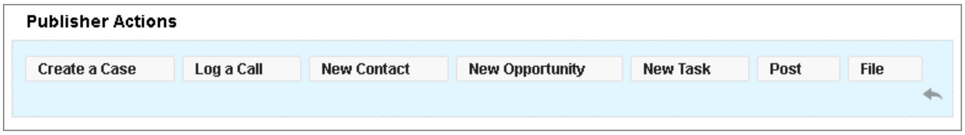
Before our object-specific action will show up both in the full Salesforce site and in Salesforce1, we need to add it to a page layout.

1. We're already on the **Buttons, Links, and Actions** node in Setup under **Customize** > **Accounts**. Now click over to **Page Layouts**.
2. Click **Edit** next to Account Mobile Technician Layout.

   This is the layout we created in the Page Layouts chapter. Notice that the Publisher Actions section is empty, and there's a message telling us that any actions on this layout are being inherited from the global publisher layout. But since this page layout is specifically for Acme Wireless mobile technicians, we want to customize the publisher actions on this layout to match the work the technicians need to do.
3. In the Publisher Actions section, click **override the global publisher layout**. Default actions appear, and a node for Mobile Smart Actions, which we learned about earlier.
4. Drag the Link, Poll, and Mobile Smart Actions items back to the palette.
5. Click the Actions category in the palette, then drag the following actions into the left side of the Publisher Actions section, in front of Post and File:

- Create a Case
- Log a Call
- New Contact
- New Opportunity
- New Task

The first six actions in the list show up on the first page of the publisher in Salesforce1. Since the Create a Case action is important to our mobile technicians, we put it first in the list so it doesn't get lost on the second page of the publisher.



Notice there's also a New Case item in the palette. The New Case item is a global default action associated with the Account object. We're going to customize our object-oriented Create a Case action, so we don't need the redundant global action.

6. Click **Save**.

Our new Create a Case action will now show up in the feed on the Account detail page in the full Salesforce site, and in the publisher in Salesforce1 for all of the mobile technicians.

Now that's all done, let's go over global actions. Then we'll revisit action layouts and customize our Create a Case action.

About Global Actions

Global create actions let users create object records, but there's no automatic relationship between the record that's created and any other record. Actions tied to specific objects are only accessible from those objects' record pages; however, global actions can be added to any supported objects' page layouts as well as to global layouts, so they're very useful for quickly creating records.

Creating Global Actions

You create global actions in a different place in Setup than you create object-oriented actions. To create a global action, in Setup, click **Create** > **Global Actions**.

The Global Publisher Layout

Global publisher layouts let you customize actions that appear on Chatter publishers for global pages such as the Home page, Chatter page, and Chatter group detail pages. Global publisher layouts can be composed only from global actions. After creating global publisher layouts, you can assign them to different user profiles, which lets you customize which actions the users under different profiles see by default in their Chatter feeds on the global pages.

In Salesforce1, global actions show up in the publisher on pages to which the global publisher layout applies. Before our global action will show up either in the full Salesforce site or in Salesforce1, we need to add it to the global publisher layout.

Tell Me More: Publisher Actions

Before you can start working with publisher actions in your own production organization, you need to configure a few settings. We don't need to worry about these in the developer organization we're working in, because they are both already taken care of.

1. Enable publisher actions. You can do this in Setup by clicking **Customize** > **Chatter** > **Settings**, and selecting `Enable Publisher Actions`.
2. Enable feed tracking on any object that you wish to create publisher actions for. You can do this in Setup at **Customize** > **Chatter** > **Feed Tracking**. Select the object, and select `Enable Feed Tracking`.

Publisher Action Considerations

- If you add an action to a page layout, but a user assigned to the profile that uses that page layout can't see the action either in the full Salesforce site or in Salesforce1, it might be because:
  - ◊ If it's a create action, the profile might not have access to create the record type of the action.
  - ◊ The user doesn't have both Read and Edit permission on the action's relationship field. The relationship field is the field that's automatically populated on the target object when a user creates a record using an action. For example, for an action on cases that lets users create child cases, the default relationship field is `Parent Case`. To be sure users can see the Create Child Case action, check that they have both Read and Edit permission on the `Parent Case` field.
- You can remove a required field from the action layout, but make sure the field has a predefined value. Otherwise, users won't be able to create new records.

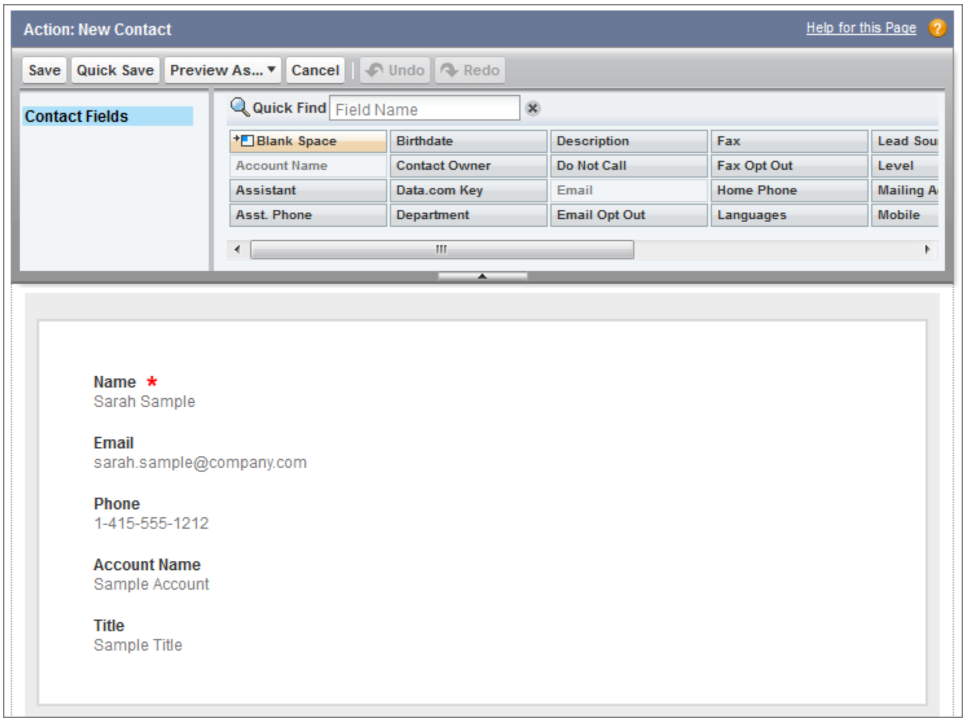
Tip: Did you know that you can drag the publisher icon into either the lower left or lower right corner of the screen? Try it!

For more tips, see Publisher Action Guidelines and Best Practices on page 60.

About Action Layouts

Just as object record pages have page layouts that can be customized, publisher actions have action layouts that can be customized too. We do this in the action layout editor.

When you first create a publisher action, its layout is populated with a default set of fields. Use the action layout editor to specify which fields to include in the layout. You can add and remove fields, or simply reorder them on the layout.



Name *
Sarah Sample

Email
sarah.sample@company.com

Phone
1-415-555-1212

Account Name
Sample Account

Title
Sample Title

The action layout editor has a palette on the upper section of the screen and the action layout below it. The palette contains fields from the action's target object that you can add to the action layout. However, the following field types aren't supported, and won't show up in the palette:

- Record type fields
- Read-only field types such as roll-up summary, formula, and auto-number fields
- Read-only system fields such as `Created By` or `Last Modified By`

Note: If you convert a field's type from one that is supported for actions to a type that isn't supported, the field is removed from the action layout. If you convert the field back to a supported type without changing the action layout, the field is automatically added back onto the layout. If you've edited the layout and then convert the field back to a supported type, you must add the field back onto the layout manually.

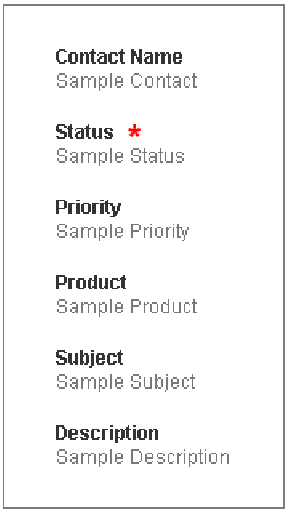
Try It Out: Customize an Object-Specific Action Layout

The first time you view the layout for an action you've created, certain fields are pre-populated: target object default fields, standard required fields, and any custom universally required fields. We're going to add more fields to the Create a Case action so the mobile technicians can put more information into the case for the Acme Wireless support reps.

1. In Setup, go to **Customize** > **Accounts** > **Buttons, Links, and Actions**.
2. Click **Layout** next to our Create a Case action.

   The action has four fields already set by default: `Contact Name`, `Status`, `Subject`, and `Description`. The red asterisk next to the `Status` field shows that it's a required field. Let's add a few more fields.
3. Click and drag `Priority` into position right after `Status`.
4. Click and drag `Product` into position right after `Priority`.

   This field lets the technicians indicate what product the customer is having trouble with.



Contact Name
Sample Contact

Status *
Sample Status

Priority
Sample Priority

Product
Sample Product

Subject
Sample Subject

Description
Sample Description

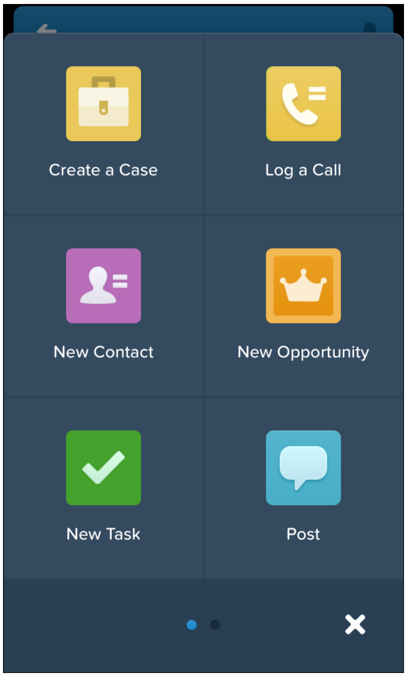
5. Click **Save**.

Now when the Acme Wireless mobile technicians visit an account record related information page in Salesforce1, they can create a case from any account record page. Let's give it a try.

Test Out the Object-Specific Action

When you create an action, assign it to a page layout, and customize its action layout, as we did, the changes are reflected in Salesforce1 immediately.

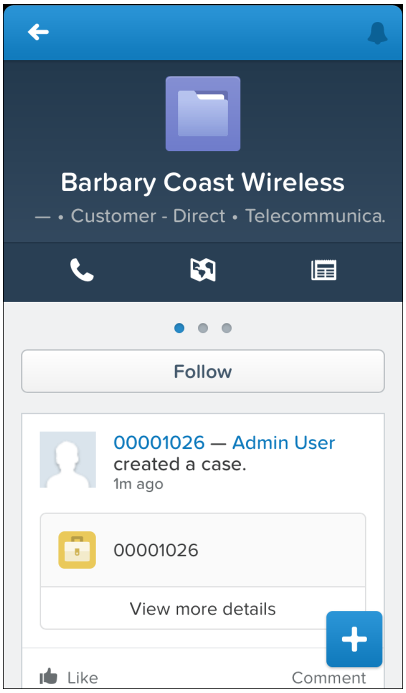
1. Open the Salesforce1 app on your mobile device.
2. Tap ☰ to access the navigation menu.
3. In the Recent section, tap **Accounts**.
4. Tap **Barbary Coast Wireless**.
5. Tap ➕.
   Our Create a Case action is the first action in the publisher.



6. Tap the Create a Case action.
7. Tap the `Contact Name` field.
8. Tap **Lloyd Benjamin** to assign him to the case.
9. Leave its status as New.

10. Assign the case a low priority.
11. Tap **Product**, and select the first one on the list.
12. Enter a subject and description.
13. Tap **Submit**.

OK, we're back on the account record detail page. Swipe right to get to the feed page, and you should see a new feed item for the case you just created.



Nice work!

About Predefined Values in Actions

Setting up *predefined values* for certain fields on actions can increase your mobile users' productivity and optimize the action for the mobile environment at the same time.

When configuring action layouts, fewer fields is better. If you remove required fields from an action layout, the action won't save properly when a user tries it. You have to balance ease of use with the need for required information. Some objects may have many required fields, and when a user clicks a record create action for these, the action layout can be very long, filled with required fields. Mobile users don't want to take the time to fill in a whole lot of required fields. They want to get things done and move on to their next task.

If you predefine values for fields on object records created through an action, you don't need to add those fields to the action layout. For example, on an action that lets users create opportunities, you might set Prospecting as the predefined value for the `Stage` field. All new opportunities created through that action will automatically be assigned to the prospecting stage.

You can set predefined values for any field available in the action layout editor, with these exceptions:

- rich text area fields
- multi-select picklists
- read-only field types like auto-number, formula, and roll-up summary fields

Predefined values for fields on actions are separate from default values you can set for fields on records. A field, if it's included in an action, can have both a predefined value set for when it's used in an action, *and* a default value set. If a field on an action has both a predefined value and a default value set, the action uses the predefined value, not the default value.

Let's set a predefined value for one of the fields on our Create a Case action.

Try It Out: Set a Predefined Field Value on an Action

When we customized our Create a Case action, the `Status` field was already present, because it's a required field for cases. Whenever Acme Wireless' mobile technicians are out in the field and have to open a case, the case status is always going to be "New" for them. Rather than require them to fill in the `Status` field every time they open a case, let's set up a predefined field value for it as "New". Then we can remove it from the action layout, and whenever the Create a Case action is used to create a case, the status will automatically be set to "New".

1. In Setup, go to **Customize** > **Accounts** > **Buttons, Links, and Actions**.
2. Click **Create a Case**.
3. In the Predefined Values related list, click **New**.
4. From the Field Name drop-down list, select Status.
5. Set its value to New.
6. Click **Save**.
   Now we need to remove the `Status` field from the action layout.
7. On the action detail page, click **Edit Layout**.
8. Click the `Status` field on the layout and drag it up to the palette.

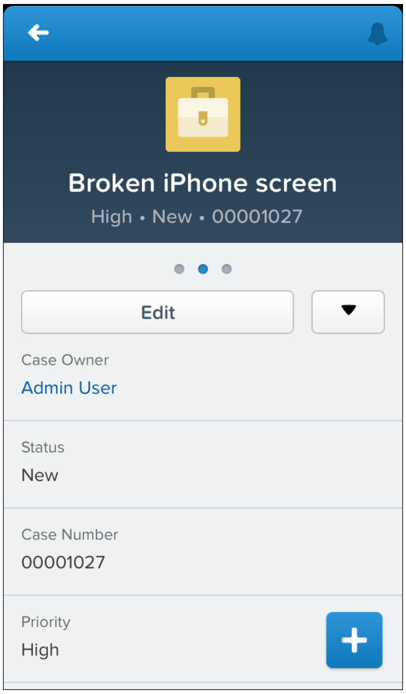
Tip: If you have a required field with a predefined value assigned, and have removed the field from the action layout, if you later delete the field's predefined value you will need to re-add the required field to the action layout. Otherwise, users won't be able to save the record.

9. Click **Save**.

OK, now let's see it in action.

Test the Predefined Value

1. Open the Salesforce1 app on your mobile device.
2. Tap ☰ to access the navigation menu.
3. In the Recent section, tap **Accounts**. You may have to tap **More...** to find it.
4. Tap **Barbary Coast Wireless**.
5. Tap ＋.
6. Tap the **Create a Case** action.
   Notice the `Status` field is now gone.
7. Assign the case a High priority.
8. Tap **Product**, and select any of the products on the list.
9. Enter a subject and description.
10. Tap **Submit**.
    Swipe right to get to the feed page, and you should see a new feed item for the case you just created.
11. Tap the case number in the feed item.
    In the record highlights area of the case record page, you'll see the subject, priority (High), status (New), and the case number. The `Status` field was populated for us, thanks to our predefined value.



All right! We're almost done with actions. There's one more type, custom actions, that we'll go over briefly for now.

About Custom Actions

Object-specific custom actions are Visualforce pages that let users interact with or create records that have a relationship to an object record. The Visualforce page for an object-specific custom action must include the standard controller for the relevant object. For example, if you want to create a custom action that lets users import a contact's Twitter profile and add that information to a contact record, you need to use the standard contact controller.

Use a Visualforce page or a canvas app to create a global custom action for tasks that don't require users to interact with or create records that have a relationship to a specific object. Visualforce pages you want to use as global custom actions can't use standard controllers. For example, if you want to create a custom action that lets users enter a street address and see a map, the local time, and the local weather, create a Visualforce page that doesn't use any of the standard controllers, and add it as a custom global action. Canvas apps you want to use as custom actions need to use Publisher as a location.

We can't create custom actions with point-and-click, so we won't be working with them in our exercises here. If you want to find out more about custom actions, see the Adding Functionality with Visualforce Custom Actions chapter on page 87 of the *Salesforce1 App Developer Guide*.

Chapter 8

Guidelines and Best Practices for Administrators

In this chapter ...

We've covered the primary places you can use point-and-click tools to optimize your organization for Salesforce1 and your mobile users. We enabled notifications, created page layouts and compact layouts, set up publisher actions, and customized the Salesforce1 navigation menu.

In this chapter, we'll cover some suggestions and best practices for actions and custom icons that can make your mobile users' experience that much better. And in case you missed it, don't forget to review the page layout guidelines in Tips for Optimizing Page Layouts for Mobile on page 36.

Publisher Action Guidelines and Best Practices

Actions are a great way to let your users get things done quickly. As an administrator, you're in a prime position to give them the exact actions they need. When considering what kinds of actions to create, or even when creating the actions themselves, keep these suggestions in mind.

- When customizing action layouts, consider what your mobile users will do with them. Minimalism is key. Include only the fields that are really necessary both for them and for whomever will handle the cases, calls, or records that result from those actions.
- Actions shouldn't be used for simple navigation shortcuts. They're designed to perform a function.
- Give your actions task-oriented names that tell your users what they do. Use verbs like New, Create, Share, Update, or Import. Keep the names short and descriptive.
- Create a global action if you're contemplating something your users need to do that isn't tied to a specific object and that you want to be accessible from anywhere.
- Use the `Description` field to create notes for yourself about each action. This is especially useful if you're creating several similar actions for different record types, for example. The description appears in the list of buttons, links, and actions for object-specific actions, or in the list of global actions, as well as on the detail page for the action. Your notes aren't visible to users.
- There is no hard limit to the number of fields you can add to an action layout. However, for optimum usability, we recommend a maximum of 8 fields. Adding more than 20 fields can severely impact user efficiency. To reduce the number of fields in your layout, you can create predefined values for the required fields, and then remove those fields from your layout. You can set predefined field values from the action detail page.

Custom Icon Guidelines and Best Practices

You can add custom icons to your publisher actions or custom tabs if your organization has access to the Documents tab.

If you decide to create your own action or tab icon, upload it to a Documents folder and make sure `Externally Available Image` is selected.

When creating a custom icon, follow these image guidelines. The icon should:

- Be less than 10k in size
- Be 120 x 120 pixels
- Be a PNG with a transparent background
- Have a resolution of 72 dpi

- Not include a color background
- Not include outer shadows on the inner icon graphic

In addition, follow these visual guidelines.

- Center inner icon graphics within a 80 x 80 pixel area, leaving 20 pixels of spacing surrounding it in a 120 x 120 px final format.
- The icon graphic should be white, or lighter than the background color.
- Avoid heavy inner or outer shadows.
- Use simple and flat styling resembling the Salesforce1 icon family.

You assign custom icons using the **Change Icon** link when you create the action or tab.

DEVELOPING FOR SALESFORCE1

Chapter 9

Welcome to Salesforce1 Platform Development

In this chapter ...

Welcome to development for the Salesforce1 Platform. In Part I, you learned how to set up and configure your organization for Salesforce1. You also learned how to customize the Salesforce1 app for mobile users by using declarative programming features. In this part, you'll learn how you can use the Salesforce1 Platform features to extend the Salesforce1 app and add new functionality for your users with code.

Developing for mobile users in Salesforce1 means you can leverage your existing skills to extend and customize the app for your users. You can use the Salesforce1 Platform to extend your organization and then make those changes available to both mobile users and users of the full Salesforce site.

Our Scenario

We'll continue the business scenario of Acme Wireless and build functionality to meet the needs of their mobile technicians and warehouse workers.

You'll learn how to:

- Optimize the mobile experience for users by employing mobile-first user interface design.
- Implement Visualforce pages so that mobile users can access them from the navigation menu, from a record, or from the publisher.
- Create a Visualforce custom action to make a Visualforce page available from the publisher.
- Create a canvas custom action to make a Force.com Canvas app available from the publisher.
- Give users access to functionality in the feed and embed a canvas app in the Chatter feed.
- Leverage existing logic in custom actions by calling them from the API.
- Extend the user interface by creating Flexible Pages.
- Implement development best practices when extending Salesforce1.

Who This Part is For

Part II of this book is geared towards all developers who need to customize the Salesforce1 app with code, from beginner to seasoned pro.

If you're familiar with programming in the Force.com platform or have done development using the Mobile SDK, then you should be able to easily make the jump to developing in the Salesforce1 Platform.

If you're new to the platform or have done mostly declarative programming, then don't worry. Each chapter takes you step-by-step through the process of implementing each feature for our fictitious business, Acme Wireless. This way, you can learn by doing. These sections are titled "Try It Out."

In each chapter you'll also find information about what the feature is, how it works, and when to use it. These sections are titled "Tell Me More." Go there to delve into the details of the feature.

When to Use the Salesforce1 Platform vs. Creating Custom Apps

When it comes to developing functionality for your Salesforce mobile users, you have options. Here are some differences between extending the Salesforce1 app and creating custom apps using the Mobile SDK or other tools.

Salesforce1 Platform

- Has a defined user interface.
- Has full access to Salesforce data.
- Can be used to create an integrated experience in the Salesforce1 app.
- Gives you a way to include your own apps/functionality with publisher actions.
- Lets you customize Salesforce1 with point-and-click or programmatic customizations.
- Lets you add functionality programmatically through Visualforce pages or Force.com Canvas apps.
- Has defined navigation points. Salesforce1 customizations or apps adhere to the Salesforce1 navigation. So, for example, a Visualforce page can be called from the navigation menu or from the publisher.
- Enables you to leverage existing Salesforce development experience, both point-and-click and programmatic.
- Is included in all Salesforce editions and supported by salesforce.com.

Custom Apps

Custom apps can be either free-standing apps you create with Salesforce Mobile SDK or browser apps using plain HTML5 and JQueryMobile/Ajax. With custom apps, you can:

- Define a custom user experience.
- Access Salesforce data using REST APIs in native and hybrid local apps, or with Visualforce in hybrid apps using JavaScript Remoting. In HTML5 apps, do the same using JQueryMobile and Ajax.
- Brand your user interface for customer-facing exposure.
- Create standalone mobile apps, either with native APIs using Java for Android or Objective-C for iOS, or through a hybrid container using JavaScript and HTML5 (Mobile SDK only).
- Distribute apps through mobile industry channels, such as the Apple App Store or Google Play (Mobile SDK only).
- Configure and control complex offline behavior (Mobile SDK only).
- Use push notifications (pilot feature in Winter '14; available for Mobile SDK native apps only).

- Design a custom security container using your own OAuth module (Mobile SDK only).

Other important Mobile SDK considerations:

- Open-source SDK, downloadable for free through npm installers as well as from GitHub. No licensing required.
- Requires you to develop and compile your apps in an external development environment (Xcode for iOS, Eclipse or similar for Android).
- Development costs range from $0 to $1M or more, plus maintenance costs.

Salesforce1 Platform Development Process

The Salesforce1 app is designed to run on a mobile device, like a phone or tablet, but that doesn't mean you have to develop on one. Especially when you're working with Visualforce pages that will apper in both the Salesforce1 app and the full Salesforce site, it's convenient to develop on your desktop. By accessing the Salesforce1 app in a device emulator or browser window, you can develop iteratively on your desktop, without having to pick up your device to test each change.

Important: Running the Salesforce1 app in an emulator or desktop browser isn't supported for normal use, and it's not a substitute for full testing of your custom apps and pages on your organization's supported mobile devices.

To view your Salesforce1 custom pages and apps on a device emulator, download and install the appropriate SDK for your supported devices.

- Apple iOS Simulator for iPhone and iPad

  `developer.apple.com/library/ios/documentation/IDEs/Conceptual/iOS_Simulator_Guide/`

- Android Virtual Device Emulator for Phone and Tablet

  `developer.android.com/tools/devices/emulator.html`

To view your Salesforce1 custom pages and apps in your desktop browser, access the URL `https://<Salesforce_instance>/one/one.app`.

- For development purposes only, the following desktop browsers are recommended:
  - ◊ Chrome on Windows
  - ◊ Chrome or Safari on Mac OS X

- To avoid an automatic redirect back to the standard version of Salesforce, set your browser's user agent to that of a mobile device, such as an iPhone or iPad. You can set the user agent in your browser settings, and the steps vary depending on the browser. For more information, see `http://osxdaily.com/2013/01/16/change-user-agent-chrome-safari-firefox/`.

You can't use the standard `https://<Salesforce_instance>/apex/yourPageName` URL to test Visualforce in Salesforce1. You can only do that by accessing the page within Salesforce1.

Development Prerequisites

You'll need to have these before you can start these exercises.

- Access to a Developer Edition organization.

  If you aren't already a member of the Force.com developer community, go to `http://developer.force.com/join` and follow the instructions for signing up for a Developer Edition organization. Even if you already have Enterprise Edition, Unlimited Edition, or Performance Edition, use Developer Edition for developing, staging, and testing your solutions against sample data to protect your organization's live data.

- The "API Enabled" permission must be enabled for your Developer Edition organization. This permission is enabled by default, but might have been changed by an administrator.
- The Warehouse data model must be installed in your Developer Edition organization and the Salesforce1 app installed on a mobile device. If you haven't already set up these items, see Setting Up Your Work Environment on page 15.

Change the System Administrator Page Layout Assignment

We've created a custom page layout to help us illustrate some of the concepts in this book. Before we begin, let's switch the page layout assignment for our System Administrator profile to this new layout.

1. In Setup, click **Manage Users** > **Profiles**.
2. Select the System Administrator profile.
3. In the Page Layouts section, find Account, and click **View Assignment**.
4. Click **Edit Assignment**.
5. Click the System Administrator line item.

6. Select Warehouse Schema Account Layout from the Page Layout to Use drop-down list.
7. Click **Save**.

All right! Now we're ready to roll.

Chapter 10

Designing Mobile-First User Interfaces

In this chapter ...

In this chapter, we'll learn about user interface design considerations to keep in mind when developing functionality for Salesforce1 mobile users.

Designing your user interface with mobile in mind is critical to the success of your app. If users find your functionality easy to use and in alignment with the experience they have with other mobile apps, they'll be much happier with the app. The user interface guidelines in this chapter address key differences in the mobile platform and the way users work in it:

- Mobile devices have smaller screens.
- Navigation is done with gestures like tapping and swiping.
- Users typically perform focused tasks from mobile devices like adding a new record.

Throughout the examples in this book, we demonstrate these best practices. As you develop and create your own customizations and apps using the Salesforce1 Platform, keep these guidelines in mind.

Design for Mobile

When designing a user interface for Salesforce1 users, keep the smaller form factor and the way users work in mind from the start.

In the mobile paradigm, users work in quick bursts, spending not more than a minute or two on a task. So be sure to design your app for the way users work.

Avoid taking forms and workflow designed for the desktop environment and simply making them available in Salesforce1. For example, it may be an acceptable user experience in a desktop Web browser to have a form with many fields and related lists on it. However, that same form probably won't provide a good user experience when used from a mobile device.

Users will have a much better experience with forms that follow these user interface guidelines and are designed specifically for the mobile environment.

