

Salesforce for Beginners

**A step-by-step guide to optimize sales
and marketing and automate business
processes with the Salesforce platform**

Second Edition



**Sharif Shaalan
Timothy Royer**

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BIRMINGHAM—MUMBAI

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To my wife, Zahira, and my daughter, Amal, for their love, support, and inspiration.

To my mother, Hayam, and my father, Adie, for their love and guidance.

- Sharif Shaalan

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Sharif Shaalan was first introduced to Salesforce as an end-user in 2007. His range of experience, from a sales rep to technical architect, helped him successfully lead more than 100 implementations, including projects that were showcased on the main stage at Dreamforce. In 2013, Sharif was chosen as a Salesforce MVP, and in 2020 he was inducted into the Salesforce MVP Hall of Fame. Sharif is a regular speaker at Salesforce conferences and has obtained more than 10 Salesforce certifications. He is the founder and CEO of *Agile Cloud Consulting* and continues to be an active Salesforce community contributor.

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Thank you to my friends and family for their continual support and to all my teammates from organizations past and present who I have learned so much from.

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I want to thank my wife, Kate, for giving me the freedom to spend a lot of time on my geeky hobbies.

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Preface

Salesforce is the world's leading **Customer Relationship Management (CRM)** software, helping businesses connect with their constituents and partners. This book will give you a comprehensive introduction to managing sales, marketing, customer relationships, and overall administration for your organization using Salesforce. Packed with realistic use cases, this book will show you how to employ Salesforce to achieve your business goals.

Who this book is for

If you are new to Salesforce and want to learn it from scratch, an administrator looking to build your Salesforce skills, or a student looking to start a career in Salesforce, this book is for you. This book will explain Salesforce CRM functionality within the context of business use cases for *end-users* and *admins*.

What this book covers

Chapter 1, Getting Started with Salesforce and CRM, provides your first look at Salesforce CRM. You will learn basic CRM concepts, the difference between the Classic and Lightning UI, how to log in and navigate Salesforce, how to search for records, and how to maximize list views.

Chapter 2, Understanding Salesforce Activities, covers the basics of Salesforce activities, including what activities are, what the different types of activities are, and how to use activities across all objects.

Chapter 3, Creating and Managing Leads, introduces Salesforce leads as the first part of the sales cycle. This includes what leads are, how lead status helps you manage leads, what it means to convert a lead, and how to use Web-to-Lead.

Chapter 4, Business Development with Accounts and Contacts, covers the basics of Salesforce accounts and contacts. Here you will learn what accounts, contacts, and relationships are, and how these objects are used by a business.

Chapter 5, Driving the Sales Cycle with Opportunities, continues your knowledge of the sales cycle by covering opportunities, including what opportunities are, how stages function, how the sales path helps you visualize your workflow, how contact roles function, how products and pricebooks function, how quotes function, and how opportunities drive forecasting.

Chapter 6, Achieving Business Goals Using Campaigns, covers how to generate leads by using Salesforce campaigns. You'll learn what campaigns are, how you can keep track of campaign members, the campaign hierarchy, and how campaigns interact with third-party apps.

Chapter 7, Enhancing Customer Service with Cases, teaches you how to handle customer relations using cases. You'll learn related case functionality such as escalation rules, entitlements, and service console, as well as how to create cases through Web-to-Case and Email-to-Case.

Chapter 8, Business Analysis Using Reports and Dashboards, covers the basics of reports and dashboards, such as report types and dashboard components.

Chapter 9, Setup and Configuration, provides an extensive overview of the **Setup** page in Salesforce, covering each section and tab one-by-one – use this referentially.

Chapter 10, An Overview of Sharing and Visibility, covers security concepts related to sharing and visibility, such as org-wide defaults, the role hierarchy, sharing rules, profiles, and permission sets.

Chapter 11, User Management and Data Security, explains how user management concepts are related to data security, covering record ownership and issues with ownership skew.

Chapter 12, Managing Projects with Sandboxes and Change Sets, covers the basics of sandboxes and change sets, including what sandboxes are and what types are available, what change sets are, and how to deploy a change set.

Chapter 13, Using Data Modeling to Configure Objects for Your Business, covers page layouts, record types, custom fields, and custom objects as well as data modeling.

Chapter 14, Lightning Experience Customization, covers the basics of setting up and configuring Lightning pages, including what components and layouts are available for Lightning pages and how to use them, and how to activate and assign a Lightning page.

Chapter 15, Extending Functionality with Third-Party Applications and Salesforce Mobile, covers the basics of third-party applications, managed packages, unmanaged packages, and the Salesforce AppExchange.

Chapter 16, Salesforce Flow, teaches you how to build a flow in Salesforce Flow. Using the laid out instructions, you will also learn how to extensively create and test multiple types of flows.

Chapter 17, Approval Processes, introduces you to approval processes, including entry criteria, approval steps, final approval and rejection actions, and recall actions.

Chapter 18, Assignment Rules, covers the basics of assignment rules, including what assignment rules are, lead assignment rules, and case assignment rules.

Chapter 19, Data Integrity with Formulas and Validations, introduces you to formulas and validation rules, covering what formulas and validation rules are, and how to create them.

Chapter 20, Testing and Debugging, covers the basics of code deployment and debugging. Here you will learn about the path to production when deploying code, how to manually test functionality, and how to create debug logs.

To get the most out of this book

- No prior knowledge of Salesforce is required to get started with this book, although we assume the reader has a basic understanding of Sales, Service, and Marketing business processes. Some processes, such as the sales cycle, will be explained.
- At the start of the book, we will explain how to create a development organization in Salesforce. You will need to set up your own so you can follow along with the instructions and examples found throughout this book.

Download the color images

We also provide a PDF file that has color images of the screenshots/diagrams used in this book. You can download it here: https://static.packt-cdn.com/downloads/9781803239101_ColorImages.pdf

Conventions used

There are a number of text conventions used throughout this book.

User input: Indicates user input, database table names, folder names, filenames, file extensions, pathnames, dummy URLs, and Twitter handles. For example: “For instance, my email might be `sharif@me.com`, but my username could be `sharif@me.com.myneworg`.”

Bold: Indicates a new term, an important word, or words that you see on the screen. For instance, words in menus or dialog boxes appear in the text like this: “Some good examples of things you will see when you click on this tile are the **Sales** and **Marketing** apps.”



Warnings or important notes appear like this.



Tips and tricks appear like this.

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1

Getting Started with Salesforce and CRM

Once upon a time, before Facebook and iPhones, businesses ran their operations using on-premises software. These operations included managing customers and their interactions with the sales, customer service, and marketing departments of the organization. ‘On-premises’ meant that the servers that ran this software were within the physical infrastructure of the business. Having the servers onsite meant huge maintenance and upkeep costs, as well as long deployment times for the smallest of changes. In 1999, Marc Benioff and his co-founders started Salesforce.com. As Benioff states in his book, *Behind the Cloud*, the idea was to make software easier to purchase, simpler to use, and more democratic, without the complexities of installation, maintenance, and constant upgrades. Salesforce was at the forefront of **Software as a Service (SaaS)** and cloud computing.

Fast-forward to 2022, when Salesforce reported \$21.25 billion in total revenue in FY 2021 and is now constantly expanding the platform and acquiring new companies. This growth has led to the **Salesforce economy**, in which Salesforce projects will have created 9.3 million jobs by 2026. How did Salesforce get to this point? It started as a **Customer Relationship Management (CRM)** tool, then, over the years, it morphed into a powerful business platform with various clouds, including Sales Cloud, Service Cloud, Marketing Cloud, Analytics Cloud, Experience Cloud, and many more.

In this book, we will focus on Sales Cloud and Service Cloud. These two clouds contain all of the core CRM functionality, which is the foundation of all the other clouds, and sets up the path for you as the end user or aspiring admin to continue learning.



Salesforce is a platform to build your entire business on. Don't let the word "*sales*" mislead you. The platform supports the ability to manage all aspects of a business, including sales, customer service, marketing, finance, and much more, through out-of-the-box functionality and customization.

In this chapter, we will cover the following topics:

- What is Salesforce CRM?
- Differentiating Salesforce Classic and Lightning
- Navigating Salesforce
- Exploring different search options
- Using list views across all objects
- Using Salesforce Chatter in your organization
- Customizing personal settings options available to end users

What is Salesforce CRM?

Salesforce CRM involves all interactions with an organization's constituents. This includes prospecting, the sales process, retention, marketing efforts, and customer service. Out-of-the-box CRM functionality is a core aspect of Salesforce that is provided when you sign up for the platform. There are various editions of the core CRM product, each providing different features and per-user price points:

- Salesforce Essentials: A small-business CRM for up to 10 users
- Salesforce Professional: A complete CRM for any size team
- Salesforce Enterprise: A deeply customizable sales CRM for your business
- Salesforce Unlimited: Unlimited CRM power and support

Salesforce uses the concept of different clouds to bring together specific features. For example, all of the core features of running a sales operation, such as lead and opportunity management, are included in Sales Cloud. Features such as advanced customer service, Cases (Sales Cloud includes a basic version of Cases), and knowledge bases fall under Service Cloud. There are also other clouds, such as Marketing Cloud, Analytics Cloud, and so on. The four editions in the preceding list focus on Sales Cloud and/or Service Cloud.

There is also a developer edition. The developer edition is one of the most valuable training tools when starting to learn how to use Salesforce, especially if you don't have access to a Salesforce environment of your own to practice what you are learning. Developer edition orgs are free, full-featured enterprise orgs with less storage and a limit of two licenses. These orgs are made for you to try out and develop features in an environment that is not directly tied to a paid production org. You can sign up for unlimited developer orgs. Regardless of the edition, the core objects are the same; we will cover them in detail in the following chapters of this book.



In this book, we will use the terms environment, org, and instance interchangeably. These three words refer to the configuration that you see when you log in to a unique version of Salesforce. This can be a development org, a client's production org, or a sandbox. We will cover sandboxes in *Chapter 12, Managing Projects with Sandboxes and Change Sets*.

Now is a good time to go to <https://developer.salesforce.com/signup> and sign up for your own developer edition.

As we walk you through the concepts of this book, you can follow along on your own org. As you sign up, you will be asked to enter a company name. If you don't belong to a company, don't worry—just re-enter your name for the company name since it is a required field.

Differentiating Salesforce Classic and Lightning

Over the years, Salesforce has had a few UI makeovers to keep up with the latest trends in usability and design. The latest, and by far the biggest, UI change Salesforce has carried out is the introduction of Salesforce Lightning in 2015. This was a fundamental change to the look and feel that Salesforce users were used to and brought with it many new features that are only available on Lightning. Some of these features include the following:

- A modern UI
- The Lightning Component framework, which allows developers to build responsive applications for any device with less effort

Many organizations that have used Salesforce for a long time either plan to migrate, or have already migrated, to Lightning. When Lightning was released, the older Salesforce UI was renamed Salesforce Classic to differentiate between the two. The following screenshots show the exact same page in Salesforce Classic and Salesforce Lightning.

Notice the option to toggle between the two interfaces. This means any user you grant this permission to can switch back and forth between Classic and Lightning. This feature helps with adoption when you first bring users onto Lightning.

This is the UI for Salesforce Classic. Although there is great functionality in Classic, the UI is not modern:

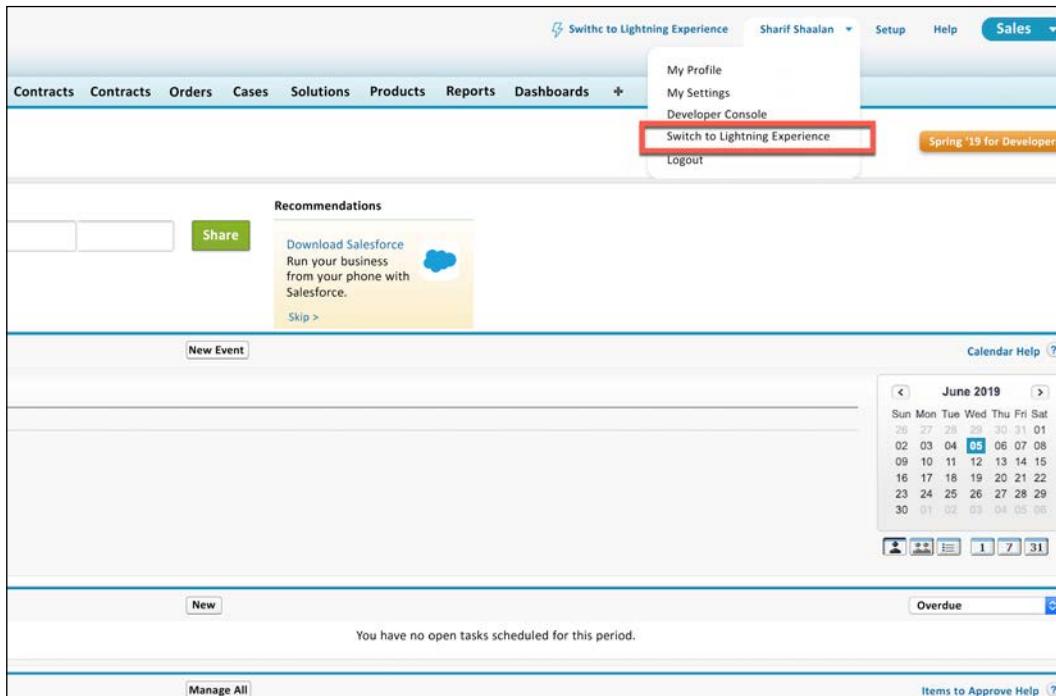


Figure 1.1: Switching to Salesforce Lightning from the dropdown at the top right of the screen

Let's compare this to the UI for Lightning Experience. The UI is more modern and you can see the component-based framework from the home page items, on the left side of the page:

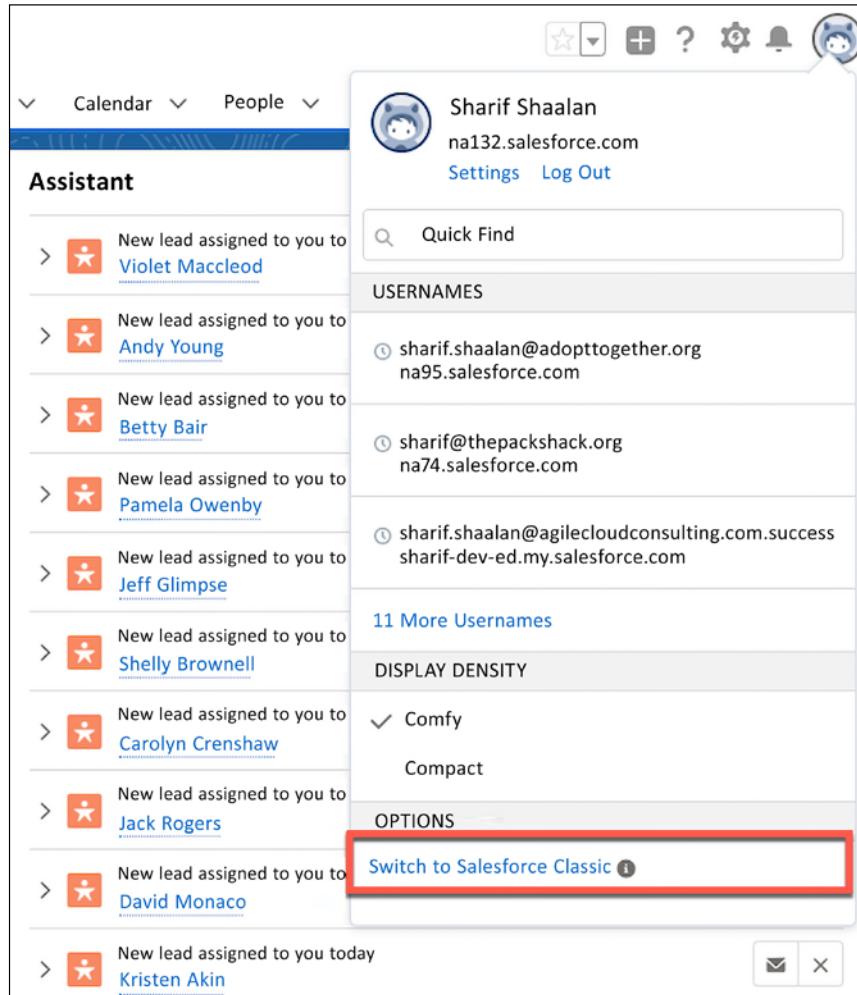


Figure 1.2: Salesforce Lightning view, with the option to switch to Classic on the profile pane



As an end user or potential admin, you need to make sure you learn how to use Lightning as it is the future of Salesforce. At the same time, you need to be familiar with Classic since many organizations still use Classic or have a hybrid system set up, where some users use Classic and some use Lightning. In this book, we will show all of our examples in Lightning, but I recommend you toggle back and forth to see how the concepts work in Classic as well.

Now that we know the difference between Salesforce Classic and Salesforce Lightning, let's take a look at how to log in to Salesforce and navigate to various useful sections.

Navigating Salesforce

Once you get access to your development org, it's time to log in. To log in to Salesforce, you need to go to <https://login.salesforce.com/>. This is important, as we'll see later when we discuss sandboxes, as you have to go to <https://test.salesforce.com/> to log in to a sandbox. Your Salesforce username has to be in the format of an email, but not an actual email address. This is a key point since you may have access to multiple Salesforce orgs and the username has to be unique. So, when you set up your account, there is a requirement for an email address as well, which does have to be a real email address since you will receive a verification confirmation for the first-time login. The username can be anything that takes the form of an email: so, for instance, my email might be `sharif@me.com`, but my username could be `sharif@me.com.myneworg`.

Once you log in, you will notice all of the tabs at the top of the page:

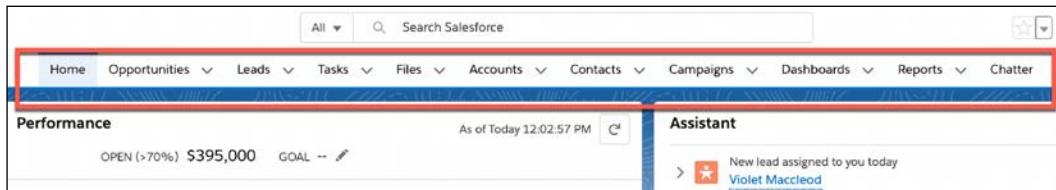


Figure 1.3: Navigation tabs at the top of the Salesforce org home page

These tabs will help you navigate to the various **objects** in Salesforce. Objects can be considered as buckets of information or tables in a database. For example, the **Account** object holds the various account records, the **Contact** object holds the various contact records, and so on. We will cover these objects in more detail in the upcoming chapters. You will also see tabs for things such as reports, dashboards, and Chatter. So, tabs are a mix of objects and items you may want to easily access.

When you log in, you will always land on the home page, which can be customized with various items that can make your job easier. The home page has components such as quarterly performance details and **Assistant**, which can be customized as needed. The quarterly performance component allows the logged-in user to see their sales statistics for the current quarter. Assistant is an artificial intelligence module that lets you know which customers or potential customers to follow up with using a phone call or an email based on data points, such as the last activity.

In the following sections, we will cover App Launcher, the search functionality, list views, Chatter, and the personal settings that can be applied.

App Launcher

On the upper left-hand side of the page, you will notice a few tiles under the cloud icon. These tiles take you to **App Launcher**, where you can access various apps in your Salesforce instance:

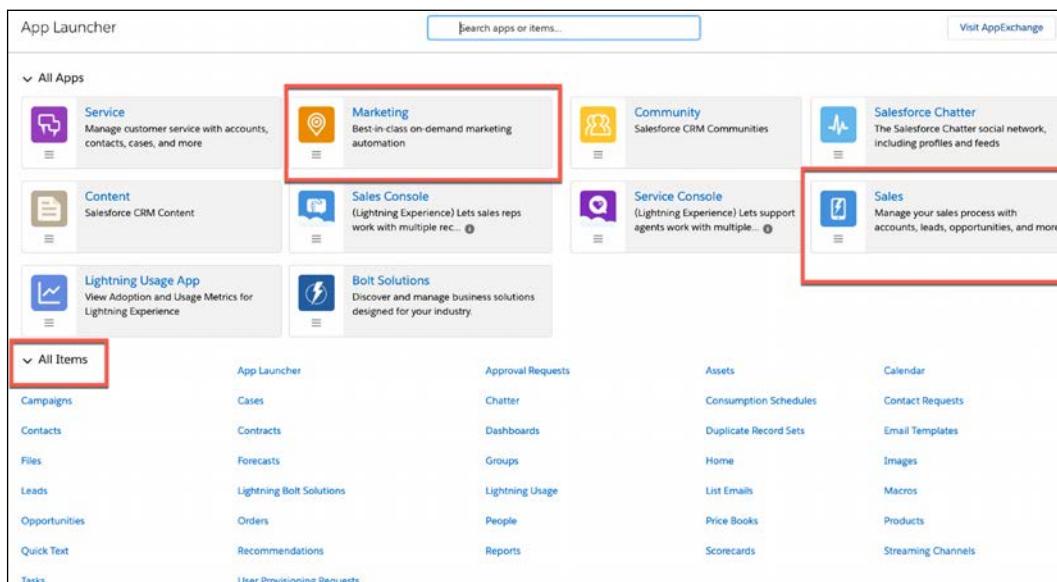


Figure 1.4: Sales and Marketing apps on the App Launcher, and the collapsible menu for All Items

Apps are a collection of tabs that can be customized. Changing the apps will change the tabs you see in your navigation. Some good examples of things you will see when you click on this tile are the **Sales** and **Marketing** apps. The **Sales** app has tabs such as **Leads**, **Contacts**, **Opportunities**, and others that are used for the sales process.

The **Marketing** app has these same tabs, along with the **Campaign** tab, which is heavily used in marketing. You will also see **All Items**, which shows you all the objects in case you need to access one of them and it is not a part of the specific app you have chosen.

Exploring search options

At the top of the page, you will notice the global search bar. This allows you to enter any search term and returns any objects where that term is included. In the following example, I searched for **grand hotels**. Notice that Salesforce returns the **Accounts**, **Opportunities**, and **Contacts** where this term is present:

The screenshot shows the Salesforce interface with a search bar at the top containing 'grand hotels'. Below the search bar, there are tabs for Sales, Home, Opportunities, Leads, Tasks, Files, Accounts, Contacts, and Campaigns. A sidebar on the left lists various objects: Top Results, Opportunities, Leads, Tasks, Files, Accounts, Contacts, Campaigns, Dashboards, Reports, Chatter, Groups, Events, People, Cases, and a 'Show More' link. The main content area displays search results for 'Accounts', 'Opportunities', and 'Contacts'.

- Accounts:** 1 Result. Shows 'Grand Hotels & Resorts Ltd'.
- Opportunities:** 5 Results · Sorted by Relevance. Shows opportunities like 'Grand Hotels Guest Portable Generators', 'Grand Hotels Generator Installations', 'Grand Hotels Emergency Generators', 'Grand Hotels SLA', and 'Grand Hotels Kitchen Generator'. To the right, a column labeled 'ACCOUNT NAME' lists 'Grand Hotels & Resorts Ltd' five times.
- Contacts:** 2 Results · Sorted by Relevance. Shows contacts 'John Bond' and 'Tim Barr'. To the right, a column labeled 'ACCOUNT NAME' lists 'Grand Hotels & Resorts Ltd' twice.

At the bottom, a message says 'Don't see your result? We searched the objects you use most, but we didn't search everything. Know which object you're looking for? Select it in the dropdown next to the search bar.'

Figure 1.5: Searching for a business also shows any Opportunities or Contacts related to that account

Once you have looked at the top results, you can narrow the search down to a specific object and refine the search further, if needed:

The screenshot shows the Salesforce Opportunities list view. On the left, there's a sidebar with a 'SEARCH RESULTS' section containing a 'Top Results' list where 'Opportunities' is selected. Below that is an 'Expand List' button. Further down are sections for 'REFINE BY' with fields for 'Opportunity Name', 'Account Name', and 'Account Site'. A dropdown menu for 'Stage' is open, with 'Closed Won' selected. Another dropdown for 'Close Date' is also visible. At the bottom of the sidebar is an 'Opportunity Owner Alias' field. The main area displays a table of opportunities with columns for Opportunity Name, Account Name, Account Site, Stage, Close Date, and Opportunity Owner. Three records are listed: 'Grand Hotels Generator Installations' (Closed Won, 5/15/2019, SShaa), 'Grand Hotels Emergency Generators' (Closed Won, 5/13/2019, SShaa), and 'Grand Hotels SLA' (Closed Won, 2/23/2019, SShaa). The 'Stage' column header and the 'Closed Won' selection in both the sidebar and the main table are highlighted with red boxes.

OPPORTUNITY NAME	ACCOUNT NAME	ACCOUNT SITE	STAGE	CLOSE DATE	OPPORTUNITY OWNER...
Grand Hotels Generator Installations	Grand Hotels & Resorts Ltd		Closed Won	5/15/2019	SShaa
Grand Hotels Emergency Generators	Grand Hotels & Resorts Ltd		Closed Won	5/13/2019	SShaa
Grand Hotels SLA	Grand Hotels & Resorts Ltd		Closed Won	2/23/2019	SShaa

Figure 1.6: Using the SEARCH RESULTS menu on the left side of the screen to filter results

In the preceding example, I narrowed the search down to the **Opportunity** object and further refined the search by setting the **Stage** filter under **Opportunities** to **Closed Won**.

Using list views

List views are one of the most useful tools available to Salesforce end users. They allow you to sort, prioritize, and analyze records that are important to you within a given object using filter criteria.

You will notice that whenever you click on a tab that is connected to an object, you will always land on a default view called **Recently Viewed**. This view shows any records you have recently worked on:

The screenshot shows the Salesforce interface with the Sales tab selected. A red box highlights the 'Recently Viewed' button in the top navigation bar under the 'Accounts' section. Below it, a list view displays two accounts: 'GenePoint' (ranked 1) and 'Burlington Textiles Corp of America' (ranked 2). The list includes a header for 'ACCOUNT NAME' and two rows of data.

	ACCOUNT NAME
1	GenePoint
2	Burlington Textiles Corp of America

Figure 1.7: Recently viewed accounts appearing in a list

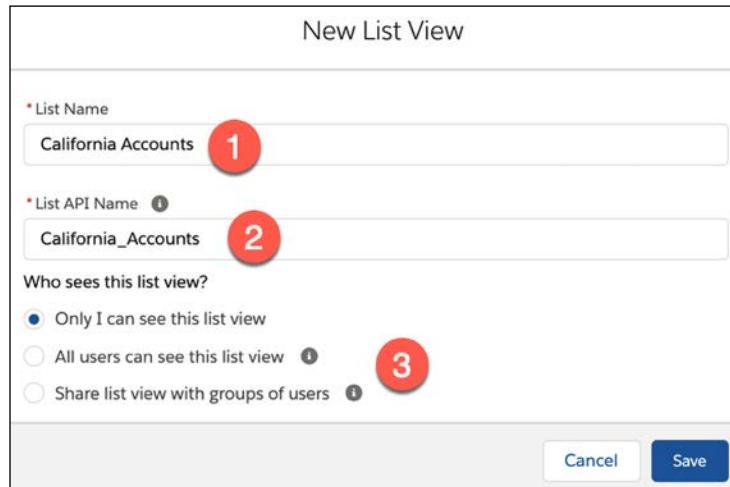
You can also use the pinning option to change the default view from **Recently Viewed** to any other view you choose to be the default. You can create as many list views as you need to help facilitate your work as long as you have the required permissions. For example, let's say you are an account manager and you only work with accounts in California. Let us see how to build this:

1. Click on **New** to create a new list view:

The screenshot shows the Salesforce interface with the Groups tab selected. A red box highlights the 'New' button in the top right corner of the list view controls. A context menu is open, with the 'New' option highlighted. Other options include Clone, Rename, Sharing Settings, Show List Filters, Select Fields to Display, Delete, and Reset Column Widths.

Figure 1.8: Creating a new list view

2. On the next screen, enter the list view name, California Accounts. The API name is the name used for development/coding purposes; this name is automatically set based on your list view name. As you will notice, the API name cannot have any spaces, so underscores are automatically entered instead.
3. Here, you can also set the sharing settings for this list view. The view can be private, shared with all users, or shared with a subset of users:



New List View

* List Name
California Accounts 1

* List API Name 2

Who sees this list view?

Only I can see this list view 3

All users can see this list view 1

Share list view with groups of users 1

Cancel Save

Figure 1.9: Steps performed to set the list name, API, and visibility options

4. Next, you can choose your filters. You can filter by the accounts you own or all accounts, and you can add multiple filters. For our example, we want any account where the billing state or the shipping state is CA. The filter logic allows you to set the AND/OR logic. In this case, we set it to 1 OR 2 since we want any records with the billing or the shipping state set to CA as shown in the following screenshot:

The screenshot shows the Salesforce Accounts list view. At the top, there's a search bar and a navigation bar with links for Accounts, Contacts, Campaigns, Dashboards, Reports, Chatter, Groups, Calendar, and More. Below the navigation bar, the list view displays two account records: one with phone '(650) 867-3450' and type 'Customer - Channel', and another with phone '(415) 901-7000'. To the right of the list, a 'Filters' sidebar is open. It shows a 'Filter by Owner' section with 'My accounts'. Under 'Matching these filters', there are two entries: '1. Shipping State/Province equals CA' and '2. Billing State/Province equals CA'. Below these, there are 'Add Filter' and 'Remove All' buttons, and a 'Filter Logic' section with the value '1 OR 2'.

Figure 1.10: Setting filter logic for the new list view

Create a few list views in your development org (organization) to get the hang of using this feature. As you do this, use different objects to see the different field options you have within a specific object and think about the use cases where you may need list views in a business context. Now that we have learned about login and navigation, let's take a look at Salesforce Chatter.

Salesforce Chatter

Chatter is a real-time collaboration tool within Salesforce. Think of it as Facebook within your organization. You have your own profile, and you can share updates, create **Groups** (label 1 of *Figure 1.11*), upload **Files** (label 2), keep track of **Followers** (label 3), set yourself to be **Following** other users (label 4), and much more! You can access your profile by clicking on the icon on the upper-right side of the page or by clicking on the **People** tab:

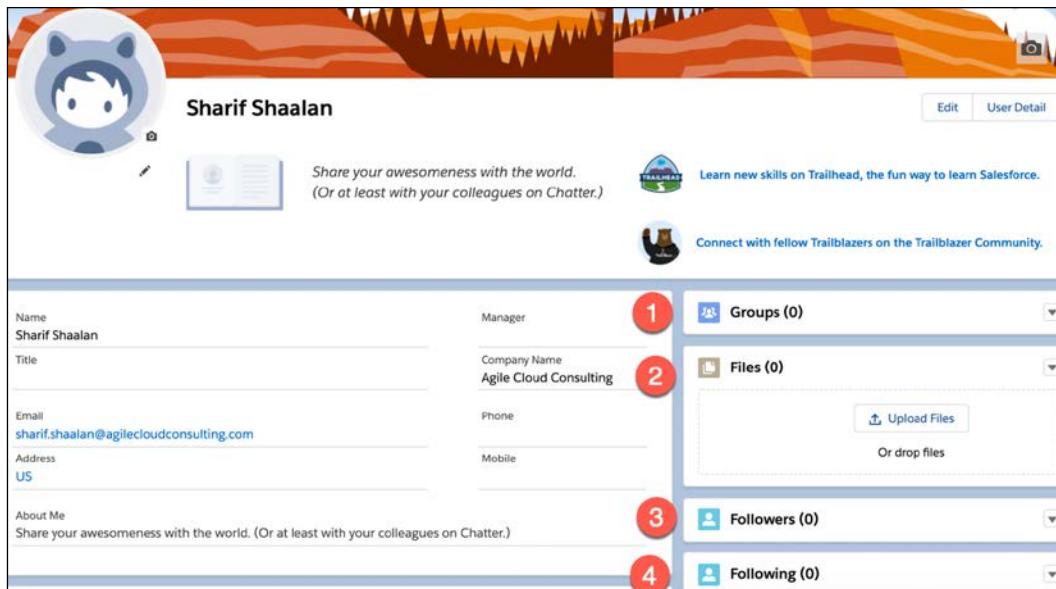


Figure 1.11: Profile details including Groups, Files, Followers, and Following on Salesforce Chatter

If you scroll down on your profile, you will see your feed:

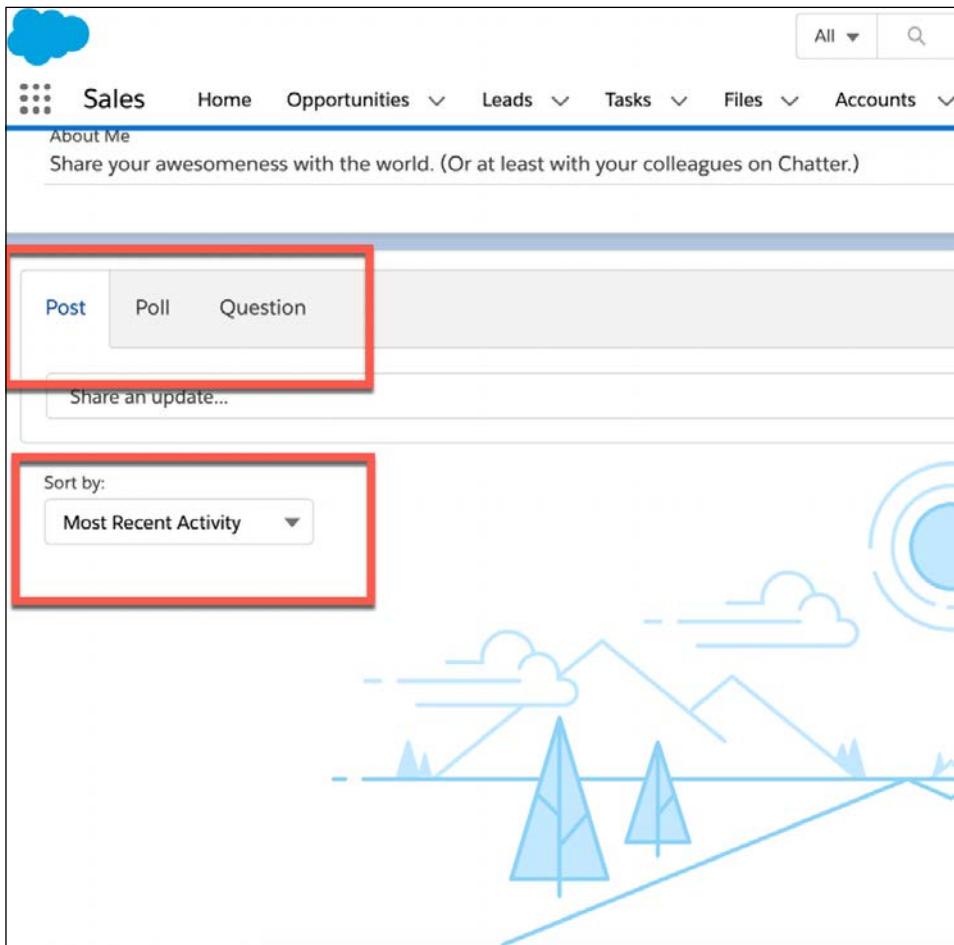


Figure 1.12: Filters and Sort by options on the Chatter feed

The feed includes any posts you have made, any posts you follow, or updates to tracked fields on records you follow. The actions can be customized to include more than the post, poll, and question action.

If you click on the **Chatter** tab, you get an expanded view of the feed:

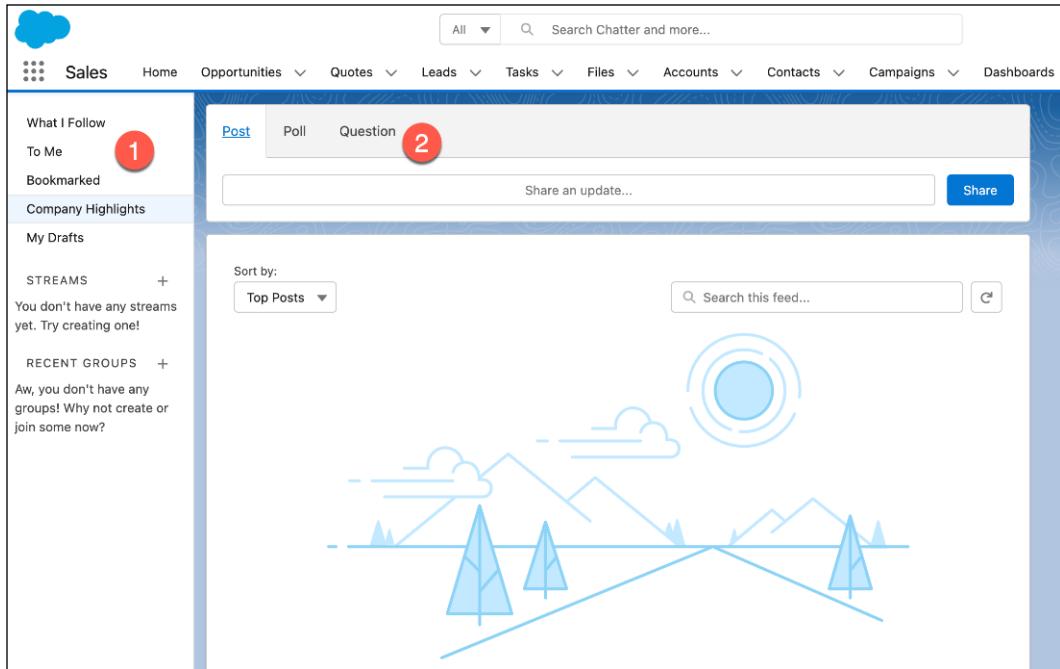


Figure 1.13: View for refining Chatter feed

This view allows you to further refine your feed (label 1 of *Figure 1.13*), and post new updates (label 2). Now that we have looked at Salesforce Chatter, let's look at some of the personal settings options.

Customizing personal settings

To round out our general overview, let's take a look at some personal settings:

1. To access your personal settings options, click on the profile picture in the upper-right corner of your screen, then click on **Settings**:

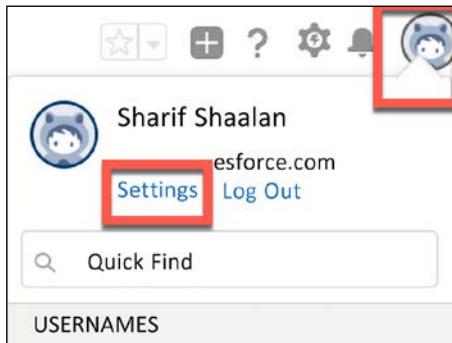


Figure 1.14: Finding Settings in the profile pane

On this page, you will see all of your options under a set of categories on the left-hand side:

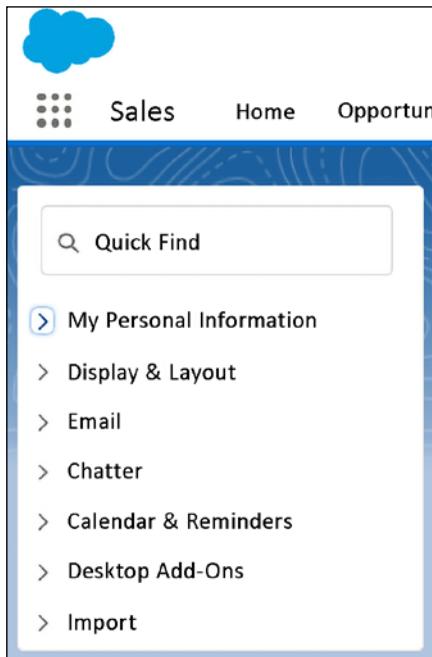


Figure 1.15: Categories on the Settings page

2. Under each one of these categories, you will find some personal customization options. Under **My Personal Information**, you have the option to add the following information:

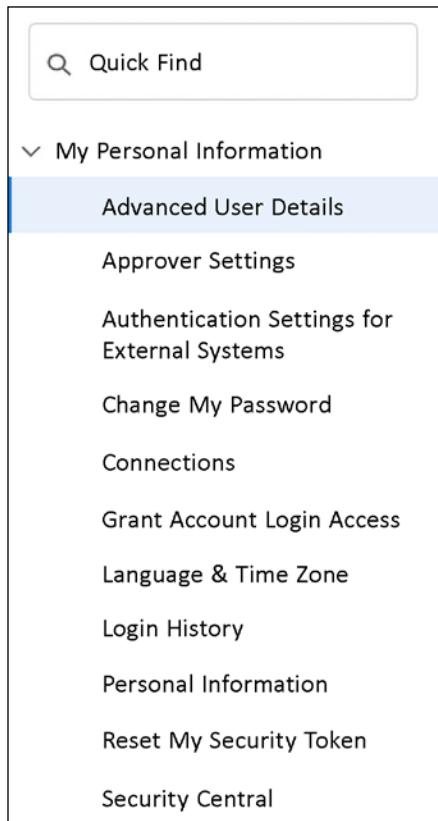


Figure 1.16: Expanding the *My Personal Information* category in *Settings*

Below, we will go through the personal information options outlined in the above screenshot:

- **Advanced User Details:** This page contains the fields on your user record that you can edit.
- **Approver Settings:** This page allows you to set a delegated approver—your manager—and approval email settings.
- **Authentication Settings for External Systems:** If you are connected to external systems, you can adjust the settings here. An example would be external objects, whose data is stored outside your Salesforce organization.

- **Change My Password:** This page allows you to change your Salesforce password while directly logged into Salesforce as opposed to having to click a password reset link when not logged in. This option will allow you to change the password without additional security questions or verification.
- **Connections:** This page shows any OAuth connections or third-party account links.
- **Grant Account Login Access:** This page allows you to grant login access to Salesforce customer service or a third-party app provider as needed.
- **Language & Time Zone:** This page allows you to set your time zone, locale, language, and email encoding.
- **Login History:** This provides an itemized list of all of the times you have logged in. Note, this will include 20,000 records of login history during the past 6 months.
- **Personal Information:** This provides basic information from your user records, such as your email address and phone number.
- **Reset My Security Token:** This allows you to reset your security token, which is needed to access certain tools.
- **Security Central:** This shows the detailed account activity, which displays all of your sessions.

3. Next is **Display & Layout:**



Figure 1.17: Second category in Settings

Here you have the following options:

- **Customize My Pages:** This allows you to choose what related items show up for you for each object
- **My Social Accounts and Contacts:** This allows you to adjust the settings to enable your social accounts and contacts, as well as Twitter and YouTube videos related to leads, accounts, and contacts

4. Then we have **Email**:

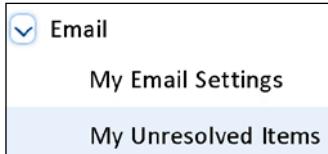


Figure 1.18: Options for Email in Settings

Here you have the following options:

- **My Email Settings:** This page contains the options for setting your email name, your email address, automatic BCC as an option, your email signature, and your email subscription settings, which allows you to opt in and out of things such as Chatter email digests.
- **My Unresolved Items:** This page has the settings for items that had no match when synced through third-party email integration. We will cover this page further in later chapters.

5. Next is **Chatter**:

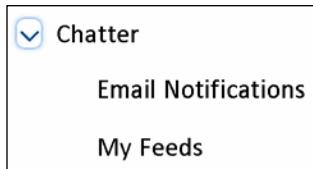


Figure 1.19: Options for Chatter in Settings

Here you have the following options:

- **Email Notifications:** This page allows you to set your email options related to Chatter. You can receive an email update for follows, posts, likes, comments, mentions, messages, or endorsements.
- **My Feeds:** This page has an option to automatically follow any records you create.

6. Next is **Calendar & Reminders**:

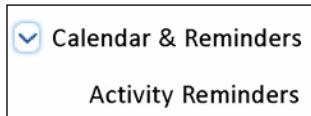


Figure 1.20: Calendar & Reminders category in Settings

Here you have the following option:

- **Activity Reminders:** This allows you to set defaults for reminders related to tasks and events. We will cover reminders in detail in *Chapter 2, Understanding Salesforce Activities*.

7. Then we have **Desktop Add-Ons**:



Figure 1.21: Category for adding Outlook and Files Connect to the development org

Here you have the following options:

- **Files Connect Offline:** This page has a direct installation link for Files Connect
- **Salesforce for Outlook:** This page offers a step-by-step guide to setting up Salesforce for Outlook

8. Next is **Import**:

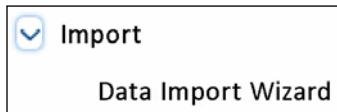


Figure 1.22: Wizard for importing data found in Settings

Here you have the following option:

- **Data Import Wizard:** If you have permission to import data, this page will take you to the launch wizard



This overview is meant to give you a quick look into some very useful functionality. Make sure you review these items in your development org to get a feel for how they look and function in the Salesforce environment!

Now that we have looked at some of the personal settings, let's summarize what we have learned so far.

Summary

By now, you should understand the core concepts of Salesforce CRM and the difference between Salesforce Lightning and Salesforce Classic. You should also now know how to navigate Salesforce and understand the different search options available to you. You should know how to build a list view, what Chatter is and how to use it, and what personal settings are available to you. Now that we have an overview of Salesforce, we will start our deep dive into the application, starting with activities in the next chapter!

Questions

This is a good time to review what you have learned in your development org and see whether you can answer some questions:

1. What is the Salesforce economy?
2. What does CRM stand for?
3. What are two advantages of using Salesforce Lightning?
4. Are all tabs objects?
5. What is an app in Salesforce?
6. What does a global search return?
7. What is the default list view that appears when you go to a tab for the first time, and can the default view be changed?
8. Which personal setting allows you to grant login access to Salesforce customer service?

Further reading

Check out the *Learn CRM Fundamentals for Lightning Experience* Trailhead module at <https://trailhead.salesforce.com/content/learn/trails/crm-essentials-lightning-experience>

Join our community on Discord

Join our community's Discord space for discussions with the authors and other readers:

<https://packt.link/rLptF>



2

Understanding Salesforce Activities

Now that we've had an overview of the basics of Salesforce CRM, let's start digging into some core functionality. This chapter covers **activities**. Activities are at the core of Salesforce CRM because they help you manage the relationship you have with your constituents, that is, the people you are doing business with. Activities include all the touchpoints you go through with your constituents. We will cover the main types of activities in this chapter, which are **tasks**, **events**, and **emails**, and how they affect the user's workflow.