Keep Navigation Simple

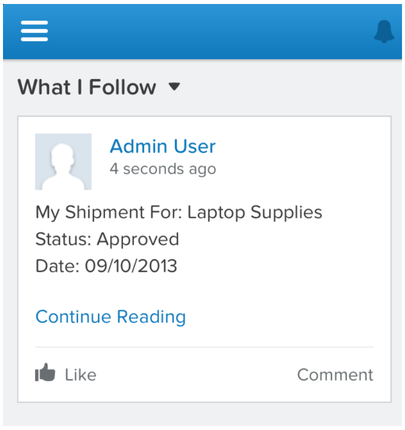
Design your customizations so that users can get to the screen quickly and know where they are within the app.

When creating forms, be sure that they have a simple, logical flow. This helps users to know where they are and keeps them from having to remember where they came from. For example, avoid creating a feed item that links to another form that then links to another form.

Put Important Information at the Top

Put the most essential information at the top of the screen so that it's immediately visible to the user and easy to access.

For example, on a screen that the mobile technician uses to see all their repair appointments, put the most important customer data such as name, address, and phone number at the top. For each screen, identify what the user's task is and what data they need to accomplish that task. Another example is if you're generating feed items, the text should be as concise as possible and the most important information should be at the beginning of the post, as shown in the following example.



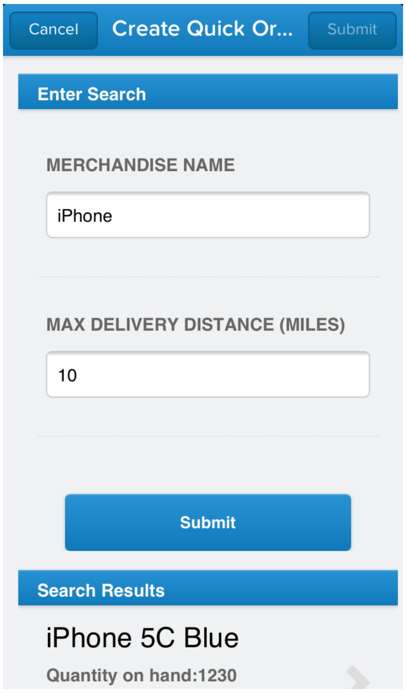
My Shipment For: Laptop Supplies
Status: Approved
Date: 09/10/2013

Minimize the Number of Fields

When it comes to presenting fields on a screen, less is more. Give users only the fields they need to complete the task at hand.

For example, if you're creating a screen for adding a new warehouse, you might only want to surface the warehouse name field. This way the user can quickly add a new warehouse. If the user has collected more information, they can edit the new record and add it in the detail view.

This guideline is particularly important when displaying information that's for viewing only. For example, if you're creating a form that the mobile technician uses to look up a customer, the technician probably needs to see only the customer name, address, and a phone number. In our page to search for merchandise, only two fields are needed: the merchandise name and delivery distance.



To reduce the number of fields on a screen, consider using default values for new records instead of having the user enter the data.

Use Field Defaults

When you have fields on a screen that user must enter, create defaults for as many of them as you can.

For example, if you create a form with a multi-select picklist, consider defaulting the field to a particular value. This way the user can change it if necessary, but otherwise can simply accept the default for quicker workflow.

Minimize User Interface Text

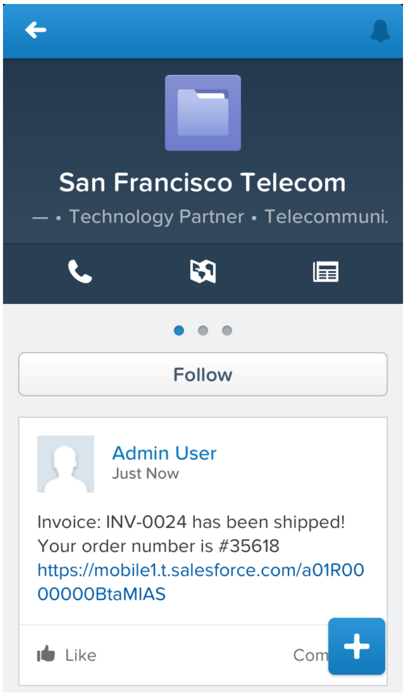
Be mindful of device form factor and size, and keep labels and user interface text short and concise.

Keep field and menu labels as short as you can while still conveying enough meaning for users to understand what the field is for. Use intuitive icons or symbols whenever possible so users can quickly understand your user interface. The goal with user interface text is to provide enough information so that users can understand what they need to do while at the same time keeping the user interface clean and simple.

A common best practice is to place labels above fields and to show only one column of fields instead of displaying fields side by side.

Any blocks of text should also be concise and to the point. For example, if you're automatically creating a feed item to be viewed in Salesforce1, keep the text short and include only the necessary information.

In our warehouse scenario, when an order is fulfilled in the warehouse, a feed item appears in the customer account feed that shows the key information such as invoice number and order number, along with a short message and a link to the invoice.



Invoice: INV-0024 has been shipped!
Your order number is #35618
https://mobile1.t.salesforce.com/a01R0000000BtaMIAS

Tap Target Size

Mobile users interact with the Salesforce1 user interface with their fingers, so be sure to design user interface elements to be the optimal size.

Screen controls should be large enough for users to tap easily and take into account that every user's hands are sized differently. Controls that are too small means users will need to tap multiple times, a frustrating experience. But you don't want controls so large that users can accidentally tap one when they meant to tap another.

We recommend a minimum tap target size of 44 pixels wide by 44 pixels high. For more information about custom icons, see Custom Icon Guidelines and Best Practices. on page 60

Chapter 11

Extending Salesforce1 with Visualforce Pages

In this chapter ...

You can use your knowledge of Visualforce to extend the Salesforce1 app and give your mobile users the functionality they need.

In this chapter, we'll extend the Acme Wireless organization and give mobile technicians a way to find nearby warehouses. For example, if the technician is out on a call and needs a part, they can use this page to look for warehouses within a 20–mile radius.

While you could take an existing Visualforce page and surface it in Salesforce1, you should consider how that page will look and function on a mobile device. Most likely, you'll want to create a new page designed especially for a mobile experience.

For more information about where Visualforce pages can appear in the user interface, see Tell Me More: Where Visualforce Pages Can Appear in Salesforce1 on page 82.

Now, let's get started!

Try It Out: Create a Visualforce Page

Now we'll create a Visualforce page and make it available from the navigation menu.

This Visualforce page references these items:

- A static resource named `googleMapsAPI`
- An Apex class named `findNearby`

These have been provided for you in the package that you downloaded and installed for this guide.

Also included in the package is the Visualforce page `FindNearbyWarehousesPage`. You can move on to the next step, if you want to use the page included in the package.

The code for this page uses the location of the current user and integrates with Google Maps to display a map with warehouses located within 20 miles. For each nearby warehouse, the map displays a pin along with the warehouse name, address, and phone number.

1. In the Salesforce application, from Setup, click **Develop** > **Pages**.
2. Click **New**.
3. In the `Label` field, enter `FindNearbyWarehousesPage`.

   The `FindNearbyWarehousesPage` page is included in the package you installed, so if you're copying this code to create a new page, you'll want to name your page something different.
4. Select the `Available for Salesforce mobile apps` checkbox.

   Selecting this checkbox designates that the page is mobile-ready and can be used in Salesforce1.
5. Cut and paste this code into the Visualforce Markup tab.

```
<apex:page sidebar="false" showheader="false"
    standardController="Warehouse__c"
    recordSetVar="warehouses" extensions="FindNearby">

    <apex:includeScript value="{!$Resource.googleMapsAPI}"
/>
    <!-- This API key needs to be set up for there to be
        no JS errors -->
    <!--http://salesforcesolutions.blogspot.com/2013/01/
        integration-of-salesforcecom-and-google.html-->
    <!--<script type="text/javascript"
        src="https://maps.googleapis.com/
        maps/api/js?key=AIzaSyAVrfZm7_NhbL
        jHrFPdl242BYV1PBmDPqs&sensor=
        false"> </script>-->
    <!-- Set up the map to take up the whole window -->
    <style>
        html, body { height: 100%; }
        .page-map, .ui-content, #map-canvas
            { width: 100%; height:100%; padding: 0; }
        #map-canvas { height: min-height: 100%; }
    </style>

    <script>
        function initialize() {
            var lat, lon;

             // Check to see if the device has geolocation
             // detection capabilities with JS
             if (navigator.geolocation) {
                 navigator.geolocation.getCurrentPosition(
                     function(position){
                     lat = position.coords.latitude;
                     lon = position.coords.longitude;

                     //Use VF Remoting to send values to be
                     //queried in the associated Apex Class
                     Visualforce.remoting.Manager.
                     invokeAction(
                         '{!$RemoteAction.FindNearby.
                             getNearby}',
                         lat, lon,
                         function(result, event){
                             if (event.status) {
                                 console.log(result);
                                createMap(lat, lon, result);

                             } else if (event.type ===
                                 'exception') {
                                 //exception case code
                             } else {

                             }
                          },
                          {escape: true}
                      );
                  });
              } else {
              //Set default values for map if the device
              //doesn't have geolocation capabilities
                    /** San Francisco **/
                    lat = 37.77493;
                    lon = -122.419416;

                    var result = [];
                    createMap(lat, lon, result);
              }

         }

         function createMap(lat, lng, warehouses){
            //Grab the map div and center the map at
            //the proper latitude/longitude
            var mapDiv = document.getElementById(
                'map-canvas');
            var map = new google.maps.Map(mapDiv, {
                center: new google.maps.LatLng(lat, lng),
                zoom: 12,
                mapTypeId: google.maps.MapTypeId.ROADMAP
            });

            //Set up the markers for the map using the
            //variable we queried for in our controller
            var warehouse;
            for(var i=0; i<warehouses.length;i++){
                warehouse = warehouses[i];
                console.log(warehouses[i]);
                setupMarker();
            }

           function setupMarker(){
               var content='<a href src="/'+ warehouse.Id +
                   '" >'+
                   warehouse.Name + '</a><br/>'+
                   warehouse.Street_Address__c +
                   '<br/>' + warehouse.City__c +
                   '<br/>' + warehouse.Phone__c;

               //Create the callout that will pop up
               //on the marker
               var infowindow = new google.maps.
                   InfoWindow({
                   content: content
               });

               //Place the marker
               var marker = new google.maps.Marker({
                   map: map,
                   position: new google.maps.LatLng(
                       warehouse.Location__Latitude__s,
                       warehouse.Location__Longitude__s)
               });

               //Create an action to open the callout
               google.maps.event.addListener(
                   marker, 'click', function(){
                   infowindow.open(map, marker);
               });
           }
        }

        //Run the initialize function when the window loads
        google.maps.event.addDomListener(
            window, 'load', initialize);

    </script>

    <body style="font-family: Arial; border: 0 none;">
        <div id="map-canvas"></div>
    </body>
</apex:page>
```

6. Click **Save**.

Now that we've created the Visualforce page for finding warehouses, the next step is to create a tab for it. We'll then add the page to the navigation menu in Salesforce1.

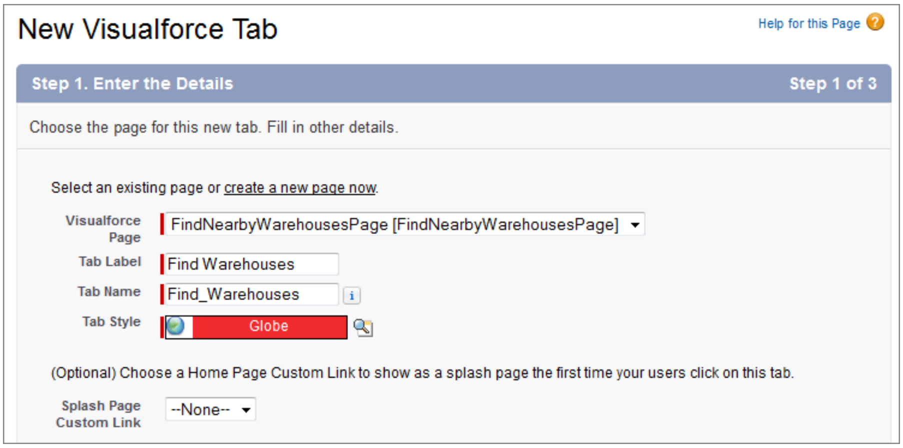
Create a New Tab

Now we'll create a new tab and add the Visualforce page you just created.

1. From Setup, click **Create** > **Tabs**.
2. In the Visualforce Tabs section, click **New**.
3. In the Visualforce Page drop-down list, select FindNearbyWarehousesPage, or the page you created in the previous step.
4. In the `Tab Label` field, enter `Find Warehouses`.

   This label appears on the navigation menu in Salesforce1.
5. Click into the `Tab Style` field, and select the Globe style.

   The icon for this style appears as the icon for the page in the Salesforce1 navigation menu.

   New Visualforce Tab

   Help for this Page

   Step 1. Enter the Details — Step 1 of 3

   Choose the page for this new tab. Fill in other details.

   Select an existing page or create a new page now.

Visualforce Page	FindNearbyWarehousesPage [FindNearbyWarehousesPage]
Tab Label	Find Warehouses
Tab Name	Find_Warehouses
Tab Style	Globe

   (Optional) Choose a Home Page Custom Link to show as a splash page the first time your users click on this tab.

Splash Page Custom Link	--None--

6. Click **Next**.
7. Click **Next** to accept the visibility defaults.

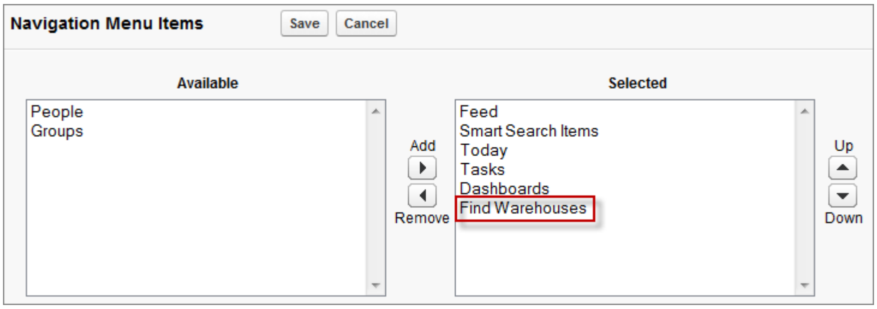
8. Deselect the **Include Tab** checkbox so that the tab isn't included in any of the apps in the organization. We only want this tab to appear when users are viewing it on their mobile device.
9. Click **Save**.
10. On the Custom Tabs screen, in the Visualforce Tabs section, click **Edit** next to the Find Warehouses tab.

Now that you've created the Visualforce page and the tab, you're ready to add the new tab to the navigation menu.

Add the Tab to the Navigation Menu

In this step, we'll add the tab as a navigation menu item. It will instantly become available to Salesforce1 app users that have access to it.

1. From Setup, click **Mobile Administration** > **Mobile Navigation**.
2. Select Find Warehouses and click **Add** to move it over to the Selected list.



3. Click **Save**.

When your Salesforce1 users log in, they'll see the Find Warehouses menu item in the navigation menu. Now let's test it out.

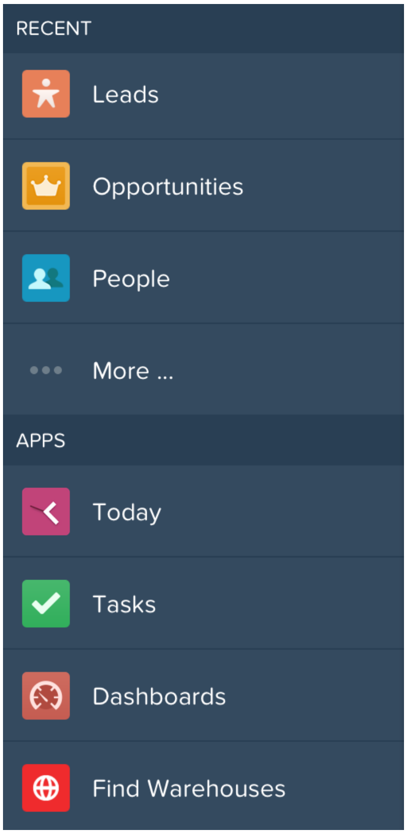
Test Out the Visualforce Page

Now you'll play the part of an Acme Wireless mobile technician and search for nearby warehouses on your device.

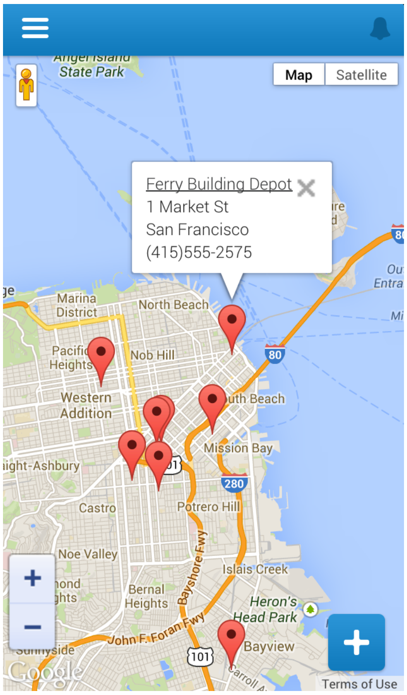
1. Open the Salesforce1 app on your mobile device.
2. Tap ☰ to access the navigation menu.

   You should see **Find Warehouses** under the Apps section.

3. Tap **Find Warehouses**.



4. Click **OK** when you see a prompt that asks to use your current location. A map that contains all the nearby warehouse locations within 20 miles appears.



The warehouses in our package sample data are all located in the San Francisco area. If you're testing this from another location, be sure to add a warehouse located within 20 miles.

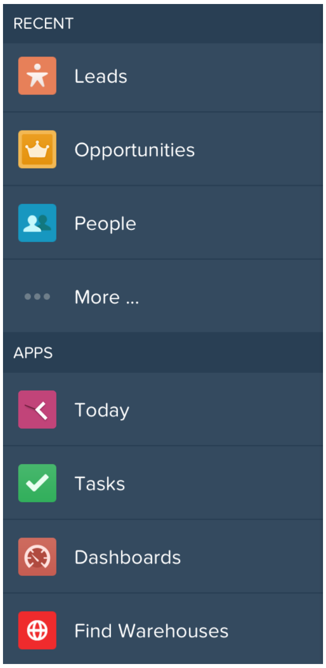
That's it! You can see how easy it is to make standard pages and tabs available to your mobile users.

For more information about development guidelines for Visualforce pages, see Visualforce Guidelines and Best Practices on page 164.

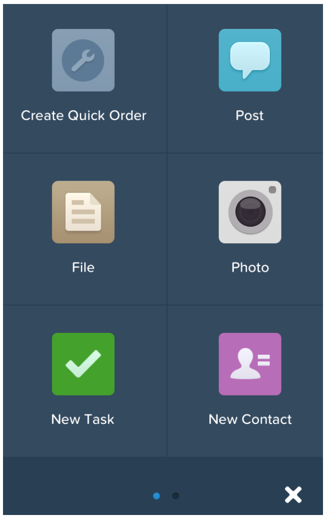
Tell Me More: Where Visualforce Pages Can Appear in Salesforce1

When you create a Visualforce page, you can make it available from a number of places in the Salesforce1 user interface.

- Navigation menu—Available when you tap ☰ from the Salesforce1 app.



- Publisher—Available when you tap ⊞ from the Salesforce1 app.



- Record Home page (as a mobile card)—Available when you navigate to a record.

You can also reference, and link to, another Visualforce page in your Visualforce markup, using the `$Page` global, or in Apex custom code, by creating a `PageReference` object and returning it from an action method. Page references like this are common in multi-page processes. Be sure to select `Available for Salesforce mobile apps` for all pages in a multi-page process.

If a referenced page doesn't have `Available for Salesforce mobile apps` selected, it won't prevent the referencing, or parent, page from appearing in Salesforce1. However, when a user tries to access the non-mobile enabled page, they'll receive an "Unsupported Page" error message.

Tell Me More: About the Code

Let's take a look at some of the code behind our Visualforce page that finds warehouses.

`FindNearby` Apex Class Query

This snippet is a dynamic SOQL query that uses variables passed in from the Visualforce page to find warehouses within 20 miles of the device accessing the page. This page works on any mobile device and HTML5–enabled desktop browser.

If the page is unable to obtain the location, the search is centered on San Francisco. If you test this from a browser, you might have to approve that the page can access your location depending on your device security settings.

```
 String queryString =
    'SELECT Id, Name, Location__Longitude__s,
     Location__Latitude__s, ' +
    Street_Address__c, Phone__c, City__c ' +
    'FROM Warehouse__c ' +
    'WHERE DISTANCE(Location__c,
    GEOLOCATION('+lat+','+lon+'), \'mi\') < 20 ' +
    'ORDER BY DISTANCE(Location__c,
    GEOLOCATION('+lat+','+lon+'), \'mi\') ' +
    'LIMIT 10';
```

Visualforce Page `initialize` Function

The `initialize` function in the Visualforce page uses the HTML5 geolocation API to get the coordinates of the user. The browser gets the position without using any plug-ins or external libraries, and then uses JavaScript remoting to invoke the `getNearby` function in the Apex controller and passes in the coordinates.

```
function initialize() {
    var lat, lon;
    // Check to see if the device has geolocation
    // detection capabilities with JavaScript
    if (navigator.geolocation) {
        navigator.geolocation.getCurrentPosition(
            function(position){
            lat = position.coords.latitude;
            lon = position.coords.longitude;

            //Use VF Remoting to send values to be
            //queried in the associated Apex Class
            Visualforce.remoting.Manager.invokeAction(
                '{!$RemoteAction.FindNearby.getNearby}', lat, lon,
                function(result, event){
                    if (event.status) {
                        console.log(result);
                        createMap(lat, lon, result);
                    } else if (event.type === 'exception') {
                        //exception case code
                    } else {

                    }
                },
                {escape: true}
            );
        });
    } else {
    //Set default values for map if the device doesn't
    //have geolocation capabilities
        /** San Francisco **/
        lat = 37.77493;
        lon = -122.419416;

        var result = [];
        createMap(lat, lon, result);
    }

}</apex:page>
```

Visualforce Page Redirect Code

The page `FindNearbyWarehousesPage` uses the Google Maps JavaScript API v3 to plot the nearby warehouses on a map. We resize the map based on the records returned by the SOQL query and plot each record as marker on the map.

The most important piece of the code is where we determine whether or not the page is being viewed in the Salesforce1 app. If it is, the redirect link to the warehouse record must be coded slightly differently. If the page runs in the Salesforce1 app, we must use the `navigateToSobjectRecord` method to go to the record detail page but still stay in the app. We can check this with a simple try/catch construct, and then set the redirect link accordingly.

```
try{
    if(sforce.one){
```

```
    warehouseNavUrl =
        'javascript:sforce.one.navigateToSObject(
        \'' + warehouse.Id + '\')';
    }
} catch(err) {
    console.log(err);
    warehouseNavUrl = '\\' + warehouse.Id;
}
    var warehouseDetails =
        '<a href="' + warehouseNavUrl + '">' +
        warehouse.Name + '</a><br/>' +
        warehouse.Street_Address__c + '<br/>' +
        warehouse.City__c + '<br/>' +
        warehouse.Phone__c;
```

Chapter 12

Adding Functionality with Visualforce Custom Actions

In this chapter ...

Actions appear in the publisher in the Salesforce1 app, and are a quick way for mobile users to access commonly used tasks or functionality.

We learned about standard actions that can be configured with point-and-click tools in Using Publisher Actions in Salesforce1 on page 43. In this chapter we'll look at custom actions, which are actions that you define. There are two types of custom actions:

- Visualforce—specifies a Visualforce page that's called from the publisher.
- Canvas—specifies a canvas app that's called from the publisher. For more information about canvas custom actions, see Extending Salesforce1 with Canvas Custom Actions on page 100.

Custom actions aren't specific to mobile users, and appear in both the Salesforce1 app and in the full Salesforce site. In the Salesforce1 app, custom actions appear in the publisher. In the full Salesforce site, custom actions appear in the publisher menu.

Custom Actions Scenario

In this chapter, we'll further extend the Acme Wireless organization and give mobile technicians a way to quickly create an order. We'll create a Visualforce page and make it available as a custom action from the publisher. That way, if the technician is out at a customer site and they want to order a part, they can quickly navigate to the page.

The custom action will let the technician enter the part name and a radius, and the Visualforce page will search all warehouses within the given radius for that part. Once a warehouse is located, the technician simply enters the quantity and clicks a button to create the order. This is all done within the context of the customer account.

Try It Out: Create a Visualforce Custom Action

First, we'll create a Visualforce custom action that references a Visualforce page.

The custom action we're creating uses these elements from the package that you downloaded and installed for this guide.

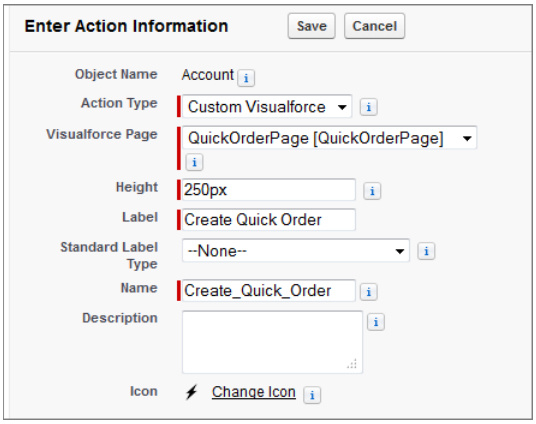
- `QuickOrderPage` Visualforce page
- `QuickOrderController` Apex class
- `Mobile_Design_Templates` static resource used for styling the page

We'll take an in-depth look at the code later in this chapter. But first, we're going to create the action and try it out.

The Visualforce code for this page uses the location of the current customer account to find warehouses located within the specified distance (in miles) that also have a particular part in stock.

1. In the Salesforce application, from Setup, click **Customize** > **Accounts** > **Buttons, Links, and Actions**.
2. Click **New Action**.
3. In the Action Type drop-down list, select Custom Visualforce.
4. In the Visualforce Page drop-down list, select QuickOrderPage.
5. In the `Label` field, enter `Create Quick Order`.

   This is the action name that appears to the user in the publisher in the Salesforce1 app or in the publisher menu in the full Salesforce site.



Object Name	Account
Action Type	Custom Visualforce
Visualforce Page	QuickOrderPage [QuickOrderPage]
Height	250px
Label	Create Quick Order
Standard Label Type	--None--
Name	Create_Quick_Order
Description	
Icon	Change Icon

6. Click **Save**.

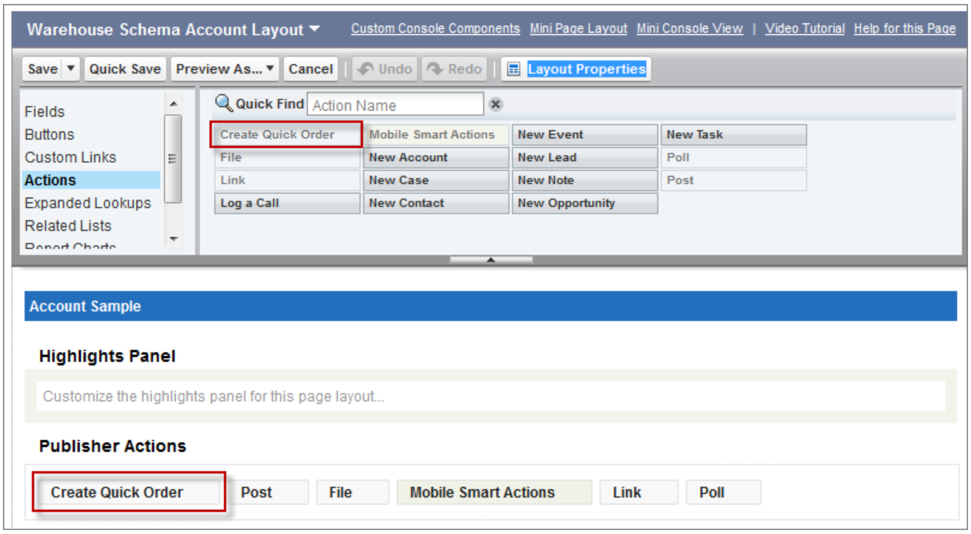
Now that we've created the custom action, we'll add the action to the Account page layout. This ensures that the custom action appears in the publisher when you go to the page layout for a customer account.

Add the Visualforce Custom Action to the Page Layout

Now we'll add the custom action to the Account page layout.

1. From Setup, click **Customize** > **Accounts** > **Page Layouts**.
2. Click **Edit** next to the Warehouse Schema Account Layout.
3. Click the Actions category in the palette.
4. In the Publisher Actions section, click **override the global publisher layout**.
5. Drag the Create Quick Order element into the Publisher Actions section so that it appears as the first element on the left.

   Our mobile technicians are going to use this custom action a lot, and we're putting it at the start of the list so it'll be one of the first actions they see when they open the publisher.



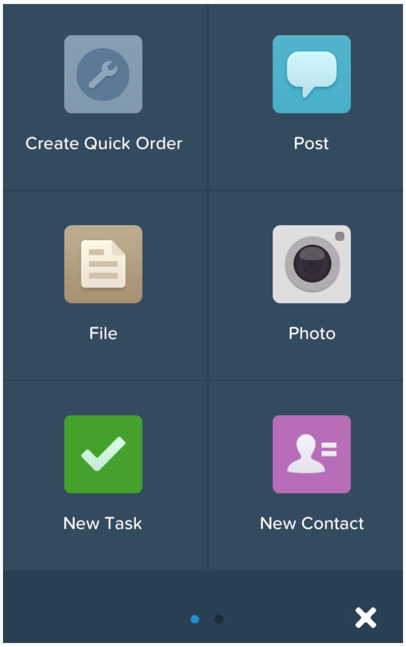
6. Click **Save**.

Now that we've created the custom action and added it to the page layout, we're ready to see it in action.

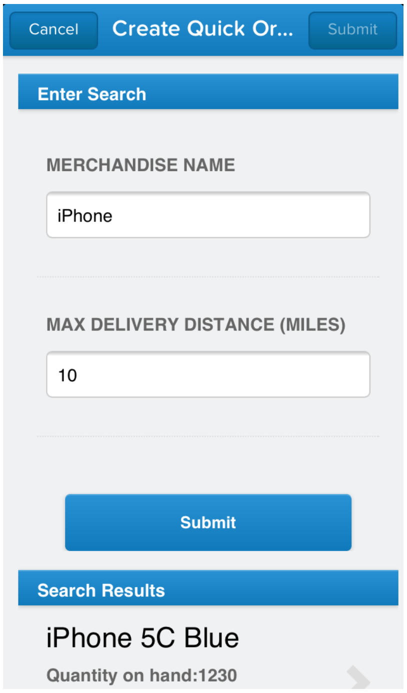
Test Out the Visualforce Custom Action

Now you'll play the part of an Acme Wireless mobile technician on a customer call, and we'll test out the custom action in Salesforce1.

1. Open the Salesforce1 app on your mobile device.
2. Tap ☰ to access the navigation menu.
3. From the navigation menu, tap **Accounts** and navigate to an account.
4. Tap ➕ to access the publisher.
5. Tap **Create Quick Order**.



6. In the `Merchandise Name` field, enter the name of an item, such as `iPhone 5`.
7. In the `Max Delivery Distance (miles)` field, enter `10`.
8. Tap **Submit**.



9. In the Search Results section at the bottom, you'll see a list of merchandise that matches what you searched for. The list shows parts contained in warehouses within 10 miles of the current account. Tap iPhone 5S Gold.
10. In the `Quantity` field, enter `1`.

    After identifying nearby warehouses that contain the part you're looking for, this screen lets you enter a quantity and creates an order for the part. The order is associated with the current account.

    Tip: If you want to return to the search screen, be sure to use the **Back** button. If you tap **Cancel**, an invoice with no line items is created.

11. Tap **Submit**.

    The order has been created. Swipe to the third page indicator, and you'll see the Invoices related list. Tap the Invoices related list, and you'll see the new invoice. You can tap the invoice and then see the line item that was created for the iPhone 5S Gold part.

Success! You've gone through the entire process of enabling a mobile technician to quickly search for a part in a warehouse and create an order.

For more information about development guidelines for Visualforce page, see Visualforce Guidelines and Best Practices on page 164.

Tell Me More: About the Code

There are two code objects behind our Visualforce custom action: the Apex class `QuickOrderController` and the Visualforce page `QuickOrderPage`.

The Apex class is the controller for the Visualforce page, and uses the `@RemoteAction` annotation on the methods. When you use this annotation, the Visualforce page wraps the logic in a JavaScript-friendly way. This is known as *Visualforce remoting*.

Visualforce remoting allows for quick and tight integration between Apex and JavaScript. This communication model works asynchronously as opposed to the synchronous model in the traditional Visualforce/Apex MVC paradigm. So after passing parameters into your controller, you can get the result from a response handler function, and write any additional client-side logic before doing any DOM manipulation or building your page with mobile templates or frameworks.

Visualforce remoting is ideal for mobile developers on the Salesforce1 Platform because it simplifies the direct server-side access to Salesforce objects and allows you to use Apex tools such as SOQL, Apex methods, and so on for rapid platform development. And, you don't have to deal with view state, which makes pages perform better.

Apex Class `QuickOrderController`

This class uses Visualforce remoting and contains the logic called by the Visualforce page to find warehouses and create orders and line items.

```
global class QuickOrderController{
    public static List<Merchandise__c> merchandise;
    public static Line_Item__c quickOrder;


    public QuickOrderController(ApexPages.
        StandardController controller){
    }

    @RemoteAction
    global static List<Merchandise__c> findWarehouses(String accId,

        String merchName, String warehouseDist){
         merchandise = new List<Merchandise__c>();
         String queryString = '';

         Account acc = [Select Location__Longitude__s,
         Location__Latitude__s, Name, Id
```

```
                from Account where Id =: accId];

            //Finds warehouses nearby if you have location
            //specified on the Account
            if(acc.Location__Latitude__s != null &&
                acc.Location__Longitude__s != null){
               queryString = 'SELECT Id, (SELECT Id, Name, Quantity__c,

                    Warehouse__r.Name, Warehouse__r.Id,
                    Warehouse__r.Street_Address__c,
                    Warehouse__r.City__c '+
                    'FROM Merchandise__r WHERE Name
                    like \''%'+merchName+'%\') '
                    +'FROM Warehouse__c WHERE '
                    +'DISTANCE(Location__c, GEOLOCATION('
                    +acc.Location__Latitude__s+','
                    +acc.Location__Longitude__s+'), \'mi\')';
                if(warehouseDist != null){
                    queryString += ' <'+ warehouseDist;
                }

            }
            //If no location defined on the Account, this will run
            //query against the merchandise name only
            else {
                queryString = 'SELECT Id, Name,
                    Location__Longitude__s,
                    Location__Latitude__s, '
                    +'(SELECT Id, Name, Warehouse__r.Name,
                    Quantity__c
                    FROM Merchandise__r WHERE Name
                    like \''%'+merchName+'%\') '
                    +'FROM Warehouse__c limit 25';

            }

            //This creates a list of merchandise
            //to display in the search results
            Warehouse__c[] warehouses = Database.Query(queryString);
            for(Warehouse__c warehouse : warehouses){
                Merchandise__c[] merch =
                    warehouse.getSObjects('Merchandise__r');
                    if (merch != null) {
                       for (Merchandise__c m : merch){
                           merchandise.add(m);
                       }
                    }
            }
            return merchandise;

        }

        //This remote action creates the invoice for the quick order
        @RemoteAction
        global static Line_Item__c createQuickOrder(
            String accId, String merchandiseId){
            Invoice__c newInvoice = new Invoice__c();
            newInvoice.Account__c = accId;
            insert newInvoice;

            quickOrder = new Line_Item__c();
            Merchandise__c m = [Select Id, Name from Merchandise__c
                where Id=: merchandiseId limit 1];
            quickOrder.Merchandise__c = m.Id;
            quickOrder.Invoice__c = newInvoice.Id;

            return quickOrder;
        }

        //This remote action creates the line item related to the
        //invoice for the quick order
        @RemoteAction
        global static Boolean insertQuickOrder(String o, String q){
            Integer quantity = integer.valueof(q);

            Line_Item__c order = new Line_Item__c();
            /* The order variable being passed in as a param is being
            passed in the form of a JSON object. You need to use
            the JSON deserialize method in Apex to convert it
            into a SObject */
            order = (Line_Item__c)JSON.deserialize(
                o, Line_Item__c.class);

            order.Quantity__c = quantity;
            insert order;

        //Need to requery for the name for the post to chatter
        //since it wasn't explicitly specified
        Line_Item__c li = [Select Name, Merchandise__r.Name, Id,
            Quantity__c, Invoice__c from Line_Item__c
            where Id =: order.Id];

            FeedItem post = new FeedItem();
            post.ParentId = aId;
            post.Body = UserInfo.getName() + ' just created a quick
    order';
            post.type = 'LinkPost';
            post.LinkUrl = '/' + li.Invoice__c;
           post.Title = li.Merchandise__r.Name + ': ' + li.quantity__c;

            insert post;
        } catch(System.Exception ex) {
            system.debug(ex.getMessage());
        }
            return true;
        }

        //This remote action handles deleting the invoice if
        //the user doesn't want to insert the line item
        @RemoteAction
        global static Boolean goBack(String invoiceId){
            // Delete created invoice and return to original
            //search screen
            Invoice__c cancelledInvoice = [select Id from Invoice__c
```

```
                where Id=: invoiceId];
            delete cancelledInvoice;

            return true;
        }

}
```

The Apex controller also has an `insertQuickOrder` method that creates a feed item about the new order in the account feed as shown in this code snippet. The feed item is a link post that links to the invoice.

```
    FeedItem post = new FeedItem();
    post.ParentId = aId;
    post.Body = UserInfo.getName() + ' just created a quick order';
    post.type = 'LinkPost';
    post.LinkUrl = '/' + li.Invoice__c;
    post.Title = li.Merchandise__r.Name + ': ' + li.quantity__c;
    insert post;
```

Visualforce Page `QuickOrderPage`

This page calls the controller with the user input and then displays the merchandise and warehouse information to the user. If the user wants to create an order, this page also calls the controller to create the order associated with the customer account and add a line item. At the beginning of the page, the code also does some styling of the page using the Salesforce mobile design templates.

```
<apex:page standardController="Account"
    extensions="QuickOrderController" standardStylesheets="false"
    showheader="false" sidebar="false">

    <!--Include Stylsheets for the Mobile look and feel -->
    <apex:stylesheet value="{!URLFOR(
        $Resource.Mobile_Design_Templates,
        'Mobile-Design-Templates-master/
            common/css/app.min.css')}"/>
    <apex:includeScript value="{!URLFOR(
        $Resource.Mobile_Design_Templates,
        'Mobile-Design-Templates-master/common/js/
            jQuery2.0.2.min.js')}"/>
    <apex:includeScript value="{!URLFOR(
        $Resource.Mobile_Design_Templates,
        'Mobile-Design-Templates-master/common/js/
            jquery.touchwipe.min.js')}"/>
    <apex:includeScript value="{!URLFOR(
        $Resource.Mobile_Design_Templates,
        'Mobile-Design-Templates-master/common/
            js/main.min.js')}"/>

      <style>
          /* Default S1 color styles */
          .list-view-header, .data-capture-buttons a {
                background: -webkit-linear-gradient(
                    #2a93d5,#107abb);
                background: linear-gradient(#2a93d5,#107abb);
                box-shadow: 0 1px 3px rgba(0,0,0,.2),
                    inset 0 1px 0 rgba(255,255,255,.21);
                color: white;
                font-weight: bold;
          }

          #resultPage, #searchPage {
              padding-bottom: 50px;
          }
      </style>
```

The `QuickOrderPage` also calls the Force.com Canvas SDK to enable the publisher **Submit** button and close the publisher window.

First, it includes a reference to the SDK:

```
<!-- This needs to be included so the publisher can be used
    to submit the action -->
<script type='text/javascript'
src='/canvas/sdk/js/publisher.js'></script>
```

Then it calls the `setValidForSubmit` method to enable the publisher **Submit** button:

```
//This method will activate the publish button
//so the form can be submitted
Sfdc.canvas.publisher.publish({
    name: "publisher.setValidForSubmit",
    payload:"true"});
```

After the `setValidForSubmit` is called and the user clicks **Submit**, this `subscribe` method fires. This method invokes the final JavaScript function which uses JavaScript remoting to insert the line item (thus completing the quick order) and then post a feed item to the account:

```
<script type='text/javascript'>
    Sfdc.canvas.publisher.subscribe({name: "publisher.post",
        onData:function(e) {
    //This subscribe fires when the user hits
    //Submit in the publisher
    insertQuickOrder();
    }});
</script>
```

Finally, after the callback from the remoting method returns successfully, this method closes the publisher window:

```
// Success - close the publisher and refresh the feed
Sfdc.canvas.publisher.publish({name: "publisher.close",
    payload:{ refresh:"true"}});
```

Chapter 13

Integrating Your Web Applications in Salesforce1 with Force.com Canvas

In this chapter ...

Force.com Canvas lets you easily integrate a third-party Web application in Salesforce1.

The Force.com Canvas SDK is an open-source suite of JavaScript libraries that provide simple methods that use existing Salesforce1 APIs (REST API, SOAP API, Chatter REST API) so you can build a seamless end-user experience for your mobile users.

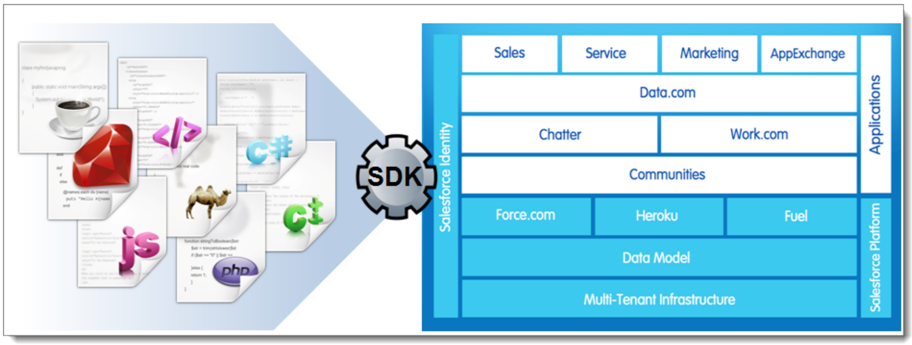
About Force.com Canvas

Force.com Canvas features include:

- Language Independence—You develop it and we display it. With Force.com Canvas you can develop in the language of your choice and easily surface the app inside of the Salesforce1 app.

  The third-party app that you want to expose as a canvas app can be written in any language. The only requirement is that the app has a secure URL (HTTPS).

- JavaScript SDK—Lightweight and easy-to-use JavaScript libraries allow your app to authenticate and communicate without having to deal with cross-domain network issues. This gives your users a single command center to drive all their apps.
- Simplified Authentication—Allows you to authenticate by using OAuth 2.0 or a signed request. This means that your app can connect to Salesforce at the data layer while remaining seamless for users.
- App Registration and Management—Developers can create apps and allow their customers to install them with a single click. Administrators can easily install apps from developers, and quickly manage who in their organizations can use the app.



Extending Salesforce1 with Canvas Custom Actions

Canvas custom actions appear in the publisher in the Salesforce1 app, and provide a way to make canvas apps available from the publisher.

In this chapter, we'll further extend the Acme Wireless organization by integrating a third-party app with the platform using Force.com Canvas. Acme Wireless has a Web application running on Heroku called Shipify. They use it to process orders. We'll copy the Shipify application that runs on Heroku and make it available as a canvas custom action from the publisher.

In this scenario, warehouse workers with mobile devices can bring up a list of open customer orders. They can select an order and then process it for shipping. After the order is processed, Shipify sets the order status in Salesforce and posts a feed item to the associated customer account. You'll see how easy it is to integrate a Web application and enable it to communicate with Salesforce. This creates a seamless experience for your mobile users.

Try It Out: Clone the Shipify Web Application

We'll start the process of creating a canvas custom action by cloning the Shipify Web application.

In addition to the prerequisites for this book listed in Development Prerequisites on page 67, you'll also need:

- "Customize Application" and "Modify All Data" user permissions. If you're an administrator, you most likely already have these permissions. Otherwise, you need to add them so that you can see the Canvas App Previewer and create canvas apps.
- Git installed. Go here to install and configure Git: `https://help.github.com/articles/set-up-git`.
- A GitHub account to clone the code example. Go here to set up a GitHub account: `https://github.com/plans`.
- A Heroku account because our Web application will run on Heroku. Go here to create a Heroku account: `https://api.heroku.com/signup`.
- Heroku Toolbelt to manage the Heroku app from the command line. Go here to download and install Heroku Toolbelt: `https://toolbelt.heroku.com`.

Shipify is a Web application that Acme Wireless uses to track the status of customer orders, customer shipments, and deliveries. The warehouse workers use this application to check for outstanding orders, fulfill those orders, and then update the shipping status. The Shipify Web application contains some order processing logic, but it's not a full order processing application. Its purpose is to demonstrate how you can integrate your Web applications with the Salesforce1 app.

Shipify is a Node.js application that runs on Heroku. Each running instance of the application must reference the consumer secret for the connected app that you create in your organization. Therefore, you'll need to have your own instance of Shipify on Heroku that you can then add as a canvas app. In this step, we'll clone the application, which is the first step in the process.

1. Open a command window and navigate to the directory where you want to download Shipify. When you clone the application, it will create a directory called `Shipify-Node-App` from wherever you run the clone command.
   - From a computer running Windows, open a command window by clicking **Start** > **Run...** and entering in `cmd`.
   - From a computer running Mac OS, open a command window by pressing Command + Space and entering `terminal`.
2. Enter this command: `git clone https://github.com/forcedotcom/Shipify-Node-App`
3. Navigate to the `Shipify-Node-App` directory and enter this command to initialize the repository: `git init`
4. Enter this command to get the files ready to commit: `git add —A`
5. Enter this command to commit the changes along with a comment: `git commit —m '`***`MyChangeComments`***`'`

   If you're working from a Windows computer, you may need to replace the single quotes with double quotes (").
6. Enter this command to log in to Heroku: `heroku login`

   When prompted, enter your email and password.
7. Enter this command to create a new Heroku app: `heroku apps:create`

   Confirmation that the app was created looks like this:

   ```
   Creating deep-samurai-7923... done, stack is cedar
   http://deep-samurai-7923.herokuapp.com/ |
   git@heroku.com:deep-samurai-7923.git
   Git remote heroku added
   ```
8. Copy the URL of the Heroku app because we'll use it in the next task. In this example, the URL is `http://deep-samurai-7923.herokuapp.com`, but you'll want to copy the URL of your own Heroku app.

   We've created the Shipify Web application in Heroku, but it won't work yet because we still need to deploy it, which we'll do in a later step.

The next step is to add it as a canvas app in Salesforce.

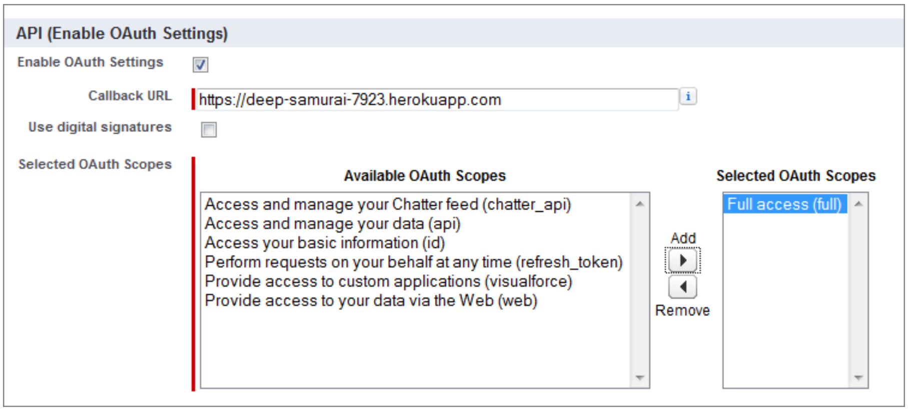
Create the Shipify Canvas App

In this step, we'll expose the Shipify Web application as a canvas app.

You'll need user permissions "Customize Application" and "Modify All Data" to create a canvas app.

1. In the Salesforce application, from Setup, click **Create** > **Apps**.
2. In the Connected Apps related list, click **New**.
3. In the `Connected App Name` field, enter `Shipify`.
4. In the `Contact Email` field, enter your email address.
5. In the API (Enable OAuth Settings) section, select `Enable OAuth Settings`.
6. In the `Callback URL` field, paste the URL of the Heroku app you just created and change the protocol to `https`. For example, your final URL should look something like `https://deep-samurai-7923.herokuapp.com`.
7. In the `Selected OAuth Scopes` field, select Full access and click **Add**.

   As a best practice, you'll want to keep the OAuth scopes as limited as needed for your canvas app functionality.



API (Enable OAuth Settings)

Enable OAuth Settings ✓

Callback URL: https://deep-samurai-7923.herokuapp.com

Use digital signatures ☐

Selected OAuth Scopes

Available OAuth Scopes:
Access and manage your Chatter feed (chatter_api)
Access and manage your data (api)
Access your basic information (id)
Perform requests on your behalf at any time (refresh_token)
Provide access to custom applications (visualforce)
Provide access to your data via the Web (web)

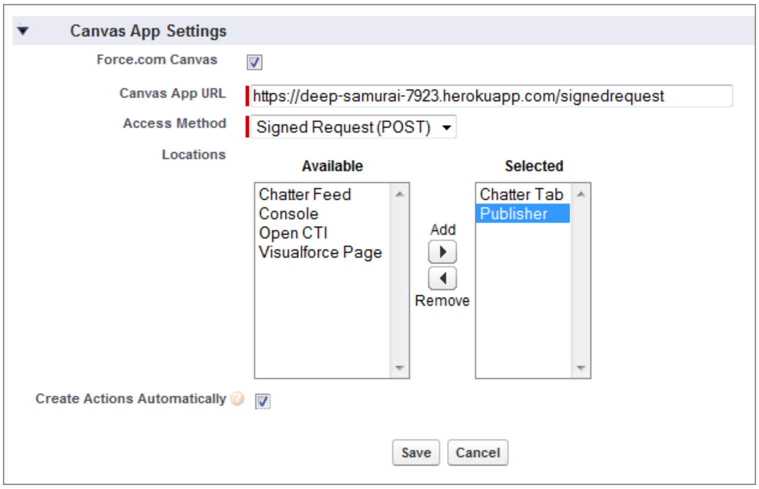
Selected OAuth Scopes:
Full access (full)

8. In the Canvas App Settings section, select `Force.com Canvas`.
9. In the `Canvas App URL` field, enter the same URL you entered in the `Callback URL` field with `/signedrequest` appended to it. For example, the URL might look like `https://deep-samurai-7923.herokuapp.com/signedrequest`.
10. In the Access Method drop-down list, select Signed Request (POST).
11. In the `Locations` field, select Chatter Tab and Publisher and click **Add**.

    For a canvas app to appear in the publisher, you only need to specify a location of Publisher. In this scenario, we also chose Chatter Tab to be able to easily test the canvas app by looking at the Chatter tab.

12. Select `Create Actions Automatically`.

    Selecting this field creates a global custom action for the canvas app.


Canvas App Settings

Force.com Canvas ✓

Canvas App URL: https://deep-samurai-7923.herokuapp.com/signedrequest

Access Method: Signed Request (POST)

Locations

Available	Selected
Chatter Feed	Chatter Tab
Console	Publisher
Open CTI	
Visualforce Page	

Create Actions Automatically ✓

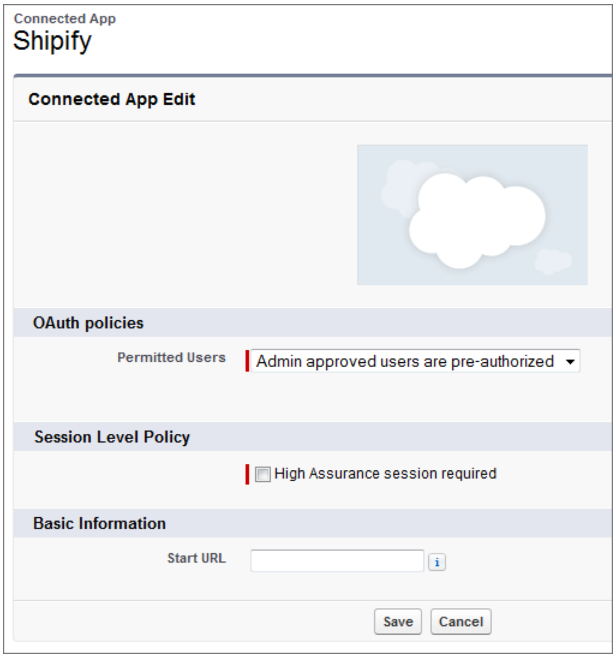
13. Click **Save**. After the canvas app is saved, the detail page appears.

We added the canvas app, and now we'll specify who can access it.

Configure Who Can Access the Shipify Canvas App

You've created the canvas app, but no one can see it until you configure user access.

1. From Setup, click **Manage Apps** > **Connected Apps**.
2. Click the Shipify app, and then click **Edit**.
3. In the Permitted Users drop-down list, select Admin approved users are pre-authorized. Click **OK** on the pop-up message that appears.



Connected App
Shipify

Connected App Edit

OAuth policies

Permitted Users	Admin approved users are pre-authorized

Session Level Policy

☐ High Assurance session required

Basic Information

Start URL	

4. Click **Save**.

   Now you'll define who can see your canvas app. This can be done using profiles and permission sets. In this example, we'll allow anyone with the System Administrator profile to access the app.

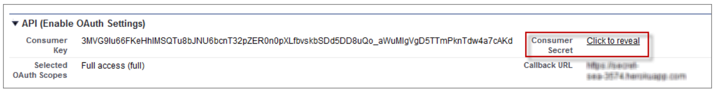
5. On the Connected App Detail page, in the Profiles related list, click **Manage Profiles**.
6. Select the `System Administrator` profile and click **Save**.

That's it! The next step is to set up some environment variables on Heroku.

Configure the Heroku Environment Variables

Now that we've created the canvas app, we need to set up an environment variable for the consumer secret.

1. From Setup, click **Create** > **Apps**.
2. In the Connected Apps related list, click **Shipify**.
3. Next to the `Consumer Secret` field, click the link **Click to reveal**.



▼ API (Enable OAuth Settings)

Consumer Key	3MVG9lu66FKeHhlMSQTu8bJNU6bcnT32pZER0n0pXLfbvskbSDd5DD8uQo_aWuMlgVgD5TTmPknTdw4a7cAKd	Consumer Secret	Click to reveal
Selected OAuth Scopes	Full access (full)	Callback URL	[illegible]

4. Copy the consumer secret.
5. Open a command window, navigate to the `Shipify-Node-App` directory, and enter this command to create the environment variable: `heroku config:add APP_SECRET='`***`Your_Consumer_Secret`***`'`

   If you're working from a Windows computer, you may need to replace the single quotes with double quotes (").
6. Enter this command: `heroku config:add RUNNING_ON_HEROKU='true'`

   This specifies that the application is running on Heroku. This is helpful for testing so you don't need to re-deploy every time you make a change. If you're working from a Windows computer, you may need to replace the single quotes with double quotes (").
7. Enter this command to deploy the app to Heroku: `git push heroku master`

   If the process completes successfully, you'll see something like this:

```
-----> Compiled slug size: 11.2MB
-----> Launching... done, v6
       http://deep-samurai-7923.herokuapp.com deployed to
Heroku

To git@heroku.com:deep-samurai-7923.git
 * [new branch]      master -> master
```

   If you receive a "permission denied" error message, you may need to set up your SSH key and add it to Heroku. See `https://devcenter.heroku.com/articles/keys`.