The following topics will be covered in this chapter:

- Navigating to what Salesforce defines as activities
- Creating entries for events and calendars
- Sending emails from Salesforce and exploring the email integration options

By the end of this chapter, you will have learned about tasks, events, calendar integration, and emails in Salesforce.

Technical requirements

For this chapter, log into your development organization and follow along as we learn how to create activities.

Navigating to activities

In Salesforce, activities include tasks, events, and calendars. Activities help you prioritize your time and keep up with any object. The main objects that you will use with activities are **Accounts**, **Campaigns**, **Contacts**, **Leads**, and **Opportunities**. **Emails** are another type of activity that you may use to stay in touch with your contacts and leads. Having all the touchpoints logged in Salesforce will give you a 360-degree view of your contacts and let you look at any person related to a specific Account, Contact, Opportunity, Lead, or Campaign that you may be working with.

You can also view your activities on the home page, depending on your home page's layout. This gives you a shortcut to all of your activities. Let's see what activities look like when they're connected to objects:

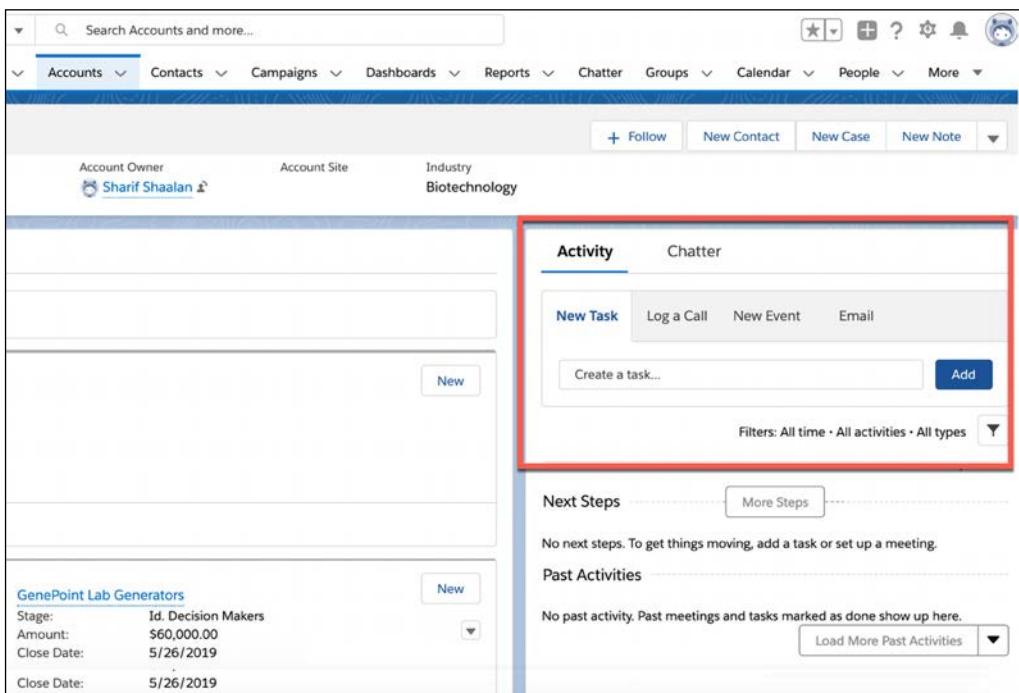


Figure 2.1: Activity section seen from an object

Here, I have navigated to the **Accounts** tab and then to the **GenePoint** Account. On the right-hand side, you can see that there is an **Activity** section, which allows us to create a task, log a call, create an event, or send an email. If you navigate to any of the other tabs, you will see that the same **Activity** section exists.

Let's cover each of these activity types in detail.

Tasks

Tasks are objects on your to-do list. They help you stay on top of things that you need to do and are related to the accounts you manage, deals you are working on, or marketing campaigns you may be managing.

Business use case

You are a sales representative at XYZ Widgets. Mr. Jack Rogers is a contact that is interested in buying your product. You call Jack and have a good conversation with him. After the conversation, you decide to set up a follow-up task so that you can call Jack again to gather more information on the next steps to take. Let's see how this is done.

Creating tasks

To create a task, navigate to any object that you want to log a task for and go to the **Activity** section:

The screenshot shows the Salesforce interface for creating a task. A vertical blue line on the left indicates the flow of steps. Red circles numbered 1 through 9 highlight specific elements:

- 1**: A red circle with the number 1 is positioned above the contact details: Name (Textiles Corp of America), Phone (2) (336) 222-7000, Email (jrogers@burlington.com), and Contact Owner (Sharif Shaalan).
- 2**: A red circle with the number 2 is positioned above the "Activity" tab, which is currently selected.
- 3**: A red circle with the number 3 is positioned above the "New Task" button.
- 4**: A red circle with the number 4 is positioned above the "Subject" field containing the value "Follow up with Jack on next steps".
- 5**: A red circle with the number 5 is positioned above the "Name" field containing the value "Jack Rogers".
- 6**: A red circle with the number 6 is positioned above the "Related To" field containing the value "Burlington Textiles Corp of America".
- 7**: A red circle with the number 7 is positioned above the "Assigned To" field containing the value "Sharif Shaalan".
- 8**: A red circle with the number 8 is positioned above the "Status" field containing the value "In Progress".
- 9**: A red circle with the number 9 is positioned below the "Save" button.

Figure 2.2: Creating a task

From the preceding screenshot, we can see the following steps have been taken (the numbering coincides with the areas on the right side of the steps shown in *Figure 2.2*):

1. I search for Mr. Jack Rogers and click on his Contact record.
2. Navigate to the **Activity** section.
3. Fill in the subject of the task.
4. Fill in the due date for when to perform this task.
5. The name of the contact is pre-populated since we are on the contact record.
6. Add the account that Jack is related to.
7. The task is assigned to the logged-in user.
8. Set the task to **In Progress**.
9. Save the record.

After performing these steps, we can see that the task shows up in the **Next Steps** section:

The screenshot shows the Salesforce Activity Chatter interface. At the top, there are tabs for 'Activity' and 'Chatter'. Below the tabs is a navigation bar with links: 'New Task' (highlighted in blue), 'Log a Call', 'New Event', and 'Email'. A search bar contains the placeholder 'Create a task...' and an 'Add' button. To the right of the search bar are 'Filters' (set to 'All time - All activities - All types') and 'Refresh' and 'Expand All' buttons. A red box highlights the 'Next Steps' section. This section contains a list item with a green checkmark icon, a checkbox labeled 'Follow up with Jack on next steps', the date 'Jul 18', and a dropdown arrow. Below this, a message states 'You have an upcoming task about Burlington Textiles Corp of America'. A dashed line separates the 'Next Steps' section from the 'Past Activities' section. The 'Past Activities' section displays the message 'No past activity. Past meetings and task marked as done show up here.' and a 'Load more Past Activities' button with a dropdown arrow.

Figure 2.3: Next Steps section

Once the task has been completed, you can check the **Next Steps** box to mark it as completed (label 1 in the following screenshot). You can then set up a follow-up task if needed (label 2):

The screenshot shows the Salesforce Activity timeline interface. At the top, there are buttons for '+ Follow', 'New Case', 'New Note', 'Submit for Approval', and a dropdown menu. Below this is the main activity feed with sections for 'Activity' and 'Chatter'. A red circle labeled '1' highlights the 'Next Steps' section. This section contains a checkbox labeled 'Follow up with Jack On next steps' which is checked. A message below states 'You have an upcoming task about Burlington Textiles Corp of America'. Another red circle labeled '2' highlights the 'Create Follow-Up Task' option in the context menu that appears when hovering over the 'More Steps' button. The context menu also lists other options like 'Edit Comments', 'Change Date', 'Change Status', 'Change Priority', 'Edit', 'Delete', and 'Create Follow-Up Event'. At the bottom, there's a 'Past Activities' section with a message 'No past activity. Past meetings and tasks marked as done show up here.' and a 'Load More Past Activities' button.

Figure 2.4: Mark as complete

Notice that the task now shows up in **Past Activities**, as shown here:

The screenshot shows the Salesforce Activity tab interface. At the top, there are tabs for 'Activity' (which is selected) and 'Chatter'. Below the tabs is a navigation bar with buttons for 'New Task', 'Log a Call', 'New Event', and 'Email'. A search bar contains the placeholder 'Create a task...'. To the right of the search bar is a blue 'Add' button. Further down, there are 'Filters: All time - All activities - All types' and 'Refresh Expand All' buttons. A section titled 'Next Steps' has a 'More Steps' button. Below this, a message says 'No next steps. To get things moving, add a task or set up a meeting.' A section titled 'Past Activities' is highlighted with a red box. It lists a task: 'Follow up with Jack On next steps' due on 'Jul 18'. Below the task is a note: 'You had a task about Burlington Textiles Corp of America'. At the bottom right is a 'Load More Past Activities' button.

Figure 2.5: Past Activities

Now that we have learned how to create a task, let's take a look at how to log a call.

Logging a call

Logging a call is a type of task. It works exactly as a task does, except for two things: first, the due date always defaults to today; second, the status is always set to **Completed**.

Business use case

As a sales representative for XYZ Widgets, Jack Rogers calls in with a question. After the call, you want to update Salesforce with details of the call that took place.

Log a call

In the following screenshot, I navigated to the **Log a Call** sub-tab in order to log a call. You will notice no options for **Due Date** or **Status**:

The screenshot shows a Salesforce interface for logging a call. At the top, there are two tabs: "Activity" (which is underlined in blue) and "Chatter". Below the tabs is a horizontal menu with four items: "New Task", "Log a Call" (which is highlighted in blue), "New Event", and "Email".

The main content area has several input fields:

- "Subject": A text input containing "Call". To the right is a magnifying glass icon.
- "Comments": A text input containing "Great call with Jack, setting up a follow up call for next week". To the right is a small "e" icon.
- "Name": A text input containing "Jack Rogers". To the right is a small "X" icon.
- "Related To": A text input containing "Burlington Textiles Corp of America". To the right is a small "X" icon.

At the bottom right is a large blue "Save" button.

Figure 2.6: Log a Call

This is because the **Log a Call** functionality is built only to log calls you've just completed with a client.

In this case, the due date is set to the current day and the status is automatically set to completed, as shown in the following screenshot:

The screenshot shows the Salesforce Activity Chatter interface. At the top, there are tabs for 'Activity' (which is selected) and 'Chatter'. Below the tabs are buttons for 'New Task', 'Log a Call' (which is underlined, indicating it's the active action), 'New Event', and 'Email'. A text input field says 'Recap your call...' and a blue 'Add' button is to its right. Below this is a filter bar with 'Filters: All time - All activities -All types' and a refresh/expand all button. A dashed line labeled 'Next Steps' connects to a 'More Steps' button. Below this, a message says 'No next steps. To get things moving, add a task or set up a meeting.' A section titled 'Past Activities' is highlighted with a red box. It contains two items: 1) 'Follow up with Jack on next steps' (due Jul 18) and 2) 'Call' (due Today). The 'Call' item is also highlighted with a red box. Below the second item, a note says 'You logged a call about Burlington Textiles Corp of America'. At the bottom right of the 'Past Activities' section is a 'Load More Past Activities' button with a downward arrow.

Figure 2.7: Past Activities

As you can see, when you save the call, the task automatically shows up under **Past Activities**.

Task list view

There are times when we'll have a few pending tasks that need to be performed during the course of the day. To see all such outstanding tasks, navigate to the **Tasks** tab, where you can keep track of them. The following screenshot shows this:

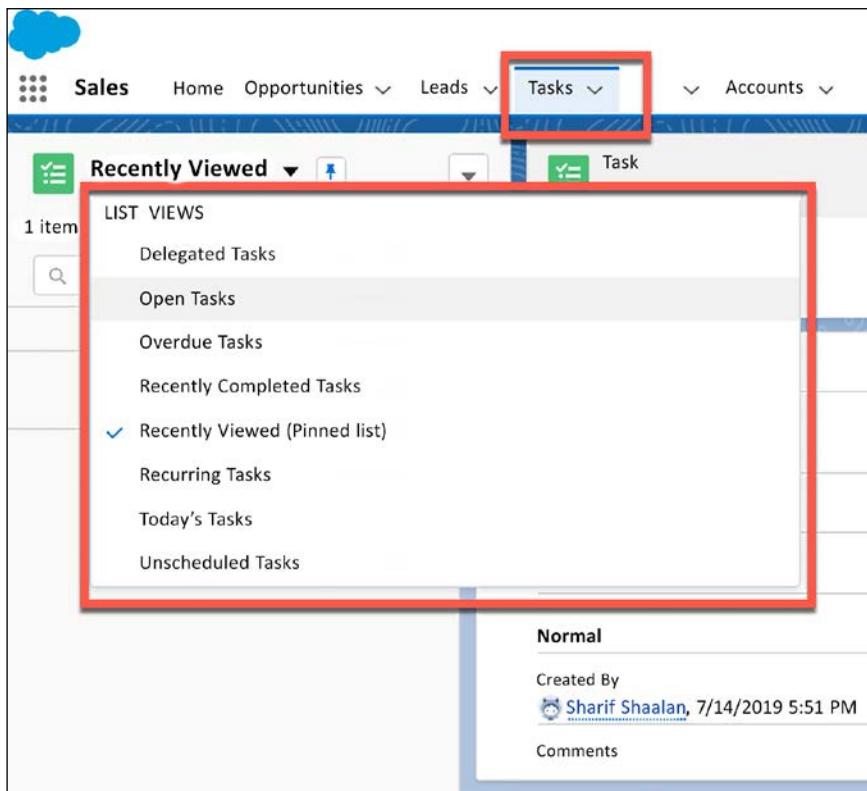


Figure 2.8: Tasks tab

Take a look through the **LIST VIEWS** options that you can filter by. These list views will help you organize your day and view the lists of tasks you wish to work on.

Viewing tasks on the home page

Another place where you can easily access your tasks and events is your home page. The default home page layout contains two components that show activities, called **Today's Events** (1) and **Today's Tasks** (2):

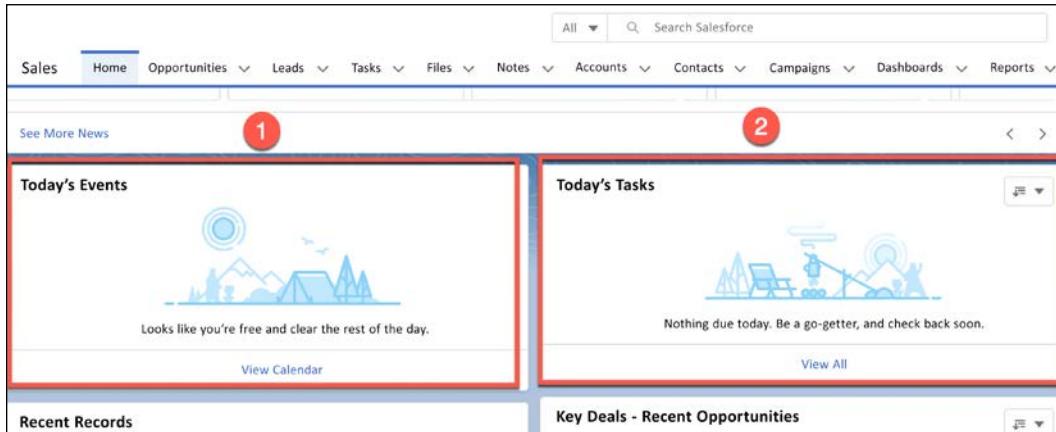


Figure 2.9: Home page view

This will show you any tasks or events that have a due date set for “today.” Now that we have covered tasks, let’s take a look at events.

Creating events and calendar entries

Events are activities that require a start date/time and an end date/time and are used to log actual meetings with a duration. An event activity is different from a task in a couple of ways:

- Events have a start date/time and an end date/time rather than just a due date. This means that when the end date and time passes, the event automatically moves to **Past Activities** without you needing to take any action. For ongoing tasks, you have to mark them as complete since only a date is provided – not a specific time.
- Events show up on your Salesforce calendar and will sync to Outlook or Gmail if you have the connector set up. We will cover connectors later in this chapter.

Now, let’s take a look at events in more detail.

Understanding events

Events are meetings that have a start date/time, as well as an end date/time. They let you set up meetings related to the accounts you manage, the deals you are working on, or the marketing campaigns you may be managing.

Business use case

As a sales representative for XYZ Widgets, you close a sale with Jack Rogers and want to schedule a kick-off meeting for the next steps. You enter this event in Salesforce so that it shows up on your calendar.

Creating an event

To create an event, navigate to any object that you want to log an event for and go to the **Activity** section:

The screenshot shows the Salesforce interface for creating an event. A vertical column of red circles numbered 1 through 10 indicates the sequence of steps:

- 1: News tab (highlighted by a red circle)
- 2: Activity tab (highlighted by a red circle)
- 3: 'New' button in the New Task, Log a Call, New Event, and Email buttons (highlighted by a red circle)
- 4: 'New' button in the list of generator base contacts (highlighted by a red circle)
- 5: 'New' button in the list of campaigns (highlighted by a red circle)
- 6: 'Upload Files' button (highlighted by a red circle)
- 7: Related To field (highlighted by a red circle)
- 8: Assigned To field (highlighted by a red circle)
- 9: Location field (highlighted by a red circle)
- 10: Save button at the bottom right (highlighted by a red circle)

The form fields include:

- Subject: Kick off Meeting
- Start Date: Jul 18, 2019
- Start Time: 12:00 PM
- End Date: Jul 18, 2019
- End Time: 1:00 PM
- All-Day Event: Unchecked
- Name: Jack Rogers
- Related To: Butlington Textiles Corp of America
- Assigned To: Sharif Shaalan
- Location: Gotomeeting

Figure 2.10: Creating an event

Here, we have to do the following (the numbering coincides with the areas on the right side of the steps shown in *Figure 2.10*):

1. Search for **Mr. Jack Rogers**.
2. Go to the **Activity** section.
3. Fill in the subject of the event.
4. Fill in the start date/time of the event.
5. Fill in the end date/time of the event.
6. Ensure that the name of the contact is pre-populated if the user is on the contact record.
7. Add the account that Jack is related to.
8. Ensure that the task has been assigned to the user (this is me since I am the logged-in user).
9. Enter the location of the meeting.
10. Save the record.

After doing this, you'll see that the event now shows up in the **Next Steps** section, as shown in the following screenshot:

The screenshot shows the Salesforce Activity tab interface. At the top, there are tabs for Activity (which is selected), Chatter, and other options like New Task, Log a Call, New Event, and Email. Below these are buttons for 'Set up an event...' and an 'Add' button. A filter bar indicates 'Filters: All time - All activities - All types'. The main area is divided into sections: 'Next Steps' and 'Past Activities'. The 'Next Steps' section is highlighted with a red box and contains a single item: 'Kick of Meeting' (with a calendar icon) scheduled for 12:00 PM | Today about Burlington Textiles Corp of America. The 'Past Activities' section lists two items: 'Follow up with Jack on next steps' (with a task icon) from Today and 'Call' (with a phone icon) from Jul 14, both about Burlington Textiles Corp of America. At the bottom, there's a 'Load More Past Activities' button.

Figure 2.11: Next Steps

Once the date for the meeting has passed, the event will automatically move to the **Past Activities** section.

This is how events work. In the next section, we'll learn how the Salesforce calendar is aligned with these events.

Salesforce calendar

Once an event has been created, it will show up on your Salesforce **Calendar**, as shown in the following screenshot:

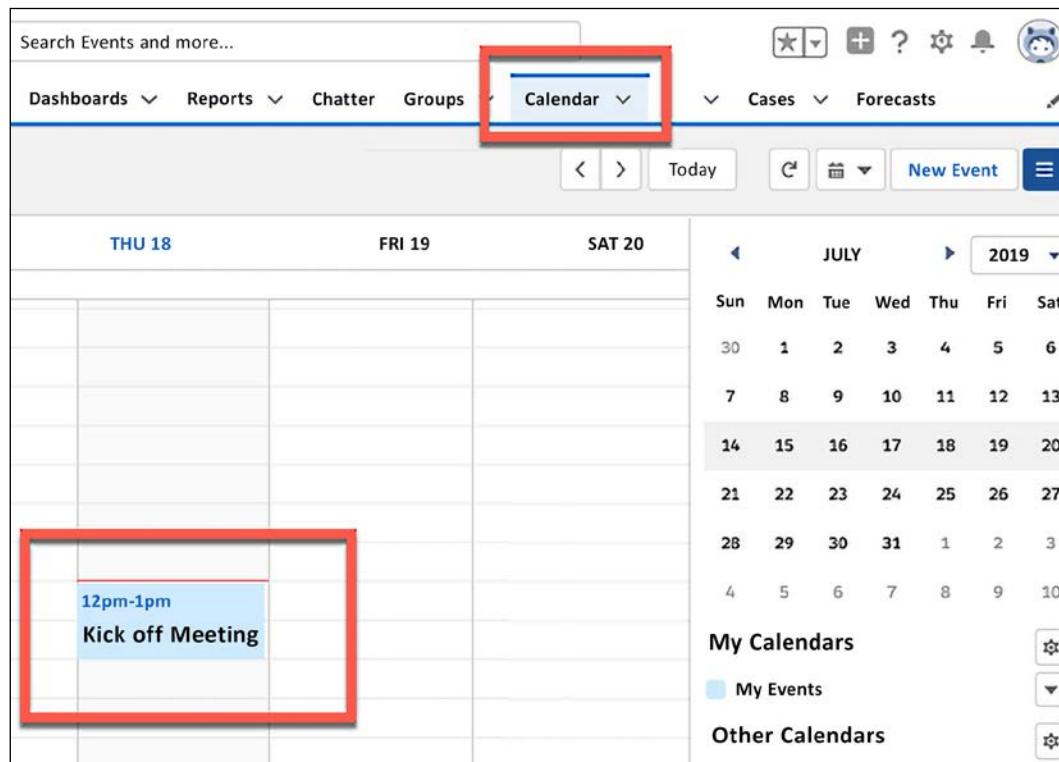


Figure 2.12: Salesforce calendar view

To navigate to your calendar, click on the **Calendar** tab. Here, you will see all of your events. If you have the **Lightning Sync** feature enabled and configured for Gmail or Outlook, your events will sync from Salesforce to those services.

Now, you are familiar with how events can be set up, how to follow up on them, and how such events can be synced to Salesforce calendars or with Gmail or Outlook. In the next section, we will learn how emails and email integration options work.

Sending emails and email integration options

Salesforce allows you to send emails directly from any standard or custom object. This takes place from the same **Activity** section that we used to log tasks and events.

Business use case

As a sales representative for XYZ Widgets, you want to send Jack Rogers a follow-up email after your initial conversation. You can do this directly from Salesforce as an activity! Let's see how this is done.

Sending an email

As shown in the following screenshot, I navigated to the **Activity** section of the **Jack Rogers** contact and clicked on **Email**:

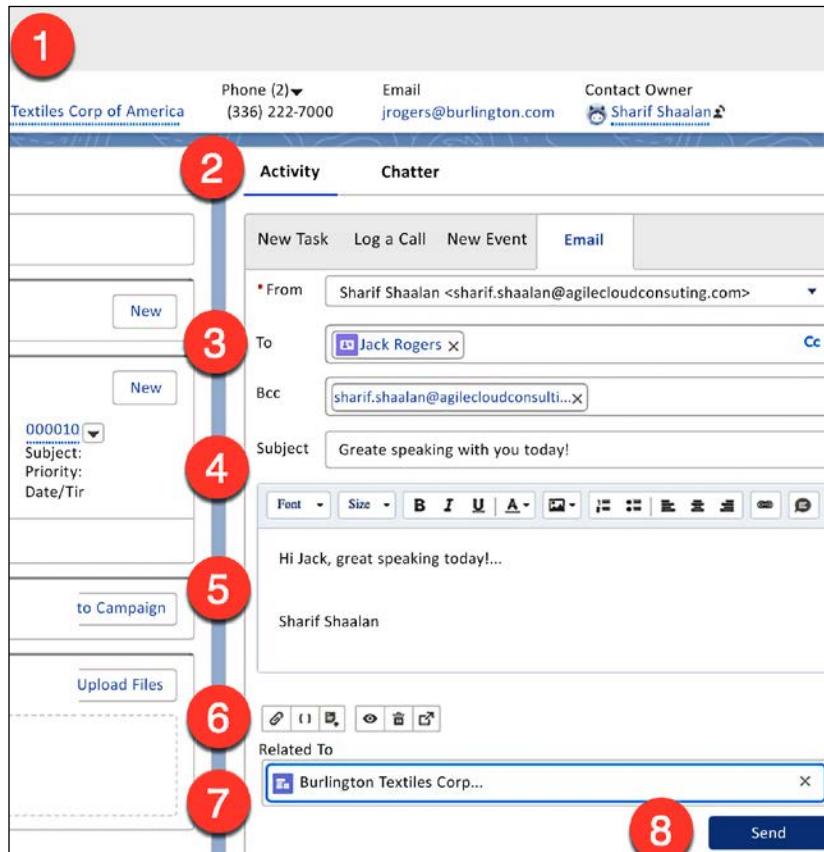


Figure 2.13: Sending an email

From the preceding screenshot, we can see the following (the numbering coincides with the areas on the right side of the steps shown in *Figure 2.13*):

1. Search for **Mr. Jack Rogers**.
2. Go to the **Activity** section.
3. Fill in the **To** information. This can be a contact on the system or a free text email address.
4. Add the subject.
5. Add the body of the email.
6. Here, you have the option to choose a template, add quick text, and attach a file.
7. The activity is assigned to the user.
8. Save the record, shown as follows:

The screenshot shows the Salesforce Activity Chatter interface. At the top, there are tabs for Activity, Chatter, and a navigation bar with New Task, Log a Call, New Event, and Email. The Email tab is selected. Below this is a compose area with 'Write an email...' and a 'Compose' button. To the right are filters for All time, All activities, All types, Refresh, Expand All, and View All. A dropdown menu is open for 'Upcoming & Overdue' tasks. The main content area displays a list of tasks. One task from January 2020 is highlighted with a red box: it's an email to 'Jack Rogers' with '[No subject]' and status 'Unopened'. Another task from July 2019 is also listed: a meeting with 'Burlington Textiles Corp of America' on Jul 18, 2019.

Date	Type	Subject/Details	Time/Date
January • 2020	Email	[No subject] Unopened You sent an email to Jack Rogers	10:34 AM Today
July • 2019	Meeting	Kick off Meeting You had an event about Burlington Textiles Corp of America	12:00 PM Jul 18, 2019

Figure 2.14: Record of sent email

Once the email has been sent, it will show up in the **Past Activities** section.

Using Gmail integration options

Calendar integration helps you sync specific events and emails to Salesforce. This is useful so that you don't create double entries in your email/calendar client and Salesforce. The following options are available for Gmail:

- **Send through Gmail:** This is for representatives who spend most of their time in Salesforce but want to use a Gmail account to send emails. Emails are composed in Salesforce but are sent through a connected Gmail account and appear in the Gmail **Sent** folder. When **Send through Gmail** is enabled, the activity history for leads and contacts includes a **Compose Gmail** button. Emails are logged to the records the email was sent from.
- **Gmail Integration:** This is for representatives who spend most of their time on their Gmail account. When emails are sent, they can select which Salesforce records to log the emails to.
- **Einstein Activity Capture:** This option is for users who prefer to have emails logged automatically. Einstein logs email activity from a connected client or device, including Gmail.

Using Outlook integration options

The following options are available for Outlook:

- **Outlook Integration:** When you work in Outlook, you can sync your emails and/or calendar events directly to Salesforce and vice versa.
- **Outlook Integration with Inbox and Einstein Activity Capture:** Einstein Activity Capture lets you automatically log emails and events if you have this feature turned on. Einstein is the AI portion of Salesforce that auto-suggests useful steps to take as you work.
- **Email to Salesforce:** This option lets users add emails to Salesforce records by copying a unique BCC email to all emails you send out.

Sending emails is a primary activity in any business. Using the preceding tools ensures that you are not entering information in multiple systems. It does this by allowing you to sync your emails and/or events with your email and calendar client. Now, let's review what we have learned in this chapter.

Summary

Activities are at the core of CRM, so it is very important that you understand how to log your interactions with constituents.

In this chapter, we have looked at a use case for tasks and how to create and work with tasks. Then, we did the same for events, as well as looking at a use case for sending emails from Salesforce and the options we have if we wish to extend this functionality to Outlook or Gmail. All of these skills will help us in our daily interactions, which will lead to more sales!

This is a good time to review what we have learned in our development organization and see if we can answer some questions. In the next chapter, we will tackle **leads**!

Questions

1. What type of activity should be used to set up a reminder to research an account?
2. Which activity type should be used to set up an onsite meeting with a client?
3. Is it possible to send an email to a client and copy someone not in the system as a contact?
4. Do tasks appear on your Salesforce Calendar?
5. Which tab shows all of your open tasks?
6. If you use Gmail but spend most of your time in Salesforce, which integration option should you use?
7. Can we log activities regarding Opportunities?

Further reading

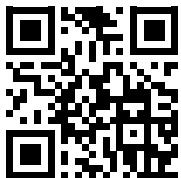
- Trailhead Module: Manage Your tasks, events, and emails: <https://trailhead.salesforce.com/en/content/learn/modules/lightning-experience-productivity/manage-your-tasks-events-and-email>
- Send Through Gmail: https://help.salesforce.com/articleView?id=email_send_through_external.htm&type=5&language=en_US
- Gmail Integration: https://help.salesforce.com/articleView?id=email_int_user_overview.htm&type=5&language=en_US
- Einstein Activity Capture: https://help.salesforce.com/articleView?id=einstein_sales_aac.htm&type=5&language=en_US

- Outlook Integration with Inbox and Einstein Activity Capture: <https://help.salesforce.com/articleView?id=inbox.htm&type=0>
- Lightning Sync for Microsoft Exchange: https://help.salesforce.com/articleView?id=exchange_sync_admin_implement_ex_sync.htm&type=0
- Salesforce for Outlook: https://help.salesforce.com/articleView?id=outlookcrm_sfo_about.htm&type=5%20%C2%A0
- Email to Salesforce: https://help.salesforce.com/articleView?id=emailadmin_email2salesforce.htm&type=0

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3

Creating and Managing Leads

Leads are the first step of the sales and marketing cycle—they keep opportunities flowing into your sales funnel. Leads are prospects or people that may be interested in your product or service. The goal of working with them is to move them through the sales cycle and assess them as either **unqualified** or **qualified** for workable opportunities. Understanding how leads work is beneficial as it familiarizes you with how a lead starts off the sales cycle and how to move from a lead to the next step in the sales cycle.

The following topics are covered in this chapter:

- What are leads and what are they used for?
- What is lead status and how is it used in the sales cycle?
- What is lead conversion and what happens when you convert a lead?
- What is Web-to-Lead and how is this feature used?
- What are lead auto-response rules and how do you set them up?
- Lead settings and lead processes

In this chapter, we will learn the skills needed to create a lead, as well as learning what a lead record contains. We will also learn how to move a lead through the initial sales cycle, how to convert a qualified lead into an opportunity in order to move to the next step of the sales cycle, and how to create Web-to-Lead forms.

Technical requirements

For this chapter, log in to your development org and follow along as we create and convert a lead.

Understanding leads

Leads comprise anyone that is a potential customer. You can think of leads as the “catch-all” database from which you qualify potential deals. The goal is to *convert* the lead into a cleaner data set of high-probability sales. Converting leads into opportunities is the key to a successful business. Managing your leads effectively allows you to convert more leads into opportunities, which ultimately results in more business. Leads can be captured in many different ways, such as through conferences, websites, purchasing lists, and any other way you may come into contact with potential customers. Let’s look at a business use case where a lead may need to be created, then we’ll walk through the steps for creating a lead.

Business use case

You are a sales representative for your company, XYZ Widgets, and have been sent to a conference to talk to potential customers. While at the conference, you have a great conversation with Brenda McClure, the CFO of Cardinal Inc. Brenda is interested in potentially purchasing 1,000 widgets for Cardinal and gives you her card. This is a hot lead! Let’s see how you work this lead in Salesforce.

Creating leads

After this conversation, you take the business card and decide to enter the information into Salesforce right away. Usually, you would wait until after the conference and enter all of the leads’ information together, but this is a potentially big deal and you want to make sure you get it into Salesforce ASAP. Your manager always says, “If a lead doesn’t exist in Salesforce, it doesn’t exist!” Let’s see how the lead is created in Salesforce.

We will start with the main navigation page on your development org:

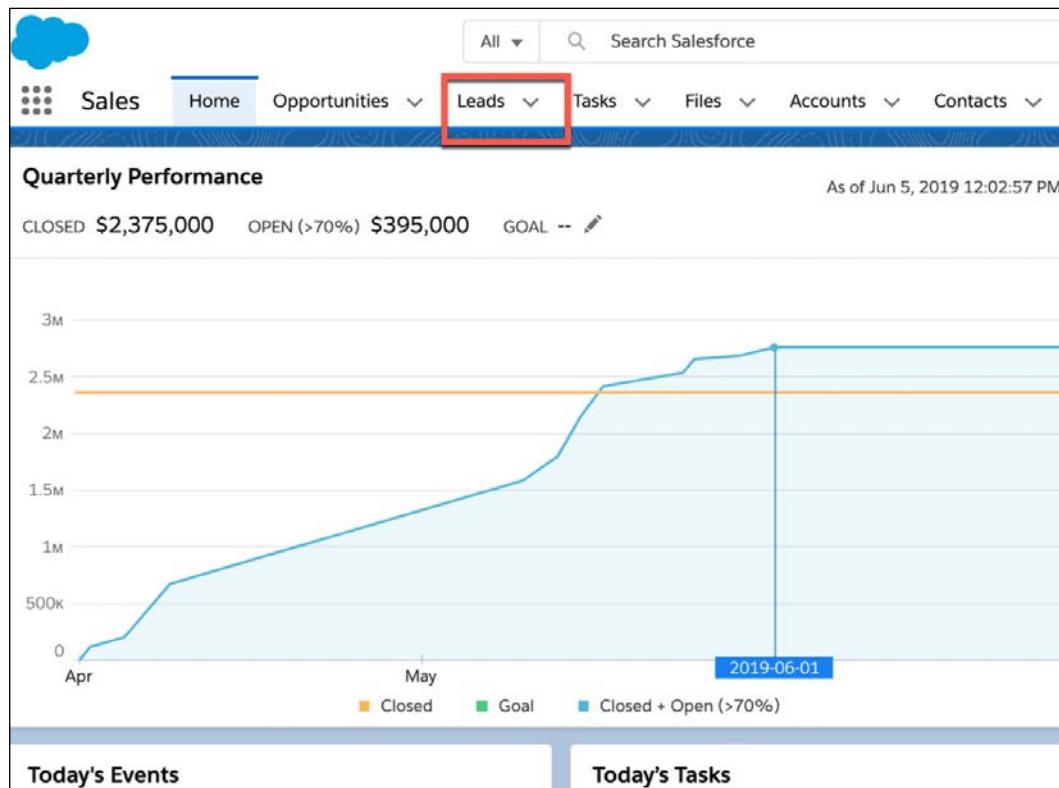


Figure 3.1: The Leads tab in the navigation bar

Let's start creating our lead by clicking on the **Leads** tab, as seen in *Figure 3.1*.

From here, you will land on the following page:

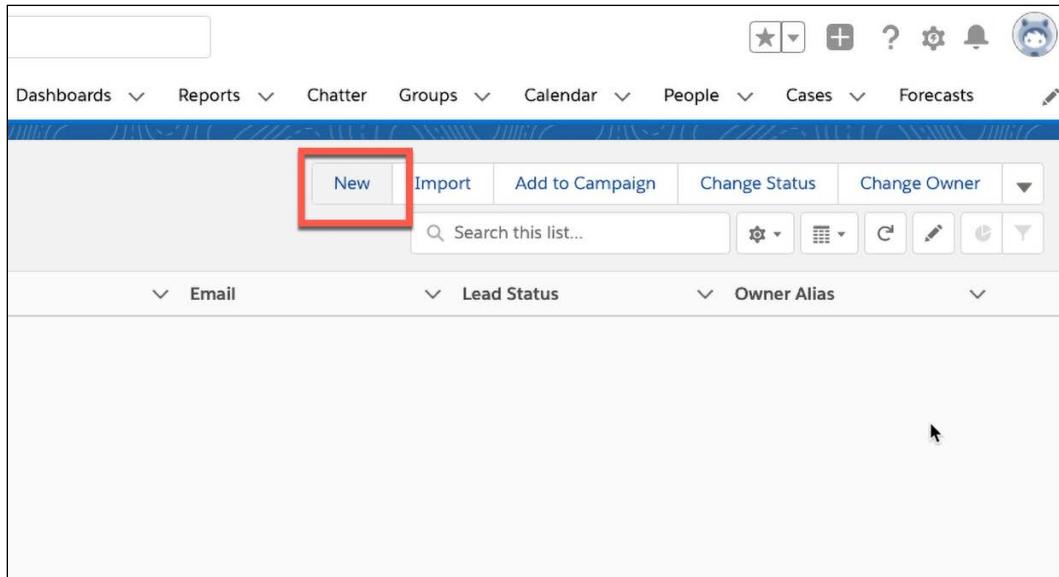


Figure 3.2: The Leads page

In *Figure 3.2*, you can see the **Recently Viewed** view, as discussed in *Chapter 1, Getting Started with Salesforce and CRM*. Here, click on the **New** button to create a new lead.

In *Figure 3.3*, you can see the popup to create a lead. You should fill this out with the information from Brenda's business card:

The screenshot shows the 'Lead Information' section of a Salesforce lead creation form. Key fields filled in are:

- Salutation:** Ms.
- Name:** First Name: Brenda, Last Name: Mcclure
- Company:** Cardinal Inc.
- Email:** brenda@cardinal.net
- Lead Status:** Open - Not Contacted

Other fields shown but not filled include:

- Lead Owner: Sharif Shaalan
- Phone: 8472625000
- Mobile: (empty)
- Fax: (empty)
- Lead Source: Other
- Industry: --None--
- Annual Revenue: --None--

At the bottom right, there are three buttons: Cancel, Save & New, and a prominent blue **Save** button, which is the target of a red arrow indicating where the user should click to save the lead.

Figure 3.3: Creating a lead

Here, we have entered the details for the **Salutation**, **First Name**, **Last Name**, **Company**, **Phone**, **Email**, and **Lead Status** fields. The **Lead Source** field is set to **Other** by default; we will need to add Conference as a **Lead Source** value to this field. We will take a look at how to do this in the *Salesforce Administration* section of this book. Click on **Save** and you have now created your lead!

Let's take a look at the newly created lead:

The screenshot shows the Salesforce Lead page for a lead named "Ms Brenda McClure". The lead has the title "CFO", works at "Cardinal Inc.", and can be reached via phone at "(847) 262-5000" or email at "brenda@cardinal.net". A red circle labeled "1" highlights the lead details section. A red circle labeled "2" highlights the status bar at the top, which shows a path from "Working - Contacted" to "Converted". A red circle labeled "3" highlights a message in the sidebar stating "We found no potential duplicates of this lead.". A red circle labeled "4" highlights the "Campaign History (0)" section in the sidebar.

Figure 3.4: The newly created lead

When you first land on a lead, there are a few important sections. We will now cover each of these numbered areas:

1. This section shows your summary fields. These fields include the title, company name, phone number, and email address of the lead. These are important for logging your activities, as discussed in *Chapter 2, Understanding Salesforce Activities*.
2. In this section, you will notice a path with all of your lead status values, which we will discuss in more detail in *Exploring the Lead Status field* later in this chapter.
3. Based on your business requirements, you may choose to enforce duplicate rules. If so, this section shows you any potential duplicates, which works by checking the email address of the lead against other lead email addresses to see whether it has already been entered into Salesforce.
4. You will also see a **Campaign History** section that shows you whether this lead is associated with any marketing campaigns (we will cover campaigns in more detail in *Chapter 6, Achieving Business Goals Using Campaigns*).

Note that there is an **Activity** tab on the lead as well. This is where you log all calls, tasks, events, and emails, as discussed in *Chapter 2, Understanding Salesforce Activities*.

Now, we will look at the **Details** section of the lead by navigating to the **Details** sub-heading on the **Leads** page:

The screenshot shows the **Details** tab for a lead record in Salesforce. The lead is assigned to Sharif Shaalan (1). The lead's name is Ms. Brenda McClure (2). The lead works for Cardinal Inc. (3). The lead source is Web (4). The phone number is (847) 262-5000 (5). The email address is brenda@cardinal.net (6). The lead status is Working - Contacted (7). The rating is Warm (8). There are 500 employees (9). The lead was created by Sharif Shaalan on 5/11/2020 at 6:44 AM (10).

Activity	Details	Chatter	N
Lead Owner	Sharif Shaalan	1	
Name	Ms. Brenda McClure	2	
Company	Cardinal Inc.	3	
Title	CFO		
Lead Source	Web	4	
Industry	Banking		
Annual Revenue	\$5,000,000		
Address			
Product Interest			
SIC Code			
Number of Locations			
Created By	Sharif Shaalan, 5/11/2020 6:44 AM	9	
Last Modified By	Sharif Shaalan, 5/11/2020 6:45 AM		10

Figure 3.5: The Details tab for a lead

Looking at the **Details** section, you will see a few very important fields:

1. **Lead Owner:** Who the lead is assigned to, which is the person working the lead
2. **Name:** The first and last name of the person you are contacting
3. **Company:** The name of the company that this person works for
4. **Lead Source:** Where this lead came from
5. **Phone:** The lead's phone number
6. **Email:** The email address of the lead
7. **Lead Status:** Where you are in the process of this lead
8. **Rating:** This can be set to **Cold**, **Warm**, or **Hot** and can be used by reps to tag leads for a quick reference on how the interaction is going

9. **Created By:** This is a system field used for auditing purposes that is automatically set and displays the user that created the lead
10. **Last Modified By:** This is a system field used for auditing purposes that is automatically set and displays the user that last edited the lead

There are also a few other fields in the **Details** section that are optional but used by many organizations. These include the following:

- **Industry:** This is a picklist with different customer industries
- **Annual Revenue:** This helps you determine the size of the prospect if you have this information
- **Number of Employees:** This helps you determine the size of the prospect as well

As you can see, the **Details** section shows you the primary fields on the lead's record. One of the most important fields in this section is **Lead Status**. Let's take a look at this in more detail.

Exploring the Lead Status field

The **Lead Status** field shows you where you are in the life cycle of working this lead. The lead life cycle is important as this is the beginning of the sales process for any organization. The following flowchart simplifies this process a bit:

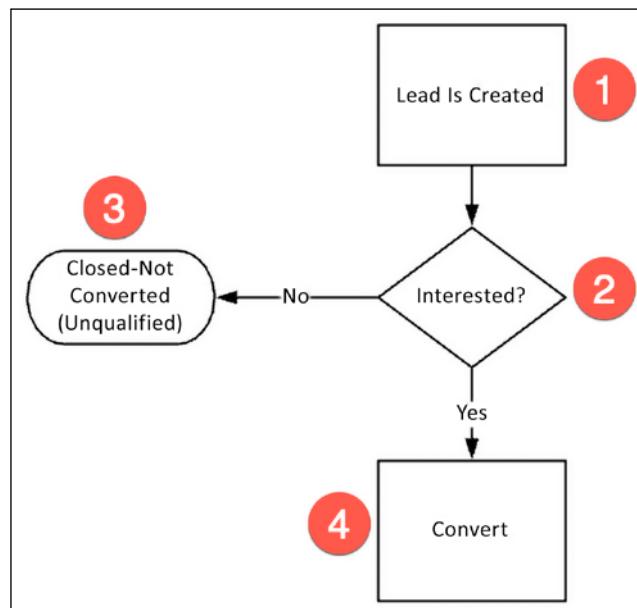


Figure 3.6: The lead life cycle

From *Figure 3.6*, we can understand the following:

1. Once the lead is created, you will contact the lead to present your product or service.
2. The lead will either be interested in speaking further, or not. Depending on the response, there are two different outcomes.
3. If not, the lead status is changed to **Closed - Not Converted**, or in some cases, this status is called **Unqualified**.
4. If the lead is interested, the status reads **Converted**. The lead is converted into an account, contact, and optionally an opportunity.

We will cover conversion in more detail in the next section.

Let's take a look at how these status values appear in Salesforce, and what happens when each lead status is chosen.

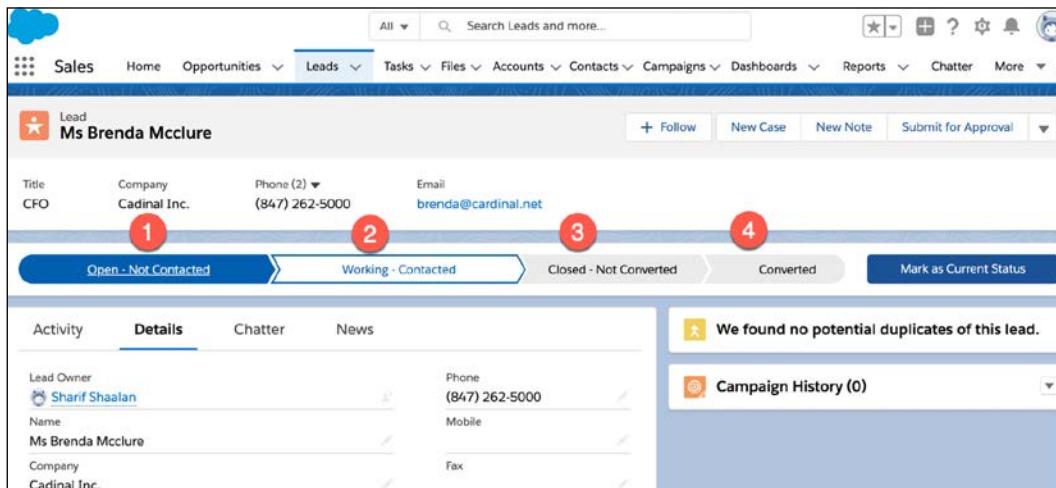


Figure 3.7: The lead path

From *Figure 3.7*, we learn the following:

1. **Open - Not Contacted:** This is the default status when the lead is created and means that you have not logged any activities to this lead.
2. **Working - Contacted:** This status means that you have reached out and logged activities but you have not received a definitive answer about whether the lead is interested.