You can quickly test that the canvas app is working in the full Salesforce site by clicking the Chatter tab. Click the **Shipify** link on the left, and you'll see the Heroku application appear right in Salesforce and display a list of open orders, including the one you created in the previous step. Now we'll add the canvas custom action to the publisher layout so our users can see it.

Add the Action to the Global Publisher Layout

When we created the canvas app, we opted to automatically create the action. In this step, we'll add the action to the global publisher layout so it shows up in the publisher in the Salesforce1 app.

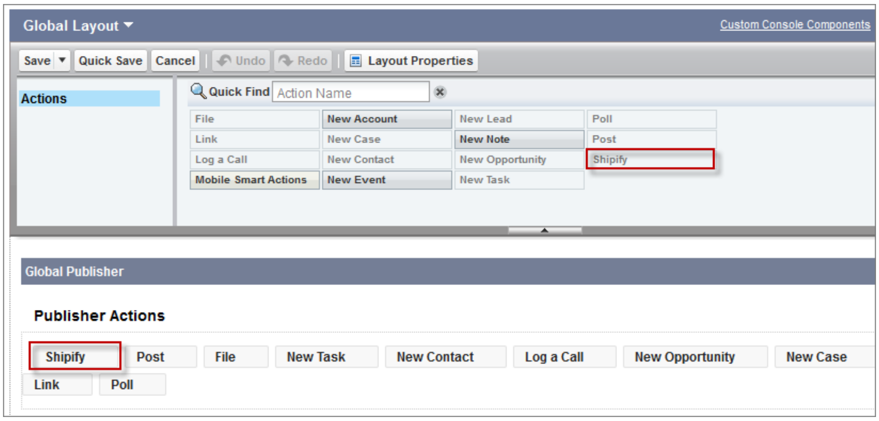
1. In the Salesforce application, from Setup, click **Customize** > **Chatter** > **Publisher Layouts**.
2. Click **Edit** next to the Global Layout.

   This is the default layout for the publisher.

3. Drag the Shipify element into the Publisher Actions section so that it appears as the first element on the left.

   Our warehouse workers are going to use this custom action a lot, so we're putting it at the start of the list so it'll be one of the first actions they see when they open the publisher.

   Note: The canvas custom action was created automatically, so it used the name of the canvas app for the name of the action (in this case, Shipify). In a production scenario, you'll want to change the action name to represent what the user can do. For example, we could change the name of this action to Ship Orders.



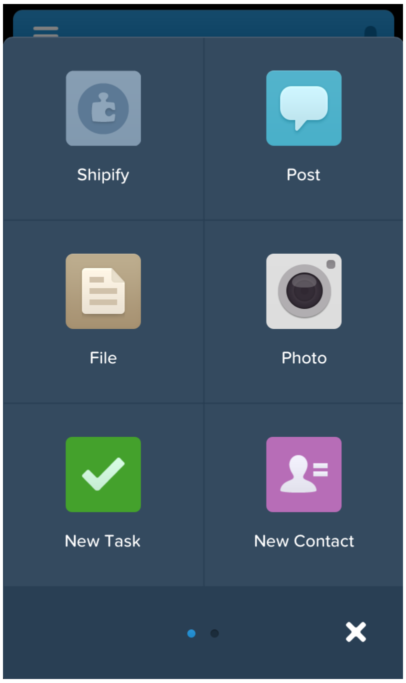
4. Click **Save**.

Now that we've created the custom action and added it to the publisher layout, we're ready to see it in action (no pun intended).

Test Out the Canvas Custom Action

Now you'll play the part of an Acme Wireless warehouse worker processing orders, and we'll test out the custom action in the Salesforce1 app.

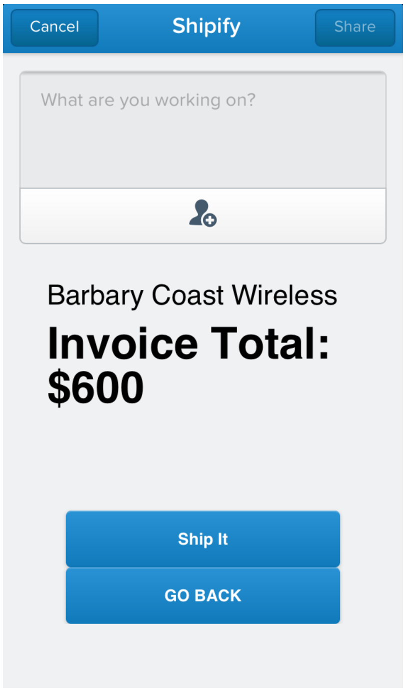
1. On your mobile device, tap + to access the publisher.



2. Tap **Shipify**.

   A list of all open invoices along with the customer account and warehouse information appears.

3. Tap one of the invoices, and a screen appears that shows the total amount of the invoice and a **Ship It** button.

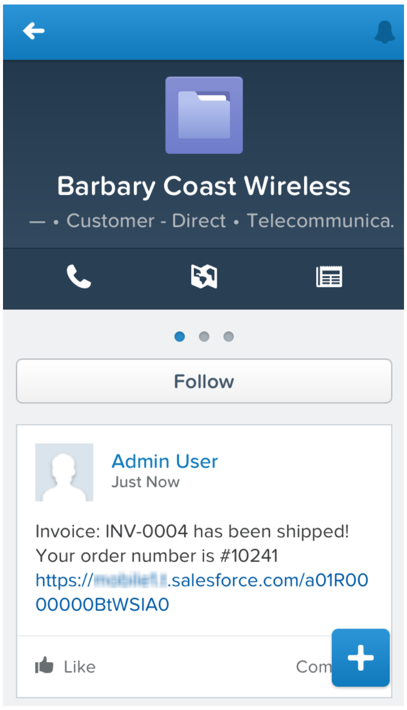


Barbary Coast Wireless

Invoice Total: $600

4. Tap **Ship It**.

   This kicks off order processing in the Shipify Web application. In addition, Shipify sets the invoice status to Closed and creates a feed item for the account that shows that the invoice has shipped along with the related order number and a link to the invoice.



Invoice: INV-0004 has been shipped!
Your order number is #10241
https://[redacted].salesforce.com/a01R0000000BtWSIA0

You did it! You've gone through the entire process of integrating a Web application in the Salesforce1 app using Force.com Canvas and canvas custom actions. Now warehouse workers can find customer orders, ship them out, and then update the order and the account feed.

For more information about development guidelines for canvas apps in the publisher, see Canvas Apps in the Publisher on page 190.

Tell Me More: Get Context in your Canvas App

The Force.com Canvas SDK provides calls and objects that let you retrieve context information about the application and the current user from Salesforce.

Getting Context

When you authenticate your canvas app using signed request, you get the CanvasRequest object (which contains the Context object) as part of the POST to the canvas app URL. If you're authenticating using OAuth, or if you want to make a call to get context information, you can do so by making a JavaScript call. You can use this information to make subsequent calls for information and code your app so that it appears completely integrated with the Salesforce1 user interface.

The following code sample is an example of a JavaScript call to get context. This code creates a link with the text “Get Context” which then calls the `Sfdc.canvas.client.ctx` function.

```
<script>
    function callback(msg) {
       if (msg.status !== 200) {
          alert("Error: " + msg.status);
          return;
       }
       alert("Payload: ", msg.payload);
    }

    var ctxlink = Sfdc.canvas.byId("ctxlink");
    var client = Sfdc.canvas.oauth.client();
    ctxlink.onclick=function() {
       Sfdc.canvas.client.ctx(callback, client)};
    }
</script>

<a id="ctxlink" href="#">Get Context</a>
```

Context Objects

When you make a call to get context in your canvas app, you get a CanvasRequest object back in the response. This object contains all the contextual information about the application and the user. The context objects include:

Object	Description
`CanvasRequest`	Returns the Context and Client objects.
`Client`	Returns context information about the client app.
`Context`	Returns information about the consumer of the canvas app. Contains the Application, Environment, Links, Organization, and User objects.
`Application`	Returns information about the canvas app, such as version, access method, URL, and so on.
`Environment`	Returns information about the environment, such as location, UI theme, and so on.
`Links`	Returns links, such as the metadata URL, user URL, Chatter groups URL, and so on. You can use these links to make calls into Salesforce from your app.
`Organization`	Returns information about the organization, such as name, ID, currency code, and so on.
`User`	Returns information about the currently logged-in user, such as locale, name, user ID, email, and so on.

This code snippet shows an example of the CanvasRequest object:

```
{
    "context":
    {
        "application":
        {
            "applicationId":"06Px000000003ed",
            "authType":"SIGNED_REQUEST",
            "canvasUrl":"http://instance.salesforce.com:8080
                /canvas_app_path/canvas_app.jsp",
            "developerName":"my_java_app",
            "name":"My Java App",
            "namespace":"org_namespace",
            "referenceId":"09HD00000000AUM",
            "version":"1.0.0"
        },
        "user":
        {
            "accessibilityModeEnabled":false,
            "currencyISOCode":"USD",
            "email":"admin@6457617734813492.com",
            "firstName":"Sean",
            "fullName":"Sean Forbes",
            "isDefaultNetwork":false,
            "language":"en_US",
            "lastName":"Forbes",
            "locale":"en_US",
            "networkId":"0DBxx000000001r",
            "profileId":"00ex0000000jzpt",
            "profilePhotoUrl":"/profilephoto/005/F",
            "profileThumbnailUrl":"/profilephoto/005/T",
            "roleId":null,
            "siteUrl":"https://mydomain.force.com/",
            "siteUrlPrefix":"/mycommunity",
            "timeZone":"America/Los_Angeles",
            "userId":"005x0000001SyyEAAS",
            "userName":"admin@6457617734813492.com",
            "userType":"STANDARD"
        },
        "environment":
        {
            "parameters":
            {
                "complex":
                {
                    "key1":"value1",
                    "key2":"value2"
                },
                "integer":10,
                "simple":"This is a simple string.",
                "boolean":true
            },
            "dimensions":
            {
                "height": "900px",
                "width": "800px",
                "maxWidth":"1000px",
                "maxHeight":"2000px"
            },
            "displayLocation":"Chatter",
            "locationUrl": "http://www.salesforce.com
                /some/path/index.html",
            "uiTheme":"Theme3",
            "version":
            {
                "api":"30.0",
                "season":"WINTER"
            },
        },
        "organization":
        {
            "currencyIsoCode":"USD",
            "multicurrencyEnabled":true,
            "name":"Edge Communications",
            "namespacePrefix":"org_namespace",
            "organizationId":"00Dx00000001hxyEAA"
        },
        "links":
        {
            "chatterFeedItemsUrl":"/services/data/v30.0/
                chatter/feed-items",
            "chatterFeedsUrl":"/services/data/v30.0/
                chatter/feeds",
            "chatterGroupsUrl":"/services/data/v30.0/
                chatter/groups",
            "chatterUsersUrl":"/services/data/v30.0/
                chatter/users",
            "enterpriseUrl":"/services/Soap/c/30.0/
                00Dx00000001hxy",
            "loginUrl":"http://login.salesforce.com",
            "metadataUrl":"/services/Soap/m/30.0/00Dx00000001hxy",
            "partnerUrl":"/services/Soap/u/30.0/00Dx00000001hxy",
            "queryUrl":"/services/data/v30.0/query/",
            "recentItemsUrl":"/services/data/v30.0/recent/",
            "restUrl":"/services/data/v30.0/",
            "searchUrl":"/services/data/v30.0/search/",
            "sobjectUrl":"/services/data/v30.0/sobjects/",
            "userUrl":"/005x0000001SyyEAAS"
        }
    },
    "client":
    {
        "instanceId":"06Px000000002JZ",
        "instanceUrl":"http://instance.salesforce.com:
            8080",
        "oauthToken":"00Dx0000X00Or4J!ARQAKowP65p8FDHkvk.Uq5...",
        "targetOrigin":"http://instance.salesforce.com:
            8080"
    },
"algorithm":"HMACSHA256",
"userId":"005x0000001SyyEAAS",
"issuedAt":null
}
```

For more information about context objects and the Force.com Canvas SDK, see the *Force.com Canvas Developer's Guide*.

Extending Salesforce1 with Canvas Apps in the Feed

Force.com Canvas enables you to add even more functionality to the feed by exposing your canvas apps as feed items in the Salesforce1 app.

You can use this functionality to:

- Post to the feed from a canvas app exposed from a canvas custom action in the publisher or post to the feed through the Chatter API.
- Display a canvas app directly inside a feed item.

In this chapter, we'll further extend the Acme Wireless organization by integrating a third-party Web app in the feed using Force.com Canvas.

Acme Wireless has a Web application that runs on Heroku called DeliveryTrakr that they use to process deliveries of customer orders. We'll copy the DeliveryTrackr application that runs on Heroku and make it available as a global action from the publisher.

In this scenario, warehouse workers equipped with mobile devices can bring up a list of deliveries. When warehouse workers access the app from the publisher, they can use it to create feed posts of different types. The app can create a text post which is a feed item that contains information about a delivery, a link post which is a feed item that contains a link to the DeliveryTrakr app, or a canvas post which is a feed item that contains a link to another canvas app. The user can click on this link to access a canvas app that lets them approve or deny a delivery.

Try It Out: Clone the DeliveryTrakr Web Application

We'll start the process of integrating a canvas app in the feed by cloning the DeliveryTrakr Web application.

In addition to the prerequisites for this book listed in Development Prerequisites on page 67, you'll also need:

- "Customize Application" and "Modify All Data" user permissions. If you're an administrator, you most likely already have these permissions. Otherwise, you need to add them so that you can see the Canvas App Previewer and create canvas apps.
- Git installed. Go here to install and configure Git: `https://help.github.com/articles/set-up-git`.
- A GitHub account to clone the code example. Go here to set up a GitHub account: `https://github.com/plans`.
- A Heroku account because our Web application will run on Heroku. Go here to create a Heroku account: `https://api.heroku.com/signup`.
- Heroku Toolbelt to manage the Heroku app from the command line. Go here to download and install Heroku Toolbelt: `https://toolbelt.heroku.com`.

The steps to create and run a canvas app are the same, regardless of the app's functionality. So the steps in this chapter are similar to those of the previous chapter, Extending Salesforce1 with Canvas Custom Actions on page 100.

DeliveryTrakr is a Web application that Acme Wireless uses to track deliveries of customer orders. The warehouse workers use this application to check for orders that have been delivered and post delivery information to the feed. The DeliveryTrakr Web application contains some delivery processing logic, but it's not a full application. Its purpose is to demonstrate how you can integrate your Web applications with the Salesforce1 app.

DeliveryTrakr is a Java application that runs on Heroku. Each running instance of the application must reference the consumer secret for the connected app that you create in your organization. Therefore, you'll need to have your own instance of DeliveryTrakr on Heroku that you can then add as a canvas app. In this step, we'll clone the application, which is the first step in the process.

1. Open a command window and navigate to the directory where you want to download DeliveryTrakr. When you clone the application, it will create a directory called `Delivery-Tracker-Java-App` from wherever you run the clone command.
    - From a computer running Windows, open a command window by clicking **Start** > **Run...** and entering in `cmd`.
    - From a computer running Mac OS, open a command window by pressing Command + Space and entering `terminal`.
2. Enter the command: `git clone https://github.com/forcedotcom/Delivery-Tracker-Java-App`
3. Navigate to the `Delivery-Tracker-Java-App` directory and enter this command to initialize the repository: `git init`
4. Enter this command to get the files ready to commit: `git add —A`
5. Enter this command to commit the changes along with a comment: `git commit —m '`***`MyChangeComments`***`'`

If you're working from a Windows computer, you may need to replace the single quotes with double quotes (").

6. Enter this command to log in to Heroku: `heroku login`

   When prompted, enter your email and password.

7. Enter this command to create a new Heroku app: `heroku apps:create`

   Confirmation that the app was created looks like this:

   ```
   Creating deep-samurai-7923... done, stack is cedar
   http://deep-samurai-7923.herokuapp.com/ |
   git@heroku.com:deep-samurai-7923.git
   Git remote heroku added
   ```

8. Copy the URL of the Heroku app because we'll use it in the next task. In this example, the URL is `http://deep-samurai-7923.herokuapp.com`, but you'll want to copy the URL of your own Heroku app.

   We've created the DeliveryTrakr Web application in Heroku, but it won't work yet because we still need to deploy it, which we'll do in a later step.

The next step is to add it as a canvas app in Salesforce.

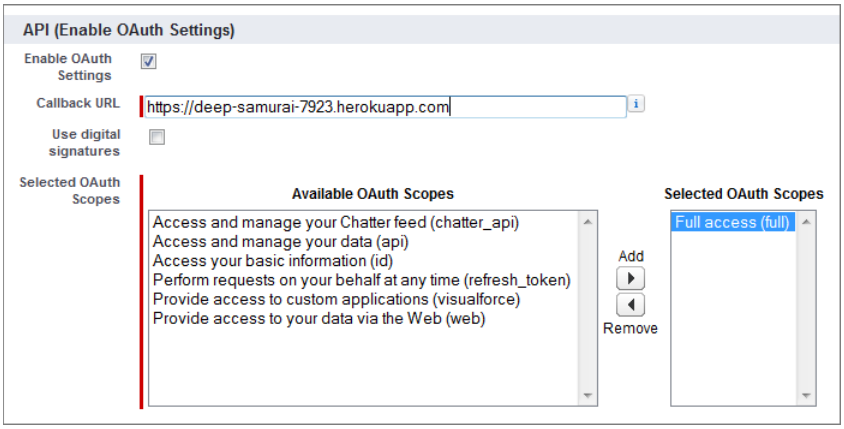
Create the DeliveryTrakr Canvas App

In this step, we'll expose the DeliveryTrakr Web application as a canvas app.

You'll need user permissions "Customize Application" and "Modify All Data" to create a canvas app.

1. In the Salesforce application, from Setup, click **Create** > **Apps**.
2. In the Connected Apps related list, click **New**.
3. In the `Connected App Name` field, enter `DeliveryTrakr`.
4. In the `Contact Email` field, enter your email address.
5. In the API (Enable OAuth Settings) section, select `Enable OAuth Settings`.
6. In the `Callback URL` field, paste the URL of the Heroku app you just created and change the protocol to `https`. For example, your final URL might look something like `https://deep-samurai-7923.herokuapp.com`.
7. In the `Selected OAuth Scopes` field, select Full access and click **Add**.

   As a best practice, you'll want to keep the OAuth scopes as limited as needed for your canvas app functionality.


API (Enable OAuth Settings)

Enable OAuth Settings ✓

Callback URL https://deep-samurai-7923.herokuapp.com

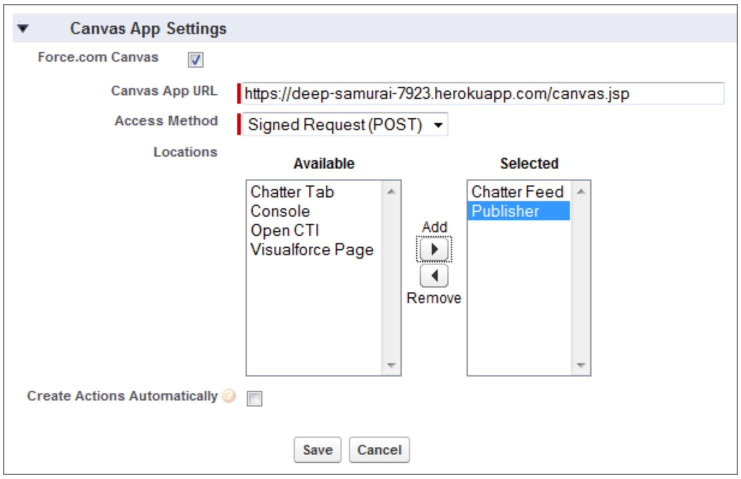
Use digital signatures

Selected OAuth Scopes

Available OAuth Scopes	Selected OAuth Scopes
Access and manage your Chatter feed (chatter_api)	Full access (full)
Access and manage your data (api)	
Access your basic information (id)	
Perform requests on your behalf at any time (refresh_token)	
Provide access to custom applications (visualforce)	
Provide access to your data via the Web (web)	

8. In the Canvas App Settings section, select `Force.com Canvas`.
9. In the `Canvas App URL` field, enter the same URL you entered in the `Callback URL` field with `/canvas.jsp` appended to it. For example, the URL might look like `https://deep-samurai-7923.herokuapp.com/canvas.jsp`.
10. In the Access Method drop-down list, select Signed Request (POST).
11. In the `Locations` field, select Chatter Feed and Publisher and click **Add**.

    We selected these values because the canvas app appears in the publisher as well as in the feed.


Canvas App Settings

Force.com Canvas ✓

Canvas App URL https://deep-samurai-7923.herokuapp.com/canvas.jsp

Access Method Signed Request (POST)

Locations

Available	Selected
Chatter Tab	Chatter Feed
Console	Publisher
Open CTI	
Visualforce Page	

Create Actions Automatically

12. Click **Save**. After the canvas app is saved, the detail page appears.

We added the canvas app, and now we'll specify who can access it.

Configure Who Can Access the DeliveryTrakr Canvas App

You've created the canvas app, but no one can see it until you configure user access.

1. From Setup, click **Manage Apps** > **Connected Apps**.
2. Click the DeliveryTrakr app, and then click **Edit**.
3. In the Permitted Users drop-down list, select Admin approved users are pre-authorized. Click **OK** on the pop-up message that appears.
4. Click **Save**.

   Now you'll define who can see your canvas app. This can be done using profiles and permission sets. In this example, we'll allow anyone with the System Administrator profile to access the app.
5. On the Connected App Detail page, in the Profiles related list, click **Manage Profiles**.
6. Select the `System Administrator` profile and click **Save**.

That's it! The next step is to set up some environment variables on Heroku.

Configure the Heroku Environment Variables

Now that we've created the canvas app, we need to set up an environment variable for the consumer secret.

1. From Setup, click **Create** > **Apps**.
2. In the Connected Apps related list, click **DeliveryTrakr**.
3. Next to the `Consumer Secret` field, click the link **Click to reveal**.
4. Copy the consumer secret.
5. Open a command window, navigate to the `Delivery-Tracker-Java-App` directory, and enter this command to create the environment variable: `heroku config:add APP_SECRET='`***`Your_Consumer_Secret`***`'`

   If you're working from a Windows computer, you may need to replace the single quotes with double quotes (").
6. Navigate to the `Delivery-Tracker-Java-App\src\main\webapp\scripts` directory.
7. Open `shipment.js` in an editor. In the `onGetPayload` function, replace YOUR_APP_URL with the URL of your DeliveryTrakr app on Heroku: `p.url = "https://[YOUR_APP_URL]/signed-request.jsp?shipment=" + shipment;`

This code is located on or around line 231. Using our example, the line of code should look like:

```
p.url = "https://deep-samurai-7923.herokuapp.com/
    signed-request.jsp? shipment=" + shipment;
```

8. Save the changes to `shipment.js` and navigate back to the `Delivery-Tracker-Java-App` directory.
9. Enter this command: `heroku config:add RUNNING_ON_HEROKU='true'`

   This specifies that the application is running on Heroku. This is helpful for testing so you don't need to re-deploy every time you make a change. If you're working from a Windows computer, you may need to replace the single quotes with double quotes (").
10. Enter this command to get the file ready to commit: `git add —A`
11. Enter this command to commit the changes along with a comment: `git commit —m '`***`MyChangeComments`***`'`

    If you're working from a Windows computer, you may need to replace the single quotes with double quotes (").
12. Enter this command to deploy the app to Heroku: `git push heroku master`

    If the process completes successfully, you'll see something like this:

```
-----> Compiled slug size: 11.2MB
-----> Launching... done, v6
       http://deep-samurai-7923.herokuapp.com deployed to
Heroku

To git@heroku.com:deep-samurai-7923.git
 * [new branch]      master -> master
```

    If you receive a "permission denied" error message, you may need to set up your SSH key and add it to Heroku. See `https://devcenter.heroku.com/articles/keys`.

You can quickly test that the canvas app is working from Setup in the full Salesforce site by clicking **Canvas App Previewer**. Click the **DeliveryTrakr** link on the left, and you'll see the Heroku application running in the previewer and displaying a list of shipments and their delivery status. Now we'll create a global action for the canvas app so that your mobile users can starting using what you've created.

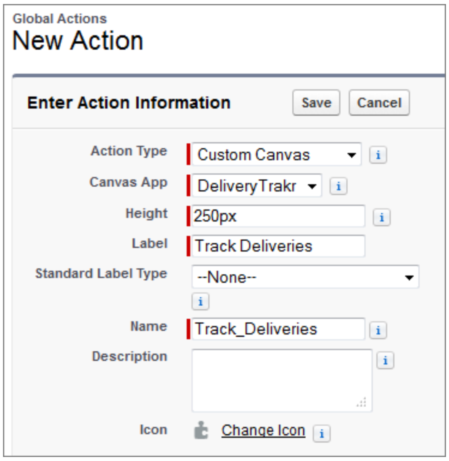
Create a Global Action

We'll create a global action for the DeliveryTrakr app so that we can then add it to the global publisher layout.

In the previous canvas example, we selected `Create Actions Automatically` when we created the canvas app in Salesforce. So the global action was created for us. In this scenario, we didn't select that field, so we'll step through creating the action manually.

1. If the Canvas Previewer is still open, click **Close**. From Setup, click **Create** > **Global Actions**.
2. Click **New Action**.
3. In the Action Type drop-down list, select Custom Canvas.
4. In the Canvas App drop-down list, select DeliveryTrakr.
5. In the `Label` field, enter `Track Deliveries`.

   This is the label that appears to the user in the publisher in the Salesforce1 app or in the publisher menu in the full Salesforce site.



Action Type	Custom Canvas
Canvas App	DeliveryTrakr
Height	250px
Label	Track Deliveries
Standard Label Type	--None--
Name	Track_Deliveries
Description	
Icon	Change Icon

6. Click **Save**.

Now that we've created the global action, we'll add the action to the global publisher layout. This ensures that the action appears in the publisher where mobile users can access it.

Add the Action to the Global Publisher Layout

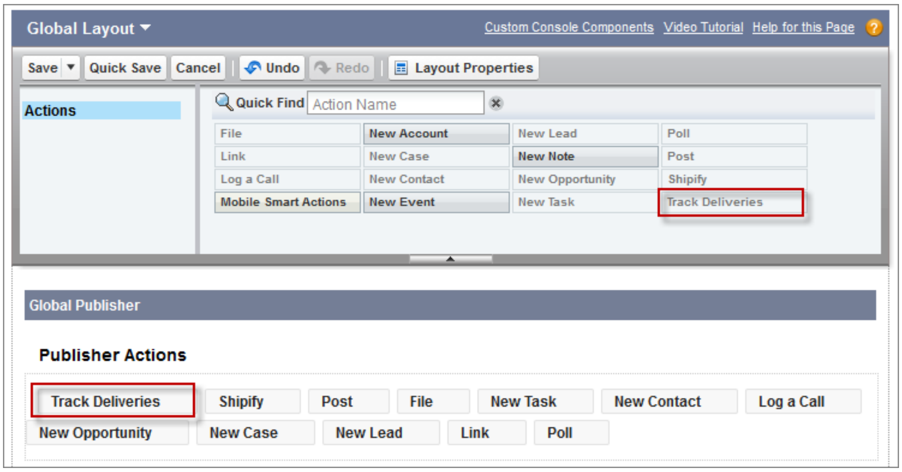
We just created the global action for the canvas app so now we'll add the action to the global publisher layout. Then it will appear in the publisher in the Salesforce1 app.