3. **Closed - Not Converted:** This is the status used if you make contact and the lead does not want to speak further. Typically, you would use this value to filter these leads out of the open leads list view that you are working with. Setting this status marks it as a dead lead, which you would want to keep in the system for reporting purposes, but would not want to see in the list view of the open leads that have a chance of being converted.
4. **Converted:** This status means the lead is interested and would like to speak further.

In this section, we have learned about the importance of the **Lead Status** field and how the values in this field contribute to the sales process. Let's take a look at what actually happens when a lead is interested in your services and you actually convert a lead.

Understanding how lead conversion takes place

When you call Brenda, she seems very interested, which is a good sign! You decide to convert the lead.

When a lead is converted, something very important happens. The lead disappears from the system (it disappears only on the frontend; it is still available for reporting on the backend) and it turns into three records. It becomes an account, an opportunity, and a contact. All the information about the company goes to the account, the information about the person goes to the contact, and the information about the actual sale goes to the opportunity. This is an important step in the sales process since this is the point where you stop working with a lead and instead start working with an opportunity.

Let's look at how to convert a lead:

1. To convert a lead, navigate to the lead record you created and click on **Converted**, then click on **Select Converted Status**. (Optionally, you can click on the arrow next to the **Submit for Approval** button and use the **Convert** button.)

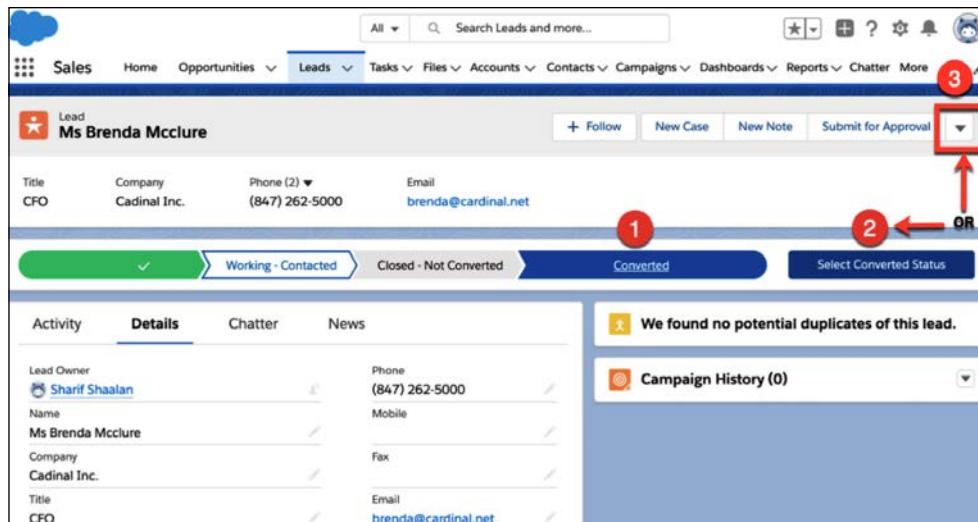


Figure 3.8: First step of converting a lead

- After performing the previous step, a pop-up page will appear on your screen:

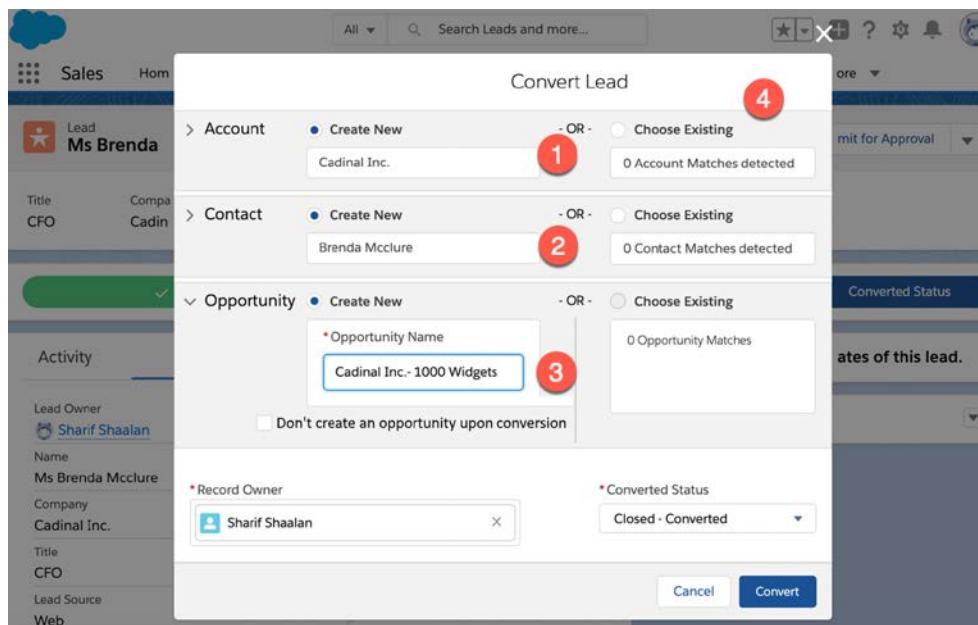


Figure 3.9: Second step of converting a lead

This is the page where you can update the **Account** name (see label 1 in the preceding screenshot), the **Contact** name (label 2), and the **Opportunity** name (label 3). Notice how everything on the left is used to create new records. If Salesforce detects possible duplicates, they show up on the right, where you can attach the lead to an existing account, contact, or opportunity (label 4).

3. After filling in the fields shown in the preceding screenshot, click on **Convert**. Once you click on **Convert**, you will see links to the newly created account, contact, and opportunity, as follows:

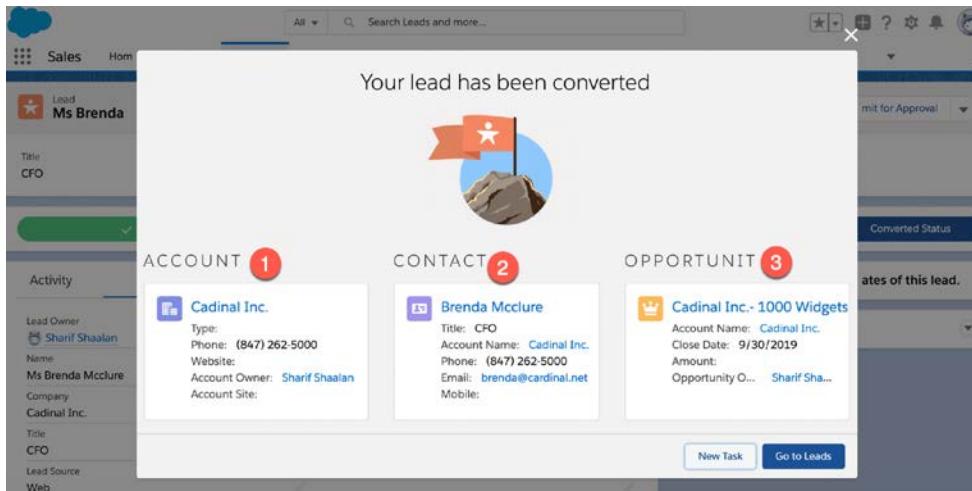


Figure 3.10: Third step for converting a lead

You have now converted your first lead!

In this section, we learned how to convert a lead. Converting a lead is the *happy-path* goal of the sales process. The more leads you convert into opportunities, the more chance it will lead to sales. We will cover Account, Contact, and Opportunity objects in greater detail in later chapters of this book. Now that we have seen how to create and convert a lead, we will discuss a tool Salesforce provides for capturing leads online. This tool is called Web-to-Lead.

Working on forms with Web-to-Lead

Many organizations need an easy way to capture leads through their website. Using Web-to-Lead is an easy way to generate HTML code that your webmaster can drop into your website to create a lead capture form. A lead capture form is generated outside of Salesforce but creates a lead directly in Salesforce when the form is saved.

This can take the form of a Contact Us page on your website or any other form where you would want the information to be automatically added to Salesforce. Let's see how this is done:

1. Click on the gear at the top of the page (see label 1 in *Figure 3.11*) and choose **Setup** (label 2):

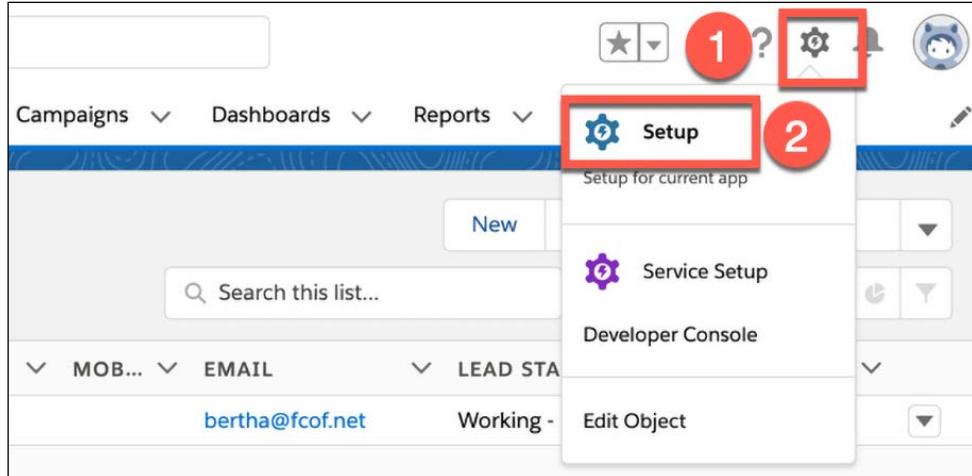


Figure 3.11: First step for navigating to Web-to-Lead

Clicking on **Setup** in *Figure 3.11* brings you to the administration section of Salesforce.

2. Next, type web in the quick-find box (see label 1 in *Figure 3.12*). This will bring up **Web-to-Lead**. Click on the link (label 2):

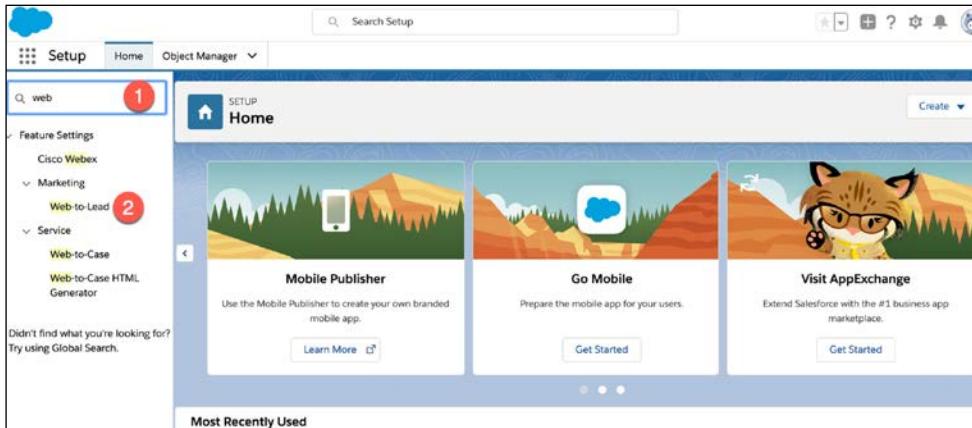


Figure 3.12: Second step for navigating to Web-to-Lead

3. Clicking on **Web-to-Lead** brings you to the **Web-to-Lead** settings page. On this page, click on **Create Web-to-Lead Form**:

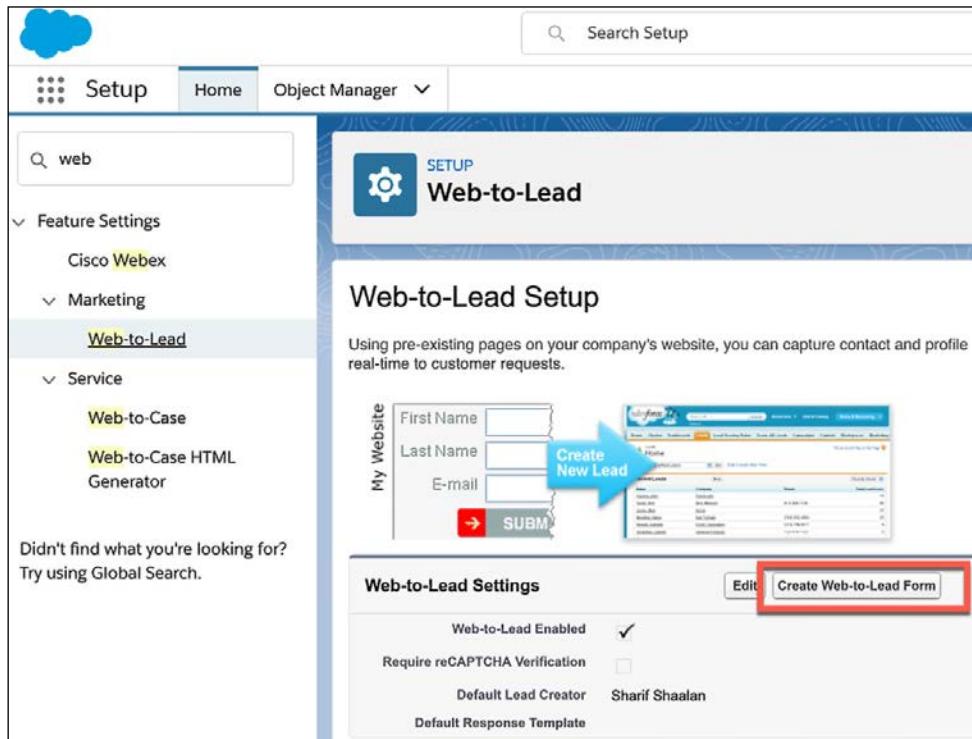


Figure 3.13: Create Web-to-Lead Form

4. This brings you to the Web-to-Lead creation section. There are a few options on the next page to be filled in before you generate the code:

- **Available Fields:** These are all of the fields available on the Leads object. You can pull any of them into your form.

- **Selected Fields:** These are the fields that are included in the form once you generate the HTML code.
- **Return URL:** This is where the user lands after submitting the form.
- **Include reCAPTCHA in HTML:** This is optional—you can add a reCAPTCHA to the form.

After this, click on **Generate**. *Figure 3.14* shows the steps we have taken:

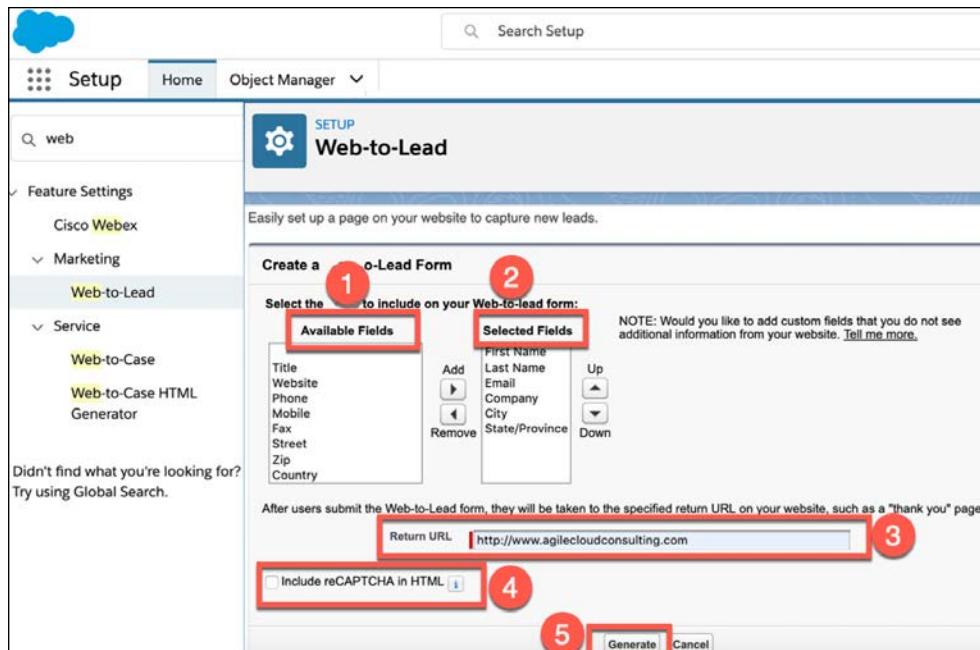


Figure 3.14: Steps for generating HTML code

5. Clicking on **Generate** is the final step that will generate the HTML code for you. Now, you have your HTML code! You can copy and paste this right into your website and start capturing leads:

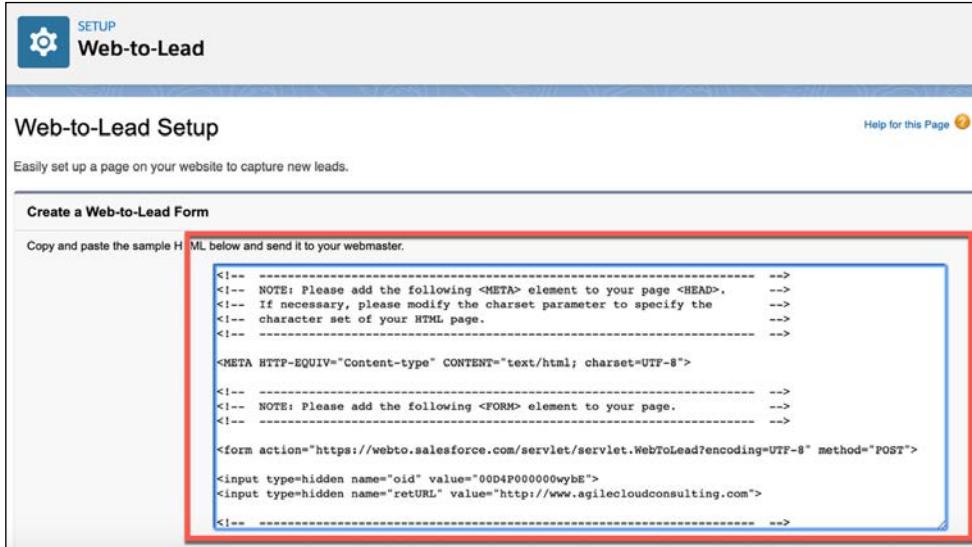


Figure 3.15: HTML code example

Your webmaster would take this code snippet and add it to an HTML block on your website. The output is a form that includes the selected fields in *Figure 3.14*. This form can now be filled out by website visitors and, when submitted, will create a new lead directly in Salesforce! You have now learned how to navigate to the Web-to-Lead setup section and how to generate the HTML code needed to add a Web-to-Lead form to an external website. Next, let's take a look at setting up auto-response rules to support Web-to-Lead submissions.

Setting up auto-response rules

Now that we have set up the Web-to-Lead, an important function to support the submission of a form is auto-response rules. Auto-response rules allow you to automate the email that a user receives when a lead is submitted via a Web-to-Lead form based on specific criteria on the lead record, such as the lead source. Let's see how auto-response rules are created:

1. First, navigate to the **Home** tab of the **Setup** page (see label 1 in *Figure 3.16*):

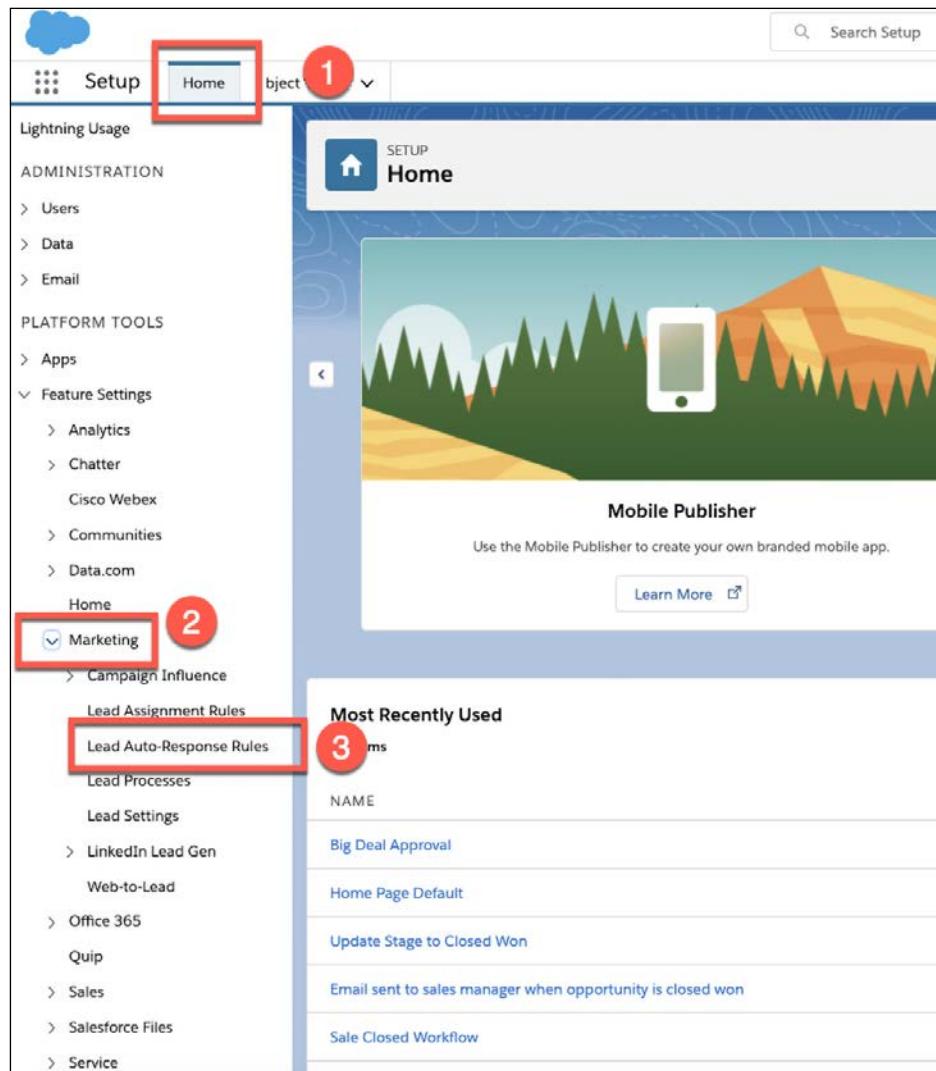


Figure 3.16: Navigate to auto-response rules page

- From here, we move to **Marketing** (see label 2 in *Figure 3.16*), then click on **Lead Auto-Response Rules** (label 3). *Figure 3.17* shows the **Web-to-Lead Auto-Response Rules** creation page:



Figure 3.17: Auto-response rules creation page

- Click on **New**, which leads you to the creation screen:

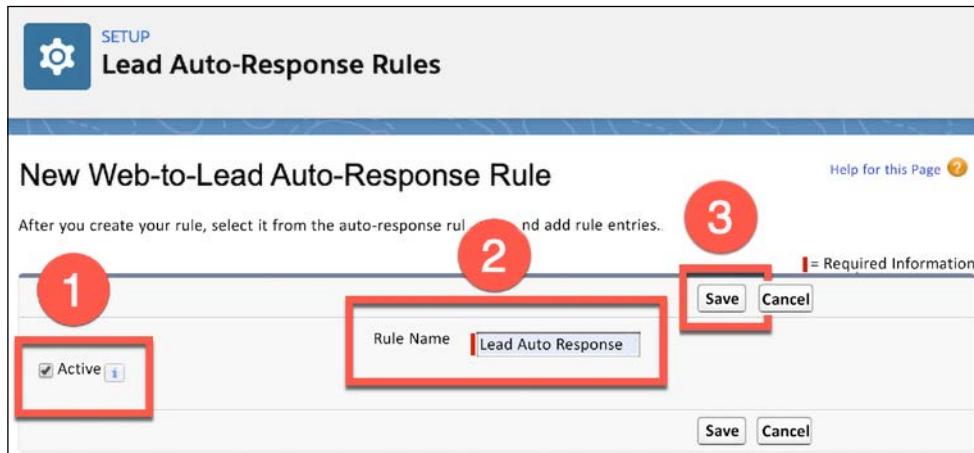


Figure 3.18: Auto-response rules creation detail

- We then check the **Active** checkbox (see label 1 in *Figure 3.18*), enter the **Rule Name** (label 2), and click on **Save** (label 3). This will lead you to the screen for new rule entries, as shown in *Figure 3.19*:

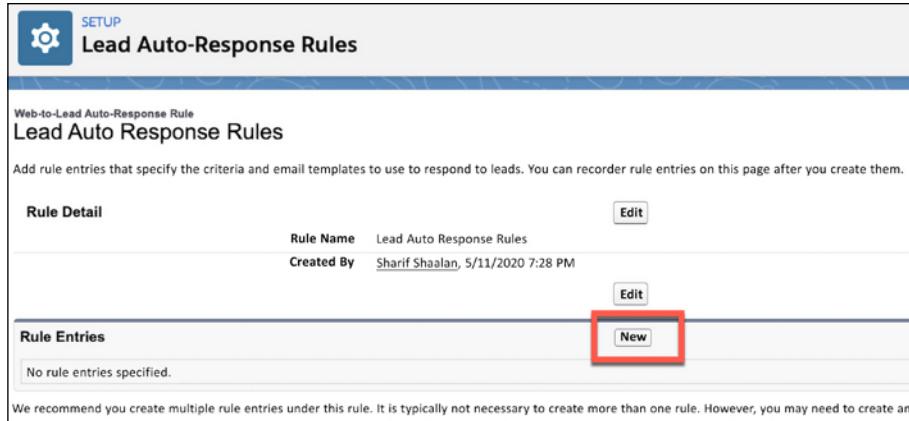


Figure 3.19: New rule entries

5. Figure 3.19 shows you the created auto-response rule. Next, let's click on **New** to create a rule entry. This leads to the following rule entry creation screen:

The screenshot shows the 'Rule Entry Edit' screen for the 'Lead Auto-Response Rules' rule. The screen is divided into several sections:

- Step 1: Set the order in which this rule entry will be processed**: Shows a 'Sort Order' field with the value '1', which is highlighted with a red box and circled with a red circle labeled '1'.
- Step 2: Select the criteria for this rule entry**: Shows a table for defining run conditions. The first row is highlighted with a red box and circled with a red circle labeled '2'. The table has columns for 'Field', 'Operator', and 'Value'. The first row has 'Lead: Lead Source' as the field, 'quals' as the operator, and 'Web' as the value. There are four additional rows below it, each with 'None' selected in the operator column.
- Step 3: Specify the name and address**: Shows fields for 'Name' (containing 'XYZ Widgets') and 'Email Address' (containing 'info@xyzwidgets.com'). A note below states: 'The sender email address must be either one of your verified organization-wide email addresses or the email address in your Salesforce user profile.' This section is highlighted with a red box and circled with a red circle labeled '3'.
- Step 4: Select the template to use**: Shows an 'Email Template' dropdown with 'Support: Case Respo' selected. This section is highlighted with a red box and circled with a red circle labeled '4'.
- Buttons**: At the bottom right are 'Save' and 'Cancel' buttons, both highlighted with a red box and circled with a red circle labeled '5'.

Figure 3.20: Rule entry creation screen

Figure 3.20 shows you the steps to add a rule entry:

1. **Sort Order:** Salesforce evaluates all of the entries on an auto-response rule with this option. Once a match is found, the response is sent and the evaluation stops. This field allows you to determine the order in which the rule entries are evaluated.
2. **Select the criteria for this rule entry:** For our business use case, the criterion for this rule is any lead where the **Lead Source** field is set to **Web**. Any leads created through the web meet this criterion and trigger this auto-response rule.
3. **Name and Email Address:** This is the name and email address that show up on the response email.
4. **Email Template:** This is the email template used for the auto-response rule.
5. **Save:** Clicking **Save** completes the rule entry creation.

You can create many rule entries based on the complexity of your business use case. Next, we will move from understanding leads and how to capture them to additional options and settings that we may want to configure.

Lead settings and lead processes

In this section, we will cover some of the configuration options for leads.

Using the lead settings

The lead settings allow you to configure some options for your leads and how leads convert into opportunities. Let's take a look at these options.

First, we will navigate to **Home** (see label 1 in *Figure 3.21*) | **Marketing** (label 2) | **Lead Settings** (label 3) from the **Setup** page:

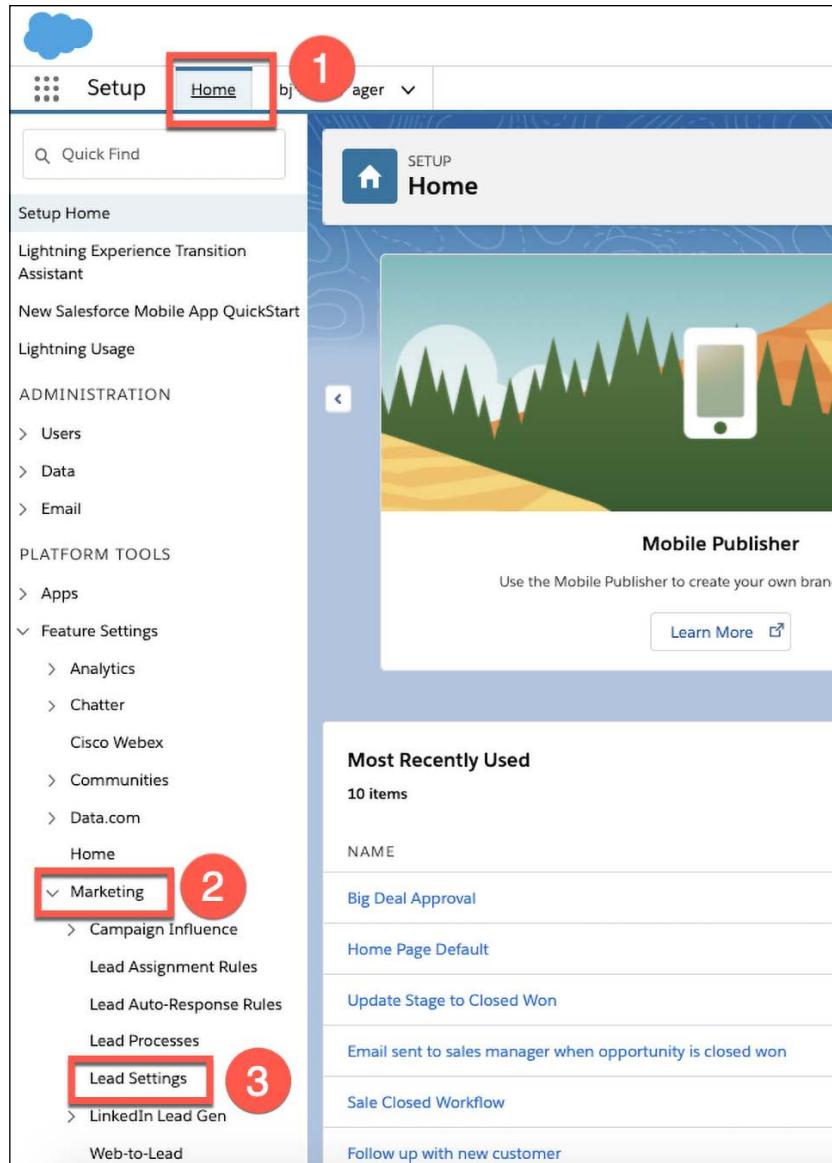


Figure 3.21: Navigating to Lead Settings

This brings us to the **Lead Settings** page:

Lead Queue Settings

The queue or user that will own a lead when assignment rules fail to locate an owner:

- when a lead is saved with the auto-assign checkbox selected
- when a lead is captured online

Default Lead Owner	<u>Sharif Shaalan</u>
<input type="checkbox"/> Notify Default Lead Owner	

Lead Conversion Settings

Require Validation for Converted Leads	<input checked="" type="checkbox"/>
Preserve Lead Status	<input checked="" type="checkbox"/>
Enable Conversions for Salesforce Mobile	<input type="checkbox"/>
Hide Opportunity Section of Convert Lead Window	<input type="checkbox"/>
Select "Don't create an opportunity" by Default in Convert Lead Window	<input type="checkbox"/>
Create a Task During Lead Conversion when Subject is Blank	<input type="checkbox"/>

Lead Merge Settings

Org-Wide Merge and Delete	<input checked="" type="checkbox"/>
---------------------------	-------------------------------------

Figure 3.22: Lead Settings page

Figure 3.22 shows you the three sections that contain the lead settings options:

1. **Lead Queue Settings** has the following two options:
 - **Default Lead Owner:** This is the user that owns all the new leads created through the web-to-lead feature and that are not assigned to another user based on criteria.
 - **Notify Default Lead Owner:** This sends an email to the default lead owner when a lead is assigned to them.

2. **Lead Conversion Settings** has the following options:
 - **Require Validation for Converted Leads:** When a lead is converted, this option makes sure all validation and automation on the new account, contact, and opportunity is enforced.
 - **Preserve Lead Status:** This preserves the lead status assigned to the original lead owner when converting the lead, rather than updating the new owner's default lead status on conversion.
 - **Enable Conversions for Salesforce Mobile:** Allows conversion using the mobile app.
 - **Hide Opportunity Section of Convert Lead Window:** If this option is set up, an opportunity will not be created during lead conversion.
 - **Select “Don’t create an opportunity” by Default in Convert Lead Window:** This makes not creating the opportunity the default option but gives the user the option to create the opportunity by checking a checkbox.
 - **Create a Task During Lead Conversion when Subject is Blank:** This option applies to Salesforce Classic and automatically creates a follow-up task when a lead is converted.
3. **Lead Merge Settings** has the following option:
 - **Org-Wide Merge and Delete:** If your organization-wide default sharing option is set to **Public Read/Write/Transfer** for leads, checking this box allows users to also merge and delete leads.

Next, let's take a look at lead processes.

Using lead processes

Lead processes allow you to assign different lead status values to different lead record types. We will cover record types in *Chapter 13, Using Data Modeling to Configure Objects for Your Business*. Let's take a look at how to configure lead processes.

First, we will navigate to **Home** (see label 1 in *Figure 3.23*) | **Marketing** (label 2) | **Lead Processes** (label 3) from the **Setup** page, as shown:

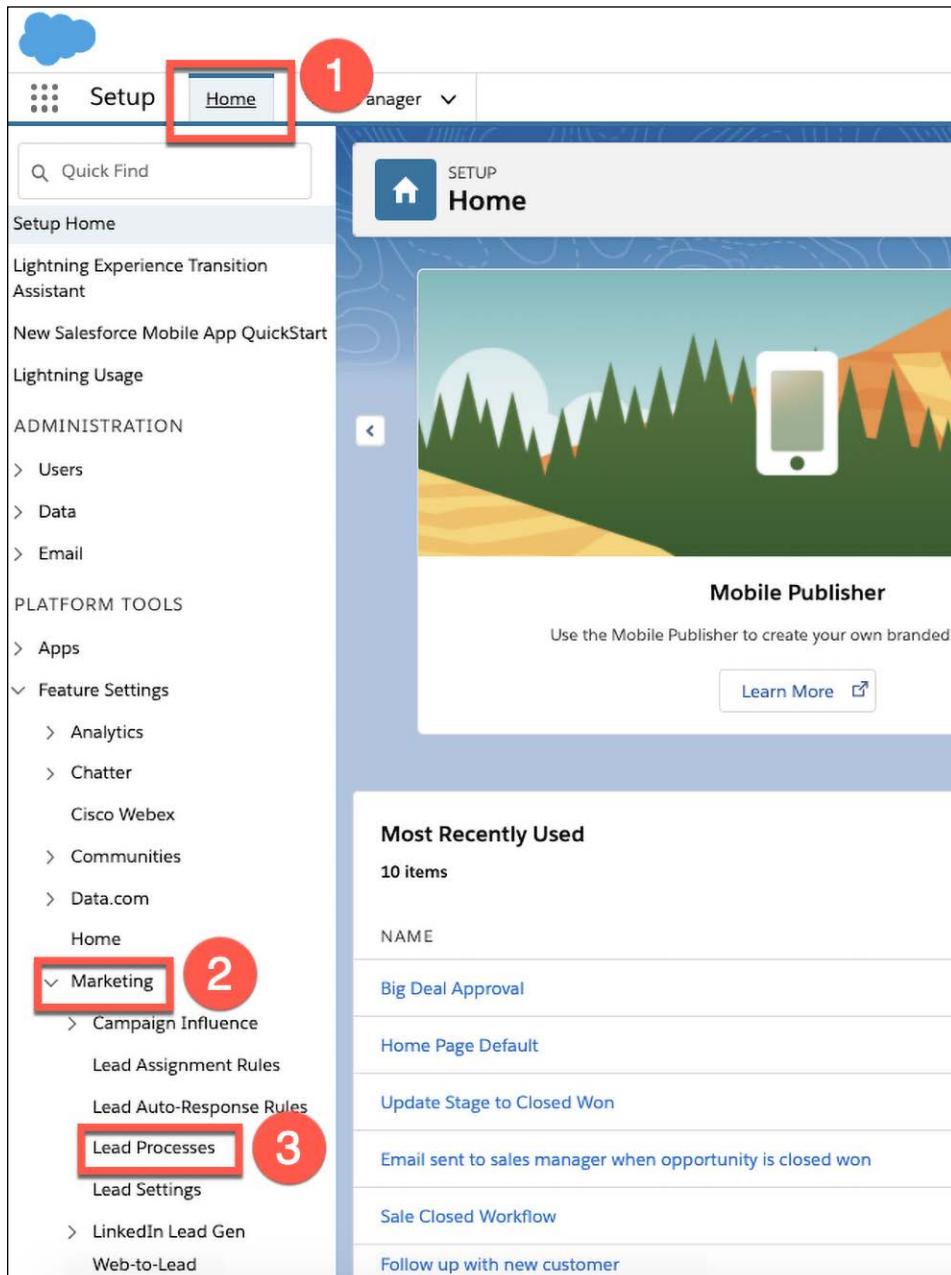


Figure 3.23: Navigating to Lead Processes

This leads us to the **Lead Processes** page:

The screenshot shows the Lead Processes page in the Salesforce Setup. At the top left is a gear icon labeled "SETUP". Below it is the title "Lead Processes". A sub-header "Lead Processes" is displayed. A descriptive text block says: "Create and maintain multiple lead processes for your organization to use. Lead processes use the lead status field to identify a lead within the lead lifecycle." A note below states: "Note: After creating a new Lead Process, associate it with one or more [Lead Record Type](#) to apply it to new leads." The main area is a table titled "Lead Process". It has columns: Action, Lead Process Name, Description, and Active. There are two rows: one for "Edit | Del" and another for "Master". The "Master" row is highlighted with a red box around its "Lead Process Name" cell. A "New" button is located at the top right of the table.

Figure 3.24: Master lead process on the Lead Processes page

As you can see in *Figure 3.24*, we have a **Master** lead process as well as the option to create **New** lead processes. Let's take a look at what the **Master** process contains by clicking on **Master**:

The screenshot shows the Lead Processes details page for the "Master" lead process. At the top left is a gear icon labeled "SETUP". Below it is the title "Lead Processes". A sub-header "Lead Process" and the name "Master" are displayed. A descriptive text block says: "Select a value from the Available Values list and add it to the Selected Values list to be included in the leads process." The main area is a table titled "Lead Status". It has columns: Lead Process (Master), Namespace Prefix, and Description. Below this is a section titled "Available Values" which contains a list: "--None--". To its right is a section titled "Selected Values" which contains a list: "Open - Not Contacted", "Working - Contacted", "Closed - Converted (Converted)", and "Closed - Not Converted". A red box surrounds the "Available Values" section, and a red circle with the number "1" is placed next to it. Below the "Selected Values" list is a "Default" dropdown menu set to "Open - Not Contacted". A red box surrounds this dropdown, and a red circle with the number "2" is placed next to it. At the bottom right is a "Save" button, which is also surrounded by a red box and has a red circle with the number "3" next to it.

Figure 3.25: Lead Processes details page for the Master lead process

Here, we have several steps to review:

1. You can see all of the values in the **Lead Status** field. A lead process allows you to add and remove values as needed for a specific process, which is then assigned to a specific lead record type.
2. You have the option to add a default lead status for this specific process.
3. Click on **Save** to finish editing the lead process.

Lead processes are a powerful tool to allow you to display different options for different types of leads. This will work using **record types**, which we will cover in the *Automate Business Processes Using Salesforce* section of this book. Now that we have seen the lead configuration options, let's review what we have learned in this chapter.

Summary

In this chapter, we learned what a lead is and how it is used to start the sales cycle. We understood what the **Lead Status** field is used for and how the values drive the process. We also understood how to convert a lead into an opportunity and that we can convert a lead when we think there is further potential for a sale. We saw the use case for Web-to-Lead and how to generate Web-to-Lead code in order to capture leads online, as well as setting up auto-response rules for these leads. Finally, we learned about the lead settings and lead processes, as well as how these configuration options can help us optimize the use of leads. These skills will help you organize and work your leads, as well as convert them into opportunities to continue the sales cycle. Understanding this process will result in efficiently working leads, which leads to more sales!

In the next chapter, we will look at the Accounts and Contacts objects and why they are used in Salesforce.

Questions

1. What are some ways that leads can be captured?
2. What determines whether a lead should be converted into an opportunity?
3. What happens to a **Closed - Not Converted (Unqualified)** lead?
4. What happens to a converted lead? Where does it go?
5. Where does the company information go when a lead is converted?
6. What is Web-to-Lead used for?
7. Once you have generated the HTML code, what do you do with it?
8. What does the **Org-Wide Merge and Delete** lead setting allow you to do?

Further reading

- *Working with Leads and Opportunities* Trailhead module: https://trailhead.salesforce.com/en/content/learn/modules/lex_salesforce_tour/lex_salesforce_tour_sales
- *Convert and Assign Leads* Trailhead module: https://trailhead.salesforce.com/content/learn/modules/lex_salesforce_tour/lex_salesforce_tour_sales
- *Generate Leads from Your Website for Your Sales Teams* article: https://help.salesforce.com/articleView?id=setting_up_web-to-lead.htm&type=5
- Setting up auto-response rules:
https://help.salesforce.com/articleView?id=creating_auto-response_rules.htm&type=5
- Configuring lead management:
https://help.salesforce.com/articleView?id=customize_leadmgmt.htm&type=5

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4

Business Development with Accounts and Contacts

Accounts and contacts are the foundation of approaching a **Customer Relationship Management (CRM)** system. Accounts are typically organizations that you already do business with or organizations that contain opportunities that have been converted from leads and are in the sales cycle. Contacts are people within these organizations that you have already contacted for various purposes, such as sales, marketing, or billing.

The following topics are covered in this chapter:

- What are accounts and what are they used for?
- What are contacts and what are they used for?
- What are relationships and what are they used for?

With the help of these topics, we'll learn how to create an account and see what an account record contains. We will then do the same for contacts and contact records, and lastly, we will look at creating a relationship and what a relationship record contains.

Technical requirements

For this chapter, make sure you log in to your development org and follow along with the examples. You will need to enable **Contacts to Multiple Accounts** for the relationships feature to work:

https://trailhead.salesforce.com/en/content/learn/modules/accounts_contacts_lightning_experience/understand-account-and-contact-relationships-lightning

Understanding how accounts work

Accounts are the organizations you have saved in Salesforce. These can be customers, partners, vendors, or any other company you would want to keep track of in your system.

Business use case

You are a sales rep for XYZ Widgets. There is a customer in a legacy system that you wish to add to Salesforce. Since this customer is not a new lead, you have to enter the customer directly as an account. Let's see how this is done.

Creating an account

In this section, we will focus on accounts as customers or potential customers. There are two ways of creating accounts:

- Creating an account by converting a lead
- Creating an account by navigating to the **Accounts** tab

We covered creating an account by converting a lead in *Chapter 3, Creating and Managing Leads*. Let's now see how we can create an account by navigating to the **Accounts** tab, as well as what is contained in an account record. The following screenshot shows the main navigation page in your development org, which is where we will start:

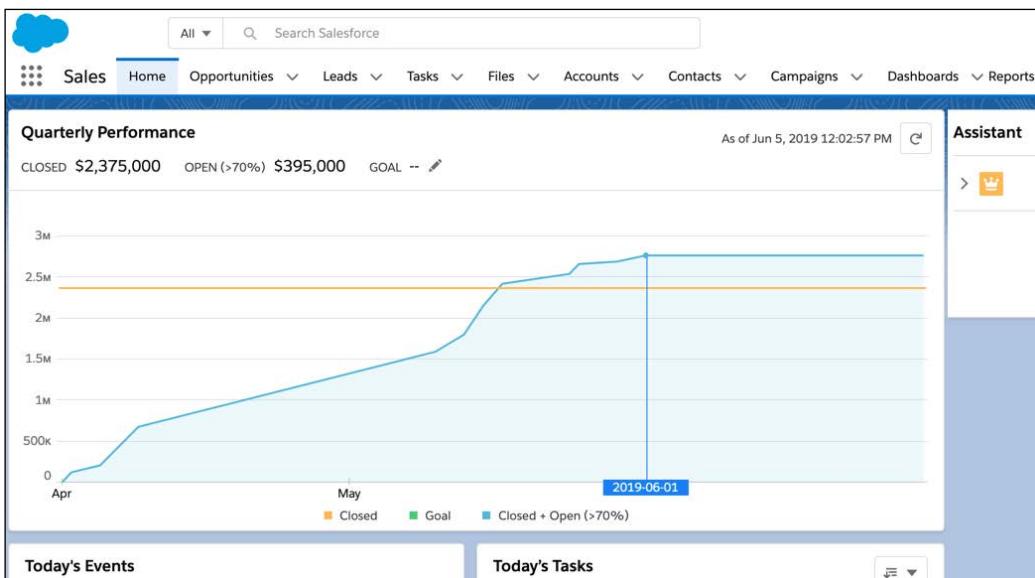


Figure 4.1: Main navigation page for a development org

Let's look at our first account by clicking on the **Accounts** tab. Once you click on the **Accounts** tab, you will land on the page shown in the following screenshot:

The screenshot shows the Salesforce interface with the 'Accounts' tab selected (highlighted with a red box). Below the navigation bar, there is a search bar and a toolbar with buttons for 'New' (highlighted with a red box) and 'Import'. A list of accounts is displayed in a table format with columns for 'ACCOUNT SITE', 'PHONE', and 'ACCOUNT OWNER ALIAS'. Each row contains three entries: '(847) 262-5000', 'SShaa', '(336) 222-7000', 'SShaa', and '(650) 867-3450', 'SShaa'. At the bottom of the list is a search bar labeled 'Search this list...' and a set of filter icons.

Figure 4.2: Accounts tab and option to create a new account

As we discussed in *Chapter 1, Getting Started with Salesforce and CRM*, you will be taken to the **Recently Viewed** page. Click on the **New** button.

In the following screenshot, I entered all of the information for the new account:

This screenshot shows the 'New Account' creation form. The fields filled in are:

Account Owner	Sharif Shaalan	Rating	Hot
*Account Name	GenePoint	Phone	(650) 867-3450
Parent Account	Search Accounts... <input type="button" value="🔍"/>	Fax	(650) 867-9895
Account Number	CC978213	Website	www.genepoint.com
Account Site		Ticker Symbol	
Type	Customer - Channel	Ownership	Private
Industry	Biotechnology	Employees	265
Annual Revenue	\$30,000,000	SIC Code	3712
Billing Address	Shipping Address		
Billing Street	Shipping Street		
345 Shoreline Park		345 Shoreline Park	

At the bottom right of the form, there are three buttons: 'Cancel', 'Save & New' (disabled), and a large blue 'Save' button highlighted with a red box.

Figure 4.3: Entering information for a new account

Click **Save** after creating the account. I also created a contact, case, and opportunity in order to show you how these related items will look when we get to them. Creating a contact will be covered later on in this chapter and creating an opportunity and case will be covered in more detail in the *Salesforce for Sales, Marketing, and Customer Relationship Management* section of this book.

When you click on the newly created **GenePoint** account, you see a page similar to the one in the following screenshot:

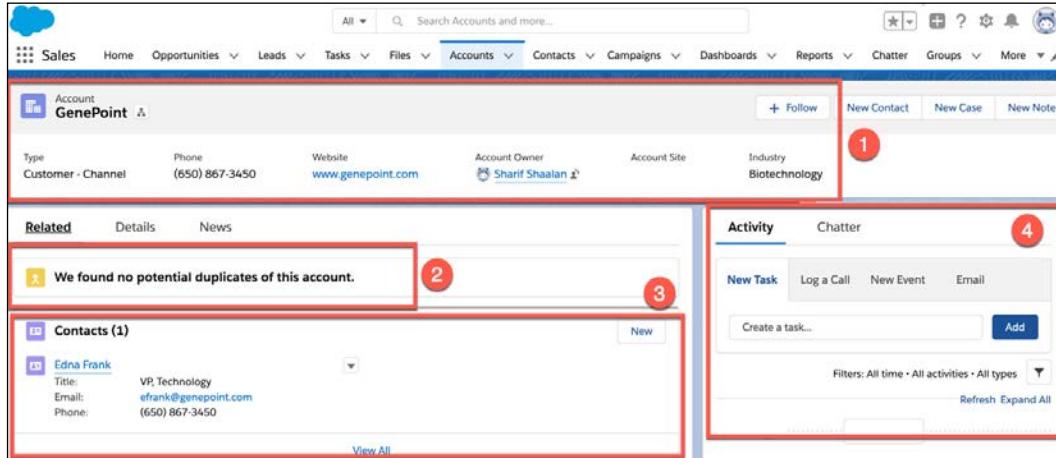


Figure 4.4: Important sections of the account overview

In the preceding screenshot, you can see that when you first open an account, you land on the **Related** sub-tab, where you will see a few important sections:

1. Summary fields, including **Type**, **Phone**, **Website**, **Account Owner**, **Account Site**, and **Industry**
2. You will notice that Salesforce automatically checks for duplicates based on the account name and lets you know whether there are any potential duplicate records
3. Here, you can see all the related contacts
4. You can also see the section for logging activities, as discussed in *Chapter 2, Understanding Salesforce Activities*

The following screenshot shows you the rest of this section:

The screenshot displays the Salesforce interface for the 'GenePoint' account. At the top, the navigation bar includes Sales, Home, Opportunities, Leads, Tasks, Files, Accounts (selected), Contacts, and Campaigns. Below the navigation bar, the account name 'GenePoint' is shown with a blue icon. A red box highlights the 'Opportunities (3)' section, which contains three opportunities: 'GenePoint SLA' (Closed Won, \$30,000.00, 5/29/2019), 'GenePoint Lab Generators' (Id. Decision Makers, \$60,000.00, 5/26/2019), and 'GenePoint Standby Generator' (Closed Won, \$85,000.00, 4/5/2019). A red circle with the number '1' is positioned to the right of this section. A blue vertical bar on the right side has a red circle with the number '2' at its bottom. Another red box highlights the 'Cases (2)' section, which lists two cases: '00001006' (Contact Name: Edna Frank, Subject: Generator assembly instructions unclear, Priority: Low) and '00001016' (Contact Name: Edna Frank, Subject: Maintenance guidelines for generator unclear, Priority: Low). A red circle with the number '2' is positioned to the right of this section.

Figure 4.5: Opportunities and Cases sections found in the Related sub-tab

In the preceding screenshot, you can see two more important sections in the **Related** sub-tab:

1. **Opportunities** shows all the opportunities related to this account. This is very important as these are both closed opportunities (sales) and open opportunities (potential sales that the sales rep is currently working on).
2. **Cases** shows all the cases related to this account. Cases are related to customer service and will be covered in *Chapter 7, Enhancing Customer Service with Cases*.

The **Related** section is very important as it shows all of the non-account records, such as opportunities, contacts, and cases, that are directly related to this organization. Let's take a look at the **Details** sub-tab in the following screenshot:

The screenshot shows the Dynamics 365 Sales interface. At the top, there is a navigation bar with a cloud icon, the word "Sales", and links for Home, Opportunities, Leads, Tasks, Files, and Accounts. The "Accounts" link is highlighted. Below the navigation bar, the account record for "GenePoint" is displayed. The account details include Type (Customer - Channel), Phone ((650) 867-3450), Website (www.genepoint.com), Account Owner (Sharif Shaalan), and Account Site. A red box highlights the "Details" sub-tab in the ribbon below the main content area. The "Details" tab is selected, showing various account fields: Account Owner (Sharif Shaalan), Account Name (GenePoint), Parent Account, Account Number (CC978213), Account Site, Type (Customer - Channel), Industry (Biotechnology), Annual Revenue (\$30.000.000), Rating (Cold), Phone ((650) 867-3450), Fax ((650) 867-9895), Website (www.genepoint.com), Ticker Symbol, Ownership (Private), Employees (265), and SIC Code (3712). Each field has a small edit icon to its right.

Figure 4.6: Details section of an account

Looking at the **Details** section, you will see all the fields that are directly related to the organization, such as **Type**, **Industry**, **Employees**, **Annual Revenue**, and **Website**, as well as the information to directly contact this organization. The following screenshot shows what the **News** sub-tab contains:

The screenshot shows the Salesforce interface for an account named 'GenePoint'. The top navigation bar includes links for Sales, Home, Opportunities, Leads, Tasks, Files, Accounts (selected), and Contacts. The account details section shows 'Type: Customer - Channel', 'Phone: (650) 867-3450', 'Website: www.genepoint.com', 'Account Owner: Sharif Shaalan', and 'Account Site'. Below this, a red box highlights the 'News' tab, which is currently selected. Under the 'News' tab, there is a section for 'Twitter' with a 'Sign in with Twitter' button.

Figure 4.7: News section of an account

In the preceding screenshot, we can see that there is an option for the Salesforce user to log in with their Twitter account to connect directly with this company. Once this is done, it shows all of the tweets that relate to this company.

There is also a way for administrators to add a **News** section here that directly searches the company name on Google News and shows any related articles. This is covered in more detail in *Section 2, Salesforce Administration*.

In this section, we learned how to navigate to an account and what an account record contains. This is important as accounts are the organizations you do business with and are the central point of interaction within CRM. Now that we have seen what companies look like in Salesforce, let's take a look at how the people within these companies show up in Salesforce.

Understanding contacts

Contacts are the people connected to Salesforce accounts. These can be customers, partners, vendors, or any other contacts related to the accounts you want to keep track of in your system.

Business use case

You are a sales rep for XYZ Widgets. We created an account for GenePoint in the previous section. You now have to create a contact record for the person you will be directly interacting with from GenePoint.

Creating a contact

In this section, we will focus on contacts as customers or potential customers. There are two ways of creating contacts:

- By converting a lead
- By navigating to a specific account and creating a contact related to that account

We covered creating a contact by converting a lead in *Chapter 3, Creating and Managing Leads*. Let's now see how to create a contact by navigating to an account and creating one. The following screenshot shows the main navigation page in your development org, which is where we will start:

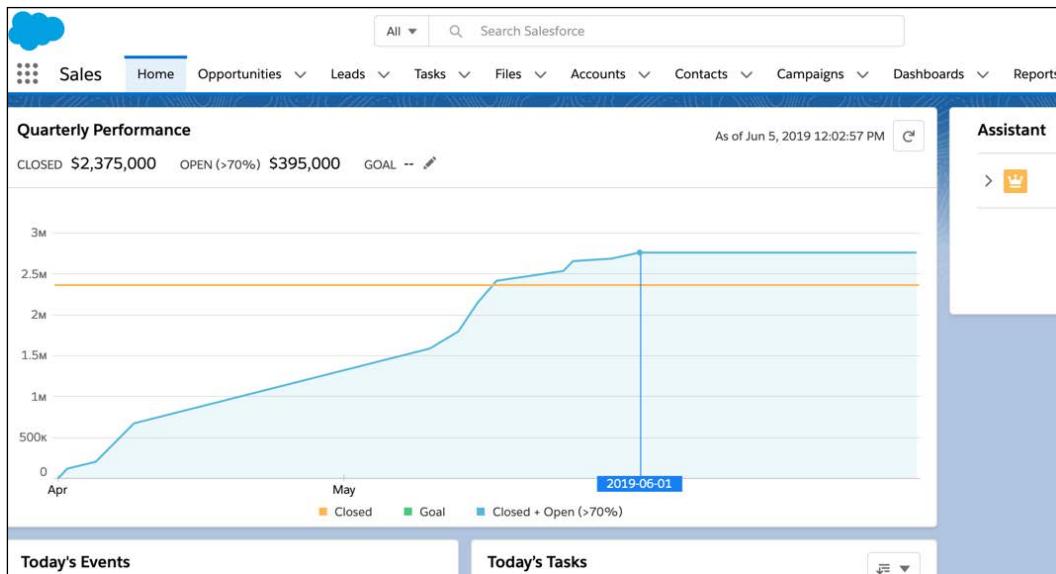


Figure 4.8: Main navigation page of a development org

Let's now look at how we create a contact from the **Accounts** tab:

1. First, click on the **Accounts** tab, which takes you to the following page:

The screenshot shows the Salesforce interface with the Accounts tab selected, highlighted by a red box. The page title is "Recently Viewed". Below it, there is a table with three items, each with a checkbox next to the account name. The columns are ACCOUNT NAME, ACCOUNT SITE, and PHONE.

	ACCOUNT NAME	ACCOUNT SITE	PHONE
1	Cadinal Inc.		(847) 262-5000
2	Burlington Textiles Corp of America		(336) 222-7000
3	GenePoint		(650) 867-3450

Figure 4.9: Selecting the Accounts tab to open the Recently Viewed list

You will be taken to the **Recently Viewed** view, as we discussed in *Chapter 1, Getting Started with Salesforce and CRM*.

2. Click on **GenePoint** to navigate to the account we looked at in the *Understanding how accounts work* section of this chapter, where you will see the following:

The screenshot shows the account detail page for GenePoint. The top navigation bar includes Campaigns, Dashboards, Reports, Chatter, Groups, More, and a search bar. The main area displays account information: Account Site (Biotechnology) and Industry (Biotechnology). Below this, the Activity tab is selected, showing buttons for New Task, Log a Call, New Event, and Email. A "Create a task..." input field and an "Add" button are also present. The Past Activities section indicates "No past activity. Past meetings and tasks marked as done show up here."

Figure 4.10: Reaching an account through the Recently Viewed view

3. Under the **Contacts** section of the **GenePoint** account, you have the option to create a new contact. When you click on **New**, you will see a popup, as in the following screenshot:

The screenshot shows the 'New Contact' form in a Salesforce interface. The form is titled 'New Contact' and has a section for 'Contact Information'. It includes fields for 'Contact Owner' (Sharif Shaalan), 'Phone' (9999999999), 'Name' (marked with a red circle labeled 1), 'Salutation' (Mr., marked with a red circle labeled 2), 'First Name' (John, marked with a red circle labeled 3), 'Last Name' (Doe, marked with a red circle labeled 4), 'Account Name' (GenePoint, marked with a red circle labeled 5), 'Mobile' (9999999999, marked with a red circle labeled 6), 'Title' (Sales Manager, marked with a red circle labeled 7), and 'Other Phone' (empty). At the bottom are 'Cancel', 'Save & New', and a blue 'Save' button.

Figure 4.11: New Contact popup and fields

Clicking on **New** brings up the following important fields, corresponding with the numbers in *Figure 4.11*:

1. The **Salutation** of the contact you are dealing with. The dropdown options can be edited from the **Setup** screen in Salesforce Classic.
2. The **First Name** of the contact
3. The **Last Name** of the contact
4. The **Account Name** that the contact is related to. This field is prepopulated since you are creating the contact directly from this account
5. The **Title** field, which shows the position of the contact in the company

6. The **Phone** field. This will usually copy over the phone number from the account **Phone** field
 7. The **Home Phone** field for the contact's home phone number
 8. The **Mobile** field for the mobile number of the contact
4. The following screenshot shows the rest of the contact creation screen:

The screenshot shows the 'New Contact' page in Salesforce. At the top, there are fields for Title ('Sales Manager'), Department (''), Birthdate (''), and other contact details like Fax ('(650) 867-9895') and Email (''). Below this, the 'Reports To' field is highlighted with a red circle containing the number 1, showing 'Edna Frank' selected. The 'Mailing Address' section is also highlighted with a red circle containing the number 2, showing '345 Shoreline Park, Mountain View, CA 94043'. At the bottom right, there are three buttons: 'Cancel', 'Save & New' (which is highlighted with a red circle containing the number 3), and a larger blue 'Save' button.

Figure 4.12: Further fields when creating a new contact

In the preceding screenshot, you can see a few more important fields:

1. The person that this contact reports to. This is typically another contact that exists on this account.
2. The **Mailing Address** field of the user.
3. When you click **Save**, this saves the contact and you will see the screen shown in the following screenshot.

You can see that the contact is now created on the GenePoint account and shows up in the **Contacts** section alongside the contact that was already on the account:

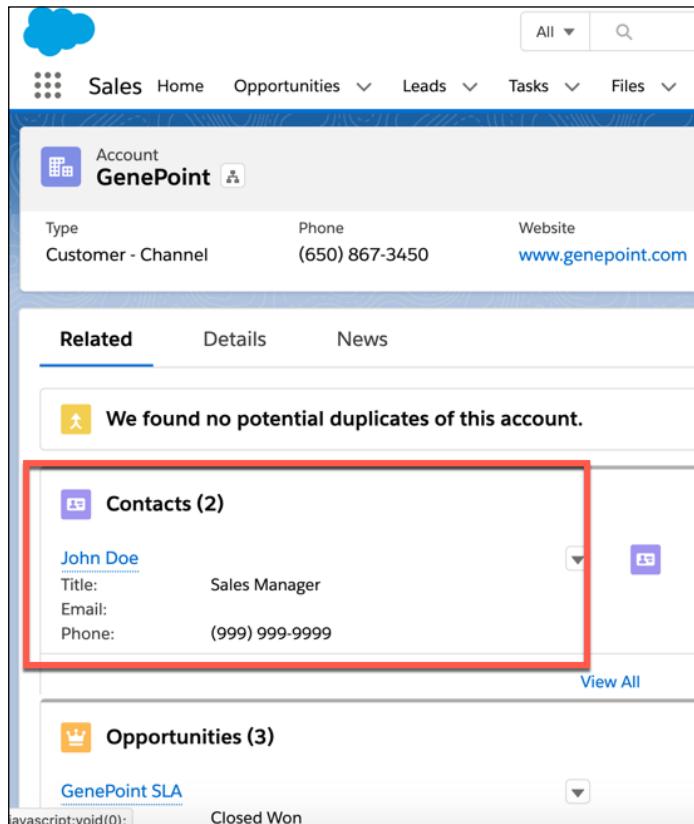


Figure 4.13: Contact added to the Contacts section of an account

5. Click on **John Doe**. The following screenshot shows you what the new contact record contains:

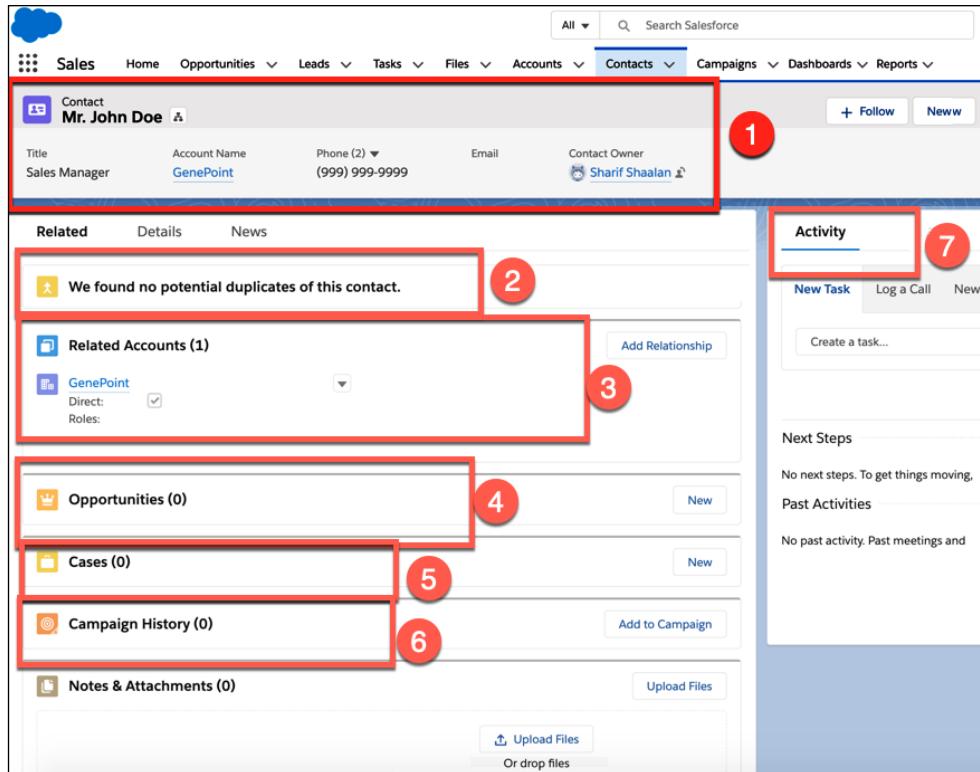


Figure 4.14: Opening a contact record to see further details

In the preceding screenshot, you can see that when you click on this contact and go to the **Related** sub-tab, there are a few important sections:

1. This shows your summary fields. These fields include **Title**, **Account Name**, **Phone**, **Email**, and **Contact Owner**.
2. Here, you will notice that Salesforce automatically checks for duplicate entries based on the contact's name and email address and lets you know whether there are any potential duplicate records.

3. Here, you will see all the related accounts. We will cover these relationships in the next section.
 4. This is where you will see all the opportunities that are related to the contact. Opportunities will be covered in *Chapter 5, Driving the Sales Cycle with Opportunities*.
 5. Here, you will see all the cases that are related to the contact. Cases will be covered in *Chapter 7, Enhancing Customer Service with Cases*.
 6. This is where you will see all the campaigns that are related to the contact. Campaigns will be covered in *Chapter 6, Achieving Business Goals Using Campaigns*.
 7. Finally, you will also see a section for logging activities, as discussed in *Chapter 2, Understanding Salesforce Activities*.
6. When you click on the **Details** sub-tab, you will see the following stored information:

The screenshot shows the Salesforce interface for a contact named Mr. John Doe. At the top, there's a navigation bar with links for Sales Home, Opportunities, Leads, Tasks, Files, and Accounts. Below that is a header with the contact's name, title (Sales Manager), account name (GenePoint), phone number ((999) 999-9999), email, and contact owner (Sharif Shaalan). A red box highlights the 'Details' tab in the navigation bar of the main content area. The 'Details' section contains fields for Contact Owner, Name, Account Name, Title, Department, Birthdate, Reports To, Lead Source, Phone, Home Phone, Mobile, Other Phone, Fax, Email, Assistant, and Asst. Phone. Each field has a corresponding input field and a small edit icon.

Figure 4.15: Overview of the Details section of a contact

7. In the preceding screenshot, you can see all of the fields you added when you created the contact. Then, click on the **News** sub-tab. The following screenshot shows the **News** section:

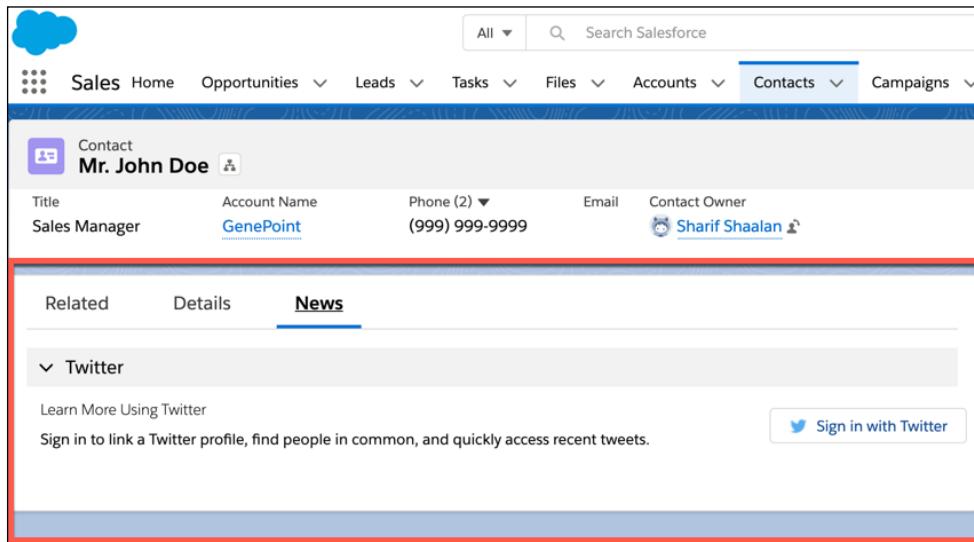


Figure 4.16: Viewing the News section of a contact

We can see that there is an option where the Salesforce user can log in with their Twitter account to connect directly with this contact. If this is done, this section will show all the tweets related to this contact and give the Salesforce user a look at the latest Twitter news for this contact. There is also a way for administrators to add a **News** section that directly searches for the contact's name on Google News and shows any related articles here. This will be covered in the *Salesforce Administration* section of this book.

We have now learned how to create a new contact and what a contact record contains. This is important as contacts are the people you communicate with from the organizations that you do business with. Contacts, along with accounts, are the central point of interaction in CRM. Now that we have seen how contacts and accounts work in Salesforce, let's take a look at a business use case where a contact may be related to multiple accounts. These connections are called relationships.

Understanding relationships

Relationships are the connections between contacts and multiple accounts in Salesforce. A contact is always connected to the account (organization) that the user works for. There are some cases where these contacts are connected to other accounts in the system, such as contractors, board members, or any other role that the contact could be connected to. Let's see how this works.

Business use case

For our example here, let's assume that John Doe is the sales manager at GenePoint but also sits on the board of another one of our accounts, Cardinal Inc. As the sales rep for XYZ Widgets, you will make the connection in Salesforce. Let's see how to go about this.

Enabling relationships

The first step is to enable the **Allow users to relate a contact to multiple accounts** feature. As you can see in the following screenshot, I navigated to the setup and configuration section of Salesforce:

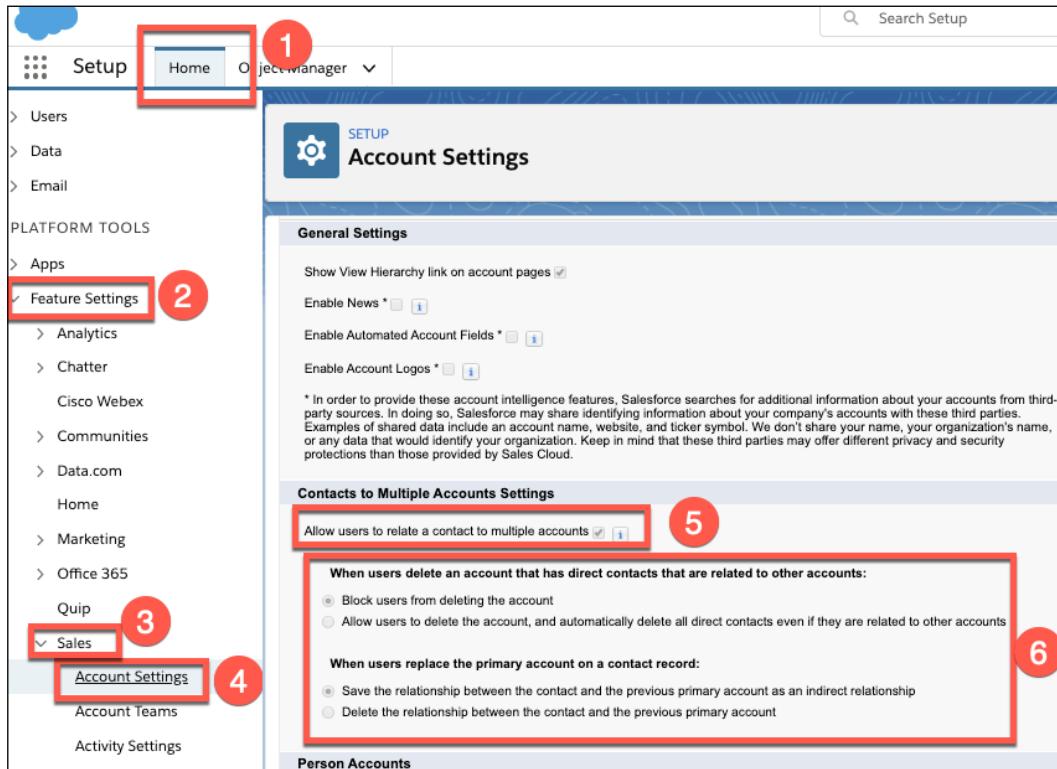


Figure 4.17: Navigating to Account Settings

There are several steps, which are shown in the preceding screenshot, to activate this feature:

1. Navigate to the **Home** tab on the setup and configuration page.
2. Click on **Feature Settings**.
3. Click on **Sales**.
4. Click on **Account Settings**.

5. Check the **Allow users to relate a contact to multiple accounts** checkbox.
6. There are also two further settings we can configure for contacts with multiple accounts. The first is what happens when we delete an organization whose contact is related to other accounts. We will select that we are blocked from deleting the account, so that the contact's other relationships aren't broken. The second setting is what happens when we replace the primary account for a contact. For this, we will select the option to save the previous primary account as an indirect relationship—so that we don't delete that relationship altogether.

The next step is to add the **Related Contacts** list to the page layout so that we can make use of relationships, which we will describe how to do in the following section. As you can see in the following screenshot, I navigated to the setup and configuration section of Salesforce:

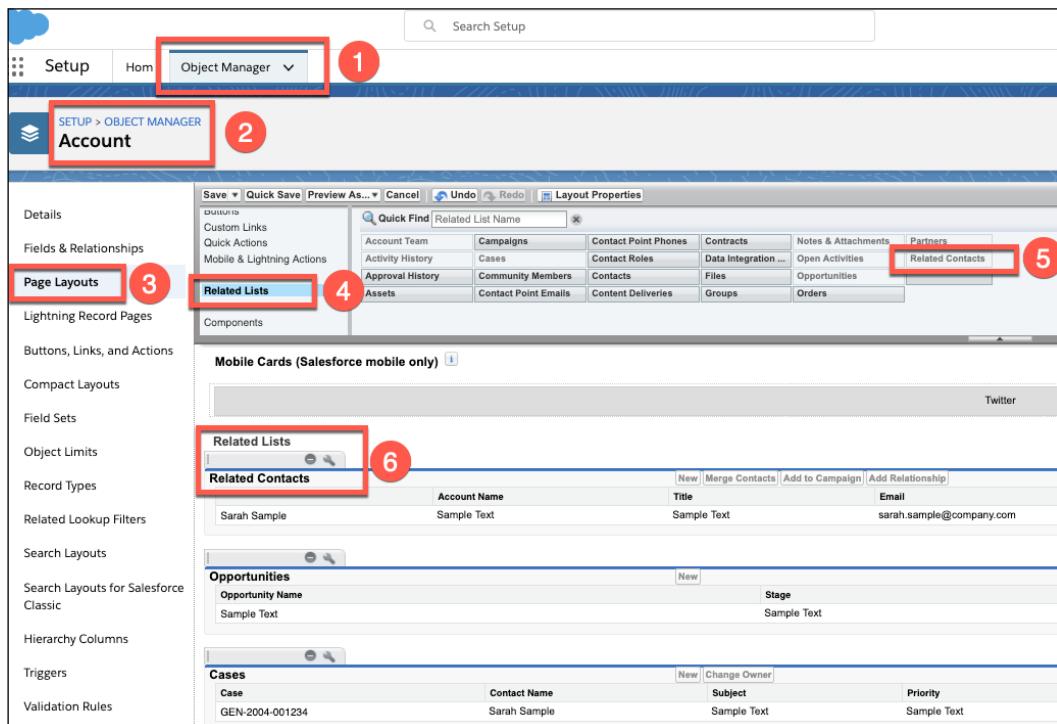


Figure 4.18: Navigating to the Related Contacts list

The preceding screenshot shows the steps for adding this related list:

1. Navigate to the **Object Manager** tab under the setup and configuration page.
2. Choose the **Account** object.

3. Click on **Page Layouts**.
4. In the appropriate layout, click on **Related Lists**.
5. You will see the **Related Contacts** list in the available lists section.
6. Drag the **Related Contacts** list to the **Related Lists** section of the layout.

Now that the feature is active and the list is added to the required layout, let's look at how to add a relationship.

Adding relationships

Let's see how this connection is made:

1. Start by navigating to the **John Doe** contact record:

The screenshot shows the Salesforce Contact Record page for 'Mr. John Doe'. The top navigation bar includes Sales, Home, Opportunities, Leads, Tasks, Files, Accounts, Contacts, Campaigns, and Dashboards. The main contact information is displayed: Title (Sales Manager), Account Name (GenePoint), Phone (999) 999-9999, Email (Sharif Shaalan), and Contact Owner (Sharif Shaalan). Below this, the 'Related' tab is selected, showing 'Related Accounts (1)' with 'GenePoint' listed. An 'Add Relationship' button is highlighted with a red box. Other sections include 'Details', 'News', 'Opportunities (0)', and 'Cases (0)'. The right sidebar shows 'Activity' with 'New Task' and 'Create a task...', 'Next Steps' (No next steps. To get), and 'Past Activities' (No past activity. here).

Figure 4.19: Add Relationship option on a contact record

In the preceding screenshot, we can see that in the **John Doe** contact record under the **Related Accounts** section, there is an option to add a relationship.

2. Clicking on this option takes us to the following screen:

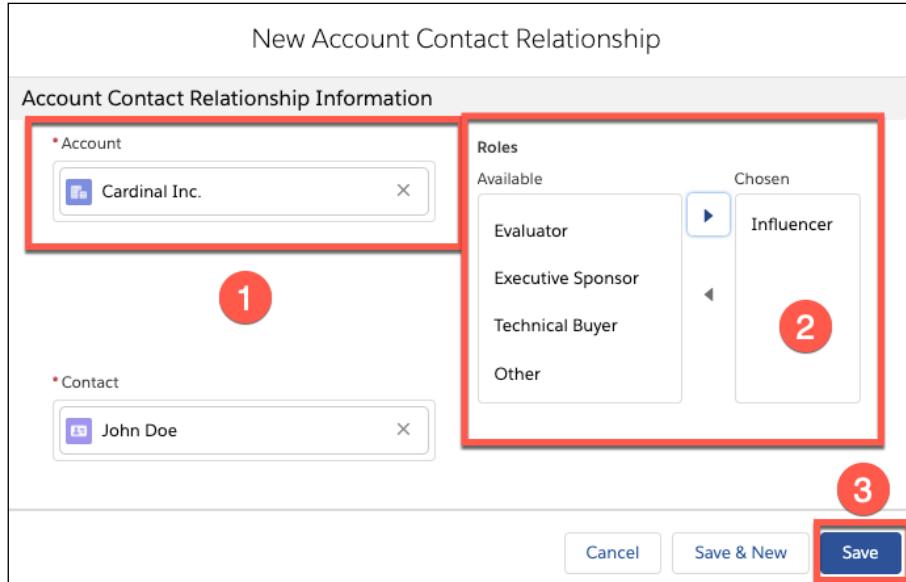


Figure 4.20: The relationship information screen for a new contact

In the preceding screenshot, you can see a few important sections:

1. The **Account** field is for setting the account that you want to connect this contact to.
2. The **Roles** field is the role that this contact plays in the organization; for our example, we will pick **Influencer** since John Doe is a board member of this organization.
3. When you click **Save**, this saves the relationship and you will see the updated **Contact** screen shown in the following screenshot.

You can see that John Doe is now related to both GenePoint as the sales manager and Cardinal Inc. as an influencer:

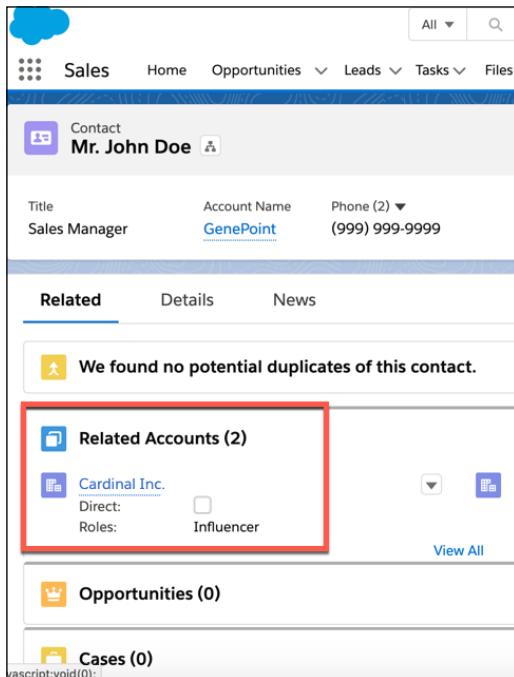


Figure 4.21: New relationship viewed from the Contact screen

The following screenshot shows you how this relationship shows up on the Cardinal Inc. account:

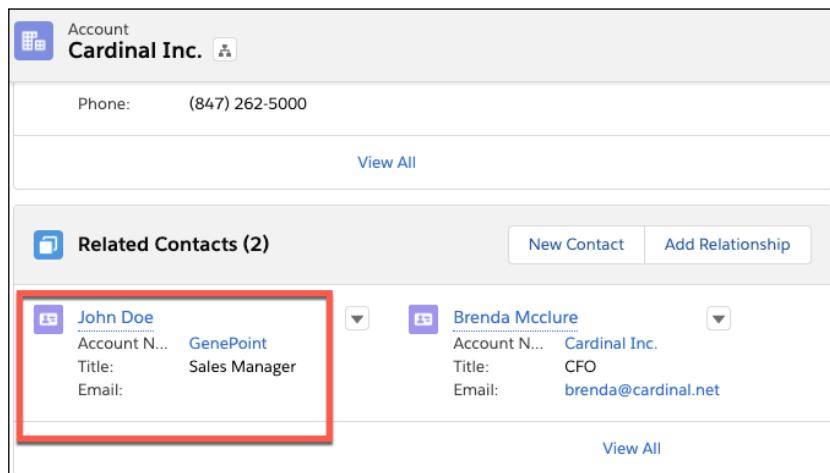


Figure 4.22: New relationship viewed from the Account screen

As you can see in the preceding screenshot, **Cardinal Inc.** has a **Related Contacts** section that shows **John Doe** as an influencer, along with Brenda McClure who works for Cardinal Inc. Let's take a look at how to remove a relationship if needed.

Removing relationships

In the following screenshot, you can see that I navigated back to the **Cardinal Inc.** account:

The screenshot shows the Salesforce Contact page for Mr. John Doe. At the top, there is a summary section with fields for Title (Sales Manager), Account Name (GenePoint), Phone (999-999-9999), and Contact Owner (Sharif Shaalan). Below this, there are three tabs: Related (which is selected), Details, and News. A message box states, "We found no potential duplicates of this contact." The "Related Accounts" section displays two accounts: Cardinal Inc. and GenePoint. The entry for Cardinal Inc. is highlighted with a red box. For Cardinal Inc., the "Direct" checkbox is unchecked, and the "Roles" dropdown is set to "Influencer". For GenePoint, the "Direct" checkbox is checked, and the "Roles" dropdown is empty. There is also a "View All" link at the bottom of the list.

Figure 4.23: Navigating to an account from the Contact screen

If we click on **Remove Relationship** next to the John Doe contact, it will lead to the following popup:

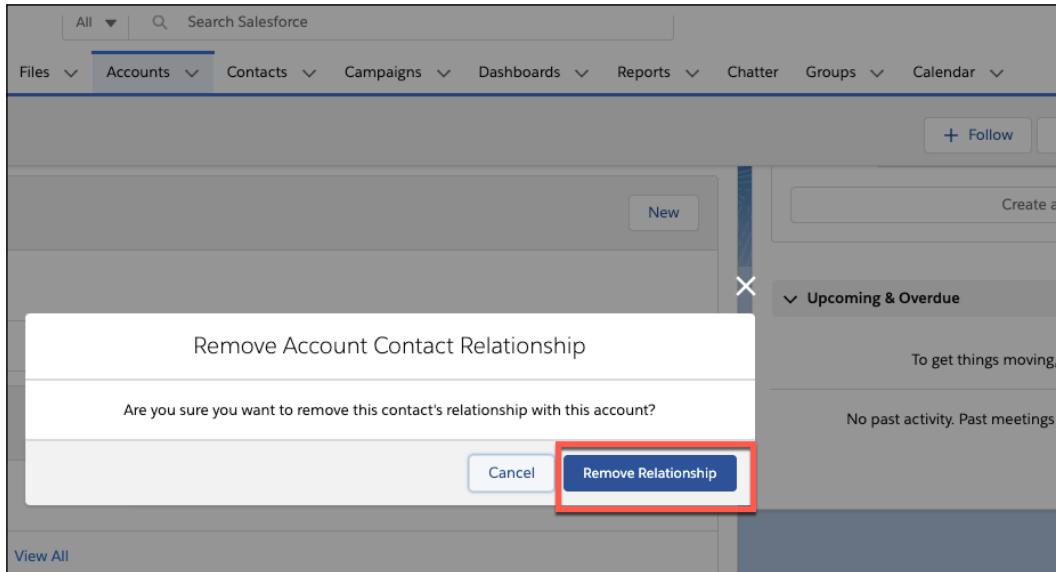


Figure 4.24: Option for removing a relationship between an account and a contact

This popup asks for confirmation that you want to delete the relationship. Clicking on **Remove Relationship** brings you back to the account screen:

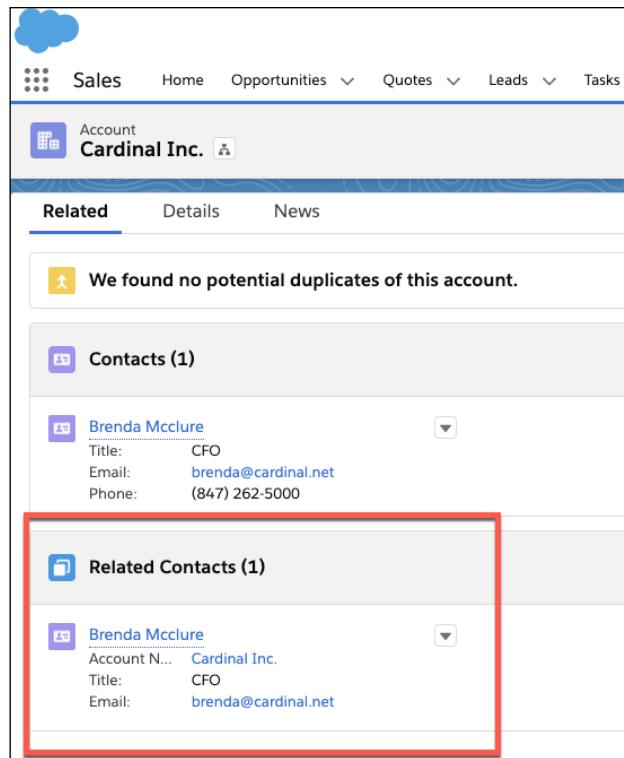


Figure 4.25: Returning to an account to view Related Contacts

The relationship with John Doe is now gone and the **Related Contacts** for Cardinal Inc. has been reduced to 1.

In this section, we learned what a relationship is, how to activate the feature, how to add the **Related Contacts** list, how to create a relationship, how to remove a relationship, and what this relationship looks like on both the contact and account records. Let's go over what we learned in this chapter.

Summary

After finishing this chapter, we now know what an account is, how to create one, and how to view it. We then learned what a contact is and how to create a new contact on an account record. For both the account and the contact, we learned about the important sections in the records for each, including the **Related Items**, **Details**, and **News** sections.

Finally, we learned about when to use a relationship and how to create a relationship between a contact and an account.

In the next chapter, we will look at opportunities—the most important part of the sales cycle in Salesforce!

Questions

1. What are some use cases for the types of accounts that an organization may want to keep track of in Salesforce?
2. Why would you want to create contacts related to accounts you are doing business with?
3. When would you create a relationship from a contact to an account that the contact does not directly work for?
4. How can you enable the **Relationships** feature?
5. How do you remove a relationship?

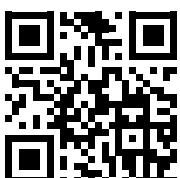
Further reading

- Accounts and contacts for the Lightning experience: https://trailhead.salesforce.com/en/content/learn/modules/accounts_contacts_lightning_experience

Join our community on Discord

Join our community's Discord space for discussions with the authors and other readers:

<https://packt.link/r1ptF>



5

Driving the Sales Cycle with Opportunities

Opportunities are the foundation of sales and drive growth for any business. Working on an opportunity involves moving from one stage to the next as you get closer to closing a deal. This is referred to as a **pipeline** or **funnel** in some organizations, because you usually have more opportunities in the earlier stages of a deal—the top of the funnel—and fewer opportunities in the later stages—the bottom of the funnel. Each stage is tied to a percentage likelihood of closing the opportunity. These percentages tie into the forecasting of future sales.

The following topics are discussed in this chapter:

- Introducing opportunities
- Understanding opportunity stages
- Adding contact roles for opportunities
- Organizing products and price books
- Creating quotes
- Determining forecasts

With the help of these topics, you will be able to develop the required skills to create an opportunity and see what an opportunity record contains. You will be able to create contact roles, opportunity products, and quotes and be able to see how the opportunity stages drive the sales path and forecasting. These skills will allow you to get a full picture of the sales cycle that we started in *Chapter 3, Creating and Managing Leads*.

Technical requirements

To follow along with this chapter, make sure you log in to your development org. You will need to enable **Quotes** from the **Setup** menu in order to generate quotes for the *Creating quotes* section of this chapter, and also enable **Forecasts** from the **Setup** menu in order to view forecasts for the *Determining forecasts* section.

Understanding opportunities

Opportunities are the main component of your sales pipeline. Within the sales cycle, once you convert a lead—as we saw in *Chapter 3, Creating and Managing Leads*—all of your interactions for the sale take place in the **Opportunity** section.

There are many components to opportunities that drive the overall sales cycle, from initially working the opportunity to forecasting future sales for the management of your sales. We will see how opportunities work by using a business use case.

Business use case

As a sales rep for XYZ Widgets, you have been corresponding with GenePoint, the account you created in *Chapter 4, Business Development with Accounts and Contacts*. Your conversations have been going well and the customer asks you to send a quote. You now have to create an opportunity, add products, and create and send a quote. After this, you will see the opportunity in your sales forecast for the month and will finally be able to close the deal! Let's see how this all comes together.

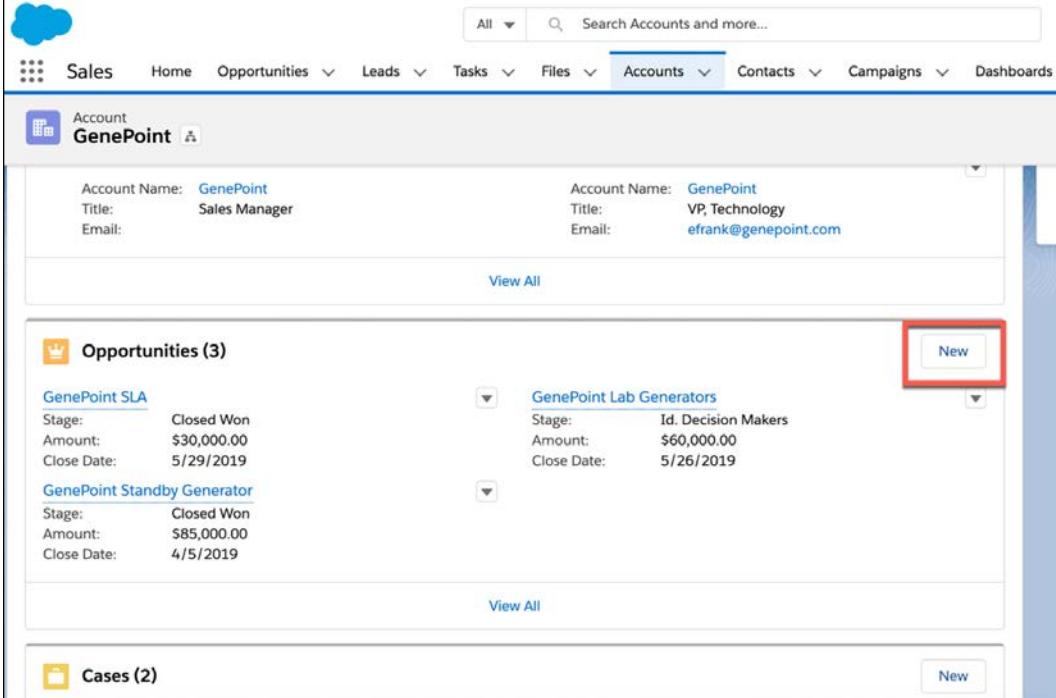
Creating an opportunity

There are two ways of creating opportunities:

- **For a new customer:** We saw how this works in *Chapter 3, Creating and Managing Leads*, where an opportunity is created upon lead conversion. Since leads are potential clients, this is how you create an opportunity and work it until you close the first sale.
- **For an existing customer:** If you already have an account created for an organization, navigate to that organization and create the opportunity for a potential sale.