1. From Setup, click **Customize** > **Chatter** > **Publisher Layouts**.
2. Click **Edit** next to the Global Layout.

   This is the default layout for the publisher.

3. Drag the Track Deliveries element into the Publisher Actions section so that it appears as the first element on the left.

   Our warehouse workers are going to use this custom action a lot, so we're putting it at the start of the list so it'll be one of the first actions they see when they open the publisher.



4. Click **Save**.

Now that we've created the custom action and added it to the publisher layout, we're ready to see it in action.

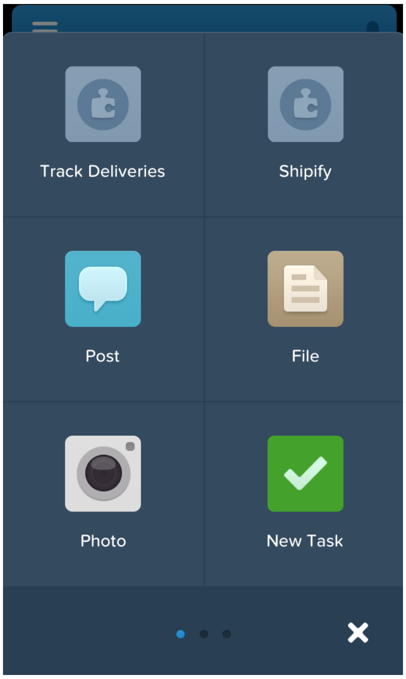
Test Out the DeliveryTrakr Canvas App

Now you'll play the part of an Acme Wireless warehouse worker processing deliveries, and we'll test out the canvas app in the Salesforce1 app.

The DeliveryTrakr app demonstrates how a canvas app can create one of three types of posts in the feed:

- Text post—Feed item that contains information about a delivery.
- Link post—Feed item that contains a link to the DeliveryTrakr app.
- Canvas post—Feed item that contains a link to another canvas app. This app is used by warehouse workers to approve or deny a delivery.

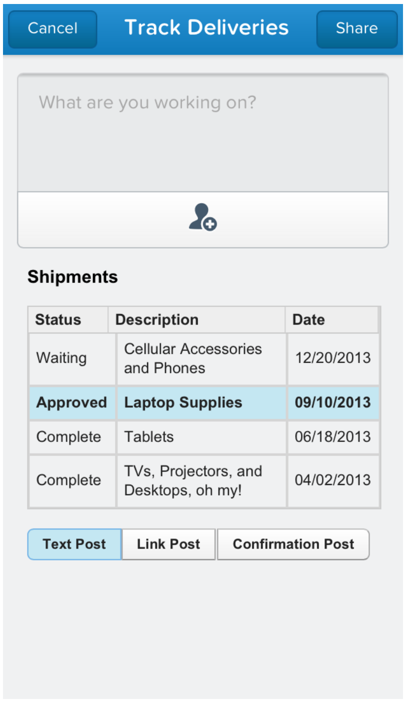
1. On your mobile device, tap **Feed** from the navigation menu.
2. Tap ➕ to access the publisher.



3. Tap **Track Deliveries**.

   The DeliveryTrakr app displaying a list of shipments appears.
4. Tap one of the deliveries in the grid.
5. Tap **Text Post**.

   You can also add some of your own text to the post by entering it in the **What are you working on?** pane.

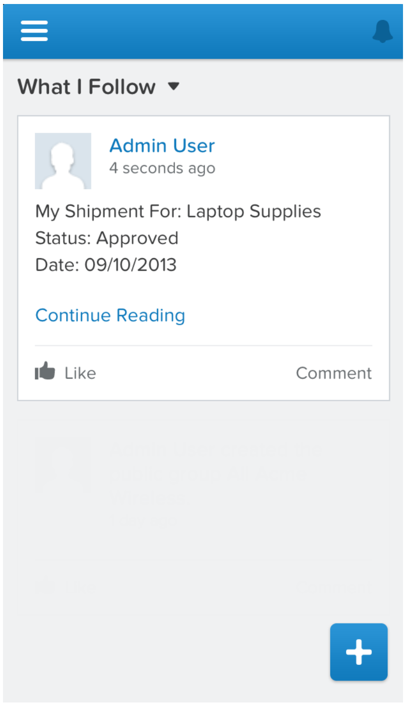


Shipments

Status	Description	Date
Waiting	Cellular Accessories and Phones	12/20/2013
Approved	**Laptop Supplies**	**09/10/2013**
Complete	Tablets	06/18/2013
Complete	TVs, Projectors, and Desktops, oh my!	04/02/2013

6. Tap **Share**.

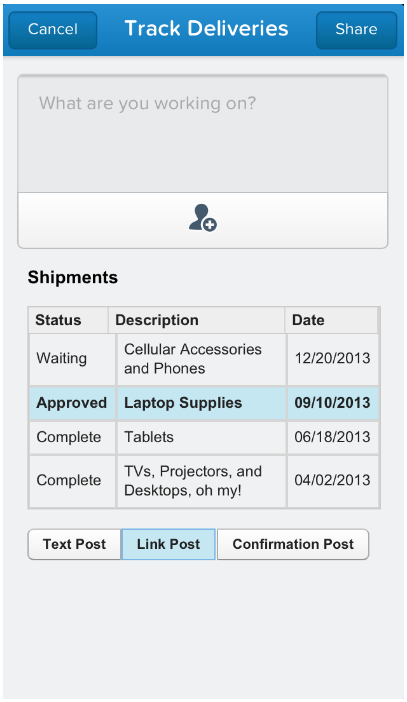
   This creates a text feed post about the shipment, and that post appears in the current user's feed.



My Shipment For: Laptop Supplies
Status: Approved
Date: 09/10/2013

7. To test out creating a link post, tap + and then **Track Deliveries**.
8. Tap one of the deliveries in the grid.
9. Tap **Link Post**.

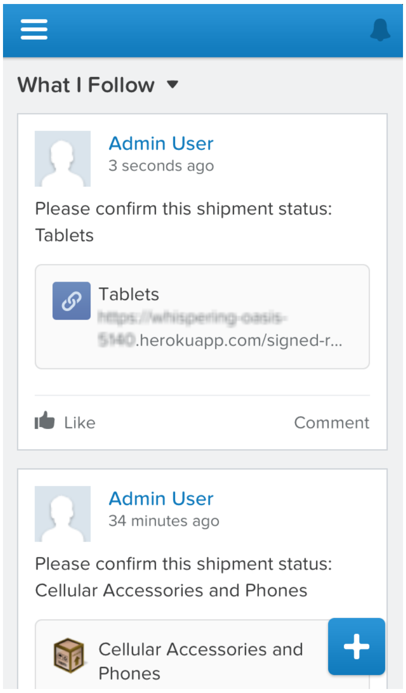
   You can also add some of your own text to the post by entering it in the **What are you working on?** pane.



Status	Description	Date
Waiting	Cellular Accessories and Phones	12/20/2013
Approved	**Laptop Supplies**	**09/10/2013**
Complete	Tablets	06/18/2013
Complete	TVs, Projectors, and Desktops, oh my!	04/02/2013

10. Tap **Share**.

This creates a link feed post about the shipment, and that post appears in the current user's feed. When you click the link, it brings you to the DeliveryTrakr app running on Heroku.



Please confirm this shipment status: Tablets

Tablets
https://whispering-oasis-5140.herokuapp.com/signed-r...

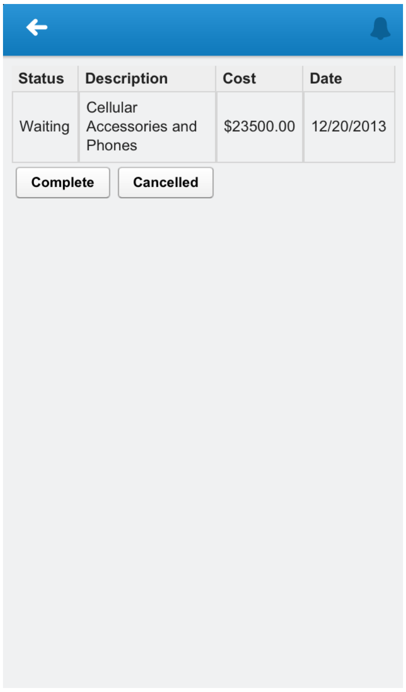
Please confirm this shipment status: Cellular Accessories and Phones

Cellular Accessories and Phones

11. To test out creating a canvas post, tap + and then **Track Deliveries**.
12. Tap one of the deliveries in the grid.
13. Tap **Confirmation Post**.

    You can also add some of your own text to the post by entering it in the **What are you working on?** pane.
14. Tap **Share**.

    This creates a canvas feed post about the shipment with a link. When you click the link, it actually takes you to a canvas app where you can complete or cancel a shipment.



Status	Description	Cost	Date
Waiting	Cellular Accessories and Phones	$23500.00	12/20/2013

You did it! You've gone through the entire process of creating a canvas app that posts a text feed item, a link feed item, and—most importantly—a canvas app in the feed.

For more information about development guidelines for canvas apps in the feed, see Canvas Apps in the Feed on page 192.

Tell Me More: About the Code to Create Feed Items

In the code for the DeliveryTrakr Web application, the `shipment.js` file contains the logic to create the various feed items.

Creating a Canvas Feed Item

This code snippet from the `onGetPayload` function creates a feed item of type `CanvasPost`. As you can see, it dynamically sets all the post values and retrieves information about the canvas app, such as the `namespace` and `developerName`, from the signed request. You can also pass in parameters that are appended to the URL and used in the canvas app feed item.

```
else if ("approval" === action)
{
    p.feedItemType = "CanvasPost";
    p.auxText = "Please confirm this shipment status: " +
        shipments[shipment].description;
    p.namespace =  sr.context.application.namespace;
    p.developerName =  sr.context.application.developerName;
    p.thumbnailUrl = "https://cdn1.iconfinder.com/data/icons/
        VISTA/project_managment/png/48/deliverables.png";
    p.parameters =  "{\"shipment\":\"" + shipment + "\"}";
    p.title = shipments[shipment].description;
    p.description = "This is a travel shipment for Shipment - " +
        shipments[shipment].description +
        ".  Click the link to open the canvas app.";
}
```

Enabling the Share Button

This code snippet is from the `draw` function. After this statement is called, the Share button is enabled. This ensures that the user can't create a feed item until they have selected all the required elements for the canvas app.

```
$$.client.publish(sr.client, {
    name : 'publisher.setValidForSubmit',
    payload : true});
```

Publishing the Feed Item

When the user clicks the Share button, this code snippet publishes the feed item to the feed. The type of feed item it creates depends on which type you select: text, link, or canvas.

```
$$.client.publish(sr.client, {name : 'publisher.setPayload',
    payload : p});
```

Chapter 14

Calling Actions from the API

In this chapter ...

You can further extend the power of actions by calling them from the REST API.

Throughout this guide, we've seen how powerful actions are because they let you quickly extend the Salesforce1 app and give users the functionality they need right within the publisher. You can harness this power outside of the Salesforce1 app by calling actions from the REST API.

In this chapter, we'll walk through creating an action off the Invoice object and calling it from the Shipify Web application. After we make our changes, when users access the Shipify canvas app and click **Ship It**, the app will add a delivery record in Salesforce.

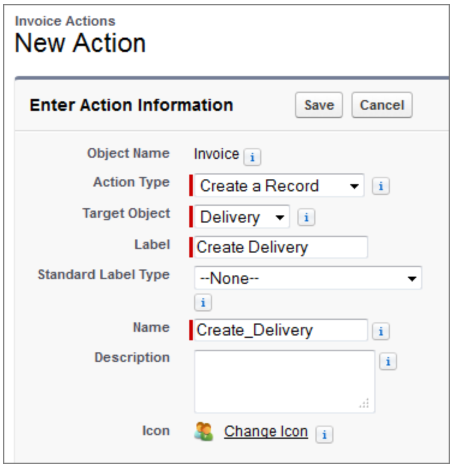
Note: This chapter builds on the tasks completed in the section Extending Salesforce1 with Canvas Custom Actions on page 100. Be sure to complete the steps of downloading the Shipify Web application and creating the canvas app before starting the tasks in this chapter.

Try It Out: Create an Invoice Action

In this step, we'll create the Invoice action that adds the delivery record.

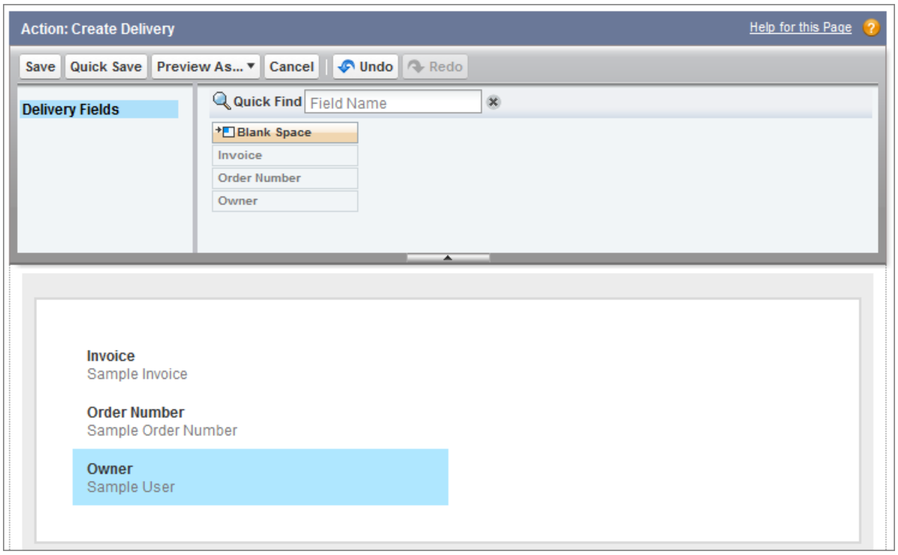
1. In the Salesforce application, from Setup, click **Create** > **Objects**.
2. Click Invoice.
3. Scroll down to the Buttons, Links, and Actions related list and click **New Action**.
4. In the Action Type drop-down list, select Create a Record.
5. In the Target Object drop-down list, select Delivery.
6. In the `Label` field, enter `Create Delivery`.

   The action name defaults to Create_Delivery. This is name by which the action is referenced by the API.



Object Name	Invoice
Action Type	Create a Record
Target Object	Delivery
Label	Create Delivery
Standard Label Type	--None--
Name	Create_Delivery
Description	
Icon	Change Icon

7. Click **Save**.
8. After you save the action, the page layout editor appears. Drag the Invoice, Order Number, and Owner fields to the page layout.
9. Click **Save**.



Now that we've created the action, we'll add the code to the Shipify Web application that's running on Heroku.

Add the Code to Call the Action

We'll add the code that calls the `Create_Delivery` action by using the REST API.

1. Navigate to the `Shipify-Node-App` directory where you downloaded the Shipify Web application. Copy the file `shipment_with_action_api_call.js` to file `shipment.js`.
   - On a Windows computer, the command would be: `copy shipment_with_action_api_call.js shipment.js`
   - On a Mac OS computer, the command would be: `cp shipment_with_action_api_call.js shipment.js`
2. Enter this command to get the files ready to commit: `git add —A`
3. Enter this command to commit the changes along with a comment: `git commit —m '`***`MyChangeComments`***`'`

   If you're working from a Windows computer, you may need to replace the single quotes with double quotes (").
4. Enter this command to deploy the app to Heroku: `git push heroku master`

If you look at the code to create the delivery record, you'll see that it passes the invoice ID and does a POST to the `/quickActions/Create_Directory` resource.

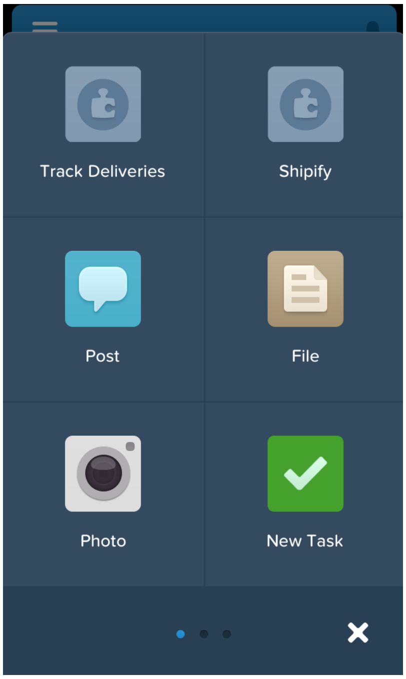
```
Shipment.prototype.createDelivery = function createDelivery(so) {
    var self = this;
    var authorization = this._formatAuthHeader(so.authorization);
    if(!so.invoiceId) {
        var err = new Error("Must Pass InvoiceId to Ship!");
        err.statusCode = '400';
        err.err = err.message;
        this.emit('create-delivery', err);
        return;
    }
    var quickActionBody = {
        contextId: so.invoiceId,
        record: {
            Order_Number__c: so.orderNumber
        }
    };

    var deliveryReq = {
        url: so.instanceUrl + '/services/data/v29.0/
            sobjects/Invoice__c/quickActions/Create_Delivery/',
        method: 'POST',
        headers: {
            'Authorization': authorization,
            'Content-Type': 'application/json'
        },
        body: JSON.stringify(quickActionBody)
    };

    //Make Ajax request and emit 'create-delivery'
    //with result data or error back to listner.
    request(deliveryReq, this.handleAJAXResponse(
        'create-delivery'));
};
```

We've got our API call all ready to go, so let's test it out by shipping a customer order.

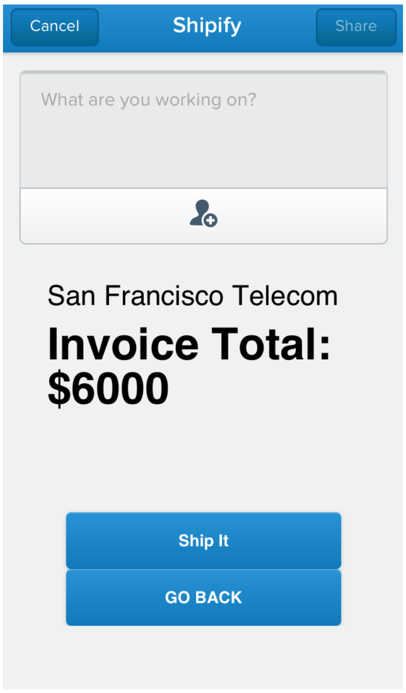
Test Out Calling the Action from the API

Now we'll test out the code that calls the action and adds a delivery record in the Salesforce1 app.

1. From your mobile device, tap ➕ to access the publisher.



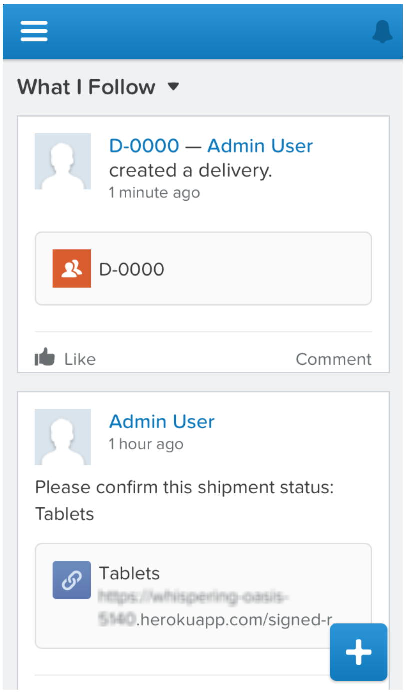
2. Tap **Shipify**.
   A list of all open invoices along with the customer information appears.
3. Tap one of the invoices. A screen appears that shows the total amount of the invoice and a **Ship It** button.



San Francisco Telecom

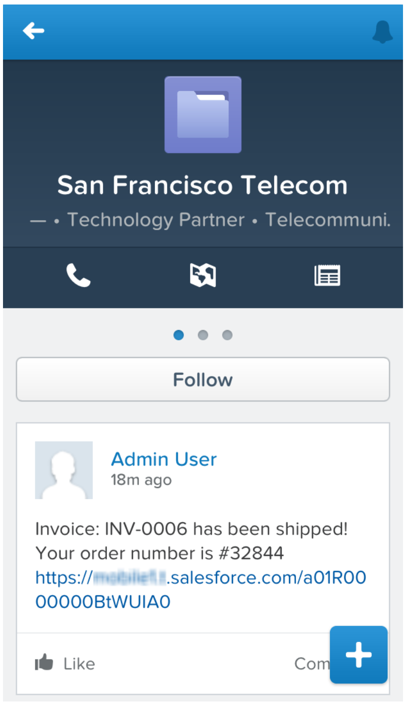
Invoice Total:
$6000

4. Tap **Ship It**.
   This kicks off order processing in the Shipify Web application. Shipify sets the invoice status to Closed and creates a feed item for the account. But now, a delivery record is also created for the invoice. After the order is shipped, you'll see a confirmation screen.
5. Tap **Cancel**.
   In the feed, you'll see the new delivery record



Please confirm this shipment status: Tablets

6. To see the closed invoice, tap ☰ and then tap **Accounts**.
7. Tap the account for the shipped order and swipe to the first indicator page. You'll see a feed item that lets the user know the order has been shipped.



Admin User
18m ago

Invoice: INV-0006 has been shipped!
Your order number is #32844
https://[redacted].salesforce.com/a01R00
00000BtWUIA0

Voila! You've now gone through the process of updating the Shipify Web application to make a REST API call to invoke the action that you created.

Tell Me More: Actions and the REST API

The REST API contains a number of resources and calls that you can use when working with actions.

Publisher Quick Actions

Use the Publisher Quick Actions resource to return a list of publisher actions as well as custom fields and objects that appear in the feed. The resource uses a URI of the format `services/data/v30.0/quickActions/`.

Global Actions

To return global actions, use: `services/data/v30.0/quickActions/`

A call to this resource returns information about the global actions including our Shipify canvas custom action as shown in this snippet of the response:

```
...
    {
    "urls" : {
        "quickAction" : "/services/data/v30.0/
            quickActions/LogACall",
        "defaultValues" : "/services/data/v30.0/
            quickActions/LogACall/defaultValues",
        "describe" : "/services/data/v30.0/
            quickActions/LogACall/describe"
        },
            "name" : "LogACall",
            "type" : "LogACall",
            "label" : "Log a Call"
    },
    {
    "urls" : {
        "quickAction" : "/services/data/v30.0/
            quickActions/Shipify",
        "describe" : "/services/data/v30.0/
            quickActions/Shipify/describe"
        },
            "name" : "Shipify",
            "type" : "Canvas",
            "label" : "Shipify"
        },
...
```

Object Actions

To return a specific object's actions, as well as global actions, use:
`services/data/v30.0/sobjects/`***`object`***`/quickActions/`

The call `/services/data/v30.0/sobjects/Invoice__c/quickActions` returns information about global actions as well as the Invoice `Create_Delivery` action, as shown in this snippet of the response:

```
...
    { "urls" : {
        "quickAction" : "/services/data/v30.0/
            quickActions/Shipify",
        "describe" : "/services/data/v30.0/
            quickActions/Shipify3/describe"
    },
    "name" : "Shipify",
    "type" : "Canvas",
    "label" : "Shipify3"
    },
    {
    "urls" : {
        "defaultValuesTemplate" : "/services/data/v30.0/
```

```
                sobjects/Invoice__c/quickActions/Create_Delivery/
                defaultValues/{ID}",
            "quickAction" : "/services/data/v30.0/
                sobjects/Invoice__c/quickActions/Create_Delivery",
            "defaultValues" : "/services/data/v30.0/
                sobjects/Invoice__c/quickActions/Create_Delivery/
                defaultValues",
            "describe" : "/services/data/v30.0/
                sobjects/Invoice__c/quickActions/Create_Delivery/
                describe"
            },
                "name" : "Invoice__c.Create_Delivery",
                "type" : "Create",
                "label" : "Create Delivery"
            },
...
```

Specific Actions

To return a specific action, use:
`services/data/v30.0/sobjects/`***`object`***`/quickActions/`***`{action name}`***

The call `/services/data/v30.0/sobjects/Invoice__c/quickActions/Create_Delivery` returns information about only the `Create_Delivery` action, as shown in this response:

```
{
    "colors": [
        {
            "theme": "theme4",
            "color": "AA8E0A",
            "context": "primary"
        },
        {
            "theme": "theme3",
            "color": "AA8E0A",
            "context": "primary"
        }
    ],
    "miniIconUrl": "https://instance.salesforce.com/img/
        icon/custom51_100/truck16.png",
    "sourceSobjectType": "Invoice__c",
    "targetParentField": "Invoice__c",
    "targetRecordTypeId": null,
    "targetSobjectType": "Delivery__c",
    "visualforcePageName": null,
    "iconUrl": "https://instance.salesforce.com/img/
        icon/custom51_100/truck32.png",
    "iconName": null,
    "canvasApplicationName": null,
    "height": null,
    "icons": [
        {
            "url": "https://instance.salesforce.com/img/
                icon/custom51_100/truck32.png",
            "height": 32,
            "theme": "theme3",
            "width": 32,
            "contentType": "image/png"
        },
        {
            "url": "https://instance.salesforce.com/img/
                icon/custom51_100/truck16.png",
            "height": 16,
            "theme": "theme3",
            "width": 16,
            "contentType": "image/png"
        },
...
    ],
    "layout": {
        "layoutRows": [{
            "layoutItems": [
                {
                    "layoutComponents": [{
                        "details": {
                            "namePointing": false,
                            "custom": true,
                            "htmlFormatted": false,
                            "dependentPicklist": false,
                            "calculatedFormula": null,
                            "defaultValueFormula": null,
                            "defaultedOnCreate": false,
                            "digits": 0,
                            "groupable": true,
                            "permissionable": false,
                            "referenceTo": ["Invoice__c"],
                            "relationshipOrder": 0,
                            "soapType": "tns:ID",
                            "nameField": false,
                            "sortable": true,
                            "filterable": true,
                            "restrictedPicklist": false,
                            "caseSensitive": false,
                            "calculated": false,
                            "scale": 0,
                            "nillable": false,
                            "externalId": false,
                            "idLookup": false,
                            "controllerName": null,
                            "deprecatedAndHidden": false,
                            "inlineHelpText": null,
                            "writeRequiresMasterRead": false,
                            "createable": true,
                            "updateable": false,
                            "relationshipName": "Invoice__r",
                            "autoNumber": false,
                            "unique": false,
                            "picklistValues": [],
                            "displayLocationInDecimal": false,
                            "cascadeDelete": true,
                            "restrictedDelete": false,
                            "length": 18,
                            "name": "Invoice__c",
                            "type": "reference",
                            "defaultValue": null,
                            "byteLength": 18,
                            "label": "Invoice",
                            "precision": 0
                        },
                        "displayLines": 1,
                        "tabOrder": 1,
                        "value": "Invoice__c",
                        "type": "Field"
                    }],
                    "placeholder": false,
                    "editable": true,
                    "required": true,
                    "label": "Invoice"
                },
                {
                    "layoutComponents": [],
                    "placeholder": true,
                    "editable": false,
                    "required": false,
                    "label": ""
                }
            ],
            "numItems": 2
        }],
        "useCollapsibleSection": false,
        "useHeading": false,
        "columns": 2,
        "heading": null,
        "rows": 1
    },
    "defaultValues": [],
    "width": null,
    "urls": {
        "defaultValuesTemplate": "/services/data/v30.0/
            sobjects/Invoice__c/quickActions/
            Create_Delivery/defaultValues/{ID}",
        "quickAction": "/services/data/v30.0/
            sobjects/Invoice__c/quickActions/Create_Delivery",
        "defaultValues": "/services/data/v30.0/
            sobjects/Invoice__c/quickActions/
            Create_Delivery/defaultValues",
        "describe": "/services/data/v30.0/
            sobjects/Invoice__c/quickActions/
            Create_Delivery/describe"
    },
    "name": "Invoice__c.Create_Delivery",
    "type": "Create",
    "label": "Create Delivery"
}
```