Let's see how the second option works.

Navigate to the existing GenePoint account and scroll down to the related **Opportunities** section. Click on **New** to create a new opportunity. This is shown in the following screenshot:



The screenshot shows the Microsoft Dynamics 365 Sales module interface. At the top, there is a navigation bar with links for Sales, Home, Opportunities, Leads, Tasks, Files, Accounts (which is currently selected), Contacts, Campaigns, and Dashboards. Below the navigation bar, the account record for "GenePoint" is displayed, showing two contacts: "GenePoint Sales Manager" and "VP, Technology".

In the center, under the "Opportunities" section, there is a summary table for three opportunities:

Opportunity Name	Stage	Amount	Close Date
GenePoint SLA	Closed Won	\$30,000.00	5/29/2019
GenePoint Lab Generators	Id. Decision Makers	\$60,000.00	5/26/2019
GenePoint Standby Generator	Closed Won	\$85,000.00	4/5/2019

Below this table, there are "View All" and "New" buttons. The "New" button is highlighted with a red box. Further down, there is a section for "Cases" with a count of 2 and a "New" button.

Figure 5.1: Button to create a new opportunity on the Account screen

Clicking on New takes you to the opportunity creation screen:

The screenshot shows the 'New Opportunity' creation screen. At the top, it says 'New Opportunity'. Below that is a section titled 'Opportunity Information'. This section includes fields for 'Opportunity Owner' (Sharif Shaalan), 'Amount' (\$1,000.00), 'Close Date' (10/31/2019), 'Opportunity Name' (GenePoint-1), 'Account Name' (GenePoint-2), 'Next Step' (empty), 'Stage' (Prospecting-7), 'Type' (Existing Customer - Upgrade-3), 'Probability (%)' (10%-8), 'Lead Source' (Other-4), and 'Primary Campaign Source' (Search Campaigns...). At the bottom are buttons for 'Cancel', 'Save & New', and a large blue 'Save' button.

Figure 5.2: Various fields on the opportunity creation screen

As you can see in the preceding screenshot, there are several important fields to fill out:

1. **Opportunity Name:** You should include a name that lets you know what you are selling.
2. **Account Name:** The account name automatically populates from the account that the opportunity relates to.
3. **Type:** This can be a new or existing customer.
4. **Lead Source:** Where this lead originated.
5. **Amount:** How much the sale is worth. This is updated when you add products in the next step.
6. **Close Date:** When you expect the deal to close.
7. **Stage:** What stage this opportunity is in. We will cover the different stages in detail in the next section.
8. **Probability(%):** This is auto-populated and ties into forecasting, which we will cover later on in this chapter in the *Determining forecasts* section.

There is also a campaign field—which is optional—here to tie the opportunity to a marketing campaign. This is to show the campaign source for this opportunity if there is one. Clicking **Save** creates the opportunity.

In this section, we learned how to create an opportunity. Next, we will look at the opportunity stages and the sales path, as well as how they contribute to working an opportunity.

Understanding opportunity stages and the sales path

Once an opportunity is created, the user can track the activities that relate to the opportunity, as we covered in *Chapter 2, Understanding Salesforce Activities*. One of the most important aspects of an opportunity is marking the correct stage that the opportunity is in. Stages mark the progress of an opportunity and are customizable for each Salesforce instance. Salesforce offers a feature that allows you to visualize the stages of an opportunity. This feature is called the sales path. Let's see how to enable this feature.

In the following screenshot, I navigated to the setup and configuration section of Salesforce:

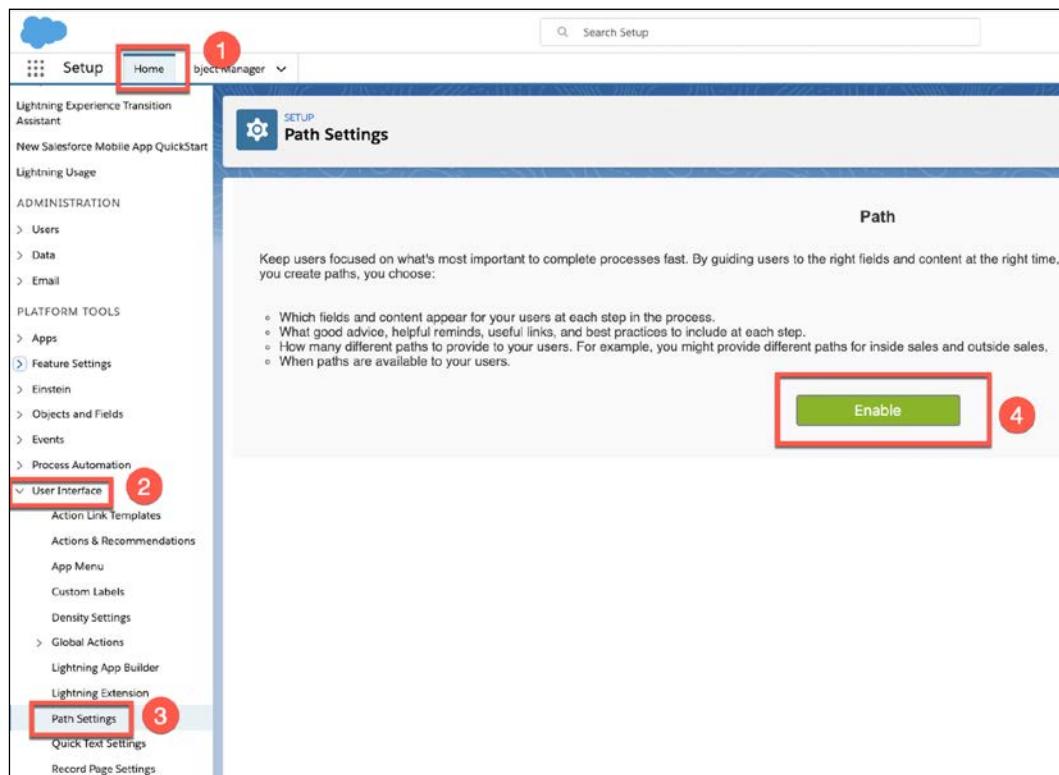


Figure 5.3: Navigating to Path Settings

As you can see in the preceding screenshot, I took a couple of steps:

1. Go to **Home (1)** | **User Interface (2)** | **Path Settings (3)** to enable the path settings for the case.
2. Click on the **Enable (4)** button, which brings you to the following screen:



Figure 5.4: Reaching the New Path button from Path Settings

Here, click on **New Path**, which brings us to the following screen:

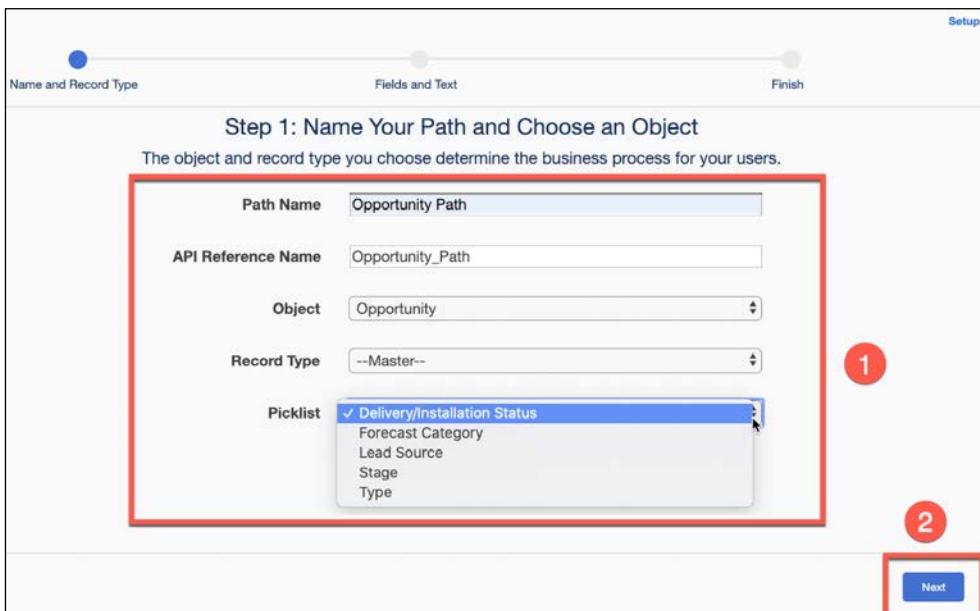


Figure 5.5: Fields for entering path details after clicking New Path

As you can see here, we took two steps:

1. Fill in the path name, API name, object, and record type (if there are no record types, it will default to --Master--), as well as the picklist you want to use for the path. In our case, we want to choose the **Stage** field.
2. Click on **Next** to take you to the following screen:

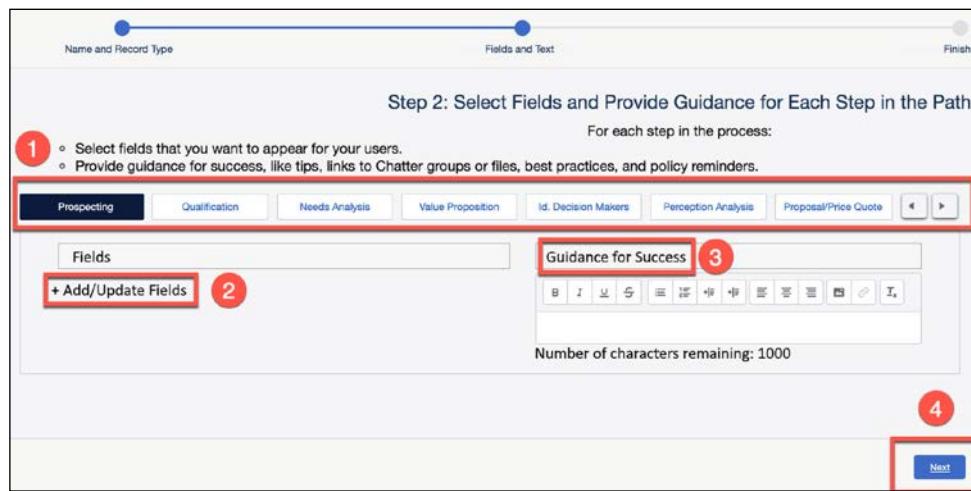


Figure 5.6: Sections for entering further details into the sales path

The preceding screenshot shows us some important sections:

1. Here, you can navigate to each stage within the path and configure the **Fields** and **Guidance for Success** options.
2. This section allows you to add the fields that appear for each stage for reference and may need to be edited when the opportunity is in that specific stage.
3. This section allows you to add text to each stage to help guide the user on what is expected for a specific stage.

4. Clicking on **Next** takes you to the following screen:

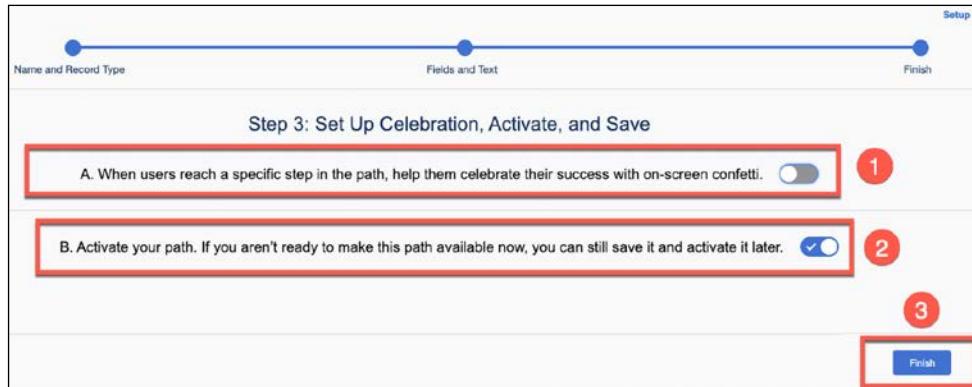


Figure 5.7: Finishing the setup of a sales path

In the preceding screenshot, you can see the following options:

1. There is an option to add visual confetti when a certain stage is reached as a celebration. An example would be confetti coming down on the screen when a sale is closed and the stage changes to **Closed Won**.
2. This is where the path is activated.
3. Clicking on **Finish** completes the path setup.

Let's navigate back to our opportunity. In the following screenshot, we can see that the out-of-the-box stages that come with Salesforce are the default stages that can be changed by the admin to match your organization's sales process:

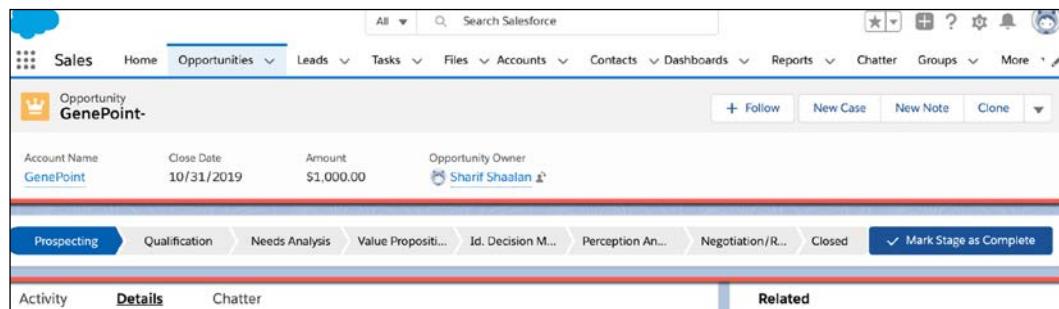


Figure 5.8: Viewing the sales path for an opportunity

A sales path appears under the opportunity details. The sales path is the visual representation of the opportunity stages and you, as the user, can click on any of the stages and then click on **Mark Stage as Complete** to indicate that the opportunity is in a specific stage.

Stages are also important as they represent the probability of closing a deal. The further along you are in a stage, the higher the probability of closing the deal. In the preceding screenshot, the probability is only at 10% since this opportunity is in the first stage. These probabilities relate to forecasting, which we will cover at the end of this chapter.

In this section, we learned what stages are and how to move to different stages using the sales path. Next, let's look at what contact roles are and how to add them to an opportunity.

Adding contact roles for opportunities

Contact roles refer to people you communicate with to close a specific deal. You could have one or more contact roles, depending on the opportunity. First, let's look at how to add new contact roles that may not be on the default list. To do this, navigate to the setup and configuration section of Salesforce:

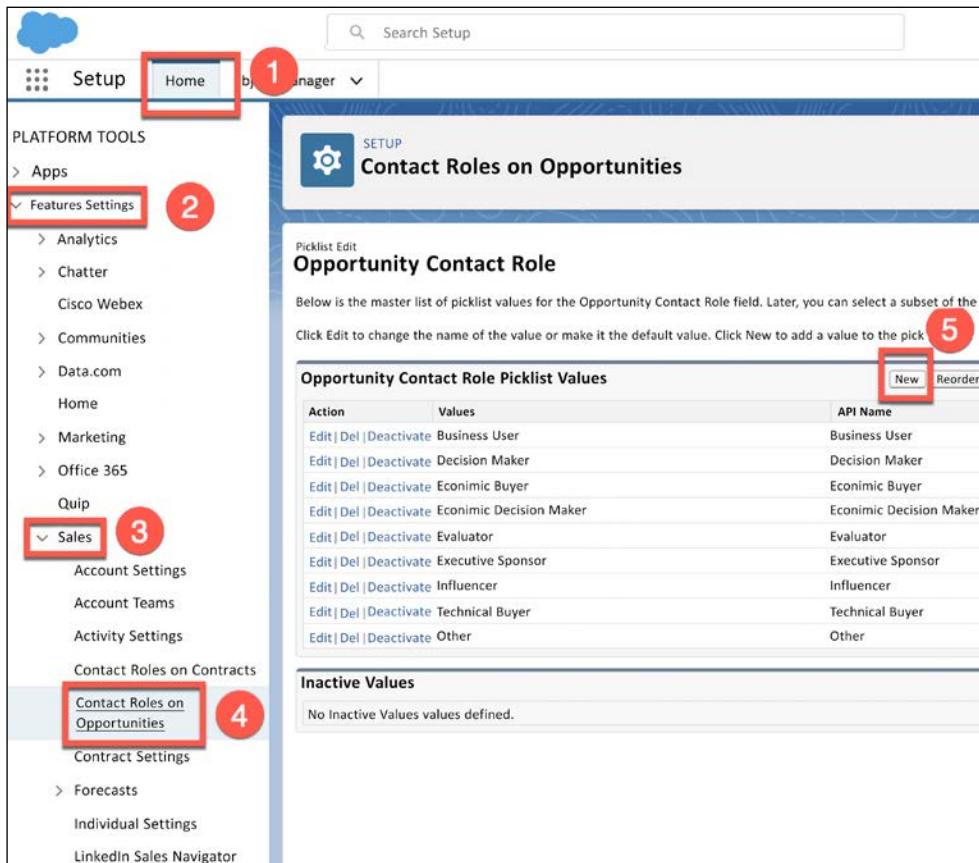


Figure 5.9: Navigating to the button to create a contact role for an opportunity

As you can see in the preceding screenshot, there are several steps to follow if you want to add or edit the roles that come up when adding a contact role:

1. Go to Home (1) | Feature Settings (2) | Sales (3) | Contact Roles on Opportunities (4).
2. On this page, click on New (5) to add a new contact role or edit any existing roles.

Now that we have seen how to add roles as needed, let's add an actual role:

1. Navigate to the **Contact Roles** section of the opportunity to add a contact role, as in the following screenshot:

The screenshot shows the Salesforce Opportunity screen. At the top, there is a navigation bar with links for Tasks, Files, Accounts, Contacts, Campaigns, Dashboards, Reports, Chatter, and More. Below the navigation bar, the opportunity details are listed: Close Date (10/27/2019), Sales Price (\$100,000.00), Stage (Prospecting), Probability (%), Primary Campaign Source, Main Competitor(s), Delivery/Installation Status, and Last Modified By (Sharif Shaalan, 10/27/2019 6:06 PM). To the right of these details is a sidebar with sections for Notes & Attachments (0), Contact Roles (0), Partners (0), and Stage History (3+). The Contact Roles section is highlighted with a red box around the "Add Contact Roles" button.

Figure 5.10: Option to add a contact role from the opportunity screen

2. Clicking on this takes you to the **Add Contact Roles** page:

The screenshot shows a list of contacts in a table format. The first contact, "John Doe", has a checked checkbox next to it, indicating it is selected. The table columns include Name, Account N..., Accoun..., Phone, Email, and Contac... . At the bottom right of the page are two buttons: "Cancel" and a blue "Next" button, which is highlighted with a red box.

Figure 5.11: Adding a contact to the contact roles for an opportunity

I selected **John Doe** as the contact role.

3. Click on **Next**. The following screenshot shows how to add the role of the contact:

The screenshot shows the "Add Contact Roles" page again. A red box highlights the "Role" input field, which contains the text "Decision Maker". At the bottom right are three buttons: "Back", "Cancel", and a blue "Save" button, which is also highlighted with a red box.

Figure 5.12: Specifying the role of the selected contact

I added the role of **Decision Maker** to John Doe. This is the person I will interact with and add activities for as I work to close this deal.

4. Click on **Save**. The contact role will save to the opportunity.

Let's see how we can edit the contact role if needed. In the following screenshot, I navigated back to the opportunity:

The screenshot shows the Salesforce Opportunity page for an opportunity named "GenWatt Diesel 1000kW". The page includes sections for Tasks, Products, Notes & Attachments, and Contact Roles. The Contact Roles section shows one entry for "John Doe" with roles "Decision Maker" and "Sales Manager". A red box highlights the "Edit Contact Roles" button next to the contact role entry.

Contact Role	Role	Title
John Doe	Decision Maker	Sales Manager

Figure 5.13: Option for editing a contact role from the opportunity page

As you can see, to edit the contact roles, you need to click on **Edit Contact Roles** in the **Contact Roles** section.

In this section, we learned how to add a contact role to an opportunity to close a deal. Next, let's look at products and price books.

Organizing products and price books

Price books are a collection of products that can be added to an opportunity to show what is purchased. An opportunity can only be tied to one price book. Price books are created by administrators and assigned to specific teams that sell a specific product line. Salesforce automatically creates a Standard price book as a master list of all the products and default prices. It is best practice to create multiple custom price books that contain the list prices if you offer products at different prices to different market segments.

Products are the actual items within a price book that are sold. Let's see how they work by taking the following steps:

1. Click on **Add Products**, as in the following screenshot, to add a product, or multiple products, to an opportunity. Notice that you also have the option here to choose a price book for this particular opportunity if you have access to more than one price book. If you only have access to one price book, it is chosen by default, as is the case in our example:

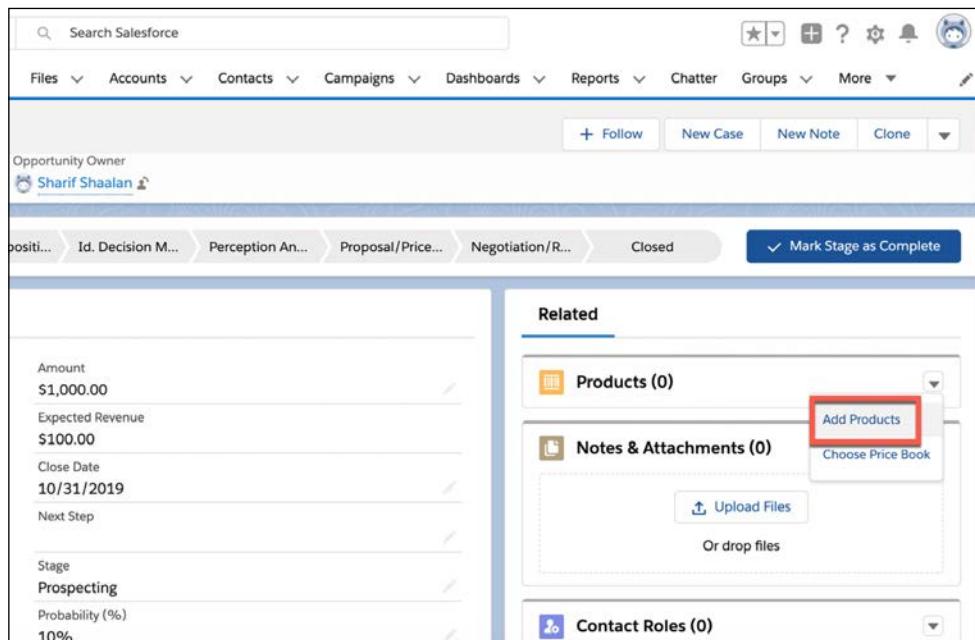


Figure 5.14: Option to add a product from the Related section of the opportunity page

We can see the initial stage of the Add Products page in the following screenshot:

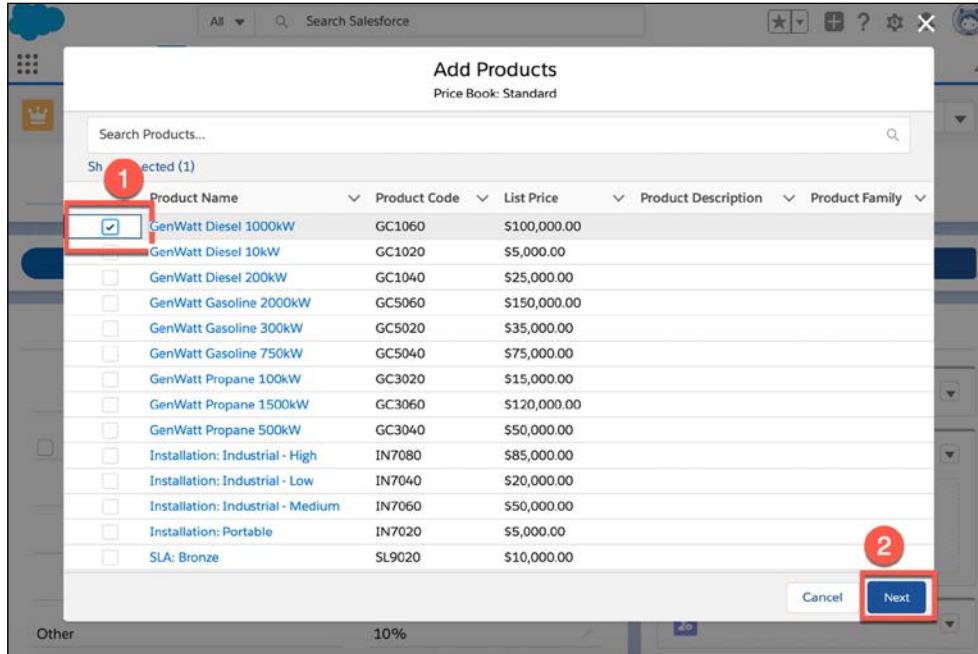


Figure 5.15: Selecting a product from the Add Products popup

2. You have the option to add one or more products. For this example, I added one product.

Now, let's see the options. The following screenshot shows the options for the product:

The screenshot shows the 'Edit Selected Products' page. The title is 'Edit Selected Products'. There is a table with columns: *Product, *Quantity, *Sales Price, Date, and Line Description. One row is visible, showing 'GenWatt Diesel 1000kW' in the Product column, '1' in the Quantity column, '\$100,000.00' in the Sales Price column, and empty fields for Date and Line Description. At the bottom left is a 'Back' button. At the bottom right are 'Cancel' and 'Save' buttons, with a red box highlighting the 'Save' button.

Figure 5.16: Optional details to add to a selected product

3. As you can see in the preceding screenshot, you can add the quantity, adjust the sales price if there is a discount on offer, set a date, and add a line description.
4. Once you have added these data points, click on **Save** to add the product to the opportunity. The following screenshot shows the product added to the opportunity:

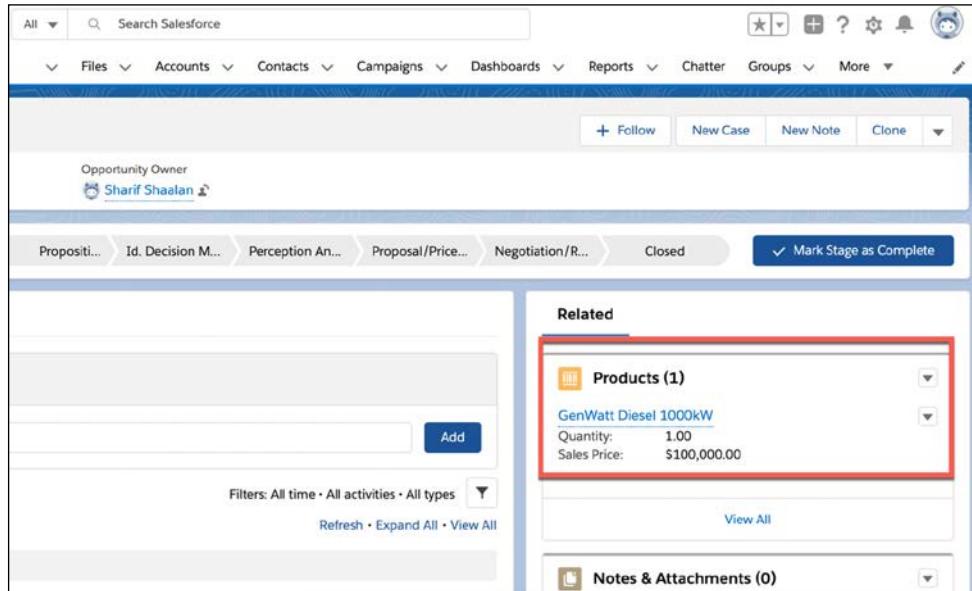


Figure 5.17: Added product details visible from the opportunity page

In the preceding screenshot, you can see that the product is now added to the opportunity. Notice that the opportunity account automatically inherits the sales price amount from the product.

In this section, we learned what products and price books are and how to add products to an opportunity. Next, let's take a look at how to add and send a quote to the decision-maker.

Creating quotes

Quotes are an integral part of the sales process and allow you to send pricing details to your clients. You can create multiple quotes as you work to close a deal. In this section, we will see how to create quotes.

The following screenshot shows you how to create a quote from an opportunity:

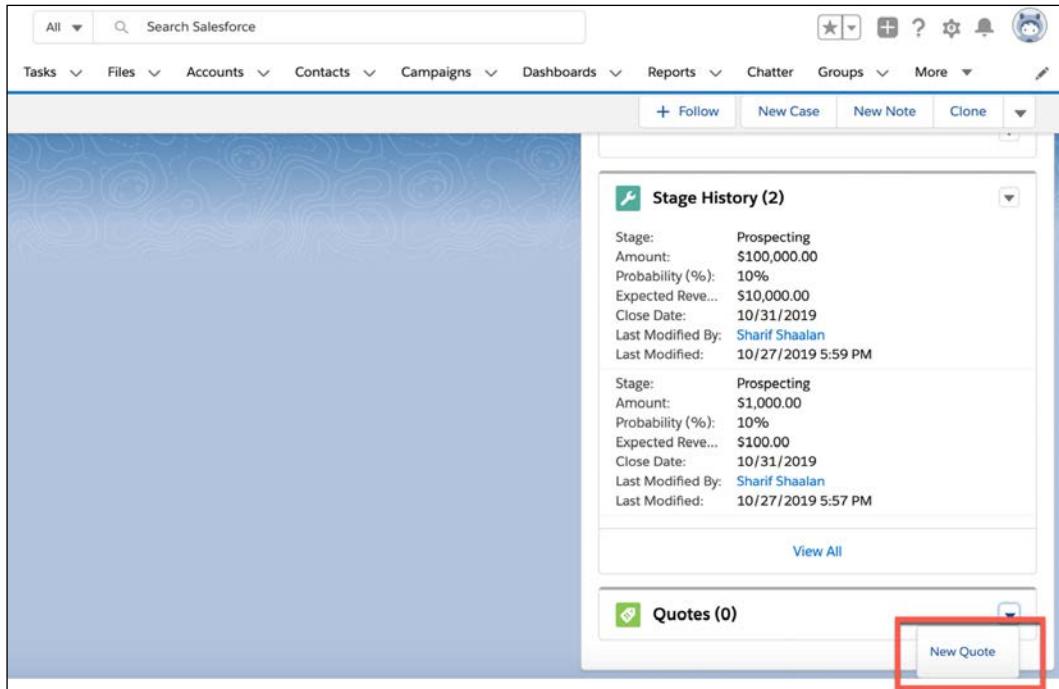


Figure 5.18: Option for creating a quote from the Quotes section of the opportunity page

Navigate to the **Quotes** section of the opportunity and click on **New Quote**. The following screenshot shows the quote creation page:

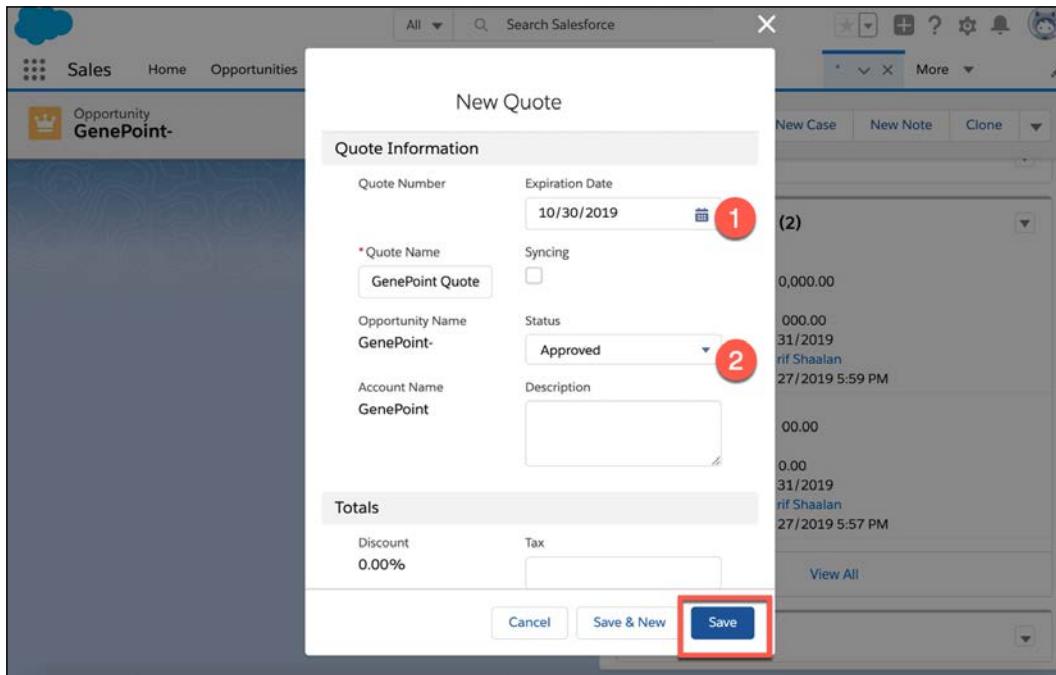


Figure 5.19: Fields found on the New Quote page

Then, fill in the **Expiration Date** field for the quote and set **Status** to **Approved** so that the quote can be used.

The following screenshot shows you how to generate a PDF of the quote by choosing **Create PDF** from the drop down menu. Creating a PDF of the quote makes it easy to share the quote with a client:

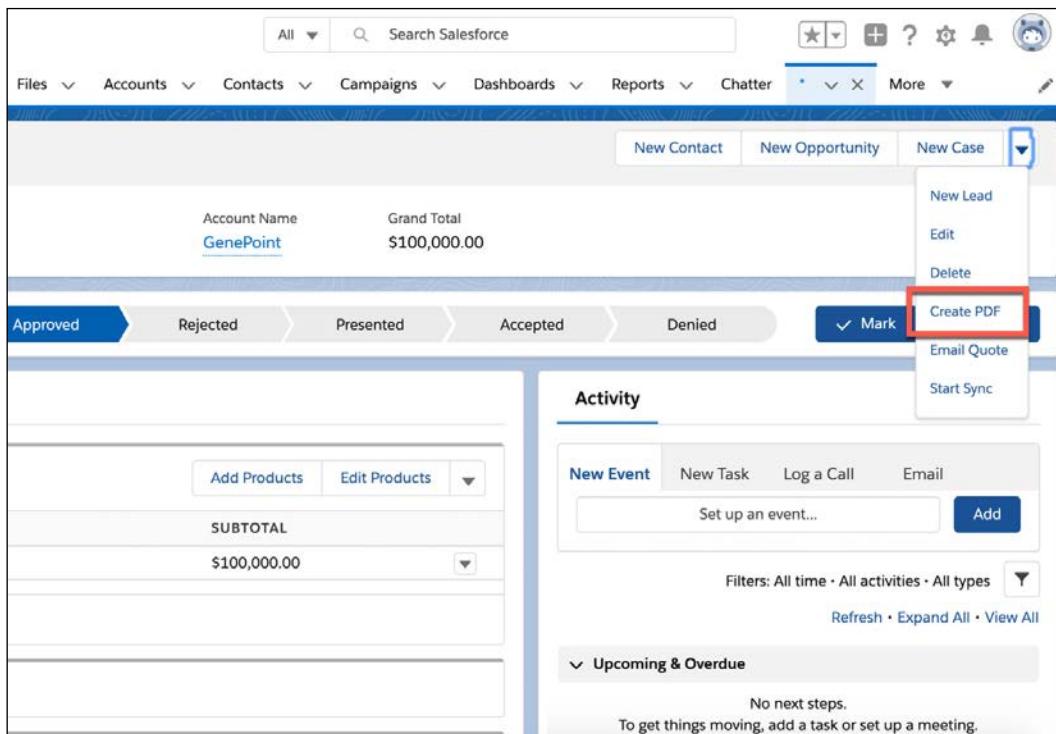


Figure 5.20: Option to create a quote PDF from the top-right drop-down menu

The following screenshot shows you how to send the quote out once the PDF is generated:

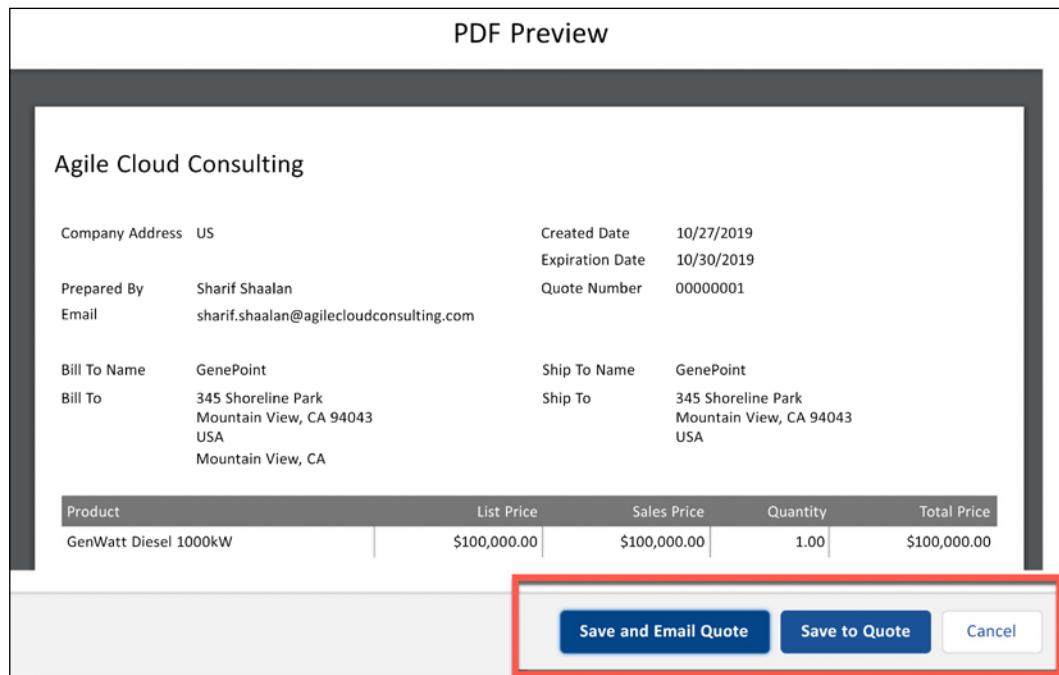


Figure 5.21: Sending a quote upon PDF generation

Once you review the quote, you can save and email it or save the PDF to the quote to send it at a later time. The quote will be saved to the files associated with the opportunity.

In this section, we learned what a quote is and how to send a quote from an opportunity. Next, we will look at how opportunities tie into forecasting.

Determining forecasts

Forecasting allows sales managers to predict how much income is projected for a specific time period. Each opportunity stage has a probability that ties into the forecast categories. Salesforce defines the forecast categories as follows:

- **Best Case** includes the amount you are likely to close, closed-won opportunities, and opportunities in the **Commit** category
- **Closed** includes the total for closed-won opportunities
- **Commit** includes the amount you are fairly sure you will close
- **Omitted** means the opportunity does not contribute to your forecast
- **Pipeline** includes all open opportunities

The following screenshot shows you how the forecast looks for the GenePoint deal, which is in the **Prospecting** stage. To get to this page, I navigated to the **Forecasts** tab:

The screenshot shows the Salesforce Forecasts tab for Opportunity Revenue. The user is Sharif Shaalan. The forecast is for 6 months, with the current month being October FY 2019. The table shows the following data:

Months	Closed	Commit	Best Case	Pipeline
Total: 6 Months	\$0.00	\$0.00	\$0.00	\$100,000.00
October FY 2019	\$0.00	\$0.00	\$0.00	\$100,000.00
November FY 2019	\$0.00	\$0.00	\$0.00	\$0.00
December FY 2019	\$0.00	\$0.00	\$0.00	\$0.00

Below the table, a detailed view for the GenePoint opportunity is shown:

Opportunity Name	Account Name	Amount	Close Date	Stage	Probability (%)	Forecast Categ...	Owner Full Name
GenePoint-	GenePoint	\$100,000.00	10/27/2019	Prospecting	10%	Pipeline	Shaalan, Sharif

Figure 5.22: Finding forecast details from the Forecasts tab

The deal shows up in the **Pipeline** category since it is not yet closed and is in a lower **Prospecting** stage. The **Prospecting** stage is the default stage when an opportunity is created. Now that we have added all the required elements to the opportunity, let's close it and see how this opportunity will show up in the forecast.

The following screenshot shows you how we mark an opportunity as **Closed Won**, which means you got the sale:

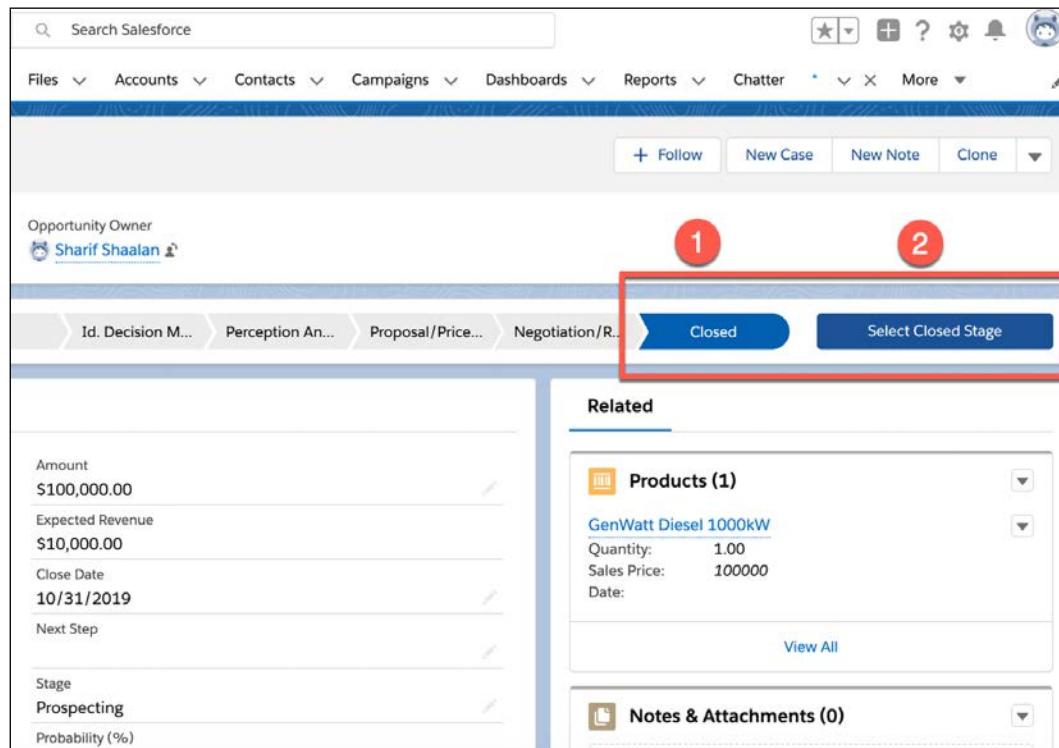


Figure 5.23: Selecting the Closed stage for an opportunity

Click on **Closed** (1) in the sales path, then click on **Select Closed Stage** (2). The following screenshot shows the popup that will appear on your screen:

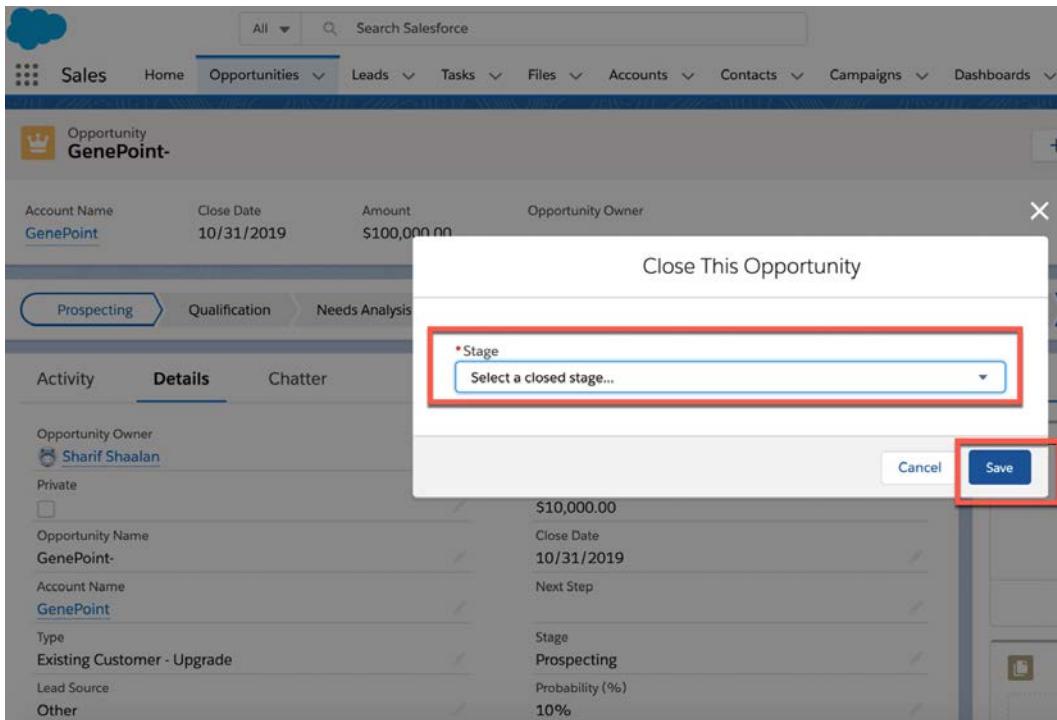


Figure 5.24: Popup for selecting the closed stage

The preceding screenshot shows the closed stage dropdown. You can choose **Closed Won**, which means you won the deal, or **Closed Lost**, which means you lost the deal. The following screenshot shows what happens when the deal is set to **Closed Won**:

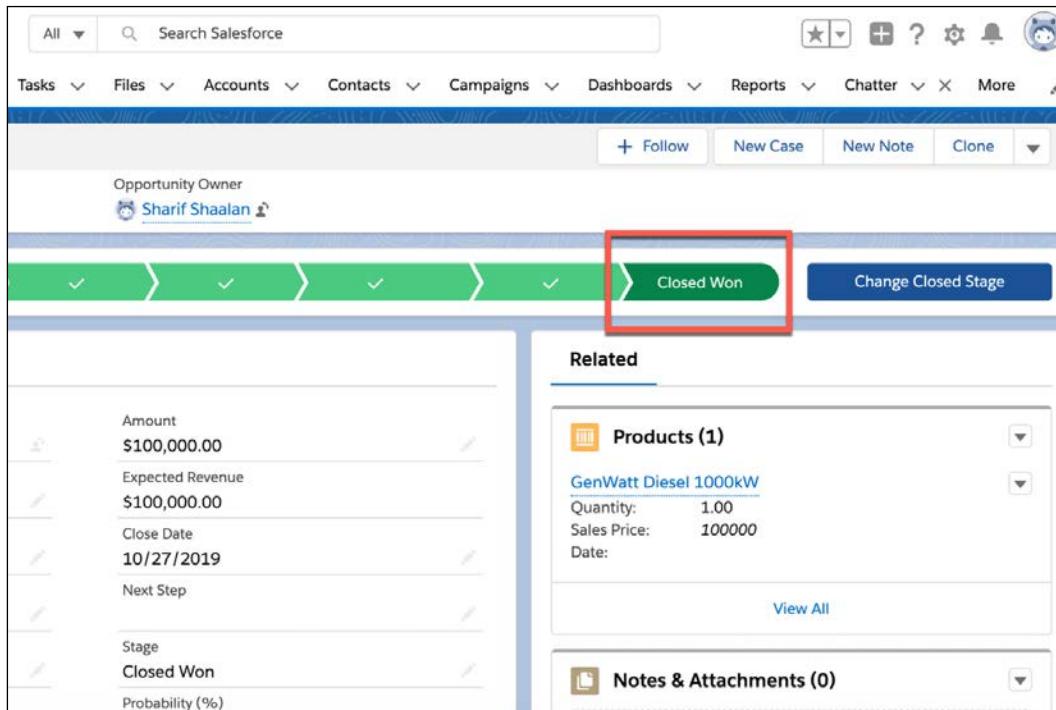


Figure 5.25: Appearance of the sales path after marking the opportunity as Closed Won

In the preceding screenshot, we can see that the sales path has turned entirely green and the deal is set to **Closed Won**. The following screenshot shows you how the forecast looks when the deal is won:

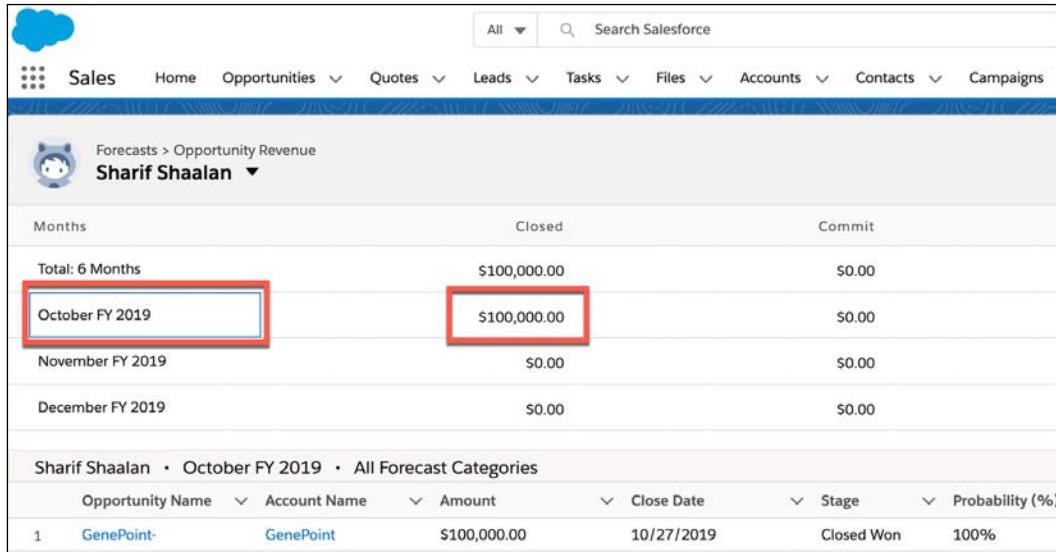


Figure 5.26: Appearance of the forecast after selecting **Closed Won**

In the preceding screenshot, you can see that the deal now shows up in the **Closed** category in the forecasting section.

In this section, we learned what forecasts are and how an opportunity contributes to forecasts.

Summary

In this chapter, we learned what opportunities are and how to create them. We discovered the different opportunity stages and how they are used with the sales path to record the progress of an opportunity. We also understood what contact roles are and how to add them to an opportunity. Then, we looked at products and price books, and how to add products to an opportunity so that we can show what is being sold. We also learned how to create and generate a quote PDF. Finally, we worked with forecasts and observed how opportunities tie into forecasting.

In the next chapter, we will cover campaigns—the foundation of marketing functionality in Salesforce.

Questions

1. How many opportunities can you have on an account?
2. What is the difference between the opportunity stages and the sales path?
3. How many **Contact Role** instances can be added to an opportunity?
4. What happens to the **Amount** field on an opportunity when you add products?
5. Who do you send quotes to in an opportunity?
6. What are the two types of **Closed** stages in an opportunity?
7. What is included under the **Best Case** forecast category?

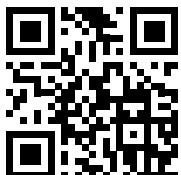
Further reading

- Salesforce opportunities:
<https://help.salesforce.com/articleView?id=opportunities.htm&type=5>
- Salesforce forecasting: https://help.salesforce.com/articleView?id=forecasts3_overview.htm&type=5

Join our community on Discord

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<https://packt.link/rLptF>



6

Achieving Business Goals Using Campaigns

Campaigns are outbound marketing initiatives that target leads and contacts. They can take the form of direct mail, events, print ads, emails, or any other marketing outreach where you are trying to get a response from the recipients. This response can take the form of interest in a product, attending an event such as a seminar or a webinar, or clicking on an ad. Campaigns tie marketing and sales together as they help generate leads and track those leads as they convert into opportunities and, finally, into opportunity closure. This closure can either be **Closed Won** (a sale) or **Closed Lost** (a lost sale).

Campaigns use campaign members to track who is associated with a campaign. Campaign members can be leads or contacts that have been contacted for a specific marketing campaign. Campaigns can also be nested in a hierarchy. This means that you may have an overall campaign, such as **2022 Email Campaigns**, and underneath it resides all the email marketing campaigns of that year. This is very useful as all the campaign statistics come under the parent, showing the overall performance of all the subcampaigns. Many third-party apps, such as email providers or event management tools, also integrate with Salesforce and tie into campaigns.

In this chapter, we will cover the following topics:

- Creating campaigns
- Adding campaign members
- Managing marketing with campaign hierarchies
- Improving campaign functionality with third-party apps

With the help of these topics, we will gain the required skills to create a campaign and see what a campaign record contains. We will learn how to create campaign members associated with a campaign and see how this looks on a lead and a contact record. We will also be able to create a campaign hierarchy and see how this helps with the reports. Finally, we will see how integrating third-party apps can make using campaigns more powerful by automating aspects of responses to a campaign.

Technical requirements

For this chapter, make sure you log in to your development org and follow along.

Creating campaigns

Campaigns are outbound marketing initiatives used by marketers. The reason campaigns are so important is that they are a primary means of obtaining leads and starting the sales cycle. You can look at campaigns as buckets that bring together leads, contacts, and opportunities.

Business use case

You are a marketing rep at XYZ Widgets. You have been tasked with delivering a webinar and you need to create the webinar campaign in Salesforce, as well as invite attendees and track their progress. Let's see how this is done.

Creating a campaign

Let's take a look at how to create a campaign in Salesforce and go through the various fields to include when creating a campaign:

Go to the **Campaigns** tab to start the process, then click on **New**:

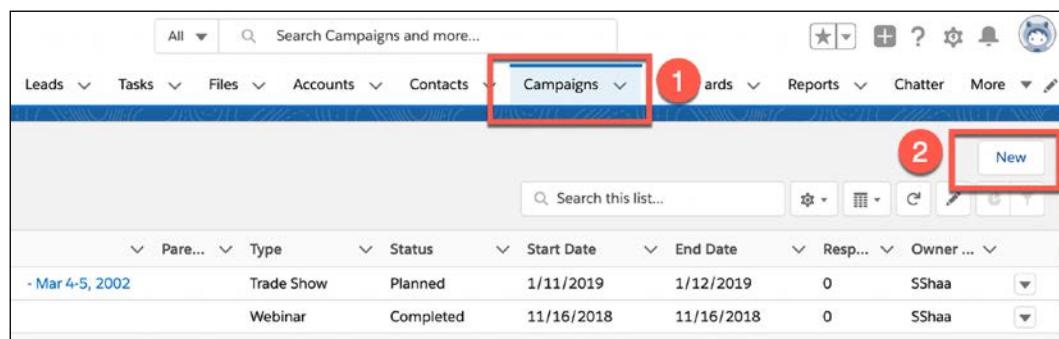


Figure 6.1: Option to create a new campaign from the Campaign tab

In the following screenshot, you can see part of the campaign creation screen:

The screenshot shows the 'New Campaign' creation screen in a Salesforce interface. The 'Campaign Information' section contains the following fields and their values:

- Campaign Owner:** Sharif Shaalan (marked with a red circle labeled 1)
- Campaign Name:** Agile Cloud Consulting January 2020 Webinar (marked with a red circle labeled 2)
- Active:** Checked (marked with a red circle labeled 3)
- Type:** Webinar (marked with a red circle labeled 4)
- Status:** Planned (marked with a red circle labeled 5)
- Start Date:** 1/15/2020 (marked with a red circle labeled 6)
- End Date:** 1/15/2020 (marked with a red circle labeled 7)

At the bottom of the screen are three buttons: 'Cancel', 'Save & New', and 'Save'.

Figure 6.2: Fields on the New Campaign creation screen

As you can see in the preceding screenshot, there are several fields on this page:

1. **Campaign Owner:** This is the name of the person that created the campaign and so owns it in Salesforce.
2. **Campaign Name:** This is the unique name that you need to include to indicate what the campaign is used for. In this example, we used Agile Cloud Consulting January 2020 Webinar.
3. **Active:** This checkbox is used to set the campaign as **Active**, which means it is currently being worked on.
4. **Type:** This field defines the type of the campaign. This can be **Email**, **Direct mail**, **Webinar**, and so on. In this example, we will set it to **Webinar**.
5. **Status:** This field lets us know what the current status of the campaign is. This can be **Planned**, **In Progress**, or **Complete**.

6. **Start Date:** This field lets us know when the campaign is set to start.
7. **End Date:** This field lets us know when the campaign is set to end.

In the following screenshot, you can see the rest of the fields on the campaign creation screen:

The screenshot shows the 'Edit Agile Cloud Consulting January 2020 Webinar' campaign creation screen. The form includes the following fields:

- Expected Revenue in Campaign: \$10,000 (marked with red circle 1)
- Budgeted Cost in Campaign: \$1,000 (marked with red circle 2)
- Actual Cost in Campaign: 0 (marked with red circle 3)
- Expected Response (%): 50.00% (marked with red circle 4)
- Num Sent in Campaign: 0 (marked with red circle 5)
- Parent Campaign: 2020 Webinar Campaigns (marked with red circle 6)
- Created By: Sharif Shaalan, 11/6/2019 7:30 PM
- Last Modified By: Sharif Shaalan, 11/6/2019 7:30 PM (marked with red circle 7)

At the bottom right are three buttons: 'Cancel', 'Save & New', and 'Save'.

Figure 6.3: Further fields on the campaign creation screen

As you can see in the preceding screenshot, there are several more important fields to fill in:

1. **Expected Revenue in Campaign:** This is how much revenue—closed opportunities—you expect to come by from this campaign.
2. **Budgeted Cost in Campaign:** This is how much the campaign costs. In our example, it would be the budget you have to put on the webinar.
3. **Actual Cost in Campaign:** This is filled in after the campaign is complete. It should note how much it actually cost to put on the webinar.
4. **Expected Response (%):** This is how many responses from leads and contacts we expect to receive out of all of the invitations we send out.
5. **Num Sent in Campaign:** This is how many leads and contacts are included in the campaign. This number is automatically calculated once we add campaign members in the next section.

6. **Parent Campaign:** This is how to set up the campaign hierarchy, which we will cover in further detail in the *Managing marketing with campaign hierarchies* section of this chapter. This allows the numbers from the webinar campaign to come under the parent campaign.
7. **Save:** When all the fields are filled in, you can save the campaign to create it.

The following screenshot shows you what the created campaign looks like:

The screenshot shows a Salesforce campaign page. At the top, there's a navigation bar with links for All, Tasks, Files, Accounts, Contacts, Campaigns (which is highlighted), Dashboards, Reports, Chatter, and More. Below the navigation is a toolbar with New Contact, New Opportunity, and New Case buttons. The main content area has two sections. Section 1, on the left, contains a red-bordered box around a table of roll-up statistics:

Leads in Campaign	0
Converted Leads in Campaign	0
Contacts in Campaign	0
Responses in Campaign	0
Opportunities in Campaign	0
Won Opportunities in Campaign	0
Value Opportunities in Campaign	\$0
Value Won Opportunities in Campaign	\$0

Section 2, on the right, is titled "Activity" and contains a red-bordered box around an activity feed:

New Event New Task Log a Call Email

Set up an event... Add

Filters: All time • All activities • All types Refresh • Expand All • View All

Upcoming & Overdue

No next steps.
To get things moving, add a task or set up a meeting.

No past activity.
Past meetings and tasks marked as done show up here.

Figure 6.4: Two sections on the screen for a created campaign

As you can see in the preceding screenshot, the campaign is now created. There are two important sections to note here:

1. **The campaign roll-up fields:** These fields auto-calculate based on the leads and contacts that are added, the leads that are converted into opportunities, and the opportunities that are turned into sales. These fields are important in analyzing the **Return on Investment (ROI)** for a specific campaign. They allow you to see how many responses or leads you had and how many of those leads were converted into opportunities. You can then see how many of the opportunities were closed, giving you a lead-to-opportunity-to-sale ratio that indicates whether the campaign was a success or not.

2. **Activities:** Note that you can add activities to campaigns as you could with leads, contacts, accounts, and opportunities.

Now that we have created the campaign, let's see how we can add campaign members in the following section.

Adding campaign members

Campaign members are the leads and contacts that you reach out to be a part of your campaign. In our webinar example, this includes any leads or contacts you reach out to attend the webinar. Some members may respond and sign up for the webinar, while others may not. Out of the campaign members that respond, some may go on to make a purchase as a result of the webinar—these sales would be tied directly to the campaign and show the ROI of putting on the webinar. Let's take a look at how to add leads and contacts to the campaign we created in the previous section.

Adding leads as campaign members

As you can see in the following screenshot, you first need to navigate to the **Campaign Members** section:

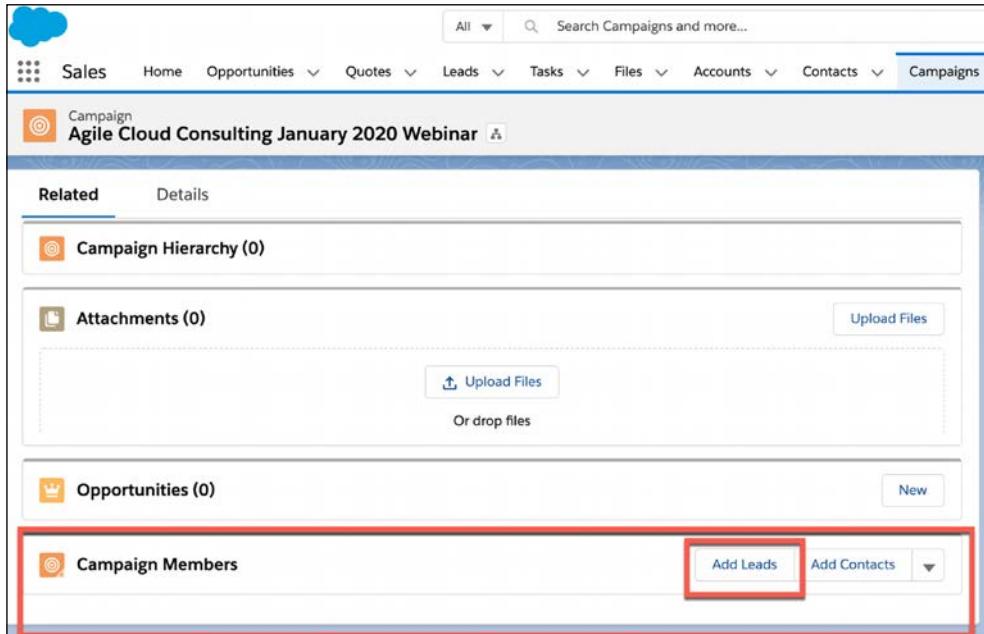


Figure 6.5: Option to add leads from the Campaign Members section

After navigating to the **Campaign Members** section, click on **Add Leads**.

In the following screenshot, you can see the Add Leads to Campaign page:

The screenshot shows a table titled "Add Leads to Campaign". At the top left is a search bar with the placeholder "Bertha Boxer". Below it, a message says "1 item selected". The table has columns: Name, Title, Company, Phone, Mobile, Email, Lead Status, and Owner. A single row is selected, highlighted with a red box and a circled '1'. The row contains: Name (Bertha Boxer), Title (Director of Vendor Relations), Company (Farmers Coop. of Florida), Phone ((850) 644-4200), Mobile (bertha@fcf.net), Lead Status (Working - Contacted), and Owner (SShaa). At the bottom right are "Cancel" and "Next" buttons, with "Next" highlighted by a red box and circled '2'.

Figure 6.6: Page for selecting leads to add to a campaign

As you can see in the preceding screenshot, there are two actions to be taken:

1. Choose the leads you want to add. This is done by clicking on the checkbox next to the lead name. In this example, there is only one lead, but you can add more than one lead at once.
2. Click on Next to move on to the final step of adding a campaign member.

In the following screenshot, you can see the popup that will appear on your screen:

The screenshot shows a modal window titled "Add to Campaign". Inside, it says "1 lead selected". Under "Campaign", "Agile Cloud Consulting January 2020 Webinar" is listed. Under "Member Status", a dropdown menu shows "Sent" (highlighted with a red box). Below that, under "Existing campaign member", there are two radio buttons: "Keep existing Member Status" (selected) and "Update to the selected Member Status". At the bottom are "Cancel" and "Submit" buttons, with "Submit" highlighted by a red box.

Figure 6.7: Popup for selecting Member Status when adding a campaign member

As you can see in the preceding screenshot, the default status is **Sent**. If the lead signs up for the webinar, this is updated to **Responded**. Clicking on **Submit** creates the campaign member record.

There is also an option to mass import leads if, for example, you have a list in a CSV file from a conference or from a marketing list that you may have purchased. The following screenshot shows this option:

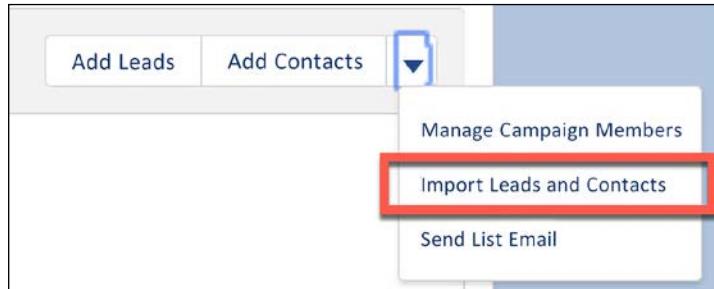


Figure 6.8: Option for importing leads to a campaign

As you can see in the preceding screenshot, if you click on the dropdown arrow next to **Add Leads** and **Add Contacts**, you will find the **Import Leads and Contacts** link. This takes you to an import wizard that allows you to mass-import leads or contacts as needed.

Next, let's take a look at how to add a contact as a campaign member.

Adding contacts as campaign members

In the following screenshot, we can see what the **Campaign Members** list looks like now that a lead has been added:

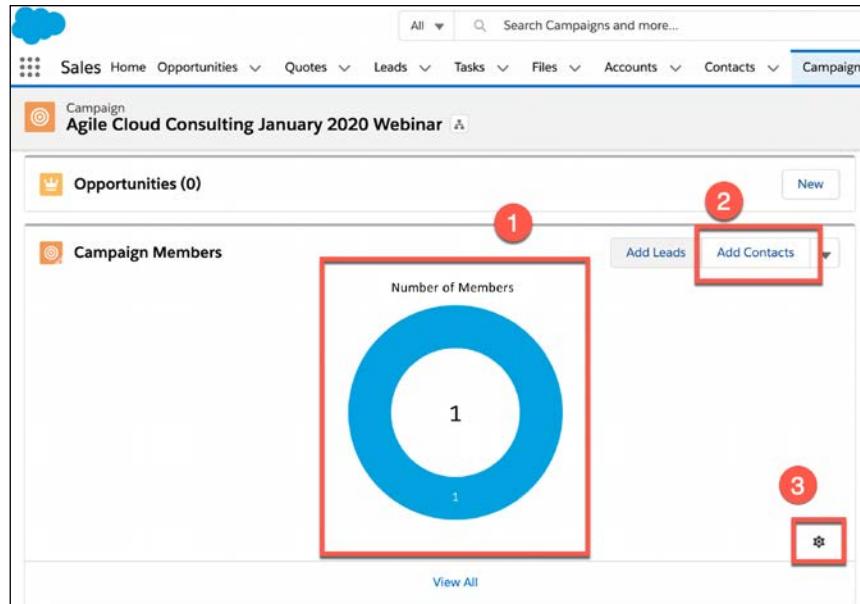


Figure 6.9: Steps for adding contacts to a campaign

As you can see in the preceding screenshot, the lead now shows up under the **Number of Members** section (1). Let's click on **Add Contacts** (2) to add contacts as campaign members. Note that the gear icon in the preceding screenshot (3) allows you to change the graph from a donut chart to a vertical or horizontal bar graph.

In the following screenshot, you can see the **Add Contacts to Campaign** page:

This screenshot shows the "Add Contacts to Campaign" page. At the top, it says "Add Contacts to Campaign". Below that, there's a search bar with entries for "Brenda Mcclure" and "John Doe". A red box highlights the search results area, which shows "2 items selected" and lists the two contacts with their names, accounts, phones, emails, and contact owner aliases. To the right of this table is a "Next" button, which is also highlighted with a red box. A red circle with the number 2 is placed over the "Next" button.

Name	Account Name	Phone	Email	Contact Owner Alias
John Doe	GenePoint	(999) 999-9999	SShaa	
Brenda Mcclure	Cadinal Inc.	(847) 262-5000	brenda@cardinal.net	SShaa

Figure 6.10: Steps for selecting contacts to add to a campaign

As you can see in the preceding screenshot, there are two actions to be taken:

1. Choose the contacts you want to add. This is done by clicking on the checkbox next to the contact name.
2. Click on **Next** to move on to the final step of adding a campaign member.

In the following screenshot, you can see the final screen for adding the contact as a campaign member:

The screenshot shows a modal dialog titled "Add to Campaign". Inside, it says "2 Contacts Selected". Under "Campaign", there is a list box containing "Agile Cloud Consulting January 2020 Webinar". Below that, under "Member Status", there is a dropdown menu set to "Sent". A red box highlights this "Member Status" section. At the bottom, there are two radio buttons: "Keep existing Member Status" (which is checked) and "Update to the selected Member Status". At the very bottom right, there are "Cancel" and "Submit" buttons, with the "Submit" button also highlighted by a red box.

Figure 6.11: Default member status when adding a contact to a campaign

As you can see in the preceding screenshot, the default status is **Sent**. If the contact signs up for the webinar, this is updated to **Responded**. Clicking on **Submit** creates the campaign member record.

Next, let's take a look at how to view the campaign history of leads and contacts.

Viewing the campaign history of leads and contacts

The campaign history is a record of all the campaigns that a lead or contact has previously interacted with. Let's take a look at how to view the campaign history of leads and contacts.

In the following screenshot, you can see that you first need to navigate to the lead that was added as a campaign member:

The screenshot shows a Salesforce lead record for 'Ms. Bertha Boxer'. The lead information includes Title: Director of Vendor Relations, Company: Farmers Coop. of Florida, Phone: (850) 644-4200, and Email: bertha@fcf.net. The status bar at the top indicates the lead is 'Working - Contacted'. Below the lead info, there's an 'Activity' section with tabs for 'New Task', 'Log a Call', 'New Event', and 'Email'. A note says 'No next steps. To get things moving, add a task or set up a meeting.' To the right, under 'Related', it says 'We found no potential duplicates of this lead.' and lists 'Campaign History (1)' for 'Agile Cloud Consulting January 2020 Webinar'.

Figure 6.12: Viewing a lead's campaign history

As you can see, the webinar campaign shows up under the **Campaign History** section of the lead. In the following screenshot, you can see a contact that was added as a campaign member:

The screenshot shows a Salesforce contact record for 'Brenda Mcclure'. The contact information includes Stage: Prospecting, Amount: \$1000, and Close Date: 9/30/2019. Below the contact info, there's a 'Cases (0)' section and a large 'Campaign History (1)' section. The 'Campaign History' section shows one entry: 'Agile Cloud Consulting Janu...' with Start Date: 1/15/2020, Type: Webinar, and Status: Sent. At the bottom, there's a 'Notes & Attachments (0)' section.

Figure 6.13: Viewing a contact's campaign history

As you can see, the webinar campaign shows up in the **Campaign History** section of the contact. Let's take a look at one final feature of the **Campaign Members** section.

Sending an email to the list of campaign members

A very useful feature in the **Campaign Members** section is the ability to send all of the campaign members an email right from Salesforce. The following screenshot shows the **Campaign Members** section of the campaign:

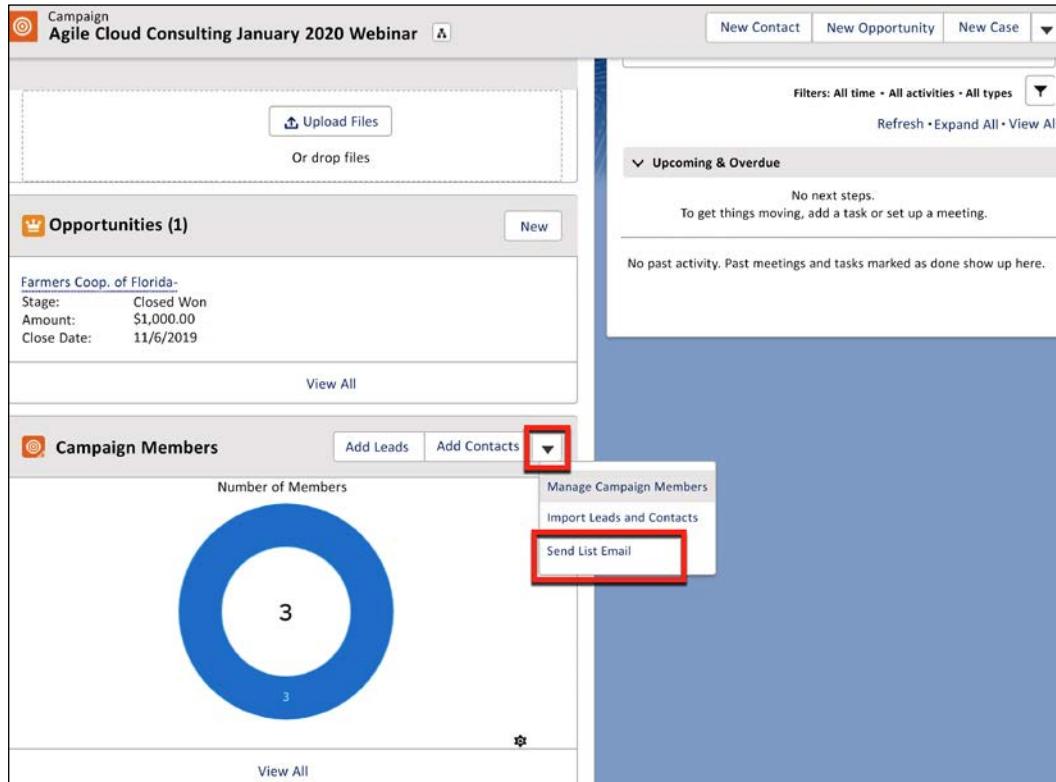


Figure 6.14: Send List Email option from the Campaign Members dropdown

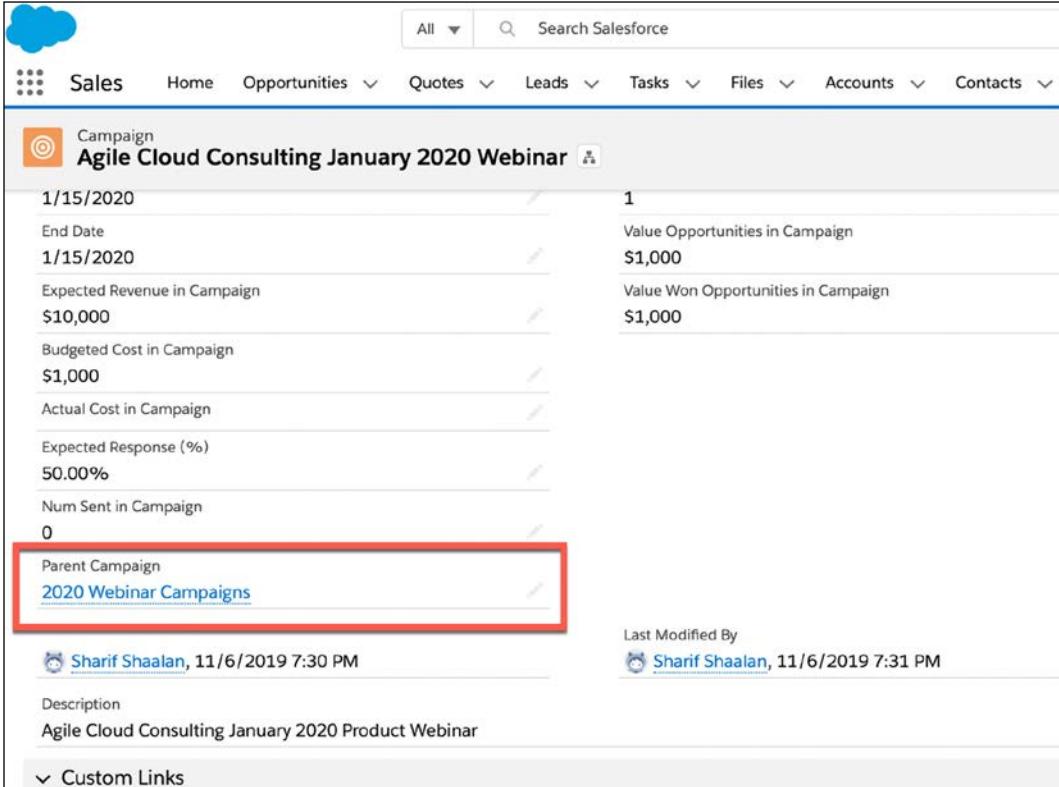
As you can see in the preceding screenshot, if you click on the dropdown arrow, there is the **Send List Email** option. This takes you to an email composition page, where you can write and send your email.

Now, we have seen how to create a campaign and how to add campaign members to a campaign. Next, let's look at what campaign hierarchies are and how to use them.

Managing marketing with campaign hierarchies

Campaign hierarchies allow you to group campaigns under a top-level campaign. This can help in showing you the overall performance of a type of campaign over a year. For our webinar example, we want all the webinar campaigns that took place in 2022 to reside under a parent campaign called **2022 Webinar Campaigns**. Let's see how to do this.

In the following screenshot, you can see that the parent campaign for our January 2022 webinar is **2022 Webinar Campaigns**:



The screenshot shows a Salesforce campaign page for "Agile Cloud Consulting January 2020 Webinar". The page includes fields for Start Date (1/15/2020), End Date (1/15/2020), Expected Revenue in Campaign (\$10,000), Budgeted Cost in Campaign (\$1,000), Actual Cost in Campaign, Expected Response (%), Num Sent in Campaign (0), and a Parent Campaign field. The Parent Campaign field is highlighted with a red box and contains the value "2020 Webinar Campaigns". The page also shows last modified information by Sharif Shaalan on 11/6/2019 at 7:30 PM and 7:31 PM.

Figure 6.15: Parent Campaign information on a campaign page

This means any numbers for this January campaign automatically come under this parent campaign.

In the following screenshot, we can see how the campaign hierarchy numbers show up under the parent campaign:

The screenshot shows a Salesforce interface with a blue cloud icon and the word 'Sales' in the top left. The top navigation bar includes 'All', a search bar with 'Search Salesforce', and various menu items like 'Home', 'Opportunities', 'Quotes', 'Leads', 'Tasks', 'Files', 'Accounts', 'Reports', 'Chatter', and 'More'. Below the navigation is a breadcrumb trail 'CAMPAIN > 2020 WEBINAR CAMPAIGNS'. The main title is 'Campaign Hierarchy'. A table displays campaign information with columns: CAMPAIGN NAME, LEADS IN..., CONVERT..., CONTACT..., OPPORT..., WON OP..., EXPECTE..., BUDGETE..., and ACTUAL There are two rows: the first row is for '2020 Webinar Campaigns' with values 1, 1, 3, 1, 1, \$10,000, \$1,000, and \$0; the second row is for 'Agile Cloud Consulting Januar...' with values 1, 1, 3, 1, 1, \$10,000, \$1,000, and \$0.

CAMPAIGN NAME	LEADS IN...	CONVERT...	CONTACT...	OPPORT...	WON OP...	EXPECTE...	BUDGETE...	ACTUAL ...
2020 Webinar Campaigns	1	1	3	1	1	\$10,000	\$1,000	\$0
Agile Cloud Consulting Januar...	1	1	3	1	1	\$10,000	\$1,000	\$0

Figure 6.16: Campaign hierarchy information

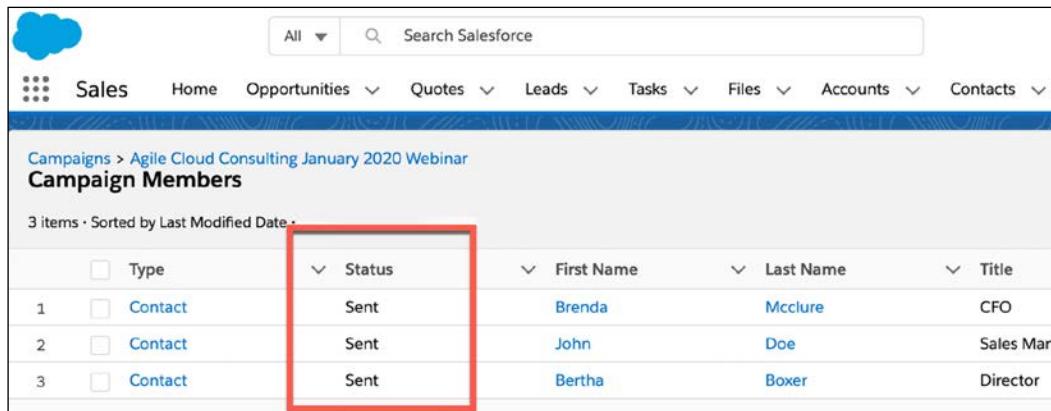
This shows the number of leads and contacts in the child campaigns, any opportunities that result from these campaigns, and any sales that result from these opportunities, which gives us a full picture of the performance of all the webinars in 2022.

Now that we have seen how to create and use campaigns, how to add campaign members, and how the campaign hierarchy shows us the performance of our campaigns across the year, let's look at how third-party apps contribute to automating campaigns.

Improving campaign functionality with third-party apps

So far, we have seen how campaigns work. In our example, the marketing rep chooses leads and contacts and adds them to the webinar campaign. These campaign members default to a status of **Sent** and when they sign up for a webinar, the status updates to **Responded**. How does this status change happen? Without a third-party app, it would need to be updated manually.

In the following screenshot, we can see the campaign members that we added:



The screenshot shows the Salesforce interface for managing campaign members. The top navigation bar includes the Salesforce logo, a search bar labeled "Search Salesforce", and a menu with items like All, Home, Opportunities, Quotes, Leads, Tasks, Files, Accounts, and Contacts.

The main content area displays a list titled "Campaigns > Agile Cloud Consulting January 2020 Webinar Campaign Members". It shows 3 items sorted by Last Modified Date. The list includes columns for Type (Contact), Status (Sent), First Name, Last Name, and Title. Three contact records are listed:

Type	Status	First Name	Last Name	Title
Contact	Sent	Brenda	Mcclure	CFO
Contact	Sent	John	Doe	Sales Man
Contact	Sent	Bertha	Boxer	Director

Figure 6.17: Member Status field for members of a campaign

Notice that the status is set to **Sent** by default. There are many third-party apps available for campaigns such as webinars, events, conferences, or any other campaign use cases. Without using a third-party app, in our example, whenever a lead or contact signs up for the webinar, you would need to go into the system and update the status manually. This can be very time-consuming.

To find an appropriate third-party app, you can go to <https://appexchange.salesforce.com/>. AppExchange is the Salesforce store for third-party apps. You can go to AppExchange to search for and find relevant apps. Most apps allow you to test drive the app in a sandbox (test environment) for free before committing to the purchase. In the following screenshot, you can see the main AppExchange page:

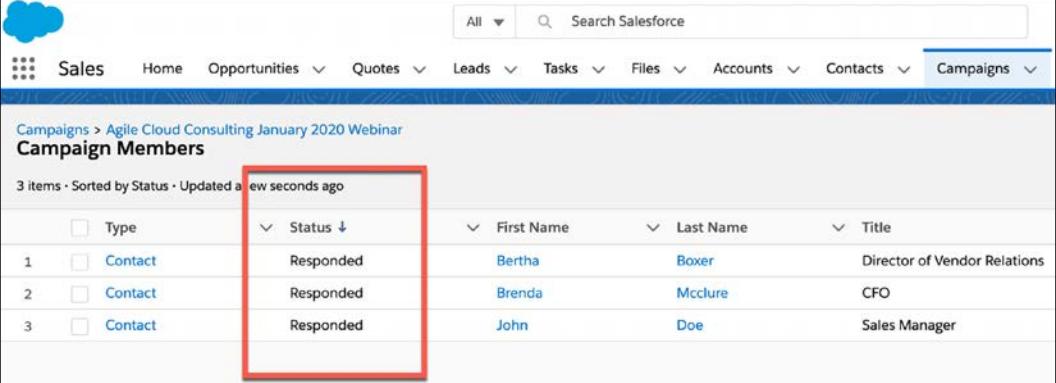
The screenshot shows the AppExchange homepage with a search bar containing 'webinar'. The search results are displayed in a table with columns for LATEST RELEASE, RATING, and PRICE. There are also filters on the left for Solution Type (Apps, Components, Consultants, Content), Prices (Free, Paid, Discounted for Nonprofits), and Editions (Essentials, Professional, Enterprise, Unlimited, Performance, Force.com). A sidebar on the right shows a list of recommended apps.

APP	LATEST RELEASE	RATING	PRICE
Validar Lead Import with AnySource	3/15/2009	★★★★★ (24)	Paid
GoToWebinar Integration	3/28/2019	★★★★☆ (13)	Paid
PLAYER MAP X-Ray (PMX)	3/13/2011	★★★★★ (6)	Paid
Campaign Calendar for Salesforce	7/1/2019	★★★★★ (51)	Paid
eShopSync for WooCommerce	5/28/2018	★★★★★ (82)	Free
Swift Meetings	7/15/2017	★★★★☆ (2)	Paid
Blackthorn Events - Native Event Management & Event Registration	9/13/2019	★★★★★ (55)	Paid
Clarizen Salesforce Edition	2/21/2016	★★★★☆ (30)	Paid
CloudAnswers Free Marketing Calendar	2/11/2017	★★★★☆ (41)	Free

Figure 6.18: AppExchange home page

As you can see in the preceding screenshot, I entered webinar into the search box and all of the apps related to webinars that integrate with Salesforce were returned.

Assume that we have connected to a third-party webinar app that integrates with Salesforce:



The screenshot shows the Salesforce interface with the navigation bar at the top. Below it, a specific campaign record is displayed under the 'Campaigns' section. The page title is 'Campaign Members'. A red box highlights the 'Status' column in the data grid, which lists three contacts, all of whom have their status set to 'Responded'.

1	Type	Status	First Name	Last Name	Title
1	Contact	Responded	Bertha	Boxer	Director of Vendor Relations
2	Contact	Responded	Brenda	McClure	CFO
3	Contact	Responded	John	Doe	Sales Manager

Figure 6.19: Member Status field updated to Responded

Notice that when someone signs up for the webinar through the third-party app, the app integration automatically updates the status to **Responded**.

This is how we use third-party apps with campaigns to know whether and when a member has signed up.

Summary

In this chapter, we covered how to create campaigns and what the important input fields are on campaign records to increase our visibility of the market. We discovered that both leads and contacts can be added to campaigns, as well as how to add a lead and contact to a campaign.

We went through how to view the campaign history of both leads and contacts, and we now know what a campaign hierarchy is and how to add a campaign to a hierarchy.

Finally, we explained how third-party apps can be used to automate campaign responses, cutting out manual work that could be inefficient and unreliable due to human error. We also now know where to find third-party apps on AppExchange to automatically find out when a member signs up.

Now that we have covered sales and marketing, we will look at how Salesforce handles customer service through cases in the next chapter!

Questions

1. What are the two types of campaign members that can be added to a campaign?
2. Why would you want to add a parent campaign to your campaign?
3. What is the name of the section where you can see campaigns related to leads and contacts?
4. What field lets us know if a campaign is **Active**?
5. Why would you want to use a third-party app with campaigns?
6. What are three examples of types of campaigns?

Further reading

- Salesforce campaigns: https://help.salesforce.com/articleView?id=campaigns_def.htm&type=5
- Salesforce campaign members:
https://help.salesforce.com/articleView?id=campaigns_members_working_with_parent.htm&type=5
- Campaign hierarchies: https://help.salesforce.com/articleView?id=campaigns_hierarchy_setup.htm&type=5

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<https://packt.link/r1ptF>



7

Enhancing Customer Service with Cases

Cases are the foundation of the customer service experience in Salesforce. A customer can open a case to report an issue or ask a question. Cases are connected to a contact and the account related to that contact to show the person and the business that originated the case. While Service Cloud includes more robust case functionality, Sales Cloud includes the basic functionality for cases. These Sales Cloud features include creating a case, escalation rules, **Web-to-Case**, and **Email-to-Case**. This basic functionality supports sales operations that want to track the customer service experience but do not have a dedicated customer service department. Service Cloud includes add-ons and extended functionality that does not come with Sales Cloud. Service Cloud includes modules such as entitlements, a knowledge base, and a service console. These modules are meant for full customer service teams.

In this chapter, we will cover the basic case functionality that is the foundation of Service Cloud. The following topics will be covered in detail in this chapter:

- Introducing cases
- Understanding case status
- Creating escalation rules
- Using Web-to-Case to generate case capture forms
- Setting up Email-to-Case

With the help of these topics, you will be able to gain the skills needed to create a case and see what the case record contains. You will learn what the case status field is, and how it is used to drive the case life cycle. You will learn the skills needed to set up and use escalation rules, and how to set up and use both **Web-to-Case** and **Email-to-Case** to enhance the customer experience.

Technical requirements

For this chapter, make sure to log in to your development org and follow along.

Introducing cases

A case is a file that contains all interactions between a customer and a company from the problem description (or complaint) to its resolution. A case may contain several back-and-forth questions and responses.

Business use case

You are a customer service rep at XYZ Widgets. You get a call about a mechanical issue from one of your customers. You will need to create a case to log the issue. We will look at how to deal with this use case, and then explore how to create escalation rules and how customers submit cases through the web, as well as through email, that may end up in your queue.

Creating a case

Let's take a look at how to create a case in Salesforce and go through the fields included when creating a case.

In the following screenshot, I clicked on the **Cases** tab to start the process:

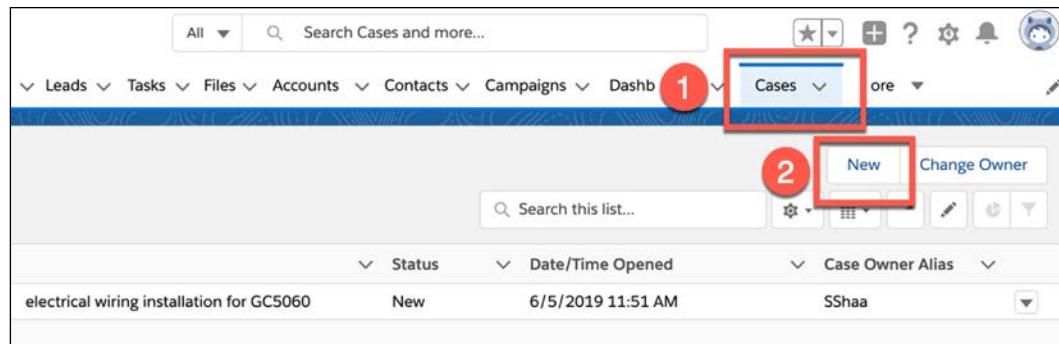


Figure 7.1: Creating a case by clicking on New under the Cases tab

Once I was on the **Cases** tab, I clicked on **New**. This took me to the case creation screen:

The screenshot shows the 'New Case' interface in Salesforce. The 'Case Information' section contains the following fields with numbered callouts:

- Case Owner:** Sharif Shaalan (1)
- Status:** New (6)
- Case Number:** (empty)
- Priority:** Medium (7)
- Contact Name:** Brenda McClure (2)
- Case Origin:** Phone (8)
- Account Name:** Cadinal Inc. (3)
- Type:** Mechanical (4)
- Case Reason:** Installation (5)

At the bottom of the screen are three buttons: 'Cancel', 'Save & New', and 'Save'.

Figure 7.2: Data fields on the case creation screen

As you can see in the preceding screenshot, there are several fields here, as follows:

1. **Case Owner:** This is the person that created the case and thus owns it in Salesforce.
2. **Contact Name:** This is the person that raised the case.
3. **Account Name:** This is the company associated with the person that raised the case.
4. **Type:** This field defines the type of case. This field is customizable for the business use case.
5. **Case Reason:** This field defines the reason for the case. This field is customizable for the business use case.
6. **Status:** This field lets us know where in the life cycle the case is. When creating a case, it will default to **New**.
7. **Priority:** This field lets us know how urgent the case is. It can be **High**, **Medium**, or **Low** priority.