Action Details

To return a specific action's descriptive detail, use: `services/data/v30.0/sobjects/`***`object`***`/quickActions/`***`{action name}`***`/describe/`

Action Default Values and Field Values

To return a specific action's default values, including default field values, use: `services/data/v30.0/sobjects/`***`object`***`/quickActions/`***`{action name}`***`/defaultValues/`

The call `/services/data/v30.0/sobjects/Invoice__c/quickActions/Create_Data/defaultValues` returns information about defaults for the Invoice `Create_Delivery` action, as shown in this snippet of the response:

```
...
{
   "attributes":{
      "type":"Delivery__c"
   }
}
...
```

Action Default Values

To return the default values for an action, use: `/services/data/v30.0/subjects/object/quickActions/{action name}/defaultValues/{parent id}`

Describe Layouts

Use the global describe layouts resource to get global layout information for objects, including publisher action objects. The resource uses a URI of the format: `services/data/v30.0/sobjects/Global/describe/layouts/`

A call to this resource returns layout information for the global actions (including our Shipify canvas custom action), as shown in this response:

```
{
   "recordTypeSelectorRequired":[
      false
   ],
   "recordTypeMappings":[

   ],
   "layouts":[
      {
         "relatedLists":[
         ],
         "relatedContent":null,
         "detailLayoutSections":[

         ],
         "editLayoutSections":[

         ],
         "multirowEditLayoutSections":[

         ],
         "offlineLinks":[

         ],
         "buttonLayoutSection":null,
         "highlightsPanelLayoutSection":null,
         "quickActionList":{
            "quickActionListItems":[
               {
                  "quickActionName":"Shipify",
                  "colors":[

                  ],
                  "miniIconUrl":null,
                  "targetSobjectType":null,
                  "iconUrl":null,
                  "urls":{
                     "quickAction":"/services/data/v30.0/
                         quickActions/Shipify",
                     "describe":"/services/data/v30.0/
                         quickActions/Shipify/describe"
                  },
                  "icons":[

                  ],
                  "type":"Canvas",
                  "label":"Shipify"
               },
               {
                  "quickActionName":"FeedItem.TextPost",
                  "colors":[

                  ],
                  "miniIconUrl":null,
                  "targetSobjectType":null,
                  "iconUrl":null,
                  "urls":{

                  },
                  "icons":[

                  ],
                  "type":"Post",
                  "label":"Post"
               },
               {
```

```
                   "quickActionName":"FeedItem.ContentPost",
                   "colors":[

                   ],
                   "miniIconUrl":null,
                   "targetSobjectType":null,
                   "iconUrl":null,
                   "urls":{

                   },
                   "icons":[

                   ],
                   "type":"Post",
                   "label":"File"
                },
                {
                   "quickActionName":"NewTask",
                   "colors":[
                      {
                         "color":"44A12C",
                         "theme":"theme4",
                         "context":"primary"
                      },
                      {
                         "color":"1797C0",
                         "theme":"theme3",
                         "context":"primary"
                      }
                   ],
                   "miniIconUrl":"https://instance.
                       salesforce.com/img/icon/tasks16.png",
                   "targetSobjectType":"Task",
                   "iconUrl":"https://instance.
                       salesforce.com/img/icon/home32.png",
                   "urls":{
                      "quickAction":"/services/data/v30.0/
                          quickActions/NewTask",
                      "defaultValues":"/services/data/v30.0/
                          quickActions/NewTask/defaultValues",
                      "describe":"/services/data/v30.0/
                          quickActions/NewTask/describe"
                   },
                   "icons":[
                      {
                         "url":"https://instance.
                             salesforce.com/img/icon/home32.png",
                         "height":32,
                         "theme":"theme3",
                         "width":32,
                         "contentType":"image/png"
                      },
                      {
                         "url":"https://instance.
                             salesforce.com/img/icon/tasks16.png",
                         "height":16,
                         "theme":"theme3",
                         "width":16,
                         "contentType":"image/png"
                      },
                      ...
                   ],
                   "type":"Create",
                   "label":"New Task"
                },
                {
                   "quickActionName":"NewContact",
                   "colors":[
                      {
                         "color":"b76db7",
                         "theme":"theme4",
                         "context":"primary"
                      },
                      {
                         "color":"56458C",
                         "theme":"theme3",
                         "context":"primary"
                      }
                   ],
                   "miniIconUrl":"https://instance.
                       salesforce.com/img/icon/contacts16.png",
                   "targetSobjectType":"Contact",
                   "iconUrl":"https://instance.
                       salesforce.com/img/icon/contacts32.png",
                   "urls":{
                      "quickAction":"/services/data/v30.0/
                          quickActions/NewContact",
                      "defaultValues":"/services/data/v30.0/
                          quickActions/NewContact/defaultValues",
                      "describe":"/services/data/v30.0/
                          quickActions/NewContact/describe"
                   },
                   "icons":[
                      {
                         "url":"https://instance.
                            salesforce.com/img/icon/contacts32.png",

                         "height":32,
                         "theme":"theme3",
                         "width":32,
                         "contentType":"image/png"
                      },
                      {
                         "url":"https://instance.
                            salesforce.com/img/icon/contacts16.png",

                         "height":16,
                         "theme":"theme3",
                         "width":16,
                         "contentType":"image/png"
                      },
                      ...
                   ],
                   "type":"Create",
                   "label":"New Contact"
                },
                ...
                   "type":"Create",
                   "label":"New Lead"
                },
                {
                   "quickActionName":"FeedItem.LinkPost",
                   "colors":[

                   ],
                   "miniIconUrl":null,
                   "targetSobjectType":null,
                   "iconUrl":null,
                   "urls":{

                   },
                   "icons":[

                   ],
                   "type":"Post",
                   "label":"Link"
                },
                {
                   "quickActionName":"FeedItem.PollPost",
                   "colors":[

                   ],
                   "miniIconUrl":null,
                   "targetSobjectType":null,
                   "iconUrl":null,
                   "urls":{

                   },
                   "icons":[

                   ],
                   "type":"Post",
                   "label":"Poll"
                }
             ]
          },
          "id":"00hR0000000MpLAIA0"
       }
    ]
 }
```

Use the describe layouts resource to obtain a description of a layout for a specific object, including publisher action objects. The resource uses a URI of the format: `services/data/v30.0/sobjects/`***`object`***`/describe/layouts/`

Chapter 15

Extending the User Interface with Flexible Pages

In this chapter ...

In this chapter, we'll extend the Acme Wireless organization for a different mobile audience. In our scenario, Acme Wireless maintains a central warehouse where all the repair parts and accessories are stored. The storefront locations order parts from the warehouse so that they can keep some inventory on hand. When they need a special part that's not in stock, storefronts can special order it from the warehouse.

Instead of focusing on the mobile technicians like we have for most of this book, this time we're going to shift our attention to the delivery drivers transporting inventory from the warehouse to the storefronts. Currently, the drivers use a custom app to create, update, and track their deliveries. We're going to use a Flexible Page to create a home page for that app, which will allow us to incorporate it into Salesforce1. This way, the drivers have a single source for information they need to manage their deliveries.

What is a Flexible Page?

A Flexible Page is a type of custom layout.

Flexible Pages occupy a middle ground between page layouts and Visualforce pages. Like a page layout, Flexible Pages allow you to add custom items to a page. However, they don't have the same structure as a page layout, and the custom items are all components.

You can use a Flexible Page to create a home page for a third-party app that you can then add directly into the Salesforce1 mobile navigation. This provides your Salesforce users with a mobile home page that lets them quickly access the objects and items that are most important in that app.

You can also assign global publisher actions to a Flexible Page by specifying them in the Flexible Page XML. When users tap ➕ from a Flexible Page, any global actions that you've assigned to it will show up in the publisher.

About Flexible Pages

A Flexible Page consists of a list of a single region, named "main", containing *ComponentInstances*. A ComponentInstance contains a set of properties for an instance of a particular component, such as which component the instance points to, and a set of name/value pairs representing a subset of the component's attributes.

Available Components

Not every component can be specified in a ComponentInstance. Even among those that are allowed, not all of their attributes can be specified. Currently, two components are supported for use in Flexible Pages.

`flexipage:filterListCard`

Points to a list view and displays the first few records from that view.

The `flexipage:filterListCard` component supports only:

- Custom Objects
- Account
- Campaign
- Case
- CollaborationGroup
- Contact
- Contract

- Lead
- LiveChatTranscript
- Opportunity

`flexipage:recentItems`

A list of most-recently used items which is limited to specific custom objects, based on the properties specified.

So, what can a Flexible Page contain?

Flexible Pages can include:

- Components that display list views
- Components that display a scoped list of recently used items
- Global Chatter publisher actions

Flexible Pages: the Big Picture

It's not enough to just create the XML for the Flexible Page. After you create it, you've got to deploy it to your organization, configure the page, and get it into Salesforce1. Here's an overview of the steps from beginning to end:

1. Before starting development, consider:
   a. What list views do you want to include?
   b. What recent items do you want to include?
   c. Which global publisher actions, if any, do you want to provide?
2. Create the Flexible Page XML file.
3. Decide which global publisher actions to use in your app, whether they're out-of-the-box global actions from Salesforce or ones you create yourself.

   You can assign specific global actions to your Flexible Page in the XML for the page. If you don't define specific actions in the XML, the publisher icon (+) won't appear on the page.
4. Deploy the Flexible Page into your development organization.
5. Create a Flexible Page custom tab.
6. Add your Flexible Page tab to the Salesforce1 navigation menu.

We'll walk through all these tasks, starting with step 2, in this chapter. But before we can get started, we need to download the custom Deliveries app that the delivery drivers have been using.

Before We Begin: Download the Deliveries App

As we mentioned previously, Acme Wireless delivery drivers use a custom app to create, update, and track their deliveries. We want to add a Flexible Page to it so we can surface it in Salesforce1, but before we can do that, we need to download the custom app.

1. Go to `https://github.com/forcedotcom/Salesforce1-Dev-Guide-Setup-Package`.
2. Click **Download ZIP**.
3. Save the `Salesforce1-Dev-Guide-Setup-Package.zip` to your hard drive.
4. Extract the `Salesforce1-Dev-Guide-Setup-Package.zip` file.

   In it, you'll find `Salesforce1_Dev_Guide_Deliveries_App.zip`.
5. Now extract the `Salesforce1_Dev_Guide_Deliveries_App.zip` file.

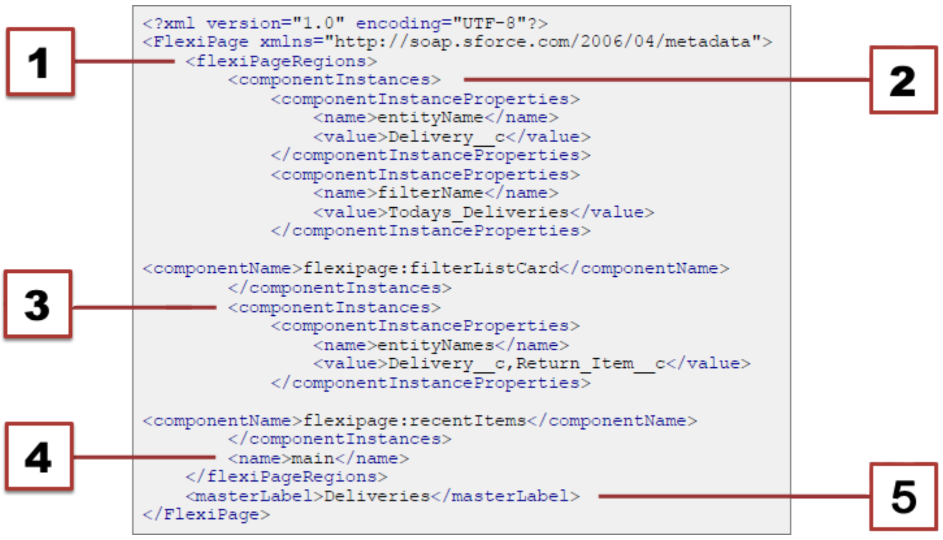
Remember where you extracted the Deliveries app files, because we'll be returning there shortly.

Creating a Flexible Page

You create a Flexible Page manually in XML, then deploy it into Salesforce either through the Force.com Migration Tool, the Force.com IDE, or Workbench.

The Flexible Page layout and style is provided by Salesforce. There's no custom coding necessary.

Here's a sample of what a Flexible Page XML file looks like. This is our Deliveries app starting code, which we'll work with in the next exercise.



```
<?xml version="1.0" encoding="UTF-8"?>
<FlexiPage xmlns="http://soap.sforce.com/2006/04/metadata">
    <flexiPageRegions>
        <componentInstances>
            <componentInstanceProperties>
                <name>entityName</name>
                <value>Delivery__c</value>
            </componentInstanceProperties>
            <componentInstanceProperties>
                <name>filterName</name>
                <value>Todays_Deliveries</value>
            </componentInstanceProperties>

<componentName>flexipage:filterListCard</componentName>
        </componentInstances>
        <componentInstances>
            <componentInstanceProperties>
                <name>entityNames</name>
                <value>Delivery__c,Return_Item__c</value>
            </componentInstanceProperties>

<componentName>flexipage:recentItems</componentName>
        </componentInstances>
        <name>main</name>
    </flexiPageRegions>
    <masterLabel>Deliveries</masterLabel>
</FlexiPage>
```

1. Start of the Flexible Page region. Flexible Pages can have only one region.
2. Start of the `flexipage:filterListCard` component
3. Start of the `flexipage:recentItems` component
4. Name of the region. Must be "main".
5. Master label of the Flexible Page.

Ready to give it a shot? Let's create one for ourselves.

Try It Out: Create a Flexible Page

As we mentioned, we have to create our Flexible Page manually as an XML file. You'll need an XML editor for this task and the next one.

In the `Salesforce1_Dev_Guide_Deliveries_App` folder created when you extracted the package, you'll see a `flexipages` folder. Inside, you'll find a sample version of the final Flexible Page file we're creating here, for your reference. Let's get coding!

1. Open the XML editor of your choice.
2. Open a new file.
3. Copy and paste this code block into your XML editor:

```
<?xml version="1.0" encoding="UTF-8"?>
<FlexiPage xmlns="http://soap.sforce.com/2006/04/metadata">
    <flexiPageRegions>
        <componentInstances>
            <componentInstanceProperties>
```

```
                <name>entityName</name>
                <value>Delivery__c</value>
            </componentInstanceProperties>
            <componentInstanceProperties>
                <name>filterName</name>
                <value>Todays_Deliveries</value>
            </componentInstanceProperties>

<componentName>flexipage:filterListCard</componentName>
        </componentInstances>
        <componentInstances>
            <componentInstanceProperties>
                <name>entityNames</name>
                <value>Delivery__c,Return_Item__c</value>
            </componentInstanceProperties>

<componentName>flexipage:recentItems</componentName>
        </componentInstances>
        <name>main</name>
    </flexiPageRegions>
    <masterLabel>Deliveries</masterLabel>
</FlexiPage>
```

4. Save the file as `Deliveries.flexipage` in the `flexipages` folder.

   Important: Always save your Flexible Pages with the `.flexipage` extension.

All right, we've created a basic Flexible Page, but there's another block of code we need to add: a section specifying actions to be assigned to the Flexible Page. We're not done with the XML just yet.

Assigning Actions to A Flexible Page

We learned all about actions in the Using Publisher Actions in Salesforce1 chapter, where we created and configured an action using point-and-click tools. Actions you want to use for your Flexible Pages must first be created and configured in the full Salesforce site, but unlike objects, where you add the action to a page layout declaratively, actions on Flexible Pages must be specified in the XML.

Only global publisher actions are supported for Flexible Pages.

When a user taps ➕ from the Flexible Page in Salesforce1, only the actions you specify in the Flexible Page XML display in the publisher. If you don't specify any actions, the ➕ won't appear.

In this exercise, we'll be adding a pre-configured global action to the Flexible Page. This action lets our drivers schedule a delivery while on the road.

Try It Out: Add an Action to Your Flexible Page

A global action called "New Delivery" for this Flexible Page is included in the sample app package you downloaded at the start of this chapter. We just need to call it in the XML.

1. If it's not already open, re-open the `Deliveries.flexipage` file in your XML editor.
2. Add this action codeblock to the end of the XML, just before the `</FlexiPage>` tag.

   This codeblock associates the New Delivery action with the Flexible Page.

   ```
       <quickActionList>
           <quickActionListItems>
               <quickActionName>New_Delivery</quickActionName>
           </quickActionListItems>
       </quickActionList>
   ```

3. Save the `Deliveries.flexipage` file.

Now, when users open the Deliveries app from the Salesforce1 menu, the Flexible Page will have a ➕ that they can tap to open the publisher and access this action.

Your full codeblock should look like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<FlexiPage xmlns="http://soap.sforce.com/2006/04/metadata">
    <flexiPageRegions>
        <componentInstances>
            <componentInstanceProperties>
                <name>entityName</name>
                <value>Delivery__c</value>
            </componentInstanceProperties>
            <componentInstanceProperties>
                <name>filterName</name>
                <value>Todays_Deliveries</value>
            </componentInstanceProperties>
            <componentName>flexipage:filterListCard</componentName>
        </componentInstances>
        <componentInstances>
            <componentInstanceProperties>
                <name>entityNames</name>
                <value>Delivery__c,Return_Item__c</value>
            </componentInstanceProperties>
            <componentName>flexipage:recentItems</componentName>
        </componentInstances>
        <name>main</name>
    </flexiPageRegions>
    <masterLabel>Deliveries</masterLabel>
```

```
    <quickActionList>
        <quickActionListItems>
            <quickActionName>New_Delivery</quickActionName>
        </quickActionListItems>
    </quickActionList>
</FlexiPage>
```

The XML code is ready. Now it's time to deploy it, and the rest of the Deliveries package, into your organization.

Deploying a Flexible Page

As we mentioned at the start of this chapter, a Flexible Page has to be deployed via the Metadata API, and there are a few ways to do that: through the Force.com Migration Tool, the Force.com IDE, or Workbench.

You may have some of those already set up on your computer, but for the purposes of this exercise, we're going to choose the simplest route. We'll be deploying via the Workbench, which is an online suite of open source tools designed for administrators and developers to interact with salesforce.com organizations via the Force.com APIs.

Try It Out: Deploy a Flexible Page

We've created our Flexible Page XML, so now it's time to deploy it and its app into our developer organization.

1. Zip the contents of the `Salesforce1_Dev_Guide_Deliveries_App` package folder back up into a new `.zip` file called `DeliveriesApp.zip`.

   Important: Don't zip up the main folder itself, or the package won't deploy correctly. Select the `package.xml` file and all the subfolders (objects, flexipages, tabs, and so on), and zip them up together.

2. In a new browser tab or window, navigate to https://workbench.developerforce.com/.
3. Set the API version to the latest one.

   For example, Winter '14 is API version 29.0. Flexible Pages are supported in API version 29.0 and above.

4. Agree to the terms of service, and then click **Login with Salesforce**.
5. Log in using your Developer Edition credentials.
6. From the migration menu, select Deploy.

7. Click to choose a file and select the `DeliveriesApp.zip` file you just created that now contains our Flexible Page.
8. Select `Single Package`.
9. Click **Next**.
10. Click **Deploy**.
11. Wait for the deployment to finish.
12. Return to your Salesforce browser window.

Great! Now our package and its contents are in our development organization. But we're not done yet. We need to get our Flexible Page into Salesforce1, and to do that, we need to create a tab.

About Flexible Page Tabs

Before you can include a Flexible Page in the Salesforce1 navigation menu, you must create a custom tab for it. Flexible Page tabs don't work like other custom tabs. Once created, they don't show up on the All Tabs page when you click the plus icon (+) that appears to the right of your current tabs. Flexible Page tabs also don't show up in the Available Tabs list when you customize the tabs for your apps. Flexible Page tabs only facilitate inclusion of the Flexible Page in the Salesforce1 navigation menu.

You can define a Flexible Page tab in XML and deploy it like you would any other custom tab, but we're going to do it in the full Salesforce site to illustrate the Flexible Page tab's unique qualities.

Try It Out: Create a Flexible Page Tab

1. In Setup, go to **Create** > **Tabs**.
2. Click **New** in the Flexible Page Tabs related list.

   The Flexible Page Tabs related list displays only if there is a Flexible Page deployed in your organization.
3. Select our Deliveries Flexible Page for the tab.
4. Enter `My Deliveries` as the label.

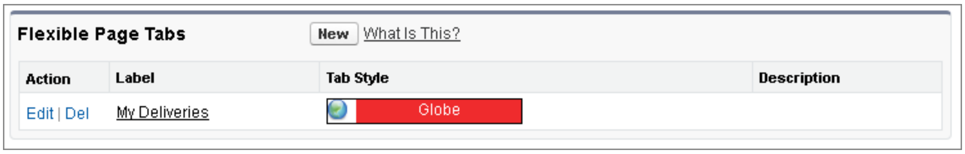
   This text becomes the name for the Flexible Page in the Salesforce1 navigation menu, and it also displays in the Flexible Page header along with its corresponding icon.
5. Click the `Tab Style` lookup icon to display the Tab Style Selector.
6. Click the **Globe** style.

   The icon on the style you select is the icon that displays to the left of the Flexible Page label in the Salesforce1 navigation menu.

7. Click **Next**.
8. Leave the tab applied to all profiles.

   Note: The Default On and Default Off options for Flexible Pages don't work as they do with other custom tabs. The Flexible Page menu item appears for the selected profiles in Salesforce1 whether you choose Default On or Default Off. Select the Tab Hidden option to hide the Flexible Page menu item from the selected profiles in Salesforce1.

9. Click **Save**.



Flexible Page Tabs New What Is This?

Action	Label	Tab Style	Description
Edit | Del	My Deliveries	Globe	

All right! The tab is created. Now we can make our Flexible Page available in Salesforce1.

Tell Me More: Flexible Page Tabs

Creating a Custom Tab Style

You can create your own custom tab style for your Flexible Page tab if your organization has access to the Documents tab. When in the tab style selector:

1. Click **Create your own style**.
2. Click the `Color` lookup icon to display the color selection dialog and click a color to select it.
3. Click **Insert an Image**, select the document folder, and select the image you want to use.

   Alternatively, click **Search in Documents**, enter a search term, and click **Go!** to find a document file name that includes your search term.

   Note: This dialog only lists files in document folders that are under 20 KB and have the Externally Available checkbox selected in the document property settings. If the document used for the icon is later deleted, Salesforce replaces it with a default multicolor block icon (🧊).

4. Select a file and click **OK**. Then you're taken back to the New Custom Tab wizard.

Icon Guidelines

When creating a custom icon for use in a Flexible Page tab, follow the guidelines in Custom Icon Guidelines and Best Practices on page 60.

Making Your Flexible Page Available in Salesforce1

In Customizing the Salesforce1 Navigation Menu on page 23, we went over the Salesforce1 navigation menu items and some of the quirks about how navigation works. We also customized the navigation menu structure for the Acme Wireless mobile technicians. Later, in the Extending Salesforce1 with Visualforce Pages chapter on page 75, we added a Visualforce page to the menu.

Now it's time to augment the menu even further by adding our Flexible Page, and hence, our custom app, to the Salesforce1 navigation menu.

Try It Out: Add a Flexible Page to the Salesforce1 Navigation Menu

The first item you put in the menu becomes your users' Salesforce1 landing page. The Acme Wireless delivery drivers don't need to see the Deliveries app as their landing page every time they open Salesforce1, but they do need access to it. Let's put it in the Apps section of the menu.

1. From Setup, click **Mobile Administration** > **Mobile Navigation**.
2. In the list of available items, select our Flexible Page tab, My Deliveries, and click **Add**.
3. Using the **Up** and **Down** arrows, position My Deliveries just below the Smart Search Items menu item.
   This will make the Deliveries app the first item in the Apps section of the menu.
4. Click **Save**.

It's done! Let's go test it out in Salesforce1.

Test the Flexible Page in Salesforce1

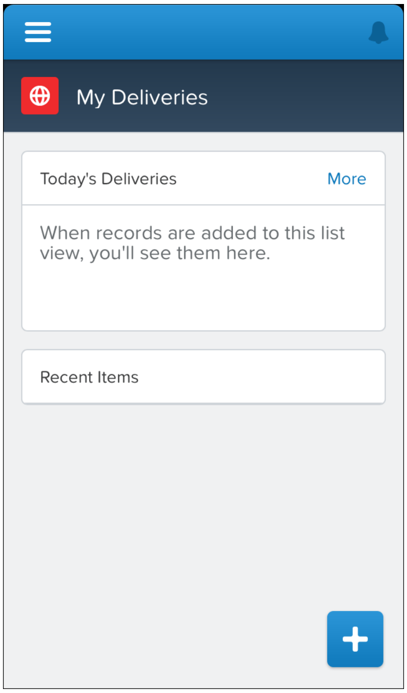
1. Open the Salesforce1 app on your mobile device.
2. Tap ☰ to access the navigation menu.

3. Scroll down to the Apps section.

   This section contains any menu item that was put below the Smart Search Items element, whether it's really an "app" or not.

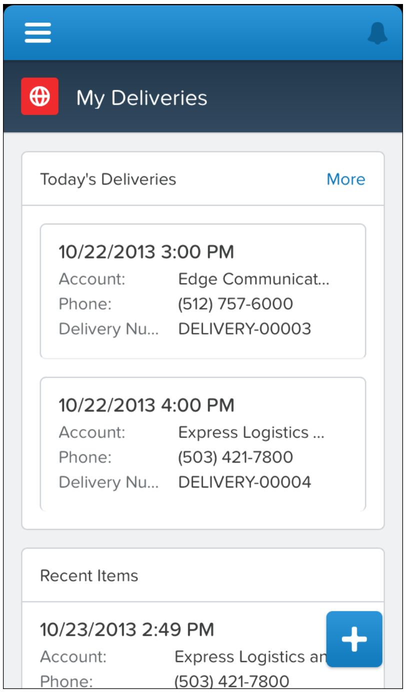
4. Tap **My Deliveries**.

   You're taken to the Flexible Page. The "My Deliveries" label is at the top, and we see two list cards representing Today's Deliveries and Recent Items. There aren't any deliveries in our developer organization, so the components are empty.



When records are added to this list view, you'll see them here.

The Today's Deliveries component picks up any delivery scheduled for today's date with a status of "In Transit". If we did have some records in our developer organization that matched those requirements, our Flexible Page might look like this:



10/22/2013 3:00 PM
Account: Edge Communicat...
Phone: (512) 757-6000
Delivery Nu... DELIVERY-00003

10/22/2013 4:00 PM
Account: Express Logistics ...
Phone: (503) 421-7800
Delivery Nu... DELIVERY-00004

10/23/2013 2:49 PM
Account: Express Logistics ar
Phone: (503) 421-7800

Tell Me More: Flexible Pages

When working with Flexible Pages, keep in mind:

- A Flexible Page region can contain no more than 25 components.
- The `flexipage:recentItems` component only supports custom objects.

Modifying Flexible Pages

If you're considering making changes to a Flexible Page, some changes require an update to the XML, and others don't. You must modify the Flexible Page XML and re-deploy it if you change:

- Which list views are displayed
- The order that the different list views are displayed in (not the contents of the list view)
- The objects that show up in the recent items list
- The global actions that are available

Updates to these items don't require a change to the Flexible Page XML, and can be done in the full Salesforce site.

- The contents of the list view components

- The global publisher actions

Packaging Flexible Pages

For details on how Flexible Pages work in packages, see the *ISVforce Guide*.

Chapter 16

Development Guidelines and Best Practices

In this chapter ...

You've had a chance to learn the major concepts of developing for the Salesforce1 app, and to see how you can easily add customized functionality for your mobile users. This chapter focuses on some conceptual guidelines and specific best practices for developing advanced custom actions and pages using the programmatic tools available to all Salesforce1 Platform developers.

Whether you're creating Visualforce pages to add as custom actions or mobile cards, or creating or integrating canvas apps into Salesforce1, these principles and practices will help you provide the best experience for your mobile users.

When to Use the Navigation Menu or the Publisher

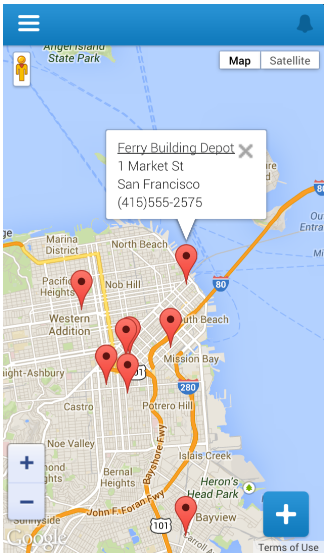
As we've seen throughout the examples in this book, you can extend and customize the Salesforce1 app and make that functionality accessible to users from either the navigation menu or from the publisher. Here we'll look at when you should use one method over another.

Navigation menu

The navigation menu appears when you tap ☰. This menu is available in the global context. For example, if a user logs in and is viewing items in the feed, they can tap and open the navigation menu, and it displays menu items. Typically, these menu items lead to more complex business processes that don't take place in the context of any particular object.

Menu items in the navigation menu should bring users to a fully functional page or app. So if you have a page or app that contains many fields through which the user would need to scroll and perform a more complex process, you'll want to make it available from the navigation menu.

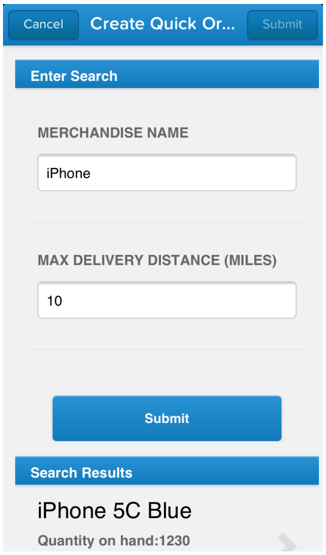
An example from this book is the Find Warehouses Visualforce page that we made available from the navigation menu in Extending Salesforce1 with Visualforce Pages on page 75. When the mobile technician taps the menu item, a page appears that contains a Google map and displays any nearby warehouses. The functionality of this page is global—not in the context of any particular object in our schema.



Publisher

The publisher appears when you tap ➕. This menu is for accessing custom functionality that displays small amounts of data and allows users to perform short, quick actions. If you have functionality that occurs in the context of an object, you'll want to add it as an action in the publisher.

An example from this book is the Create Quick Order action available from the publisher within a customer account. While the mobile technician is servicing a customer account, they can tap the action and then enter in just the merchandise name and distance to find warehouses with a part in stock. Then the technician enters the quantity and a customer order is created. The functionality of this Visualforce page occurs within the context of a customer account. The user interaction with the page is quick, and it's a simple process to search and create an order because the page contains only a few fields.



MERCHANDISE NAME
iPhone
MAX DELIVERY DISTANCE (MILES)
10

iPhone 5C Blue
Quantity on hand:1230

Visualforce Guidelines and Best Practices

Visualforce pages aren't automatically mobile friendly in the Salesforce1 app. The standard Salesforce header and sidebar are disabled in favor of the Salesforce1 controls, and a JavaScript API is available to make it possible for Visualforce pages to connect with Salesforce1 navigation management. In other respects the pages remain as they are and, although usable within Salesforce1, desktop focused Visualforce pages will *feel* desktop focused.

Fortunately, making your apps look great in the Salesforce1 app is straightforward. You can either revise your code so that your pages work in both the full Salesforce site and the Salesforce1 app, or you can create mobile-specific pages.

In this chapter, you'll learn best practices for how to:

- Share Visualforce pages between mobile and desktop.
- Exclude Visualforce from mobile or desktop.
- Choose the best architecture for your Visualforce pages.
- Choose an effective page layout for your pages.
- Manage user input and navigation.
- Use Visualforce pages as custom actions.
- Tune your pages for the best performance.

Sharing Visualforce Pages Between Mobile and Desktop

You should revise Visualforce pages that appear in both the Salesforce1 app and in the full Salesforce site to support both environments. This includes Visualforce pages used as custom actions, and Visualforce pages added to standard page layouts, except those added to the Mobile Cards section of a page layout.

Visualforce pages that need to work in both environments include:

- Pages used as custom actions. Custom actions appear in the publisher in the Salesforce1 app, and in the publisher menu in the full Salesforce site.
- Pages added to normal page layouts, when `Available for Salesforce mobile apps` is enabled for the page.
- Custom Visualforce buttons or links added to normal page layouts.
- Standard button overrides with Visualforce pages for the New, Edit, View, Delete, and Clone actions. Overriding standard list and tab controls isn't supported in Salesforce1. Button overrides won't appear in the Salesforce1 app unless `Available for Salesforce mobile apps` is enabled for the page.

Note:

Standard buttons that are overridden with a Visualforce page disappear from record detail pages and record lists in Salesforce1 if `Available for Salesforce mobile apps` is disabled for the Visualforce page that overrides the corresponding button.

Excluding Visualforce Pages from Mobile or Desktop

To display your Visualforce pages only in the Salesforce1 app, add them to the Mobile Cards section of your page layout. To add Visualforce pages to either the Salesforce1 app or the full Salesforce site, use tab and navigation settings.

Visualforce pages that can be configured to be desktop-only or mobile-only include:

- Pages added as mobile cards on page layouts. These only appear in the Salesforce1 app.
- Pages added to normal page layouts, when `Available for Salesforce mobile apps` is disabled for the page. These only appear in the full Salesforce site.
- Pages used in Visualforce tabs. You add tabs to Salesforce1 navigation separately from adding them to the full Salesforce site navigation.

Choosing an Architecture for Visualforce Pages in Salesforce1

The Salesforce1 Platform supports several ways to design and structure Visualforce pages, each with different trade-offs with respect to development time, developer skill required, and how thoroughly you want your custom functionality to match Salesforce1.

Use one of the following approaches for the structure of your pages:

- Standard Visualforce Pages on page 166
- Mixed Visualforce and HTML on page 167
- JavaScript Remoting and Static HTML on page 169

Standard Visualforce Pages

Normal Visualforce pages render well on mobile browsers, and can be used as-is, with a modest reduction of the user experience compared to mobile-optimized Web pages. Pages display as they would on the full Salesforce site, and won't visually match other Salesforce1 features.

You saw how easy it is to add a Visualforce page to Salesforce1 in Extending Salesforce1 with Visualforce Pages on page 75.

Limitations

Limitations to the user experience include:

- Tap targets—buttons, links, form fields, and so on—are optimized for mouse cursors, and can be difficult to hit accurately with a fingertip.
- The visual design is unchanged, and may not fit with the mobile-optimized, modern visual design of Salesforce1.

If your development timeline is aggressive, you might find these limitations acceptable. Standard Visualforce development is documented in detail in the *Visualforce Developer's Guide*.

Example of a Standard Visualforce Page

The following code provides a sample for a standard Visualforce page that allows a user to edit a warehouse record. The edit feature is provided by the standard controller for the object.