8. **Case Origin:** This field lets us know the source of the case. It can be **Phone, Web, Email**, or any custom origin you want to add.

In the following screenshot, we will see the continuation of the fields on the case creation screen:

Web Information 9

Web Email	Web Company
<input type="text"/>	<input type="text"/>
Web Name	Web Phone
<input type="text"/>	<input type="text"/>

Additional Information

Product	Engineering Req Number
GC1040	56789
Potential Liability	SLA Violation
No	No

Description Information

Subject
<input type="text"/>

Send notification email to contact

Figure 7.3: Further fields on the case creation screen

As you can see in the preceding screenshot, there are several more fields here, as follows:

9. **Web Information:** This section is only utilized when a web form is submitted, so it is not relevant for this use case.
10. **Product:** This field defines the product for the case. This field is customizable for the business use case.
11. **Potential Liability:** This field defines the potential liability for the case. This field is customizable for the business use case, and may or may not be used.
12. **Engineering Req Number:** This field defines the engineering request number for the case. This field is customizable for the business use case, and may or may not be used.
13. **SLA Violation:** This field lets us know if the **service-level agreement (SLA)** has been violated. The SLA defines how much time your business has committed to responding to the issue.

In the following screenshot, we will see the continuation of the fields on the case creation screen:

The screenshot shows the continuation of the case creation form. At the top, there's a section titled "Additional Information" containing fields for Product (GC1040) and Engineering Req Number (56789), and Potential Liability (No) and SLA Violation (No). Below this is a section titled "Description Information" with fields for Subject (14 Installation Issue for Brenda McIure), Description (15 Brenda is unable to install the product.), and Internal Comments (16 Had an initial call with Brenda and will follow up). At the bottom, there's a checkbox for "Send notification email to contact" (17) and three buttons: Cancel, Save & New, and a large blue "Save" button (18) which is highlighted with a red box.

Figure 7.4: Further fields and the Save option on the case creation screen

As you can see in the preceding screenshot, there are several more fields to finish off the case creation, as follows:

14. **Subject:** This is where you enter the subject of the case.
15. **Description:** This is where you enter the details of the issue.
16. **Internal Comments:** This is where you enter comments about the case that are not visible to the customer.
17. **Send notification email to contact:** You can choose this option to notify the contact via email that the case has been created.
18. **Save:** Click **Save** to create the case.

The following screenshot shows the created case:

The screenshot displays a Salesforce Case record. At the top, there's a header with a yellow folder icon labeled 'Case', the title 'Installation Issue for Brenda Mcclure', and a toolbar with 'Follow', 'Edit', 'Delete', 'Change Owner', and a dropdown menu. Below the header, the case details are shown: Priority 'Medium', Status 'New', and Case Number '00001026'. A red circle with the number '1' highlights the 'Feed' section, which contains a 'Post' button, a 'Poll' button, a 'Share an update...' input field, and a 'Share' button. Another red circle with the number '2' highlights the 'Details' section, which lists various case properties: Case Owner 'Sharif Shaalan', Status 'New', Case Number '00001026', Contact Name 'Brenda Mcclure', Account Name 'Cardinal Inc.', Type 'Mechanical', Case Reason 'Installation', Contact Phone '(847) 262-5000', Contact Email 'brenda@cardinal.net', Case Origin 'Phone', Web Email, and Web Company.

Figure 7.5: Created case shown with two highlighted sections

From *Figure 7.5* there are two important sections to note, as follows:

1. **Feed:** This is the chatter feed for the case.
2. **Details:** All of the details you entered on case creation will show up here.

The following screenshot shows another very important section on the created case, called the **Related** section. This section shows all the records that are related to a case:

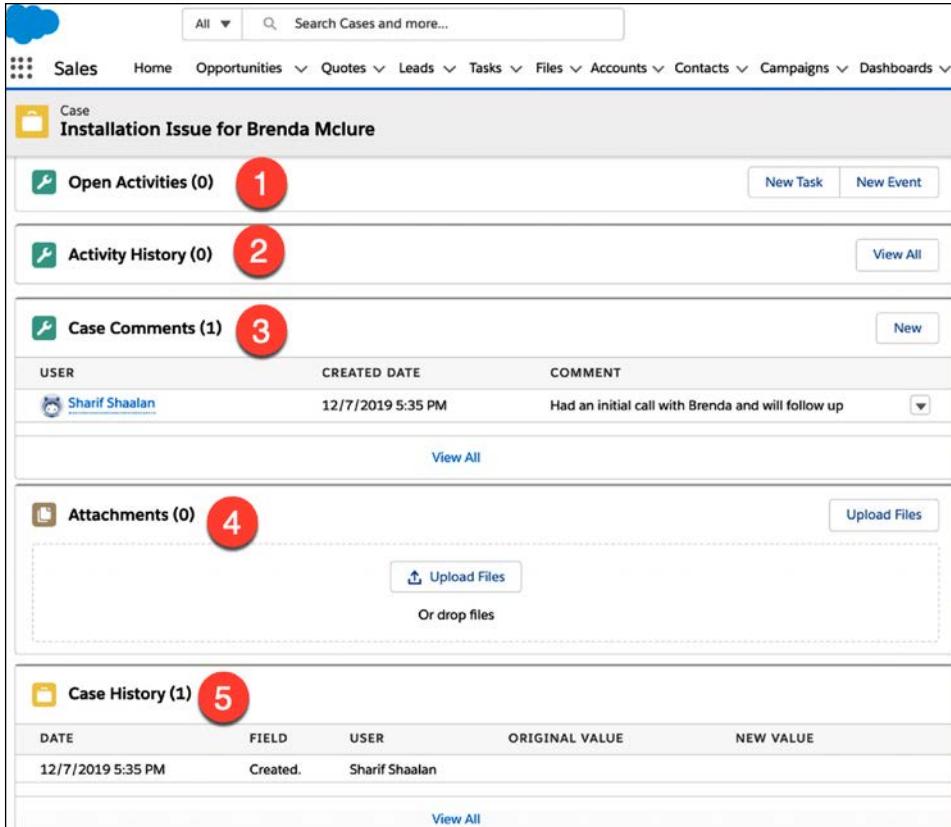


Figure 7.6: The Related section of a case

The **Related** section shown in *Figure 7.6* are as follows:

1. **Open Activities:** This section shows all open tasks and events related to the case.
2. **Activity History:** This section shows all tasks and events that have been completed.
3. **Case Comments:** This section shows all comments, both internal and external, that have been added to the case.
4. **Attachments:** This section shows all attachments related to this case.
5. **Case History:** This section shows an audit of all actions on the case.

Now that we have created the case, let's see how the case **status** drives the case life cycle.

Understanding case status

The case status field drives the case life cycle. This field allows you to see where the case is at a point in time.

The following screenshot shows the options for case status. These values can be customized for the business use case, as needed:

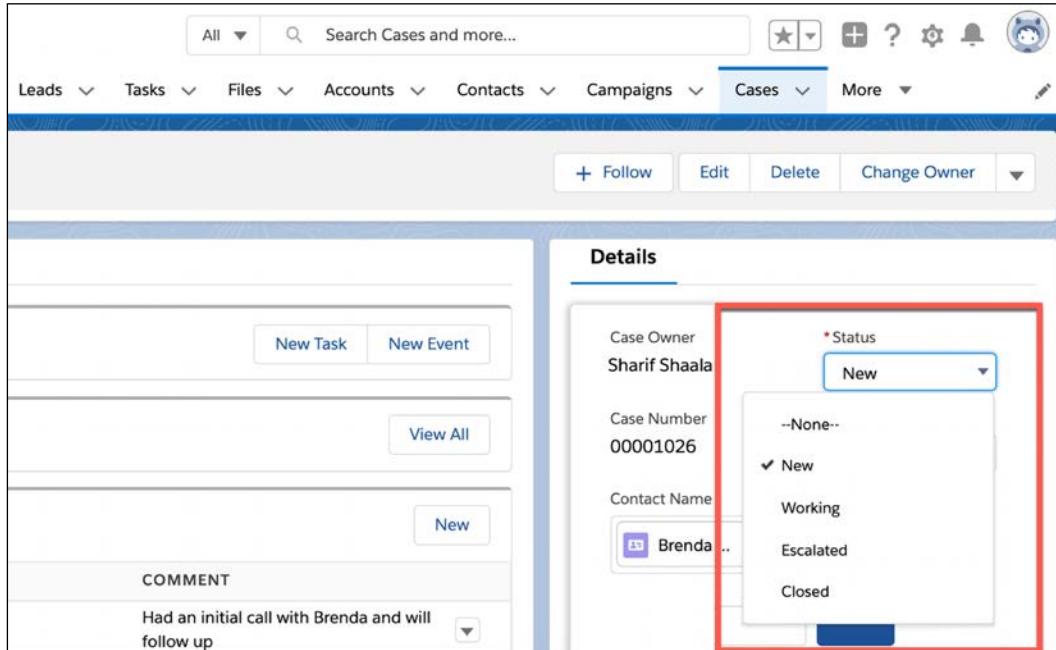


Figure 7.7: Case Status dropdown in the Details section of a case

As you can see in the preceding screenshot, there are four case **status** values, as follows:

- **New:** The default status when a case is created.
- **Working:** The case is being actively worked on.
- **Escalated:** The case has been escalated to another department or a manager due to an issue not being resolved in a timely manner, or because of needing a different skillset to resolve the issue.
- **Closed:** The case has been resolved.

Now that we have created the case and seen how case **status** works, let's dig a little deeper into case escalation in the following section.

Creating escalation rules

Escalation rules allow you to automatically reassign a case and/or notify a manager that there is an issue with a case and it may not be resolved in a timely manner. An example would be a technical issue that needs to be escalated to a more skilled technician. Another example may be if a customer asks in a comment or on a phone conversation for a case to be escalated to a manager for review. Escalation rules allow you to automatically escalate cases based on set criteria such as the number of hours the case is open and assign to who the case is escalated, as well as who to notify of the escalation. Let's take a look at how to build escalation rules.

In the following screenshot, I clicked on the gear icon to start the process:

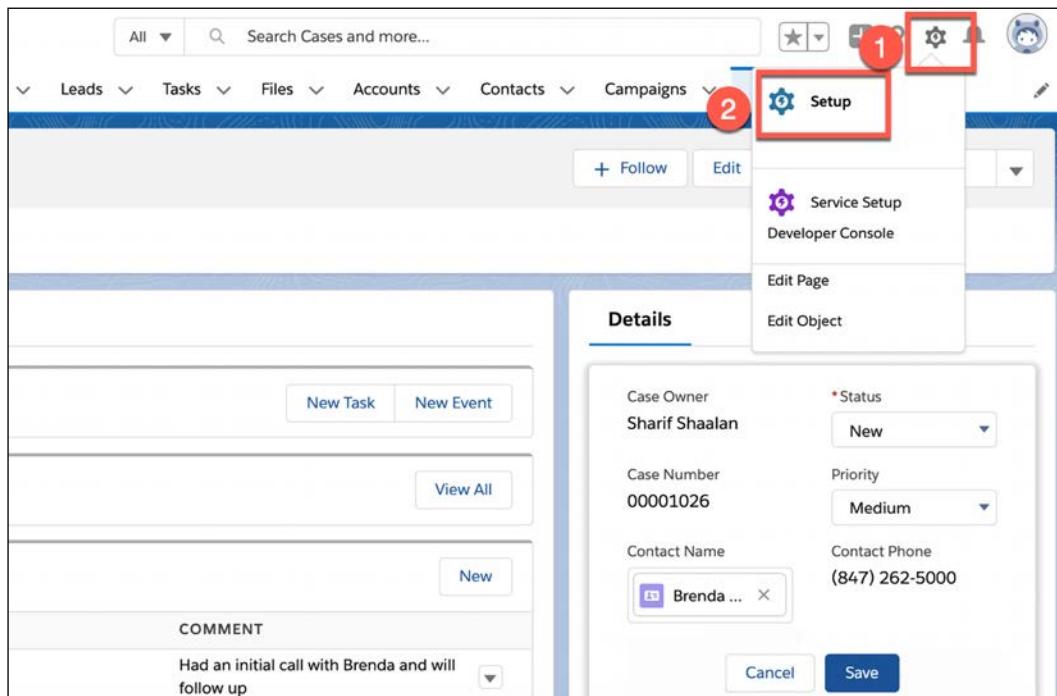


Figure 7.8: Clicking on Setup at the top-right of the screen

As you can see in the preceding screenshot, after clicking on the gear icon, I clicked on **Setup** to take me into the configuration section of Salesforce.

In the following screenshot, I started typing esca into the search bar. This brings up any items in **Setup** that contain these letters:

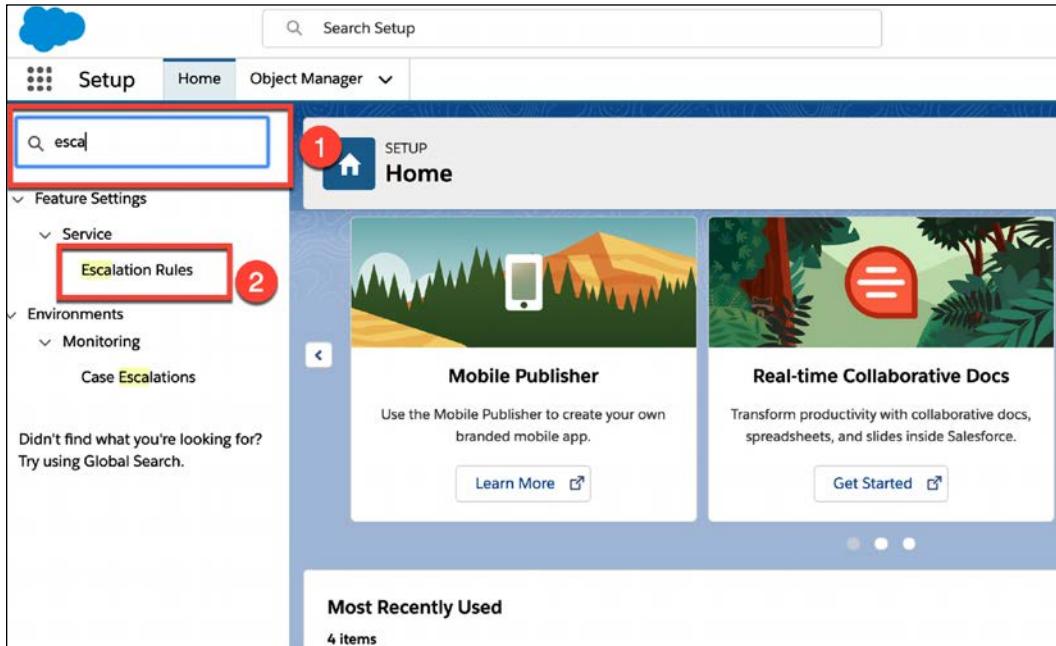
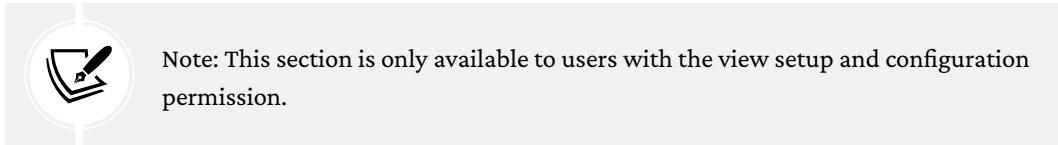


Figure 7.9: Reaching Escalation Rules by using the search bar

As you can see in the preceding screenshot, clicking on **Escalation Rules** takes me to the section where I can set these rules up. There is a standard escalation rule already set up. Let's click on the **rule name** below:

Case Escalation Rules						Help for this Page	
Action	Rule Name				Active	Created By	Created On
Rename Delete	Standard	New	<input checked="" type="checkbox"/>	Sharif Shaalan	✓	Sharif Shaalan	6/5/2019

Figure 7.10: Clicking on the rule name to open rule entries



Note: This section is only available to users with the view setup and configuration permission.

This will bring up all the rule entries on the **Standard** escalation rule:

The screenshot shows the 'Rule Entries' section of the 'Standard' escalation rule. At the top, there is a 'Rule Detail' summary with fields for 'Rule Name' (Standard), 'Active' (checked), 'Created By' (Sharif Shaalan, 6/5/2019 11:51 AM), and 'Modified By' (Sharif Shaalan, 6/5/2019 11:51 AM). Below this is a table titled 'Rule Entries' with columns for 'Action', 'Order', and 'Criteria'. The first row, labeled '1', has its 'Edit' button highlighted with a red circle and a red box, indicating it is the target of the user's action. The other three rows have their 'Edit | Del' buttons visible. The table includes a 'New' button and a 'Reorder' button at the top right. A 'Rule Entries Help' link is also present.

Action	Order	Criteria
Edit Del	1	(Account: Billing Country EQUALS US,USA,United States,United States of America) AND (Account: SLA EQUALS Platinum) AND (Case: Priority EQUALS High)
Edit Del	2	(Account: Billing Country EQUALS US,USA,United States,United States of America) AND (Account: SLA EQUALS Platinum) AND (Case: Priority EQUALS Medium,Low)
Edit Del	3	(Account: Billing Country EQUALS US,USA,United States,United States of America) AND (Account: SLA EQUALS Gold) AND (Case: Priority EQUALS High)
Edit Del	4	(Account: Billing Country EQUALS US,USA,United States,United States of America) AND (Account: SLA EQUALS Gold) AND (Case: Priority EQUALS Medium,Low)

Figure 7.11: Selecting the option to edit an escalation rule

As you can see in the preceding screenshot, each rule is set with criteria. In this example, we are looking at the **Billing Country**, **SLA**, and **Priority** fields to decide how the case should be routed. There is also an order of how the rules are executed, giving you the ability to check for multiple combinations of criteria within a single escalation rule. Let's click on **Edit** to look at the first entry (1).

In the following screenshot, you can see all of the configuration options for a single entry within an escalation rule:

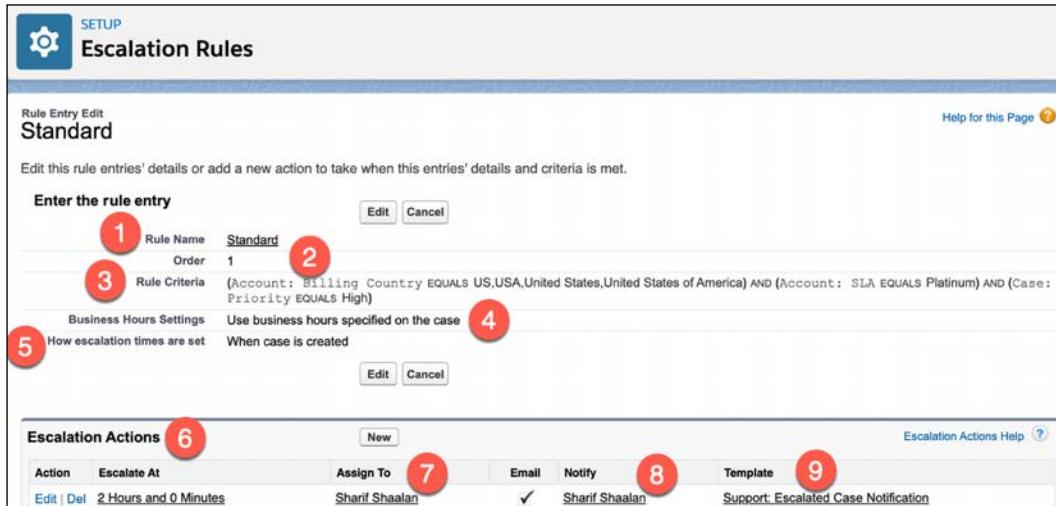


Figure 7.12: Configuration options for an escalation rule entry

As you can see in the preceding screenshot, there are several options here, as follows:

1. **Rule Name:** The name of the rule that this entry belongs to.
2. **Order:** The order in which the entry executes within the rule.
3. **Rule Criteria:** The criteria that, if true, will execute the action(s).
4. **Business Hours Settings:** Settings for the calculation of the hours. For example, if you only want business hours to count toward resolution time, this can be set here to exclude other times from the calculation.
5. **How escalation times are set:** Settings for when the clock starts ticking on escalations. In this example, it is as soon as the case is created.
6. **Escalation Actions:** Actions you can set to execute if the criteria are met.
7. **Assign To:** An action for reassigning the case to whoever is set in the **Assign To** field, if the criteria are met.
8. **Notify:** An action for sending a notification to whoever is set in the **Notify** field, if the criteria are met.
9. **Template:** The email template that will be used for the notification.

Now that we have seen how to create and use cases, as well as how to create automatic escalation rules to reassign cases and notify management of issues, let's take a look at another feature that will help automate cases. In the next section, we will look at **Web-to-Case**.

Using Web-to-Case to generate case capture forms

Very similar to Web-to-Lead, which we covered in *Chapter 3, Creating and Managing Leads*, **Web-to-Case** is an easy way to generate HTML code that you can drop into your website to create a case capture form. A case capture form lives outside of Salesforce but creates a case directly in Salesforce when the form is saved. This can be a page on your website or any other form where you would want the case to be automatically added to Salesforce. Let's see how this is done.

In the following screenshot, I started typing web into the search bar. This brings up any items in **Setup** that contain these letters:

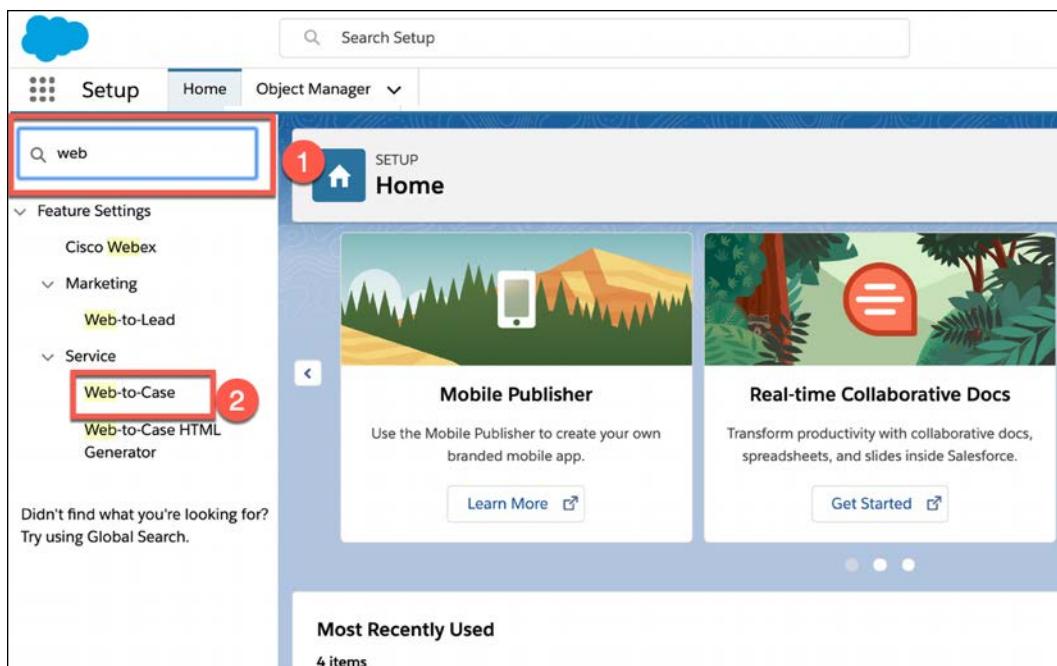


Figure 7.13: Reaching Web-to-Case by using the search bar

As you can see in the preceding screenshot, after clicking on **Web-to-Case**, it takes you into the section where you can set this up.



Note: This section is only available to users with the view setup and configuration permission.

In the following screenshot, all of my options for setting up **Web-to-Case** come up:

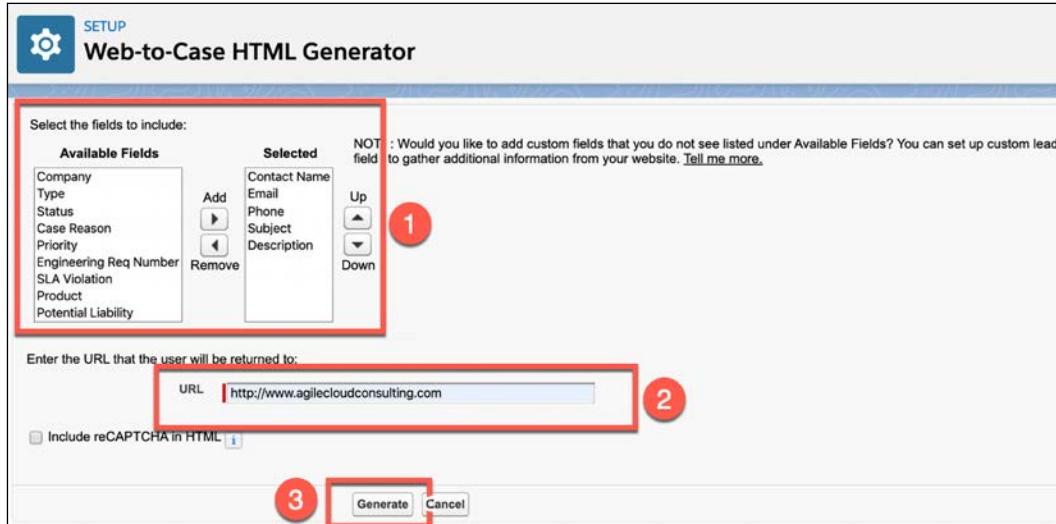
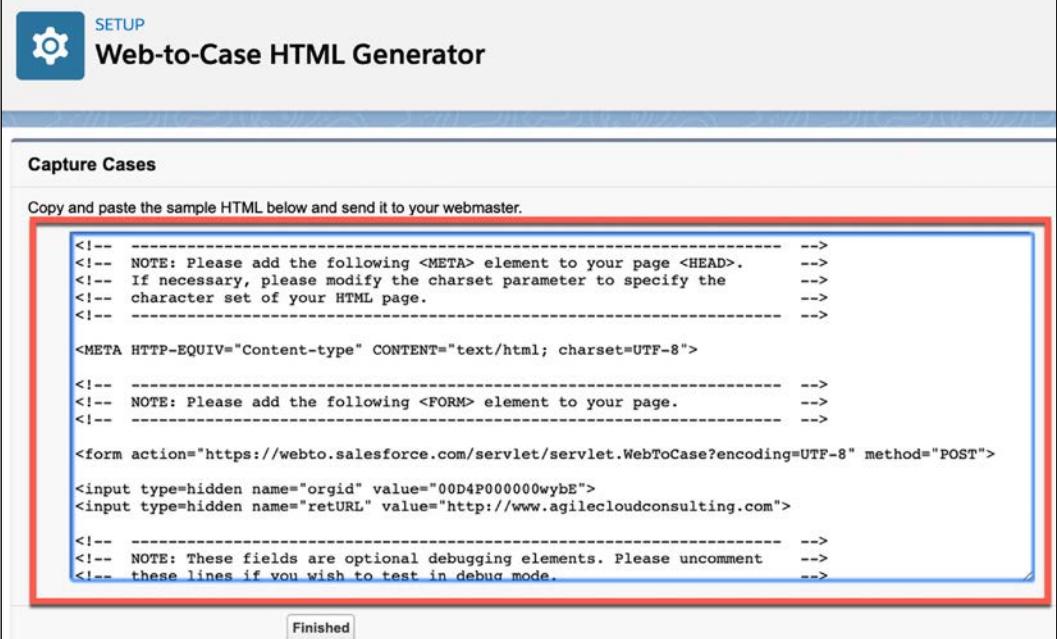


Figure 7.14: Options before generating Web-to-Case HTML code

As you can see in the preceding screenshot, there are a few options to be filled in before you generate the code, as follows:

1. **Available Fields:** These are all of the fields available on the case object. You can pull any of them into your form.
2. **Selected:** These are the fields that will be included in the form once you generate the HTML code.
3. **URL:** This is where the user will land after submitting the form.
3. **Generate:** This is where you click to generate the HTML.

Now, you have your HTML code! You can copy and paste this right into an HTML block on your website and start capturing cases, like this:



The screenshot shows the "Web-to-Case HTML Generator" setup page. At the top, there is a "SETUP" button and a gear icon. Below it, the title "Web-to-Case HTML Generator" is displayed. A section titled "Capture Cases" contains instructions to "Copy and paste the sample HTML below and send it to your webmaster." A red box highlights the generated HTML code, which includes notes about adding meta tags and form elements, and optional debugging lines. A blue border surrounds the entire code block. At the bottom of the code area is a "Finished" button.

```
<!-- -----  
<!-- NOTE: Please add the following <META> element to your page <HEAD>. -->  
<!-- If necessary, please modify the charset parameter to specify the -->  
<!-- character set of your HTML page. -->  
<!-- -----  
  
<META HTTP-EQUIV="Content-type" CONTENT="text/html; charset=UTF-8">  
  
<!-- -----  
<!-- NOTE: Please add the following <FORM> element to your page. -->  
<!-- -----  
  
<form action="https://webto.salesforce.com/servlet/servlet.WebToCase?encoding=UTF-8" method="POST">  
  
<input type=hidden name="orgid" value="00D4P00000wybE">  
<input type=hidden name="retURL" value="http://www.agilecloudconsulting.com">  
  
<!-- -----  
<!-- NOTE: These fields are optional debugging elements. Please uncomment -->  
<!-- these lines if you wish to test in debug mode. -->
```

Figure 7.15: Generated HTML code that can be copy-pasted

The preceding screenshot shows the final output.

You now have learned how to navigate to the **Web-to-Case** setup section and how to generate the HTML code needed to add a **Web-to-Case** form on an external website. Next, we will take a look at another powerful feature, **Email-to-Case**.

Setting up Email-to-Case

Whereas **Web-to-Case** allows you to capture a case submission through your website, **Email-to-Case** allows you to set up a specific email address that converts any email sent to that email address to a case. A good example of this is a support email. You may want to set up an email address such as `support@yourcompany.com`, to which your clients can send an email with an issue. Salesforce will take that email and create a case for the issue. All subsequent correspondence will be captured on that case until the case is resolved. Let's take a look at how to set up **Email-to-Case**.

In the following screenshot, I started typing **case** into the search bar. This brings up any items in **Setup** that contain these letters:

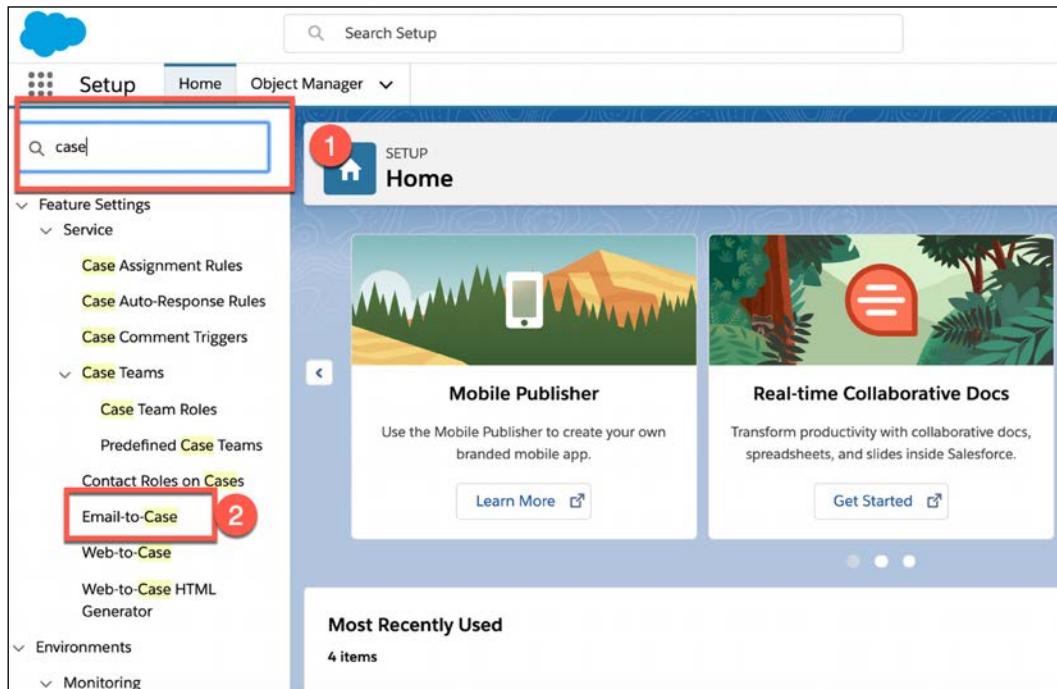
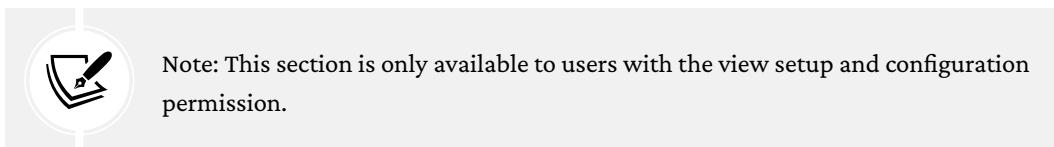


Figure 7.16: Reaching Email-to-Case by using the search bar

As you can see in the preceding screenshot, I clicked on **Email-to-Case** to take me into the section where we can set this up.



In the following screenshot, all of my options for setting up **Email-to-Case** come up:

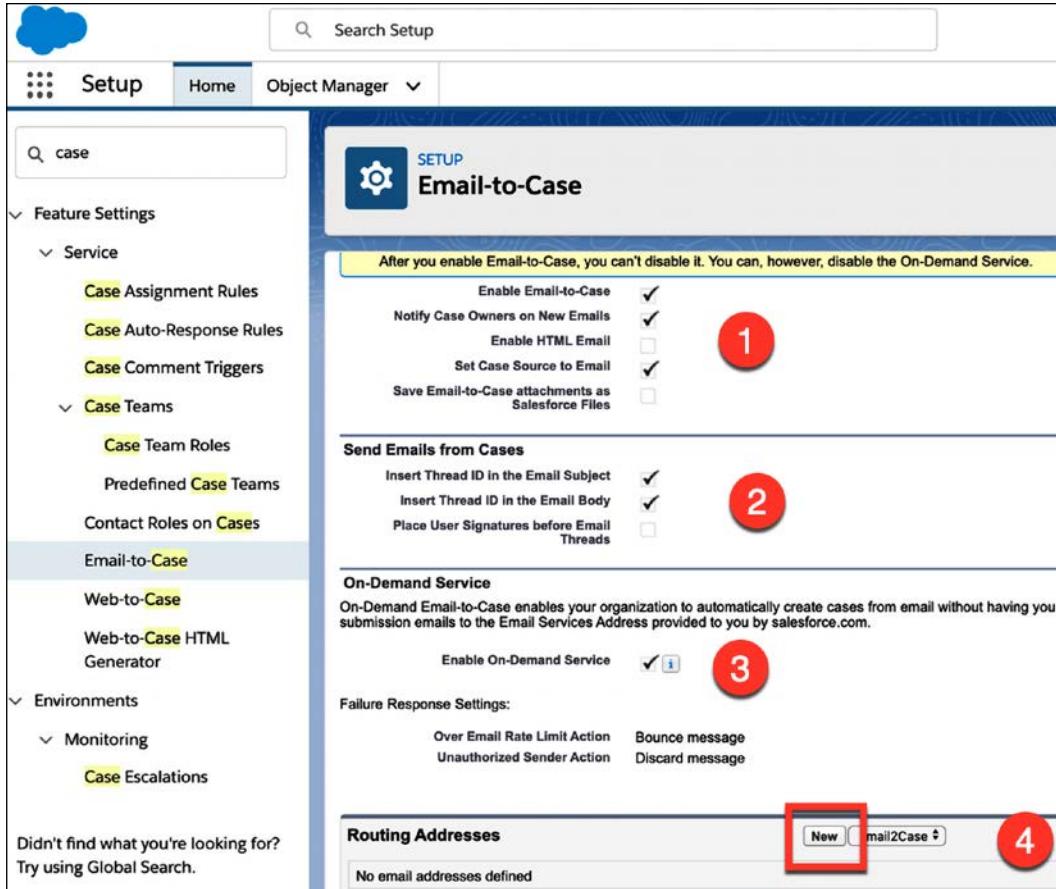


Figure 7.17: Settings to configure before generating Email-to-Case HTML code

As you can see in the preceding screenshot, there are a few options to be filled in before you generate the code, as follows:

1. **Initial Settings:** These are some initial settings to get you started, listed here:

- **Enable Email-to-Case:** This box must be checked to start the process.
- **Notify Case Owners on New Emails:** This is to let the case owner know a case has been created.

- **Enable HTML Email:** Warns users when the incoming email is HTML to avoid opening malicious emails.
 - **Set Case Source to Email:** Sets the source field to email for cases created through **Email-to-Case**.
 - **Save Email-to-Case attachments as Salesforce Files:** If the incoming email has an attachment, it carries over to Salesforce.
2. **Send Emails from Cases:** These settings allow you to set how responses work when corresponding with a case created through **Email-to-Case**, as follows:
- **Insert Thread ID in the Email Subject:** This setting makes sure the thread ID is in the email subject, which allows the replies to all emails in a thread to be created in Salesforce.
 - **Insert Thread ID in the Email Body:** This setting puts the thread ID in the email body as well.
 - **Place User Signatures before Email Threads:** This allows the user signature to show up in the email body before the thread.
3. **On-Demand Service:** This service makes it easier to configure Email-to-Case as it allows you to verify your email and set up forwarding to a unique Salesforce email address. The alternative is to download and install the **Email-to-Case** agent behind your firewall.
4. **Routing Addresses:** A routing address must be configured to set up **Email-to-Case**.

In the following screenshot, let's take a look at how to set up a routing address:

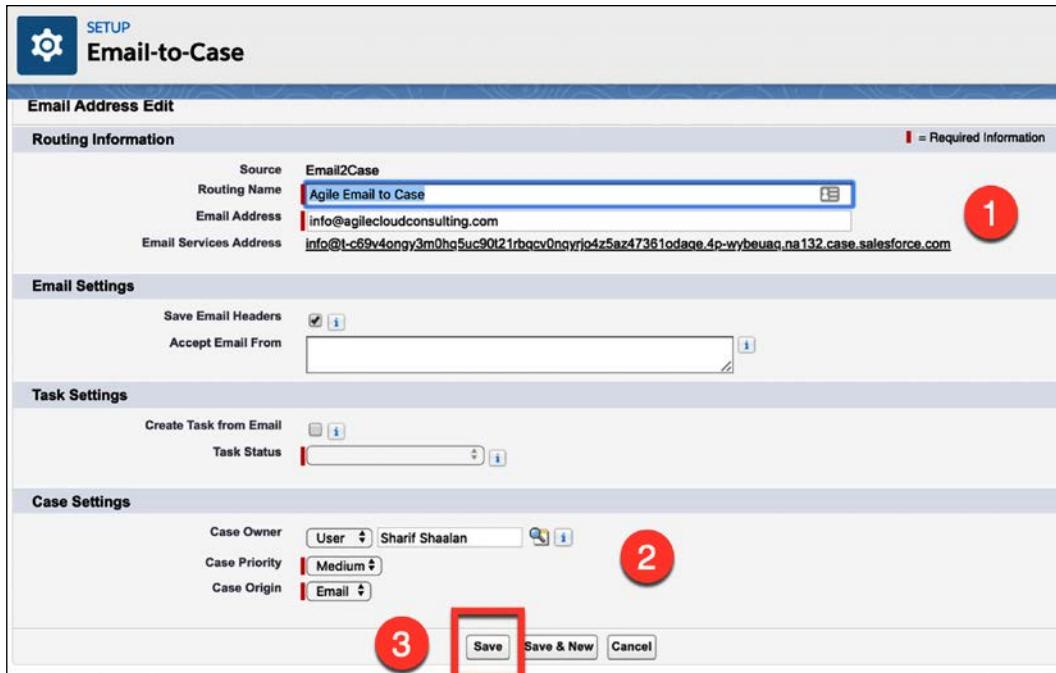


Figure 7.18: Three areas to consider in the Email-to-Case setup

As you can see in the preceding screenshot, there are a few options when setting up your routing address, as follows:

1. **Routing Information:** Enter the routing name and email address.
2. **Case Settings:** Set up the **Case Owner**, **Case Priority**, and **Case Origin** settings for cases created from this email address.
3. **Save:** Click **Save** to start the verification process.

In the following screenshot, let's take a look at the final step in setting up **Email-to-Case**:

The screenshot shows the 'Email Address Detail' page for an 'Email-to-Case' setup. At the top, there is a 'SETUP' button and a 'Email-to-Case' title. Below this, there are 'Edit', 'Delete', and 'Clone' buttons. The main area is titled 'Routing Information'. A red box highlights a message from Salesforce: 'Salesforce.com automatically created the following email service address for you: info@t-c69v4ongy3m0hq5uc90t21rbqcv0nqyrjo4z5az47361odaqe.4p-wybeuaq.na132.case.salesforce.com. Configure your email system to forward messages received at info@agilecloudconsulting.com to this email services address.' A red circle with the number '1' is placed over this message. Another red box highlights the 'Email Address' field, which contains 'info@agilecloudconsulting.com' and a 'Verify.' button. A red circle with the number '2' is placed over this field. Below the table, there are 'Email Settings' and 'Save Email Headers' buttons.

Routing Name	Agile Email to Case
Email Address	info@agilecloudconsulting.com [Verify.]
Email Services Address	info@t-c69v4ongy3m0hq5uc90t21rbqcv0nqyrjo4z5az47361odaqe.4p-wybeuaq.na132.case.salesforce.com
Created By	Sharif Shaalan, 12/7/2019 5:46 PM
Modified By	Sharif Shaalan, 12/7/2019 5:46 PM

Figure 7.19: Completing Email-to-Case setup

As you can see in the preceding screenshot, there are two final steps to completing the **Email-to-Case** setup, as follows:

1. **Email Forwarding:** Once you set up a routing address, Salesforce will generate a unique email address for you. You must take this unique address and set it as the forwarding address for your **Email-to-Case** email address. As an example, if your email is support@yourcompany.com, all emails sent to support@yourcompany.com will be automatically forwarded to your unique routing address. This is how a case is created in Salesforce.
2. **Email Verification:** When you create a routing address, Salesforce will send you a verification email with a link to click on to make sure you have access to the email address. Clicking on this link is the final step. You have now set up **Email-to-Case**!

You have now learned how to navigate to the **Email-to-Case** setup section and how to configure Salesforce to support **Email-to-Case**. Let's summarize what we have learned in this chapter.

Summary

From this chapter, we have learned what a case is and how it is used to keep customers satisfied by being the building block of customer service. We understand what the case **status** field is used for and how the values drive the process. We also learned how to create a case and update the case **status** field. We learned what escalation rules are, and gained the skills to configure escalation rules for our cases. We gained an understanding of the use cases for **Web-to-Case** and **Email-to-Case**, as well as the steps needed to set these two features up in Salesforce.

In the next chapter, we will look at reports and dashboards, and how having visibility of **Key Performance Indicators (KPI)** helps drive a business!

Questions

1. What is the main use case for Salesforce cases?
2. Why is case status so important?
3. What is an example of when a case may be escalated?
4. Why is there an **Order** field on case escalation rule entries?
5. Why do you need to generate HTML code for **Web-to-Case**?
6. What is a use case for using **Email-to-Case**?
7. What happens if you don't set up **On-Demand Service**?
8. Why is it important to verify your email address when setting up **Email-to-Case**?

Further reading

- Trailhead Module—Create and Manage Cases: <https://trailhead.salesforce.com/en/content/learn/modules/nonprofit-client-services-with-service-cloud/create-and-manage-cases>
- Trailhead Module—Create an Escalation Rule: <https://trailhead.salesforce.com/en/content/learn/projects/create-a-process-for-managing-support-cases/create-an-escalation-rule>
- Set up Web-to-Case: https://help.salesforce.com/articleView?id=setting_up_web-to-case.htm&type=5
- Set up Email-to-Case:
https://help.salesforce.com/articleView?id=customizesupport_email.htm&type=5

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8

Business Analysis Using Reports and Dashboards

So far, we have covered the basic *objects* such as Leads, Accounts, Contacts, Opportunities, Campaigns, and Cases that are used to conduct business in Salesforce. Now, we will look at the reports and dashboards that analyze those objects.

Salesforce is a great tool for capturing the data needed to drive various business processes, but what good is the data if it isn't actionable? This is where reports and dashboards come in. They allow you to understand and act on your data.

To understand the data, you will need to learn how to create reports and how to use them. The underlying data of a report can also be combined into a visual output called a dashboard. Most of this chapter will be focused on reports, leading to the dashboards section at the end of the chapter.

To help us learn all this, we will cover the following topics in detail:

- Creating reports to understand data
- Using grouping to create report types
- Adding a chart to a report
- Saving and running a report
- Using dashboards to visualize data

With the help of these topics, you will be able to create reports of various types in order to analyze data. You will also be able to use them as the underlying source for the visual dashboard components that will be used by the business to make important decisions.

Technical requirements

For this chapter, make sure to log into your development organization and follow along.

Creating reports to understand data

Reports help you analyze data and come up with **Key Performance Indicators (KPIs)** that help drive business decisions. Reports can be created and run on any of the *objects* that we've covered. Reports can also be created and run for custom objects (we will cover custom objects in *Chapter 13, Using Data Modeling to Configure Objects for Your Business*

Business use case

You are a Salesforce Admin for XYZ Widgets. Your users have asked for a report that shows how many contacts are associated with each business account, as well as a dashboard to show this. This information will help users make sure there is at least one primary contact associated with each account. Let's see how we can go about this.