```
<apex:page standardController="Warehouse__c">

<apex:form>

  <apex:pageBlock title="{! warehouse__c.Name }">
```

```
    <apex:pageBlockSection title="Warehouse Details" columns="1">
      <apex:inputField value="{! warehouse__c.Street_Address__c }"/>

      <apex:inputField value="{! warehouse__c.City__c }"/>
      <apex:inputField value="{! warehouse__c.Phone__c }"/>
    </apex:pageBlockSection>

    <apex:pageBlockButtons location="bottom">
      <apex:commandButton action="{! quickSave }" value="Save"/>
    </apex:pageBlockButtons>

  </apex:pageBlock>

</apex:form>

</apex:page>
```

This page can be used in both the Salesforce1 app and the full Salesforce site. It displays as a standard desktop Visualforce page in both contexts.

Mixed Visualforce and HTML

Combine Visualforce tags for form elements and output text with static HTML for page structure to create mobile-friendly pages that more closely match the visual design of the Salesforce1 app. For mobile-only pages, you can quickly convert an existing Visualforce page, but this doesn't work as well for pages that are used in both the Salesforce1 app and the full Salesforce site.

Visualforce pages designed this way are still "standard" Visualforce, in that they use the standard request-response cycle, standard controller functionality, `<apex:inputField>` for form fields, POSTBACK and view state, and so on. The main difference from authoring pages for the full Salesforce site is the reduced or eliminated use of Visualforce tags to add structure to the page, in favor of static HTML. That is, replacing `<apex:pageBlock>`, `<apex:pageBlockSection>`, and so on with `<div>`, `<p>`, `<span>` and so on.

This approach also requires creating CSS stylesheets to manage the look-and-feel of the page elements, instead of using the built-in, automatically applied styles provided when you use the Visualforce components. While this can take some time, it allows you to much more closely match the visual design of Salesforce1. This also means that pages designed this way *won't* match the full Salesforce site visually.

Applying this Approach to Your Visualforce Pages

To use this approach for creating pages to use in Salesforce1, follow a few general rules:

- Don't use the following Visualforce tags:

- ◊ `<apex:pageBlock>`
- ◊ `<apex:pageBlockButtons>`
- ◊ `<apex:pageBlockSection>`
- ◊ `<apex:pageBlockSectionItem>`
- ◊ `<apex:pageBlockTable>`

- Use `<apex:form>`, `<apex:inputField>` or `<apex:input>`, and `<apex:outputLabel>` for forms.
- Use `<apex:outputText>` or Visualforce for non-editable text.
- Use your preferred HTML to construct the structure for the page: `<div>`, `<span>`, `<h1>`, `<p>`, and so on.
- Use CSS styling to apply your preferred visual design.

Advantages and Limitations

The advantages of this approach include:

- Reasonably fast development time, and you use the normal Visualforce development tools and processes.
- It's reasonably easy to repurpose existing pages.
- You can more closely match the Salesforce1 look and feel.

A few limitations to keep in mind

- This approach makes the usual Visualforce request round trips, with larger data payloads, compared to a fully mobile-optimized approach using JavaScript remoting.
- It's extra work to add CSS styles that replace the styles automatically added by `<apex:pageBlock>` and related components.

Example of a Mixed Visualforce and HTML Page

The following code sample shows a mixed HTML and Visualforce page that allows a user to edit a warehouse record. The edit feature is provided by the standard controller for the object.

```
<apex:page standardController="Warehouse__c">

<style>
    html, body, p { font-family: sans-serif; }
</style>

<apex:form >

    <h1>{!Warehouse__c.Name}</h1>

    <h2>Warehouse Details</h2>

    <div id="theForm">
        <div>
            <apex:outputLabel for="address" value="Street Address"/>
            <apex:inputField id="address"
                value="{! warehouse__c.Street_Address__c}"/>
        </div>
        <div>
            <apex:outputLabel for="city" value="City"/>
            <apex:inputField id="city"
                value="{! warehouse__c.City__c}"/>
        </div>
        <div>
            <apex:outputLabel for="phone" value="Phone"/>
            <apex:inputField id="phone"
                value="{! warehouse__c.Phone__c}"/>
        </div>
    </div>

    <div id="formControls">
        <apex:commandButton action="{!quickSave}" value="Save"/>
    </div>

</apex:form>

</apex:page>
```

This page can be used in both the Salesforce1 app and the full Salesforce site. It displays as a standard page on the full Salesforce site, but without the full Salesforce styling for the form. In the Salesforce1 app, it displays roughly matching the Salesforce1 visual style. With additional styles, the page can approximate the visual style for both versions.

JavaScript Remoting and Static HTML

Combine JavaScript remoting and static HTML to offer the best user experience, with the best performance and user interface match to Salesforce1. This architecture avoids most Visualforce tags in favor of rendering page elements in JavaScript. This option requires the most developer expertise, and can take a little longer. Use the Salesforce Mobile Packs for a fast start and to work with the very latest in mobile Web application technology.

Visualforce pages designed this way eschew many of the automatic, simplified features of standard Visualforce, in favor of taking more control over the request-response cycle, and performing page updates using JavaScript instead of page reloads. This can substantially improve the performance of the page, especially over the lower bandwidth, higher latency wireless network connections that make mobile devices so, well, mobile. The downside is that there is more code to write, and you need expertise in JavaScript, JavaScript remoting, HTML5, your mobile toolkit, and CSS, in addition to Apex and Visualforce. The upside of the downside is that you're working with the latest, most advanced tools for mobile development, and the pages you can build are the best, most complete way to "snap in" custom functionality that fully integrates with Salesforce1.

You can build desktop Visualforce pages using this approach as well as pages for Salesforce1. It's even possible to share such pages between the two environments by customizing the styling, though it's a challenge to closely match the full Salesforce site look and feel. Most importantly, the pages you design can be fully responsive, adapting and working across a range of devices and form factors.

Applying this Approach to Your Visualforce Pages

To use this approach for creating pages for the Salesforce1 app, follow this general process:

1. Install your preferred Salesforce Mobile Pack (available on Developerforce) into your organization as a static resource.
2. Set your page's docType to `html-5.0`. Strongly consider disabling the standard stylesheets and header. For example:

```
<apex:page standardController="Warehouse__c"
    extensions="WarehouseEditor"
    showHeader="false" standardStylesheets="false"
    docType="html-5.0">
```

3. Add scripts and styles from your chosen mobile toolkit to the page using Visualforce resource tags. For example:

```
<apex:includeScript
    value="{!URLFOR(
        $Resource.Mobile_Design_Templates,
        'Mobile-Design-Templates-master/common/js/
            jQuery2.0.2.min.js'
    )}"/>
```

4. Use HTML5 and your mobile toolkit's tags and attributes to create a page skeleton.
5. Add JavaScript functions to the page as handlers to respond to user interaction. Use JavaScript remoting to call Apex `@RemoteAction` methods that retrieve records, perform DML, and so on.
6. Add additional JavaScript functions to handle user actions and page updates. Perform page updates by constructing HTML elements in JavaScript, and then adding or appending them to the page skeleton.

Example of a JavaScript Remoting and Static HTML Page

The following code sample shows a remoting + HTML Visualforce page that allows a user to edit a warehouse record. The edit feature is provided by a controller extension with `@RemoteAction` methods that respond to JavaScript remoting requests.

```
<apex:page standardController="Warehouse__c"
extensions="WarehouseEditor"
    showHeader="false" standardStylesheets="false"
    docType="html-5.0" applyHtmlTag="false" applyBodyTag="false">
    <!-- Include Mobile Toolkit styles and JavaScript -->
    <apex:stylesheet
      value="{!URLFOR($Resource.Mobile_Design_Templates,
      'Mobile-Design-Templates-master/common/css/app.min.css')}"/>
    <apex:includeScript
      value="{!URLFOR($Resource.Mobile_Design_Templates,

'Mobile-Design-Templates-master/common/js/jQuery2.0.2.min.js')}"/>
    <apex:includeScript
      value="{!URLFOR($Resource.Mobile_Design_Templates,

'Mobile-Design-Templates-master/common/js/jquery.touchwipe.min.js')}"/>

    <apex:includeScript
      value="{!URLFOR($Resource.Mobile_Design_Templates,
      'Mobile-Design-Templates-master/common/js/main.min.js')}"/>

<head>
<style>
    html, body, p { font-family: sans-serif; }
    input { display: block; }
</style>

<script>
    $(document).ready(function(){
        // Load the record
        loadWarehouse();
    });

    // Utility; parse out parameter by name from URL query string
    $.urlParam = function(name){
        var results = new RegExp('[\\?&]' + name + '=([^&#]*)')
            .exec(window.location.href);
        return results[1] || 0;
    }

    function loadWarehouse() {
        // Get the record Id from the GET query string
        warehouseId = $.urlParam('id');

        // Call the remote action to retrieve the record data
        Visualforce.remoting.Manager.invokeAction(
            '{!$RemoteAction.WarehouseEditor.getWarehouse}',
            warehouseId,
            function(result, event){;
                if(event.status){
                    console.log(warehouseId);
                    $('#warehouse_name').text(result.Name);
                    $('#warehouse_address').val(
                      result.Street_Address__c);
                    $('#warehouse_city').val(result.City__c);
                    $('#warehouse_phone').val(result.Phone__c);
                } else if (event.type === 'exception'){
                    console.log(result);
                } else {
                    // unexpected problem...
                }
        });
    }

    function updateWarehouse() {
        // Get the record Id from the GET query string
        warehouseId = $.urlParam('id');

        // Call the remote action to save the record data
        Visualforce.remoting.Manager.invokeAction(
            '{!$RemoteAction.WarehouseEditor.setWarehouse}',
            warehouseId, $('#warehouse_address').val(),
                $('#warehouse_city').val(),
                $('#warehouse_phone').val(),
            function(result, event){;
                if(event.status){
                    console.log(warehouseId);
                    $('#action_status').text('Record updated.');
                } else if (event.type === 'exception'){
                    console.log(result);
                    $('#action_status').text(
                      'Problem saving record.');
                } else {
                    // unexpected problem...
                }
        });
    }

</script>
</head>

<body>

<div id="detailPage">
    <div class="list-view-header" id="warehouse_name"></div>
    <div id="action_status"></div>

    <section>
        <div class="content">
            <h3>Warehouse Details</h3>
            <div class="form-control-group">
                <div class="form-control form-control-text">
                    <label for="warehouse_address">
                        Street Address</label>
                    <input type="text" id="warehouse_address" />
                </div>
                <div class="form-control form-control-text">
                    <label for="warehouse_city">City</label>
                    <input type="text" id="warehouse_city" />
                </div>
                <div class="form-control form-control-text">
                    <label for="warehouse_phone">Phone</label>
                    <input type="text" id="warehouse_phone" />
                </div>
            </div>
        </div>
    </section>
    <section class="data-capture-buttons one-buttons">
        <div class="content">
            <section class="data-capture-buttons one-buttons">
                <a href="#" id="updateWarehouse"
                    onClick="updateWarehouse();">save</a>
            </section>
        </div>
    </section>
</div> <!-- end detail page -->

</body>

</apex:page>
```

The static HTML provides the shell of the page, including empty form fields. JavaScript functions load the record, fill in the form fields, and send updated form data back to Salesforce.

Although this page can be used in the full Salesforce site, it's designed as a Salesforce1 app page, and looks very different than a normal Visualforce page.

Example of a JavaScript Remoting and Static HTML Controller

Unlike the other two approaches to creating Salesforce1 pages, the remoting + HTML approach doesn't use standard controller functionality to retrieve and save data to and from Salesforce. Instead, you create a controller extension, or custom controller, to add any `@RemoteAction` methods your page requires. Here's a simplified controller extension that supports the above page.

```
global with sharing class WarehouseEditor {

    // Stub controller
    // We're only using RemoteActions, so this never runs
    public WarehouseEditor(ApexPages.StandardController ctl){ }

    @RemoteAction
    global static Warehouse__c getWarehouse(String warehouseId) {

        // Clean up the Id parameter, in case there are spaces
        warehouseId = warehouseId.trim();

        // Simple SOQL query to get the warehouse data we need
        Warehouse__c wh = [
            SELECT Id, Name, Street_Address__c, City__c, Phone__c
            FROM Warehouse__c
            WHERE Id = :warehouseId];

        return(wh);
    }

    @RemoteAction
    global static Boolean setWarehouse(
        String whId, String street, String city, String phone) {

        // Get the warehouse record for the Id
        Warehouse__c wh = WarehouseEditor.getWarehouse(whId);

        // Update fields
       // Note that we're not validating / sanitizing, for simplicity

        wh.Street_Address__c = street.trim();
        wh.City__c = city.trim();
        wh.Phone__c = phone.trim();

        // Save the updated record
        // This should be wrapped in an exception handler
        update wh;

        return true;
    }
}
```

Visualforce Components to Avoid in Salesforce1

Most core Visualforce components (those components in the `apex` namespace) function normally within Salesforce1. Unfortunately, that doesn't mean they're optimized for mobile. You can improve the Salesforce1 user experience of your Visualforce pages by following some straightforward rules.

In general, avoid structural components, like `<apex:pageBlock>` and child components, and other components that mimic the Salesforce look and feel, such as `<apex:pageBlockTable>`. If you must use these components, set them to one column using `<apex:pageBlockSection columns="1">`, instead of the default of two columns.

Avoid wide, non-wrapping components, especially `<apex:detail>`, `<apex:enhancedList>`, `<apex:listViews>`, and `<apex:relatedList>`, which are all unsupported. Keep device width in mind when creating tables with `<apex:dataTable>`.

Avoid using `<apex:inlineEditSupport>`. Inline editing is a user interface pattern that works well for mouse-based desktop apps, but it's difficult to use on a touch-based device, especially on phones where the screen is small.

Using `<apex:inputField>` is fine for fields that display as a basic input field, like text, email, and phone numbers, but avoid using it for field types that use an input widget, such as date and lookup fields.

Don't use `<apex:scontrol>`. sControls aren't supported anywhere in Salesforce1.

Unsupported Visualforce Components

Here's a list of Visualforce components that aren't supported in Salesforce1, and shouldn't be used in Visualforce pages that will be used with it.

- `<analytics:reportChart>`
- `<apex:detail>`
- `<apex:emailPublisher>`
- `<apex:enhancedList>`
- `<apex:flash>`
- `<apex:inputField>` for field types that use a widget for input, instead of a basic form field
- `<apex:listViews>`
- `<apex:logCallPublisher>`
- `<apex:relatedList>`
- `<apex:scontrol>`
- `<apex:sectionHeader>`
- `<apex:selectList>` for picklist fields
- `<apex:vote>`

Warning: Embedded Visualforce pages—that is, those added to a page layout—that contain an `<apex:enhancedList>` component may cause the Salesforce1 app to crash on iOS.

Standard components outside the `apex` namespace, for example, `<liveagent:*>`, `<chatter:*>`, and so on, aren't supported in Salesforce1.

Custom components can be used in Visualforce in Salesforce1, as long as they themselves don't use unsupported components.

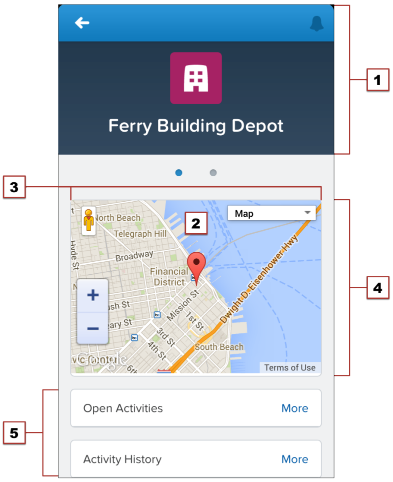
Choosing an Effective Page Layout

Design Visualforce pages that look good and work well within the Salesforce1 app by using a page layout appropriate for the context that the page is used in. Pages added as main navigation tabs or to the publisher can use nearly the full screen of the device, and can scroll vertically, while Visualforce added to an object's page layout has to fit within a specific, limited space.

In general, Visualforce added to page layouts works best if it's read-only, at-a-glance information. Put features that require user interaction, like multi-field forms, on full screen pages by adding them as tabs in the main navigation, or as custom actions from the publisher tray.

Mobile Card Layout

Mobile cards have the most limited layout, both in size and placement. Visualforce pages added as mobile cards on an object's page layout appear on the related lists page for the object in Salesforce1, as the first items on the page, below the header.



1. The record header displays when an record is loaded, but can be scrolled up and off the screen by the user. When on screen, it's 158 pixels high on all devices, and takes the full width of the screen. You can't control the display of the record header.
2. Mobile cards display above all of the related items on the record.
3. Set the width to 100%; the element sizes automatically, minus some padding on either side. The content of mobile cards can't be scrolled, so make sure it fits in the space you provide it.
4. Control the height of the mobile card by setting the height in pixels in the page layout editor. The mobile card area uses exactly that height, even if the mobile card's content is shorter. In that case, the extra area is blank. If the card's content is taller, the content is clipped. As a best practice, don't create mobile cards taller than the smallest device screen you intend to support. Be sure to set the height of screen elements relevant to your environment. So if you have an element that's always 300 pixels high, set the height to 300 pixels.
5. The record's related items are displayed after all mobile cards.

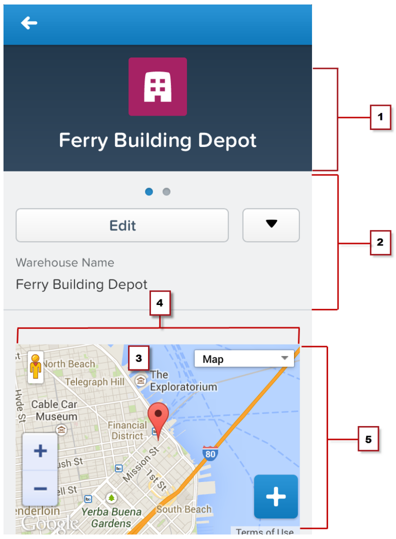
While you can add multiple mobile cards, it quickly becomes a user experience challenge to scroll past them to the related lists. It's a best practice to add only one or two. If you need a full screen to display your page, consider moving it to a custom action on the object instead.

The normal Salesforce header and sidebar are automatically removed from Visualforce pages added as mobile cards. You may find it useful to explicitly turn them and the full Salesforce site stylesheets off while you're developing the page. Additionally, if your page uses the Google Maps API, Google recommends using an HTML5 doctype. Here's an `<apex:page>` tag that does all of these things:

```
<apex:page standardController="Warehouse__c"
    docType="html-5.0" showHeader="false" standardStylesheets="false">
```

Visualforce on a Page Layout

Visualforce pages added to an object's page layout display on the record details page. Unlike mobile cards, you can control the Visualforce element's placement on the Salesforce1 record details screen, putting fields and other record details above and below it, by changing its placement on the object's page layout. Visualforce pages added this way follow the same rules for ordering that fields and other elements do.



1. The record header displays when an record is loaded, but can be scrolled up and off the screen by the user. When on screen, it's 158 pixels high on all devices, and takes the full width of the screen. You can't control the display of the record header.
2. Record controls and details, automatically generated by Salesforce1.
3. A Visualforce page added to the object's page layout.
4. Set the width to 100%; the element sizes automatically, minus some padding on either side.
5. Control the height of the Visualforce page's area by setting the height of the item in pixels in the page layout editor. The Visualforce element uses exactly that height, even if the content is shorter. In that case, the extra area is blank. If the page's content

is taller, the content is clipped. As a best practice, don't set inline Visualforce pages to be taller than the smallest device screen you intend to support.

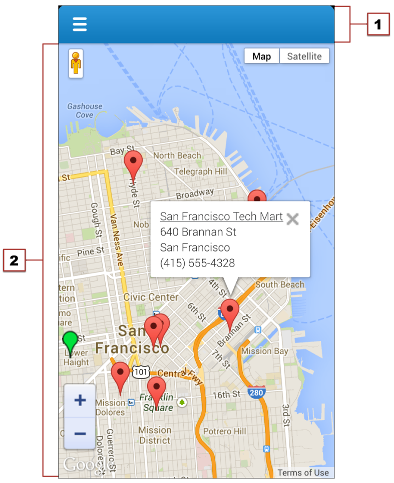
While you can add multiple inline Visualforce pages to a page layout, it quickly becomes a user experience challenge to scroll past them to see the rest of the page. It's a best practice to never add more than two Visualforce page elements in a row; separate Visualforce elements with a regular page element, such as a field. If you need a full screen to display your page, consider moving it to a custom action on the object instead.

Visualforce pages added to page layouts automatically have the normal Salesforce header and sidebar removed. You may find it useful to explicitly turn them and the full Salesforce site stylesheets off while you're developing the page. Additionally, if your page uses the Google Maps API, Google recommends using an HTML5 doctype. Here's an `<apex:page>` tag that does all of these things:

```
<apex:page standardController="Warehouse__c"
    docType="html-5.0" showHeader="false" standardStylesheets="false">
```

Full Screen Layout

Visualforce pages added to the Salesforce1 navigation menu, or as custom actions to the publisher tray, can use almost the entire screen, allowing more information, and more complex user interfaces.



1. The Salesforce1 header, which provides access to the main Salesforce1 menu, is 42 pixels high. The contents of the header can't be changed.
2. The rest of the device screen is dedicated to your Visualforce page.

When displayed in the Salesforce1 app, the standard Salesforce header and sidebar is automatically removed, like Visualforce pages used as mobile cards or added to page layouts.

However, Visualforce pages used as custom actions in the publisher tray are shared with the full Salesforce site, and pages added to the Salesforce1 navigation may or may not be shared. Pages shared with the full Salesforce site shouldn't have these items explicitly removed, unless that's the standard practice for all Visualforce on your site.

User Input and Interaction

Use `<apex:input>`, the `type` attribute, and pass-through HTML attributes to create mobile-friendly forms and user interfaces that are efficient and take advantage of native mobile browser features.

Without a keyboard and mouse, standard HTML forms can be difficult for users to fill out and interact with on mobile devices, especially phones. For Visualforce pages that don't use JavaScript remoting to make requests, choose Visualforce components for form input with an eye towards mobile users. No other change you can make to your Visualforce pages will have a larger usability impact than taking advantage of new HTML5 and mobile browser features to improve your forms and user interface controls.

Choose Efficient Input Elements

Use `<apex:input>` to get user input whenever possible. `<apex:input>` is an HTML5-ready, mobile-friendly, general-purpose input component that adapts to the data expected by a form field. It's even more flexible than `<apex:inputField>` because it uses the `type` attribute to allow client browsers to display type-appropriate user input widgets, such as a date picker, or use a type-specific keyboard that makes entering input on a mobile device much easier.

You can also use `<apex:inputField>` to create an HTML input element for a value that corresponds to a field on a Salesforce object. `<apex:inputField>` adapts the HTML generated to correspond with the data type of the underlying sObject field. Usually this is what you want, but if it isn't, use the `type` attribute to override the automatic data type detection. However, be aware that `<apex:inputField>` generates a lot of HTML, and requires additional resources to load, which means it's not the most efficient component to use over a mobile wireless connection.

Use the `type` Attribute to Create Mobile-Friendly Input Elements

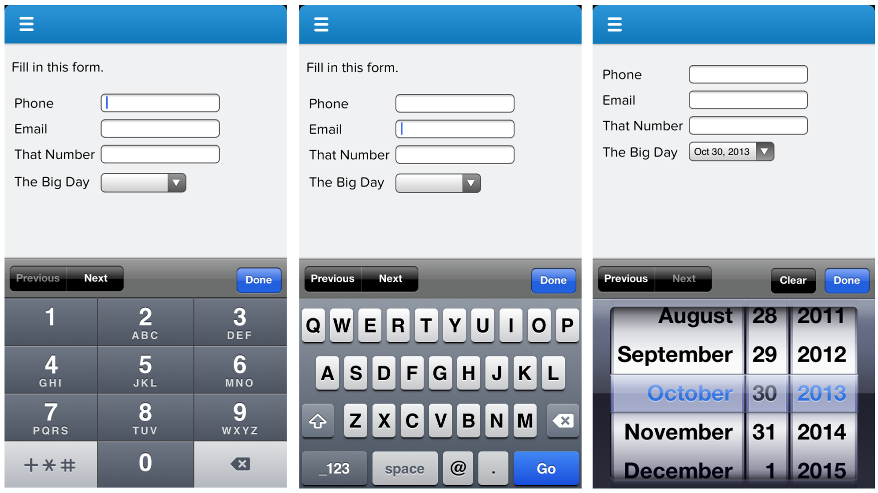
Set the `type` attribute on `<apex:input>` components (and `<apex:inputField>`, if you're using it) to display data type-specific keyboards and other input user interface widgets that are easier to use on touchscreens. The value is passed through to the generated HTML `<input>` element, for display in the Salesforce1 app.

As users step through form elements, the input method for that form element adapts for the type of data expected. Text fields show the standard keyboard, email fields show an email-specific keyboard with characters like the "@" sign and ".com" assigned to keys, date fields show a date picker, and so on.

Here's an example of a form that illustrates how this works:

```
<apex:form >

    <apex:outputLabel value="Phone" for="phone"/>
    <apex:input id="phone" value="{!fPhone}" type="tel"/><br/>

    <apex:outputLabel value="Email" for="email"/>
    <apex:input id="email" value="{!fText}" type="email"/><br/>

    <apex:outputLabel value="That Number" for="num"/>
    <apex:input id="num" value="{!fNumber}" type="number"/><br/>

    <apex:outputLabel value="The Big Day" for="date"/>
    <apex:input id="date" value="{!fDate}" type="date"/><br/>

</apex:form>
```

As the user moves through the form fields, either by tapping into them or tapping the **Next** button, the keyboard changes to match the expected data for the field.



These type-specific keyboards make filling in forms much easier for people using their mobile devices on the go.

`<apex:input>` allows the following explicit `type` values to be set:

- date
- datetime
- datetime-local
- month

- week
- time
- email
- number
- range
- search
- tel
- text
- url

You can also set `type` to auto, and the data type of the associated controller property or method is used.

The HTML `type` attribute, including new HTML5 features, is a standard part of HTML. For additional details about the `type` attribute, what you can use it for, and how it relates to mobile development, see WHATWG's list of input `type` attribute values and descriptions. Not all values are supported on Visualforce input components. If you want to use a value not supported by Visualforce, use static HTML instead of a Visualforce tag.

Use HTML5 Pass-Through Attributes for Client-Side Validation

Set pass-through attributes on your `<apex:input>` and other Visualforce components to enable other HTML5 features, such as client-side validation. By performing basic validation on the client side, you can avoid sending a request to the server and waiting for a response, when there are easily-corrected errors on a form.

Attributes prefixed with `html-` are passed through to the generated HTML, with the prefix removed. To enable client-side validation, set an `html-pattern` attribute on the `<apex:input>` tag to match expected form values. This will add a `pattern` attribute to the generated `<input>` tag, enabling client-side validation for that field.

Note: Client-side validation requires that the Visualforce page be set to API version 29.0 or later, and the page `docType` be set to `html-5.0`.

Validation patterns are regular expressions. Form input is checked against the expression, and if it matches, the field input is considered valid. If it doesn't match, the input is considered invalid; an error message is displayed, and the form won't be submitted to the server. Here's an example of a field that requires an email address from a specific domain:

```
<apex:input id="email" value="{!fText}" type="email"
    html-placeholder="you@example.com"
    html-pattern="^[a-zA-Z0-9._-]+@example.com$"
    title="Please enter an example.com email address"/>
```

Other useful HTML5 attributes that can be set as pass-through attributes include:

- `placeholder` (set using the `html-placeholder` attribute)—adds ghost text to the field to show sample input to the user.
- `title` (set using the `title` attribute on `<apex:input>`, and the `html-title` attribute on components without a title attribute)—adds an error message to use if the field fails client-side validation.

For inspiration for how you can use attributes to enhance the usability of HTML `<input>` elements, HTML5 Forms Introduction and New Attributes is a good survey of the new features in HTML5. For further details, especially for mobile users, and details of client-side forms validation, see Client-side form validation and Improving the user experience on mobile devices in WHATWG's HTML: The Living Standard.

Managing Navigation

Salesforce1 manages navigation using events. The navigation event framework is made available as a JavaScript object that provides a number of utility functions that make creating programmatic navigation that "just works" a breeze. The advantage is a navigation experience that's more natural for a mobile context. It also makes creating post-completion navigation, such as redirecting to an order page after the order is successfully submitted, easier for Salesforce1 developers.

In Salesforce1, programmatic navigation for Visualforce pages generally works something like this:

1. A user invokes a Visualforce page, usually from the navigation menu, or from the publisher.
2. The Visualforce page loads and runs, including any custom controller or extension code called by the page.
3. The user interacts with the page in some way, for example, to fill in some form values.
4. The user submits the form, or performs some other action on the page that commits a change.
5. Controller or extension code runs, saving the changes to Salesforce, and returning the results of the action.
6. The Visualforce page, using JavaScript response handlers, receives the results of the action, and when successful, responds by redirecting the user to a new page that shows the results of their action.

This scenario is easily handled by the Salesforce1 navigation framework.

Another common use case is simply adding links or other user interface controls to a page, which move from that Visualforce page to another page in Salesforce1. This navigation is also easily managed by the Salesforce1 navigation framework.

In all cases, navigation is handled by a special utility JavaScript object, `sforce.one`. The `sforce.one` object is automatically added to all Visualforce pages when they run inside the Salesforce1 app. This object provides a number of functions that trigger navigation events when they run. To use these functions, you can call them directly from your page's JavaScript code, or you can attach calls as click handlers to elements on the page.

Here's a JavaScript function, from the **FindNearbyWarehousesPage** page introduced in Extending Salesforce1 with Visualforce Pages on page 75, which creates markers to add to a Google map.

```
function setupMarker(){

    // JavaScript nav function call to add to a link
    var warehouseNavUrl =
        'sforce.one.navigateToSObject(\'' + warehouse.Id + '\')';

    // Wrap the warehouse details with the link to
    // navigate to the warehouse details
    var warehouseDetails =
        '<a href="javascript:' + warehouseNavUrl + '">' +
        warehouse.Name + '</a><br/>' +
        warehouse.Street_Address__c + '<br/>' +
        warehouse.City__c + '<br/>' +
        warehouse.Phone__c;

    // Create a panel that will appear when a marker is clicked
    var infowindow = new google.maps.InfoWindow({
        content: warehouseDetails
    });

    // ...
}
```

The very first line builds a string, *`warehouseNavUrl`*, that, when used as a JavaScript URL, navigates to the detail page for the warehouse. The link is created around the warehouse name, and appears in the information panel (put together in the *`warehouseDetails`* string) that appears when you click a marker. Clicking the warehouse name takes you to the detail page for that warehouse (the omitted part of the function code deals with the Google Maps API calls to create a marker and add it to the map).

If you have JavaScript code or HTML markup that runs inside of Salesforce1, keep these considerations in mind:

- Don't directly manipulate the browser URL using `window.location.href`. This doesn't work well with the Salesforce1 navigation management system.
- Don't use `target="_blank"` in navigation URLs; you can't open new windows inside Salesforce1.

Navigation with the `sforce.one` Object

The Salesforce1 Platform includes an event mechanism for navigation. This is exposed in Visualforce as a JavaScript object called `sforce.one`. It's available in any page that appears in Salesforce1.

The `sforce.one` object provides the following functions. Reference the function using dotted notation from the `sforce.one` object. For example: `sforce.one.navigateToSObject(recordId, view)`.

`navigateToSObject(recordId,view)`	Navigates to an sObject record, specified by `recordId`. `view` is optional, and specifies the view within record home to select—`chatter`, `related`, or `detail`.
`navigateToURL(url)`	Navigates to the specified URL. Relative and absolute URLs are supported. Relative URLs retain navigation history, absolute URLs open a child browser window.
`navigateToFeed(subjectId, type)`	Navigates to the specific feed, `subjectId`. `type` is the expected feed type, for example `NEWS`.
`navigateToFeedItemDetail(feedItemId)`	Navigates to the specific feed item, `feedItemId`.
`navigateToRelatedList(relatedListId, parentRecordId)`	Navigates to the related list as specified by the `relatedListId`. The `parentRecordId` is the record of the parent object. For example, for a related list of Warehouses, the `parentRecordId` would be `Warehouse__c.Id`.
`navigateToList(listViewId, listViewName, scope)`	Navigates to the list view as specified by the `listViewId` and `listViewName`.
`createRecord(entityName, recordTypeId)`	Opens the page to create a new record for the specified `entityName`. `recordTypeId` is optional, and if provided, specifies the record type for the created object.

`editRecord(recordId)`	Opens the page to edit the record specified by `recordId`.

Keep the following in mind when using the `sforce.one` object:

- Calls to `sforce.one.navigateToURL` may result in an "Unsupported Page" error if the URL references standard pages for objects or Chatter pages. To avoid this error, ensure that the URL begins with a backslash (`/_ui` instead of `_ui`).
- The `sforce.one.createRecord` and `sforce.one.editRecord` methods don't respect Visualforce overrides on these standard actions.

Visual Design Considerations

Create Visualforce pages that more closely match the look of Salesforce1 by using CSS styling, responsive design, and minimal HTML.

Fonts and Styles

The visual design for Salesforce1 uses Proxima Nova, a sans-serif typeface licensed specially for Salesforce1. People in your organization might not have the font installed on their devices, but the following CSS fonts will use the closest matching font available:

```
p {
    font-family: "ProximaNovaSoft-Regular", Calibri,
        "Gill Sans", "Gill Sans MT", Candara, Segoe, "Segoe UI",
         Arial, sans-serif;
}
```

Change the selectors to match the appropriate text blocks and styles on your pages.

You might also consider slightly increasing the size of the font used for normal text and form elements. This makes them easier to read and, for form elements, to tap into. Here's a complete style block to get you started:

```
<style>
    html, body, p {
        font-family: "ProximaNovaSoft-Regular", Calibri,
            "Gill Sans", "Gill Sans MT", Candara, Segoe,
            "Segoe UI", Arial, sans-serif;
        font-size: 110%;
    }
    input { font-size: 95%; }
</style>
```

Warning: Directly referencing Salesforce1 style sheets in your pages, or depending on styles found in them, isn't supported. As Salesforce1 evolves, the styles will change in ways that you won't expect. Pages that depend on unsupported styles may eventually break.

HTML Markup

If your organization's Visualforce pages match the full Salesforce site's look and feel, it's probably by using the Salesforce header, sidebar, styling, and `<apex:pageBlock>` and child components. Don't explicitly disable these elements, by setting `<apex:page showHeader="false" standardStylesheets="false" ...>`; Salesforce1 automatically disables these elements when the page runs inside it.

However, you may want to reconsider using `<apex:pageBlock>` and child components, because they explicitly match the full Salesforce site look and feel, and even with standard stylesheets turned off, the markup they generate carries over into Salesforce1. This makes your markup more complex, and it's harder to apply styling that matches Salesforce1.

Instead, use simple, static HTML markup, or the markup required by your chosen Mobile Toolkit. Sample markup is included the next section.

Responsive Design

Salesforce1 pages use responsive design techniques to provide device-optimized layouts, a stacked single column layout for phones, and a side-by-side, two-column layout for tablets. You can use a similar technique for your Visualforce pages used in Salesforce1.

First, your page should establish a default layout:

```
/* Default CSS: 2 columns */
.content-block {
    width: 50%;
    float: left;
}
```

Second, use CSS styling and media queries to make the layout responsive:

```
/* CSS phone */
@media screen and (max-width: 767px) {
    .content-block {
        width: 100%;
        float: none;
    }
}
```

Try it yourself in a Visualforce page using this HTML. Place the above CSS in between `<style>` tags on the same Visualforce page as the HTML, and then drag the corners of your browser window to observe the responsive layout.

```
<!-- HTML for two blocks of content -->
<!-- On a phone they live underneath each other -->
<!-- On bigger screens they live next to each other -->
```

```
<div class="content-block">
    top on the phone, left on big screens
</div>

<div class="content-block">
    bottom on the phone, right on big screens
</div>
```

Using Visualforce Pages as Custom Actions

If your Visualforce page is used as a custom action, design it so that it either acts upon a single record provided by a standard controller or finds and acts upon a record or records your custom controller code retrieves.

Custom Actions on an Object

Visualforce pages added as custom actions on an object are invoked in the context of a record of that object type. That is to say, the custom action has a specific record ID handed to it, the record the user was looking at when they clicked the custom action, and the page should be designed to act upon that specific record type.

Visualforce pages used as custom actions on an object must use the standard controller for that object. Use controller extensions to add custom code, including `@RemoteAction` methods you can call using JavaScript remoting.

Your custom code may very well do more than make updates to the originating record. For example, the Create Quick Order custom action searches for matching merchandise, and creates an invoice and line item, all as part of creating an order for a part. That logic occurs in the context of the originating account record—the invoice is associated to the account record where the quick order action was invoked.

As a general rule, when the action completes, the user should be redirected to a page related to the originating record.

Custom Global Actions

Visualforce pages used as global actions can be invoked in many different places, and don't have a specific record associated with them. They have complete "freedom of action," which means it's up to you to write the code.

More specifically, Visualforce pages used as global actions can't use *any* standard controller. You must write a custom controller to handle the page. Your code might create one or many records, modify found records, and so on.

When a global action completes, the user should usually be either redirected to a parent record created as part of the action, or returned to where they started.

Creating Visualforce Pages that Work in both Mobile and Desktop

Create Visualforce pages that work well in both the Salesforce1 app and the full Salesforce site by writing code that adapts to the context it's running in.

As you learned in Managing Navigation on page 182, Salesforce1 provides a framework for handling various navigation controls and events. That framework isn't available to Visualforce pages when they run on the full Salesforce site, because the `sforce` object is injected onto pages only inside Salesforce1. This means that, for pages shared between the Salesforce1 app and the full Salesforce site, you'll want to write code that uses the `sforce` object when it's available, and standard Visualforce navigation when it's not.

For example, here is a bit of JavaScript that runs after a JavaScript remoting request successfully returns from the `@RemoteAction` method that creates a quick order. This code is from a Visualforce page that's used as a custom action, which adds it to the publisher in the Salesforce1 app and the publisher menu in the full Salesforce site. It needs to work in both places. The intent of the code is to navigate to the detail page for the account for whom the order was placed:

```
// Go back to the Account detail page
if( (typeof sforce != 'undefined') && (sforce != null) ) {
    // Salesforce1 navigation
    sforce.one.navigateToSObject(aId);
}
else {
    // Set the window's URL using a Visualforce expression
    window.location.href =
        '{!URLFOR($Action.Account.View, account.Id)}';
}
```

The `if` statement checks to see if the `sforce` object is available and usable. This is only true if the page is running inside Salesforce1. If `sforce` is available, the Salesforce1 navigation management system is used to go to the account's detail page.

If the `sforce` object isn't available, trying to use it to navigate anywhere results in a JavaScript error, and no navigation. So, instead, the code sets the window's URL using a Visualforce expression that returns the URL for the account's detail page. You don't want to do this in Salesforce1 because the navigation event will be lost by the framework, but it's required in normal Visualforce.

For more details on how to use the `$Action` global variable to create URLs for different kinds of objects and actions, see the Global Variables appendix in the *Visualforce Developer's Guide*.

Performance Tuning for Visualforce Pages

Performance is an important aspect of mobile Visualforce pages. Visualforce has a caching mechanism to help you tune the performance of your pages.

To enable caching for a page, use this statement:

```
<apex:page cache="true" expires="600">
```

The parameters for page caching are:

Attribute	Description
`cache`	Boolean value that specifies whether the browser should cache the page. If not specified, defaults to `false`.
`expires`	Integer value that specifies the period of cache in seconds.

For more information, see Force.com Sites Best Practices on Developerforce

More Resources

Here are some more resources to help you tune the performance of your Salesforce1 apps:

- Inside the Force.com Query Optimizer (webinar)
- Maximizing the Performance of Force.com SOQL, Reports, and List Views (blog post)
- Force.com SOQL Best Practices: Nulls and Formula Fields (blog post)

Force.com Canvas Guidelines and Best Practices

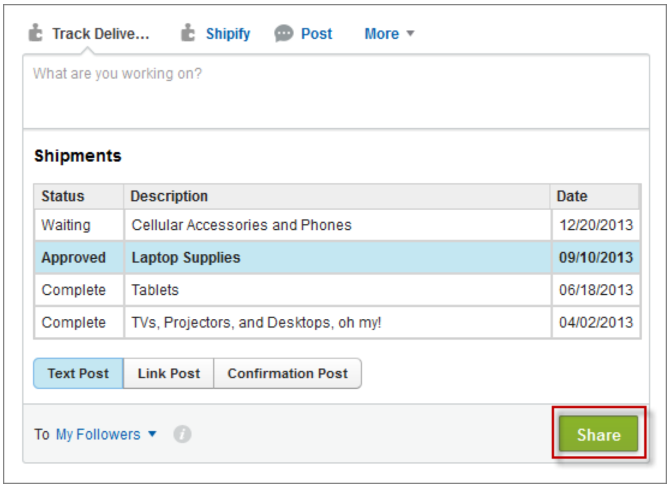
There are some additional best practices and guidelines to keep in mind when exposing your applications as canvas apps and making them available to mobile users.

Force.com Canvas makes it easy for you to integrate Web applications with Salesforce1 at the user interface level. However, the user experience in the Salesforce1 app is different than in the full Salesforce site. You'll want to make sure you design your canvas apps for mobile users and be sure to test them in the mobile environment.

Canvas Apps in the Publisher

Keep these best practices and guidelines in mind when making your canvas apps available in the publisher.

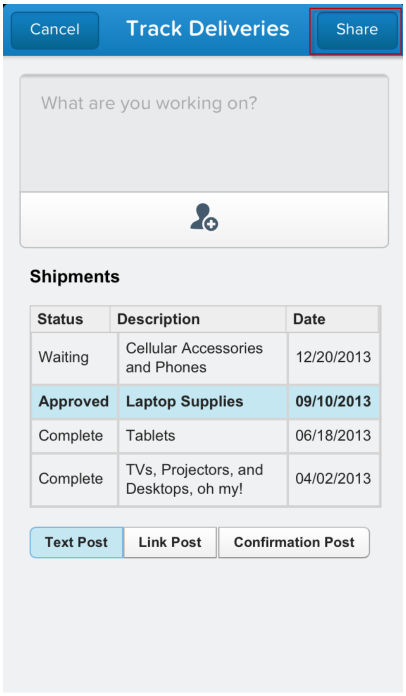
- When you access a canvas app from the publisher in the full Salesforce site, the user interface is different than when you access a canvas app from the publisher in the Salesforce1 app. For example, in the feed in the full Salesforce site, the Share button is at the bottom of the feed item.



Shipments

Status	Description	Date
Waiting	Cellular Accessories and Phones	12/20/2013
Approved	Laptop Supplies	09/10/2013
Complete	Tablets	06/18/2013
Complete	TVs, Projectors, and Desktops, oh my!	04/02/2013

In the Salesforce1 app, the Share button is at the top of the screen.



Shipments

Status	Description	Date
Waiting	Cellular Accessories and Phones	12/20/2013
Approved	Laptop Supplies	09/10/2013
Complete	Tablets	06/18/2013
Complete	TVs, Projectors, and Desktops, oh my!	04/02/2013

- When creating a canvas custom action, the height available for that action in the full Salesforce site is much greater than the height for that action in Salesforce1. Use the Dimensions object in the Force.com Canvas SDK to render your canvas app in the correct size.
- Keep the labels for canvas custom actions concise. Longer labels may not fully display in the publisher.
- When you access a canvas app from the publisher, the `What are you working on?` pane appears above the canvas app. This pane remains fixed, even if your canvas app scrolls.
- When the request comes into your Web application that's exposed as a canvas app, you can determine the type of device that's making the request. Use this information to render your app based on the requesting device for a better user experience. For example, you can add logic so that if the request comes from a mobile phone, only four lines of text are displayed; if the request comes from a tablet, ten lines of text are displayed.
- In most cases, you'll want to specify 100% for the canvas app height and width in your CSS. This ensures that the canvas app takes up the maximum available screen space.
- Canvas apps appear in an iFrame, so you can format the app appearance as you would any standard iFrame.

Canvas Apps in the Feed

Keep these best practices and guidelines in mind when making your canvas apps available in the feed.

- On a mobile device, the link text and description for a feed item display fewer characters than in the full Salesforce site. Keep this in mind when programmatically creating feed items.
- When a canvas app is contained in a feed item, the feed item appears with a link to the canvas app. On a mobile device, the canvas app doesn' appear in the feed; instead, a new page opens and displays the canvas app.
- In the Salesforce1 mobile browser app, the screen changes if the device is rotated. Your canvas app should support rotation, if possible, to maintain a seamless user experience. Note that the Salesforce1 downloadable app doesn't rotate.
- If your canvas app appears as a feed item, keep in mind that it will display in the feed on a mobile device so you'll want to render a mobile-friendly user interface.

Canvas Apps Context

When you display a canvas app inside the Salesforce1 app, keep these considerations in mind.

When you display a canvas app inside of the feed or publisher, the canvas context you receive (either from the signed request or from the `getContext` call) contains information specific to the Salesforce1 publisher.

- You can verify you're on either the feed or publisher by looking at the `displayLocation` value in the environment section. For publisher, `displayLocation` is set to ***`Publisher`***. For the feed, `displayLocation` is set to ***`ChatterFeed`***.
- When creating a canvas feed item, you can specify a `JSON` string as the parameter's value. When the context is sent, any value in the parameter's field on the feed item is sent in the parameters of the environment section of the context.
- As with any canvas app, the context contains information about the app dimensions. Since Salesforce1 is designed for mobile, the sizes we provide are different than for the full Salesforce site.
- For a single-finger touch scrolling experience:
    - ◊ Ensure that the outermost `div` elements contain the following properties:
        - min-height: 250px;
        - overflow: scroll;
        - width: 100%;

- -webkit-overflow-scrolling: touch;
- -webkit-transform: translated(0%,0px,0px);

◊ Set the `height` attribute to the `clientHeight` value delivered in the signed request. For example:

```
//Where sr is a parsed signed request object
var h = parseInt(sr.context.environment.
    dimensions.clientHeight, 10);
Sfdc.canvas.byId('divElementId').style.height = h;
```

◊ The `clientHeight` value can be very small, particularly in a phone's landscape mode, and users may not be able to see any content. Use `min-height` set to the desired height in pixels to ensure a good user experience.

Chapter 17

Learning More

In addition to this guide, there are many resources available to help you in your Salesforce1 Platform development journey.

Websites

Salesforce Developers

Our premier developer site that contains all resources related to Salesforce1 Platform development. You'll find documentation, code samples, and discussion boards to help you get started with mobile development.

Developer Force

A one-stop-shop for all things related to Force.com platform development. You'll find tools, resources, code samples, and articles to help you get started.

Documentation

You'll find all these guides and more on our developer site at `http://developer.salesforce.com/docs`.

Publisher Actions Implementation Guide

Learn about the default publisher actions, how to create object-specific actions, and how to configure publisher layouts. Find out how you can extend the publisher with Visualforce custom actions and Force.com Canvas custom actions.

Salesforce1 Platform API Services Guide

Learn about all the Salesforce1 Platform APIs and how to use them to integrate all your apps.

Mobile App Developer Guide

Learn about native iOS and Android, HTML5, and hybrid mobile development. This guide also includes information about more advanced topics such as authentication, bar code scanning, geolocation, and distributing your mobile apps.

Force.com Canvas Developer's Guide

Learn about integrating Web applications with Salesforce1 using Force.com Canvas. You'll learn how to get up to speed quickly with quick starts, how to use the Force.com Canvas SDK, and about the context objects.

Chatter REST API Developer's Guide

Learn how to programmatically access Chatter feed and social data like users, groups, followers, and files. You'll learn how to get up to speed quickly with quick starts and how to call the various Chatter REST resources.

Force.com REST API Developer's Guide

Learn to use the REST-based API to retrieve, create, update, and delete data in Salesforce. You'll learn how to get up to speed quickly with quick starts, about the available REST API resources, how to make calls and work with data.

Visualforce Developer's Guide

Learn how to use Visualforce to customize and extend the Salesforce user interface.

Force.com SOQL and SOSL Reference

Learn how to use SOQL and SOSL to build powerful queries and text searches.

Index