Creating a report

Let's take a look at how to create a report in Salesforce:

1. On the Salesforce home page, click on the **Reports** tab (1) to start the process and click on **New Report** (2):

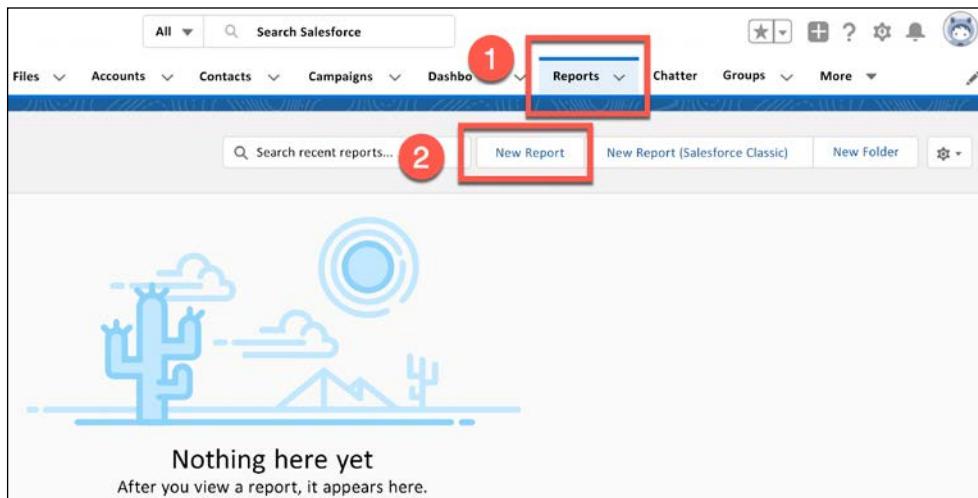


Figure 8.1: Creating a report with the New Report button from the Reports tab

2. In the following screenshot, you can see a list of the objects you can choose to create a report for. For this example, I chose **Contacts & Accounts** (1) and then clicked on **Continue** (2) to move to the next step:

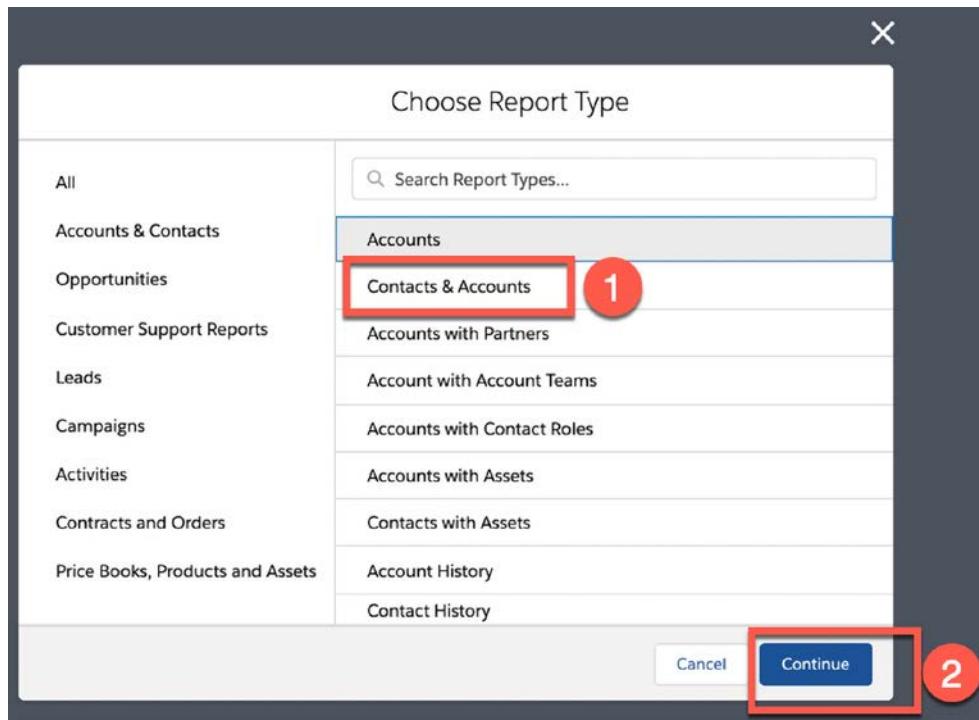


Figure 8.2: Selecting an object to create a report for

In the following screenshot, you can see we have landed on the report builder page, which defaulted to the **Outline** tab (1) within the report builder:

The screenshot shows the Salesforce Report Builder interface. At the top, there's a navigation bar with links for Sales, Home, Opportunities, Quotes, Leads, Tasks, Files, Accounts, and Contacts. Below the navigation is a search bar labeled "Search Salesforce". The main area is titled "REPORT" and "New Contacts & Accounts Report". A sub-tab "Contacts & Accounts" is selected. On the left, under the heading "Fields", there are two sections: "Groups" (with "GROUP ROWS" and "Add group...") and "Columns" (with "Add column..."). Both sections are highlighted with red boxes and numbered 1 and 2 respectively. In the center, there's a preview panel with the message: "Previewing a limited number of records. Run the report to see everything." It shows filter fields for Salutation, First Name, Last Name, Title, Account Name, and Mailing Street. An arrow points to the "First Name" field. Below the filters, it says "No records returned. Try editing report filters:" followed by three bullet points: "Show All accounts.", "Set the Created Date filter to All Time.", and "Edit other filters in the filter panel.".

Figure 8.3: The default view of the report builder on the Outline tab

3. The **Columns** section (2) allows you to choose which fields show up as columns in the report you are creating. You can add and remove columns as needed.

4. Then, click on the **Filters** tab (1):

The screenshot shows a report builder interface for a 'New Contacts & Accounts Report'. At the top, there's a navigation bar with links like Sales, Home, Opportunities, Quotes, Leads, Tasks, Files, Accounts, Contacts, and Campaigns. Below the navigation is a 'REPORT' dropdown and a 'Got Feedback?' button. The main area has tabs for 'Contacts & Accounts' and 'Report'. A red box labeled '1' highlights the 'Filters' tab. Another red box labeled '2' highlights the 'Created Date' field in the filter builder section. The report table has columns for Salutation, First Name, Last Name, Title, and Account Name. The data in the table includes 16 rows of contact information.

Salutation	First Name	Last Name	Title	Account Name
+	Brenda	McClure	CFO	Cadinal Inc.
Ms.	Rose	Gonzalez	SVP, Procurement	Edge Communications
Mr.	Sean	Forbes	CFO	Edge Communications
Mr.	Jack	Rogers	VP, Facilities	Burlington Textiles Corp of America
Ms.	Pat	Stumuller	SVP, Administration and Finance	Pyramid Construction Inc.
Mr.	Andy	Young	SVP, Operations	Dickenson plc
Mr.	Tim	Barr	SVP, Administration and Finance	Grand Hotels & Resorts Ltd
Mr.	John	Bond	VP, Facilities	Grand Hotels & Resorts Ltd
Ms.	Stella	Pavlova	SVP, Production	United Oil & Gas Corp.
Ms.	Lauren	Boyle	SVP, Technology	United Oil & Gas Corp.
Ms.	Babara	Levy	SVP, Operations	Express Logistics and Transport
Mr.	Josh	Davis	Director, Warehouse Mgmt	Express Logistics and Transport
Ms.	Jane	Grey	Dean of Administration	University of Arizona
Mr.	Arthur	Song	CEO	United Oil & Gas Corp.
Ms.	Ashley	James	VP, Finance	United Oil & Gas, UK
Mr.	Tom	Ripley	Regional General Manager	United Oil & Gas, Singapore

Figure 8.4: Filters tab and a section of a report builder

As shown in the preceding screenshot, the **Filters** section allows us to add various filters so that we can gather the data needed for the report. One example is to look for all accounts created *this year*. In this case, you could set a filter where the **Created Date** field (2) is set to **This Year**. When you run the report, it will return only the records that meet this criterion.

In the following sections, we will see how such grouping works in reports.

Using grouping to create report types

There are several report types that can be created using *grouping levels* within reports. A grouping level is a way to summarize data using one or more fields.

Let's use our previous example of a report that shows all the accounts created this year. From this, we can infer the following:

- A report with no grouping levels is called a **tabular report**. If we ran the report in our example with no grouping, it would return a list of records.
- If we added one grouping level – let's say, by calendar month – the report would return the set of records grouped by the creation month. This type of report is called a **summary report** since it is summarizing the data from a specific field; in this case, the created date field.
- Finally, we can group a report by two fields. Let's say we wanted to group our report by calendar month *and* billing state. This will give us a **matrix report** since there are two levels of grouping.

We saw the tabular report in action in the *Creating a report* section, which shows a list of records. Now, let's take a look at how to create summary and matrix reports using grouping.

Summary reports

In the previous section, we learned how to create a list of records in the report. Now, let's learn how to group them to create a summary.

On the Salesforce home page, click on the **Outline** tab and navigate to **GROUP ROWS**:

The screenshot shows the 'New Contacts & Accounts Report' page. On the left, the 'Outline' section is open, displaying grouping and column settings. A red box labeled '1' highlights the 'GROUP ROWS' button under 'Groups'. A red box labeled '2' highlights the 'Account Name' field under 'Columns'. The main area shows a table of contacts and accounts, grouped by 'Account Name'. An arrow points from the 'Account Name' field in the outline to the first group header 'Burlington Textiles Corp of America (1)' in the table.

Account Name ↑	Salutation	First Name	Last Name	Title			
Burlington Textiles Corp of America (1)	Mr.	Jack	Rogers	VP, Facilities			
Subtotal							
Cadinal Inc. (1)	-	Brenda	McClure	CFO			
Subtotal							
Dickenson plc (1)	Mr	Andy	Young	SVP, Operations			
Subtotal							
Edge Communications (2)	Ms.	Rose	Gonzalez	SVP, Procurement			
	Mr.	Sean	Forbes	CFO			
Subtotal							
Express Logistics and Transport (2)	Ms.	Barbara	Levy	SVP, Operations			
Mr.	Josh	Davis	Director, Warehouse Mgmt				
Subtotal							
GenePoint (1)	Ms.	Edna	Frank	VP, Technology			
Subtotal							
Grand Hotels & Resorts Ltd (2)	Mr.	Tim	Barr	SVP, Administration and Finance			
	Mr.	John	Bond	VP, Facilities			
Row Counts	<input checked="" type="checkbox"/>	Detail Rows	<input checked="" type="checkbox"/>	Subtotals	<input checked="" type="checkbox"/>	Grand Total	<input checked="" type="checkbox"/>

Figure 8.5: Grouping a report by Account Name

As shown in the preceding screenshot, I grouped this report by the **Account Name** field. Grouping by rows allows you to create a summary report. In this example, my report will be grouped by the name of the account.

Matrix reports

Now that we've looked at the summary report, let's learn how matrix reports work.

Navigate to the **GROUP COLUMNS** section under **Outline (1)**:

The screenshot shows the 'New Contacts & Accounts Report' in the 'Sales' application. The 'Outline' section on the left has 'Account Name' and 'Mailing State/Province' selected as group columns, indicated by red boxes and the number 1. The 'Columns' section below shows various fields like First Name, Last Name, Title, and Mailing Street. A red box and the number 2 highlight the 'Mailing State/Province' field in the columns list. A red box and the number 3 highlight the 'Add Chart' button in the top right corner. The main grid displays data grouped by Account Name and Mailing State/Province, with a preview message: 'Previewing a limited number of records. Run the report to see everything.'

Account Name	Mailing State/Province	CA	IL	KS	NC	Total
Burlington Textiles Corp of America	Record Count	0	0	0	1	1
Cadinal Inc.	Record Count	0	0	1	0	1
Dickenson plc	Record Count	0	0	0	1	1
Edge Communications	Record Count	2	0	0	0	2
Express Logistics and Transport	Record Count	2	0	0	0	2
GenePoint	Record Count	1	0	0	0	1
Grand Hotels & Resorts Ltd	Record Count	2	0	0	0	2
Pyramid Construction Inc.	Record Count	1	0	0	0	1

Figure 8.6: Grouping a report by Mailing State/Province

As shown in the preceding screenshot, I added a second group to this report for the **Mailing State/Province** field (2). Grouping by column as well as row allows you to create a Matrix report. In this example, my report will be grouped by the **Account Name** and **Mailing State/Province** fields.

Now that we have learned how to create a report and the various report types, let's add a chart to the report by clicking on **Add Chart** (3).

Adding a chart to a report

Adding a chart to a report helps our users better understand the reports, as we can see the grouping being done in a visual manner.

In the following screenshot, you can see that the chart is automatically generated (1) when you click on the button for adding a chart. The button then highlights to blue, as seen below:

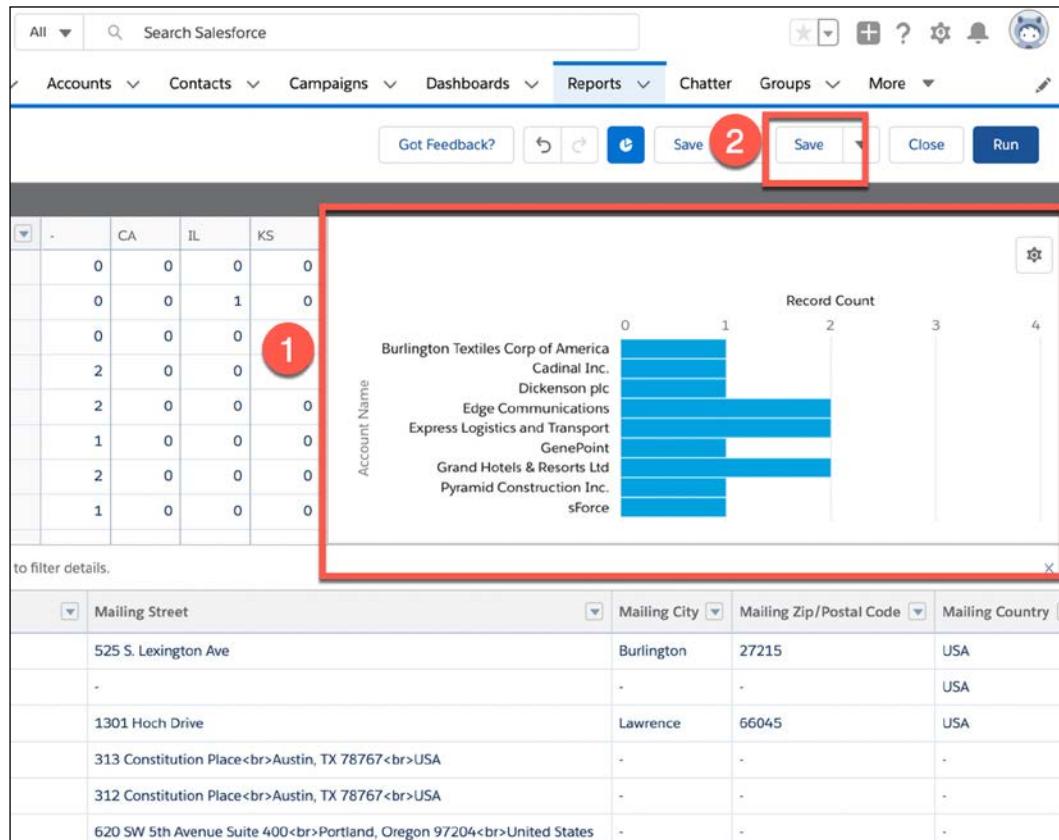


Figure 8.7: Automatically generated report and Save button

As shown in the preceding screenshot, we now have a Matrix report with a chart in preview mode. Click on the **Save** button (2) to save this report.

Saving and running a report

The final stage here, after creating a report and its data, is saving it and then running it to see how it appears. Let's learn how to do this.

In the following screenshot, you can see the page that comes up when you click on **Save**. Here, you can enter a name for your report (1):

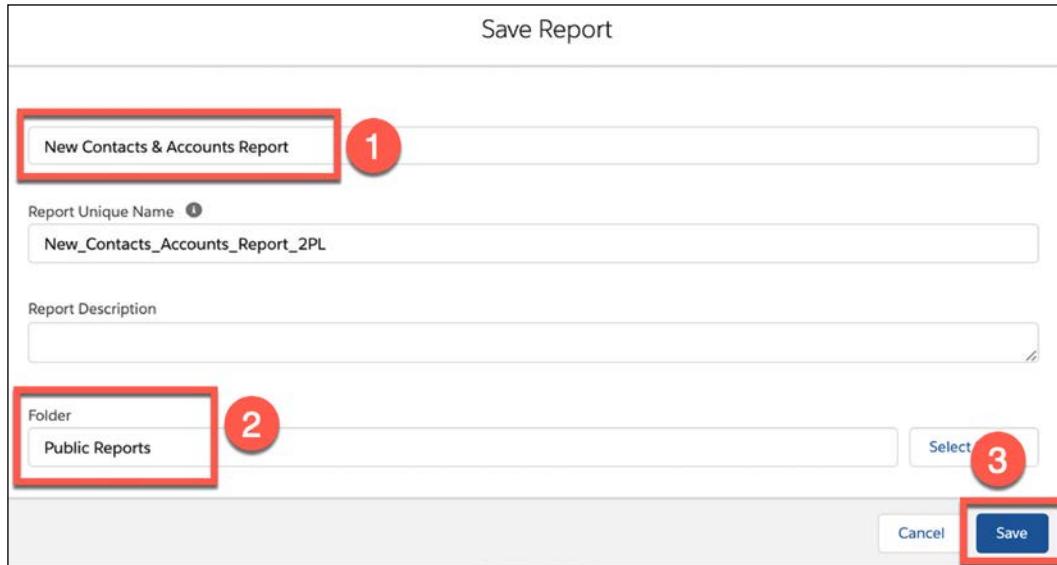


Figure 8.8: Save Report page and Save button

I chose to save this report in the Public Reports folder (2) and then clicked Save (3) to save the report. There are three types of folders: private, public, and shared. Private folders are only visible to you, the logged-in user. Public folders are visible to everyone in the organization, while shared folders can be shared with particular users, roles, or public groups. For our example, I have made the report public.

After saving the report, we'll land back on the preview page:

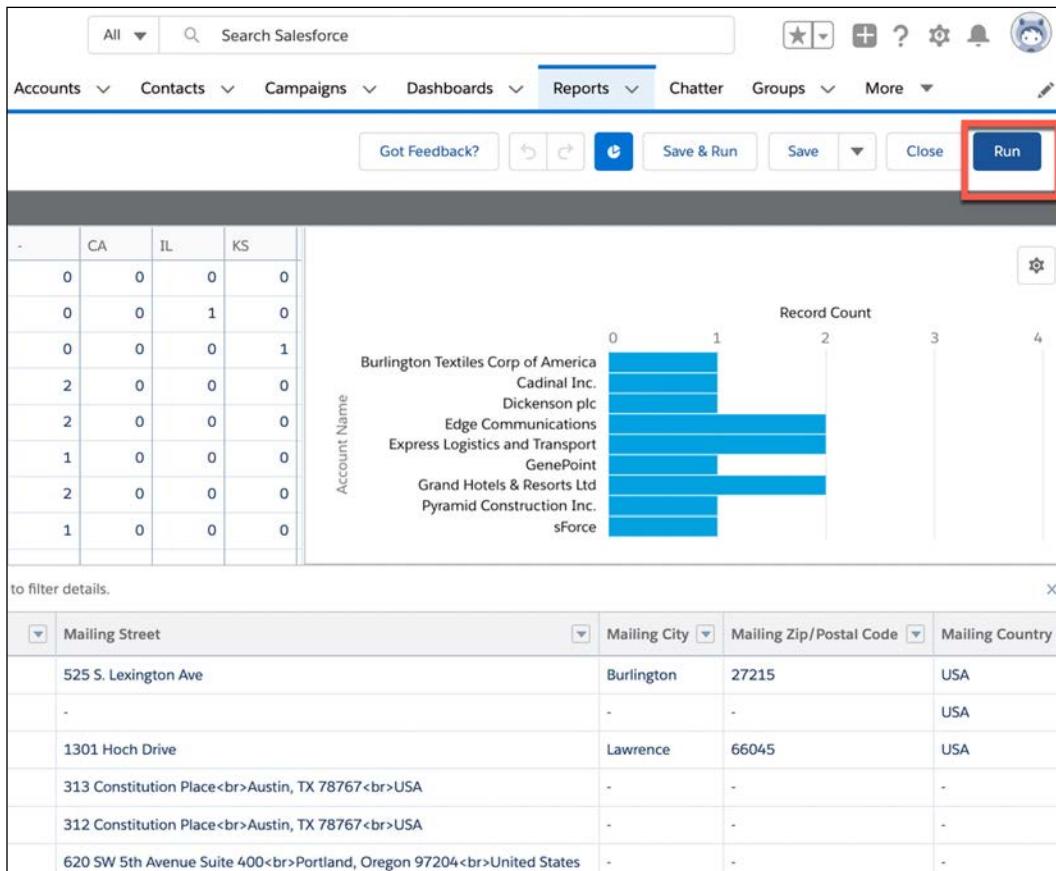


Figure 8.9: Preview page and the button to run a report

Now, click on **Run** to see how the actual report looks.

In the following screenshot, you can see how the final report looks:

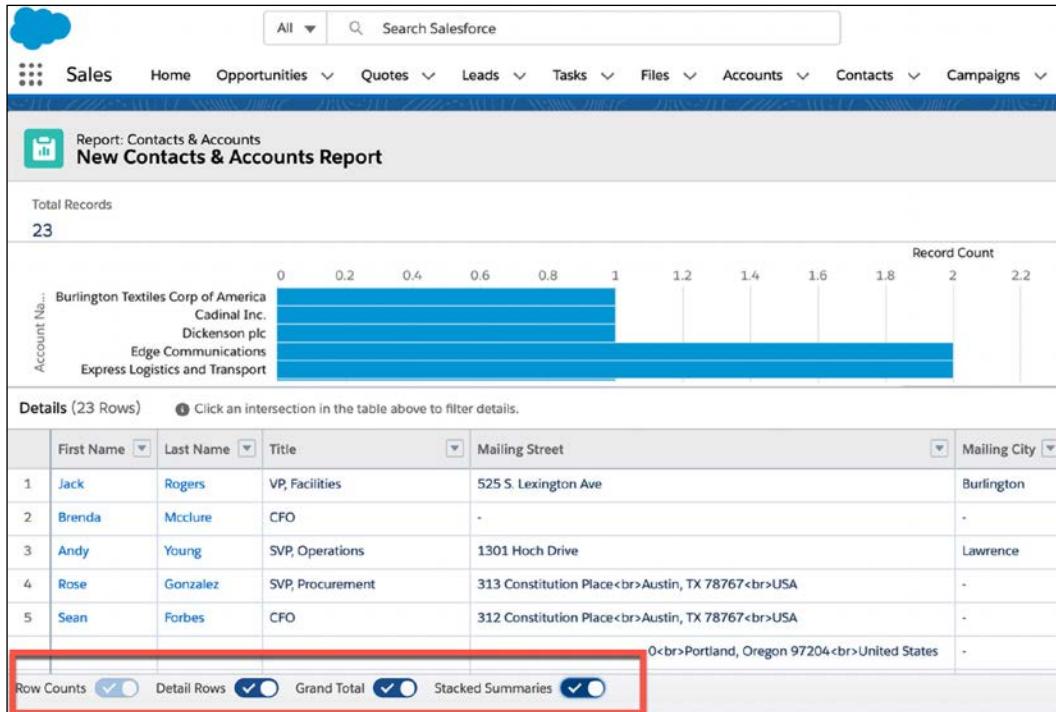


Figure 8.10: Report preview and a row of options

There are various options available such as **Row Counts**, **Detail Rows**, **Grand Total**, and **Stacked Summaries**. You can toggle these options on and off to adjust the report as needed.

In the following screenshot, you can see the additional chart properties that can be used to edit the report:

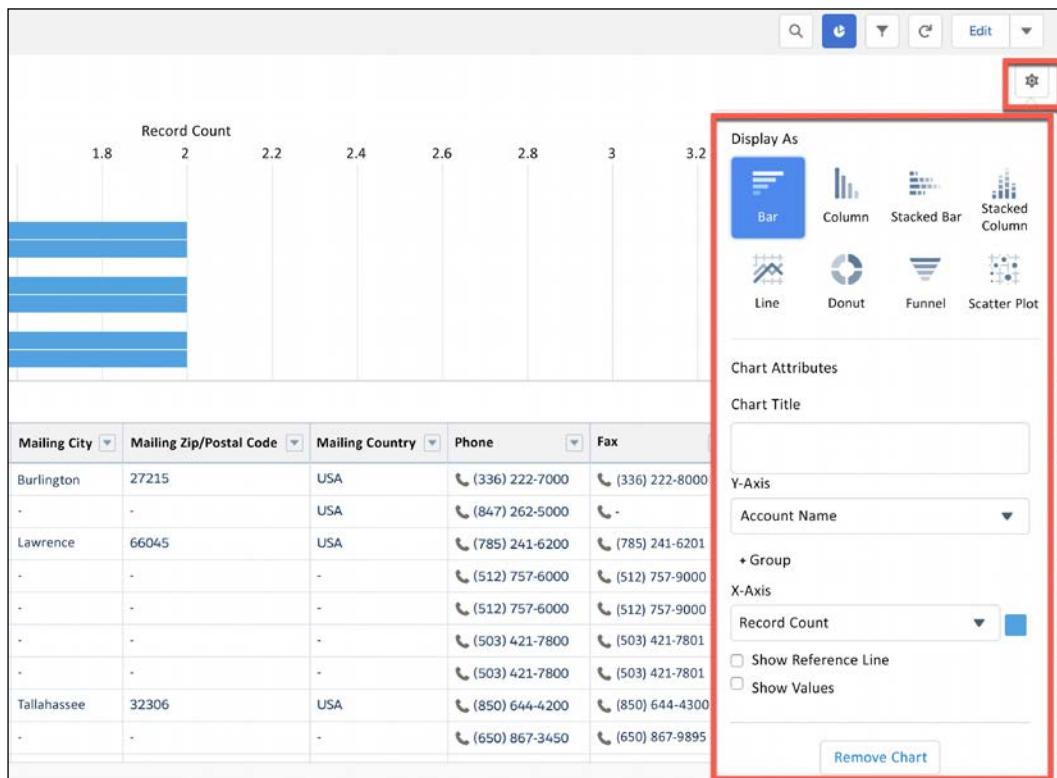


Figure 8.11: Chart properties expanded from the top-right corner of the screen

As shown in the preceding screenshot, clicking on the gear icon allows you to change the way the chart is displayed, add a chart title, control the fields displayed on the Y and X axes, and remove the chart if needed.

Another useful reporting feature can be seen by clicking on the dropdown arrow, as shown in the following screenshot:

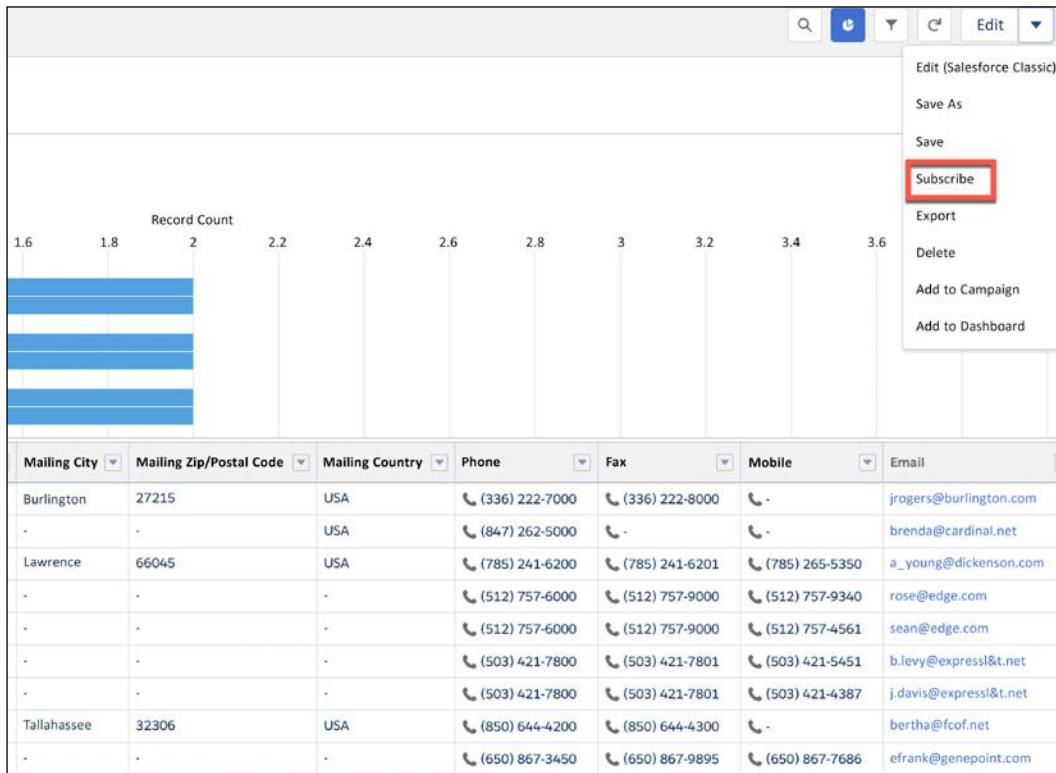


Figure 8.12: Dropdown for additional features in the top-right corner of the screen

Now, click on **Subscribe**, which will bring you to the following screen:

The screenshot shows the 'Edit Subscription' page with the following fields:

- Schedule**:
 - Frequency: Weekly (selected)
 - Days: Wednesday (selected)
 - Time: 8:00 AM
- Conditions**:
 - Add conditions to this report
- Subscribe**:
 - Send email to:
 - Me (selected)
 - Another Person
 - [Edit Recipients](#)
- Run Report As**:
 - Me
 - Another Person
- Buttons**:
 - Cancel
 - Save (highlighted with a red box)

Figure 8.13: Reaching the Edit Subscription page from the additional features dropdown

As shown in the preceding screenshot, we can schedule the subscription to a report so that it's automatically sent to us on a specific day and time.

Now that we have learned how to create a report, let's learn how to add this report to a dashboard as a dashboard component.

Using dashboards to visualize data

While reports allow you to gather and filter information, dashboards allow you to *visualize* various reports together through dashboard components. A dashboard is always built as an overlay to reports. We built an example report in the previous section, so now, let's add this report to a dashboard component:

1. Click on the **Dashboards** tab (1) to start the process, as shown in the following screenshot:

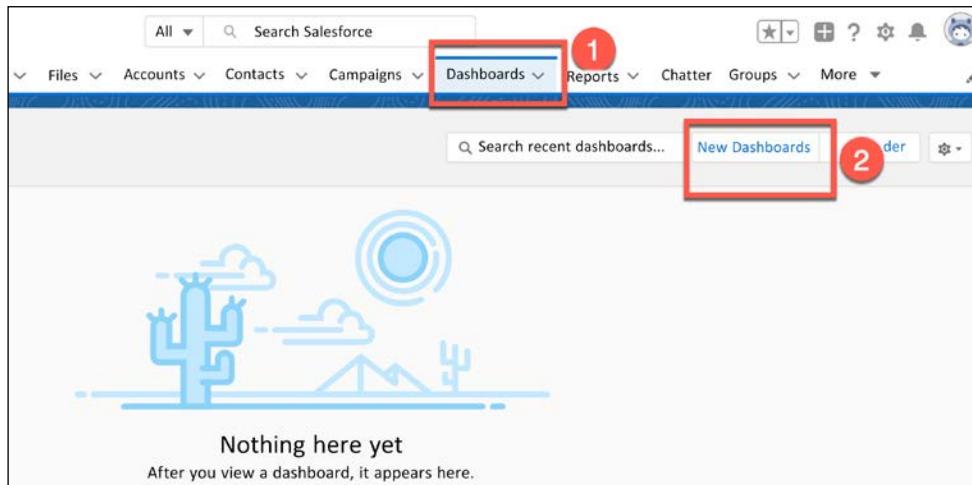


Figure 8.14: Reaching the New Dashboard button from the Dashboard tab

2. Then, click on **New Dashboard** (2). You can name it anything you like; I have named my dashboard **Account and Contact Dashboard**:

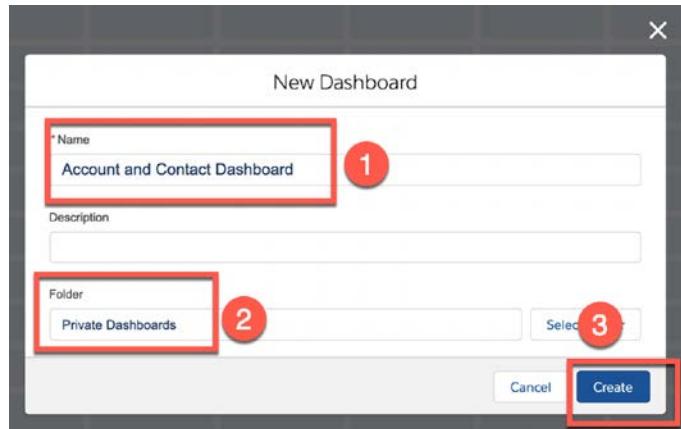


Figure 8.15: Fields for creating a dashboard

3. This dashboard will be added to my Private Dashboards folder (2), which means it will only be visible to me. Once I've finished building it, I can choose to move it to a public folder that can be widely shared. Click on **Create** (3).
4. After creating a private dashboard, we'll land on the dashboard builder page. Click on **+ Component** to add a new dashboard component to the dashboard:

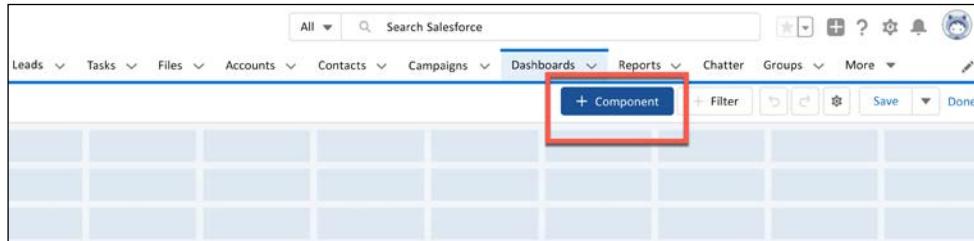


Figure 8.16: Button to add a component from the dashboard builder

5. Then, click on the report that you would like to use as the underlying source for the dashboard component (1) and click **Save** (2):

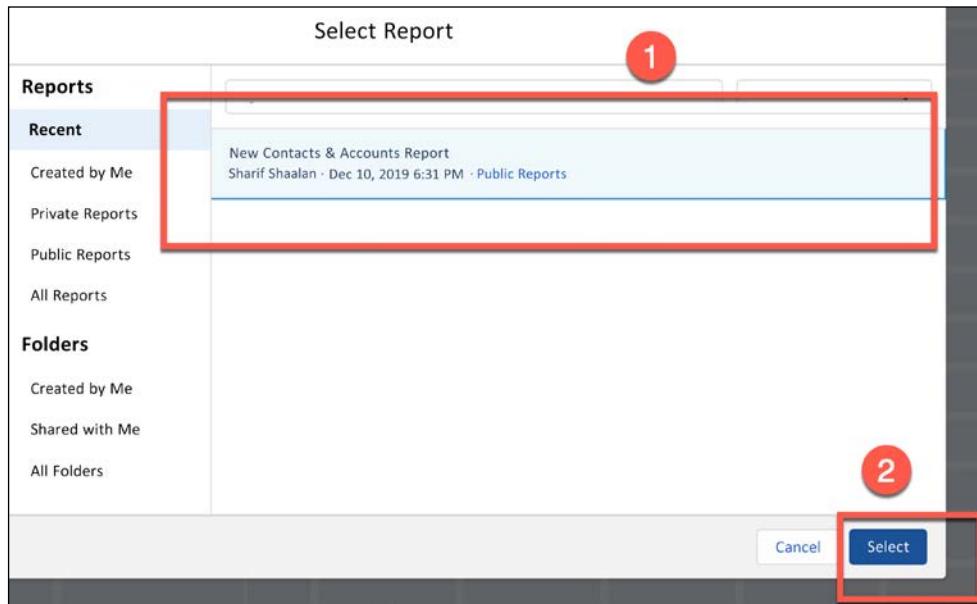


Figure 8.17: Selecting a report to use as the source for the dashboard

6. Next, choose the chart type you would like to use for the component and update the formatting settings (1), as shown in the following screenshot:

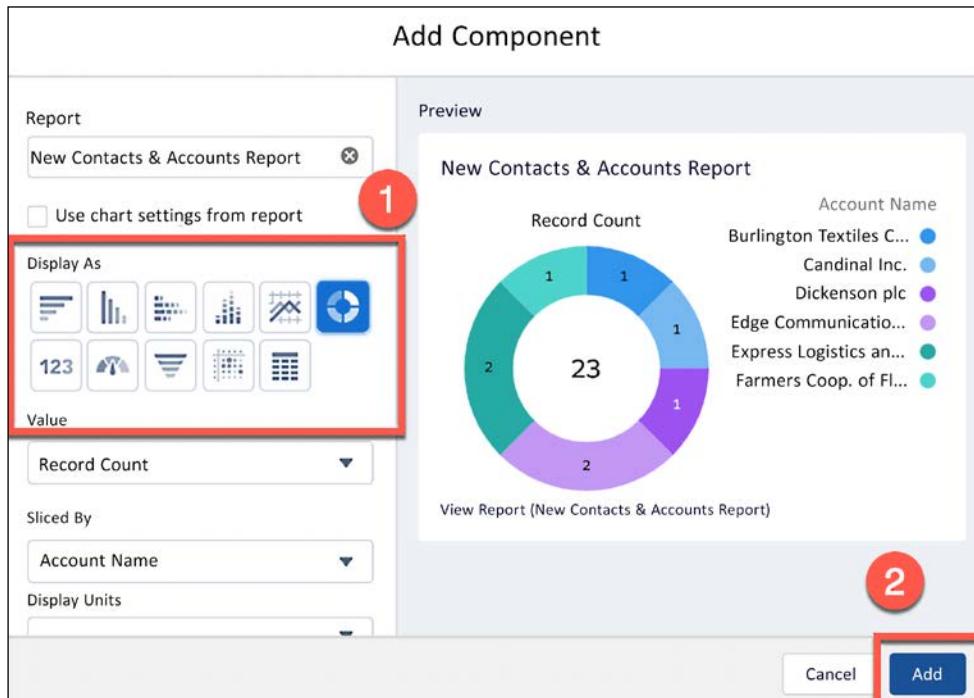


Figure 8.18: Selecting the chart type when adding a component

Once you're done, click on **Add** (2) to create the component.

In the following screenshot, you can see that the component we created is still in preview mode. Click **Save** to see the final result:

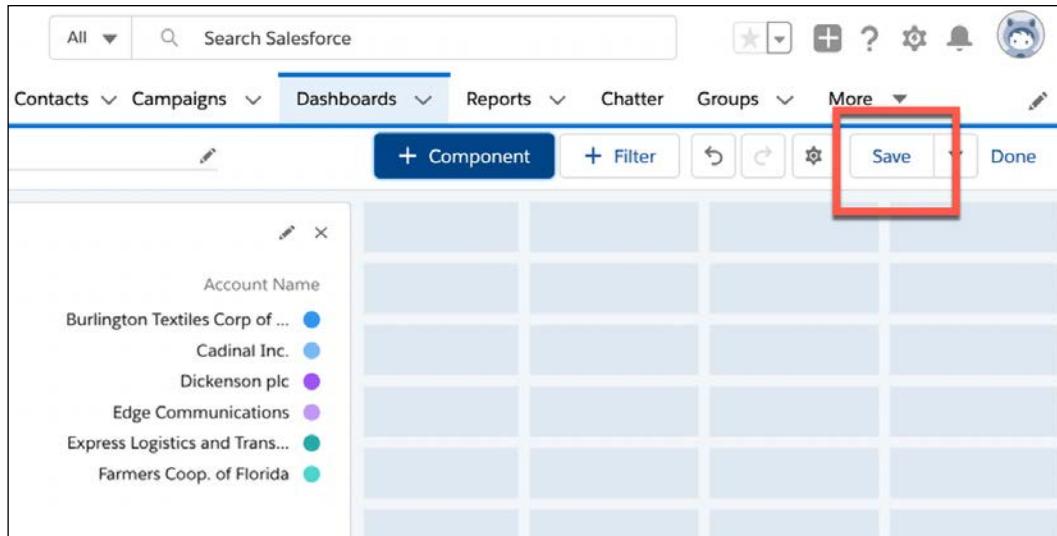


Figure 8.19: Preview of the created component

The following screenshot shows the completed dashboard:

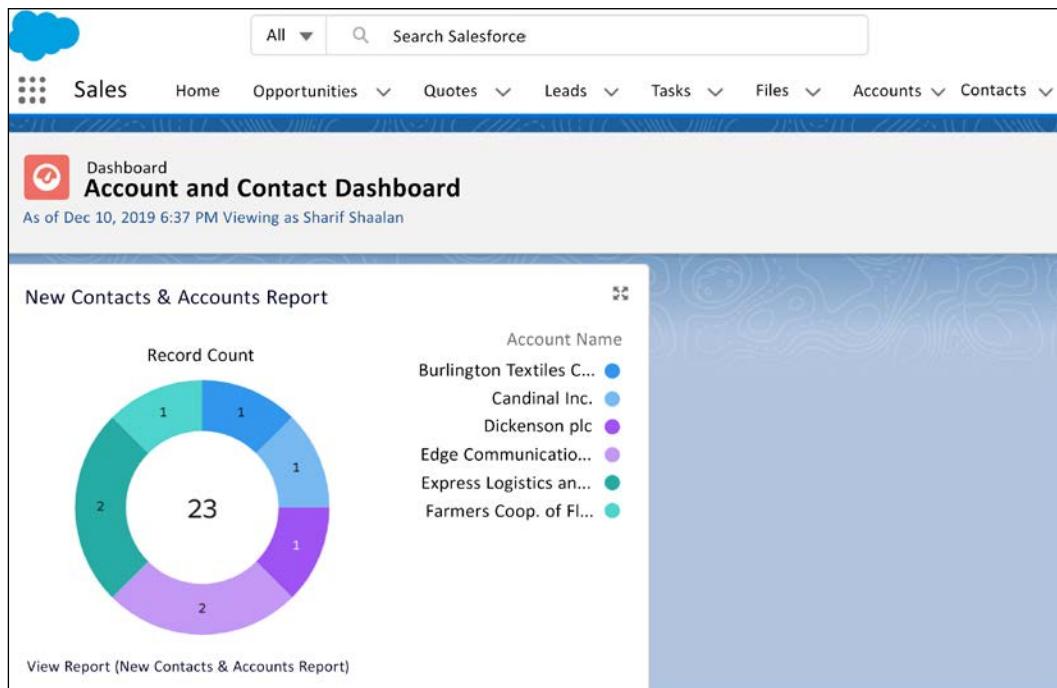


Figure 8.20: The completed dashboard

From the preceding screenshot, you can see that there is one component for our example. A dashboard can contain up to twenty dashboard components. Each of these components will have an underlying report.

Finally, another useful dashboard feature can be seen by clicking on the **Subscribe** button, which can be found in the upper-right corner of the page. This brings us to the following screen:

The screenshot shows the 'Edit Subscription' dialog box. At the top, it says 'Edit Subscription'. Below that, a message reads 'Schedule dashboard refreshes and subscribe to receive results.' Under 'Schedule', there's a 'Frequency' section with three options: 'Daily' (selected), 'Weekly', and 'Monthly'. Below that is a 'Days' section with buttons for Sun, Mon, Tue, Wed (selected), Thu, Fri, and Sat. Under 'Time', there's a dropdown menu showing '8:00 AM'. A checkbox labeled 'Receive new results by email when dashboard is refreshed.' is checked. At the bottom right, there are 'Cancel' and 'Save' buttons, with 'Save' being highlighted by a red box.

Figure 8.21: Reaching the Edit Subscription screen from clicking the Subscribe button

As shown in the preceding screenshot, we can subscribe to a dashboard to have it automatically sent to us on a specific day and time.

Now that we have learned how to create, view, and subscribe to a dashboard, let's go over what we have learned in this chapter.

Summary

In this chapter, we learned what a report is and how to create a report to help the business understand and take action on its data. We learned how to add columns, filters, groupings, and charts to customize the report's output and make it more useful. We also learned how to take a report and make it the underlying data source for a dashboard component.

Reports allow us to gain an understanding of what dashboards are and how to create dashboards in order to help the business visualize and act on data.

In the next chapter, we will look at **Salesforce Administration**, starting with its setup and configuration!

Questions

1. What type of report has no grouping?
2. What type of report has only a row grouping?
3. What type of report has both a row grouping and a column grouping?
4. How do you add a chart to a report?
5. How does a report relate to a dashboard?
6. How many components can you add to a dashboard?
7. What does **KPI** stand for?

Further reading

- Quick Start: Reports and Dashboards: <https://trailhead.salesforce.com/en/content/learn/projects/quickstart-reports>
- Explore Reports and Dashboards: https://trailhead.salesforce.com/en/content/learn/modules/lex_migration_whatsnew/lex_migration_whatsnew_analytics

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<https://packt.link/rLptF>



9

Setup and Configuration

Now that we have gone through the basic Salesforce objects and how they are used in the context of businesses, we will turn to Salesforce administration for this part of the book. Salesforce administration has endless possibilities and we would need a complete book in its own right to cover them all. For our purposes, we will focus on how to navigate the most crucial sections you will use on a day-to-day basis as an admin. Some of these features will be covered in further detail in later chapters of this book.

This chapter is best used as a reference for all the setup and configuration items. It will help you when going through future chapters in this book, as well as in future admin work within your organization.

In this chapter, we will explore the **Setup** page and the sections it contains. For each section, we will gain an understanding of the different items they include, and what they are used for. More specifically, we will cover the following topics:

- Navigating to the **Setup** page
- Delving into the **ADMINISTRATION** section
- Exploring the **PLATFORM TOOLS** section
- Understanding the **SETTINGS** section
- Using the **Object Manager** tab

With the help of these topics, you will be able to navigate to **Setup** and you will know where to find the settings to help you carry out your job as a system administrator.

Technical requirements

For this chapter, make sure you log in to your development org and follow along as we go through the different settings available to a system administrator. Your development org will be automatically set up with the system administrator profile, but do note that in other Salesforce orgs, you need to have the system administrator profile set up to access all of the areas we will cover in this chapter.

Navigating to the Setup page

Setup is the key to the administrator kingdom. Once you have access to this page, you can look under the hood of your system and make the changes needed to help drive business processes. Let's take a look at how to get to this page.

We start off on the home page of Salesforce, as shown:

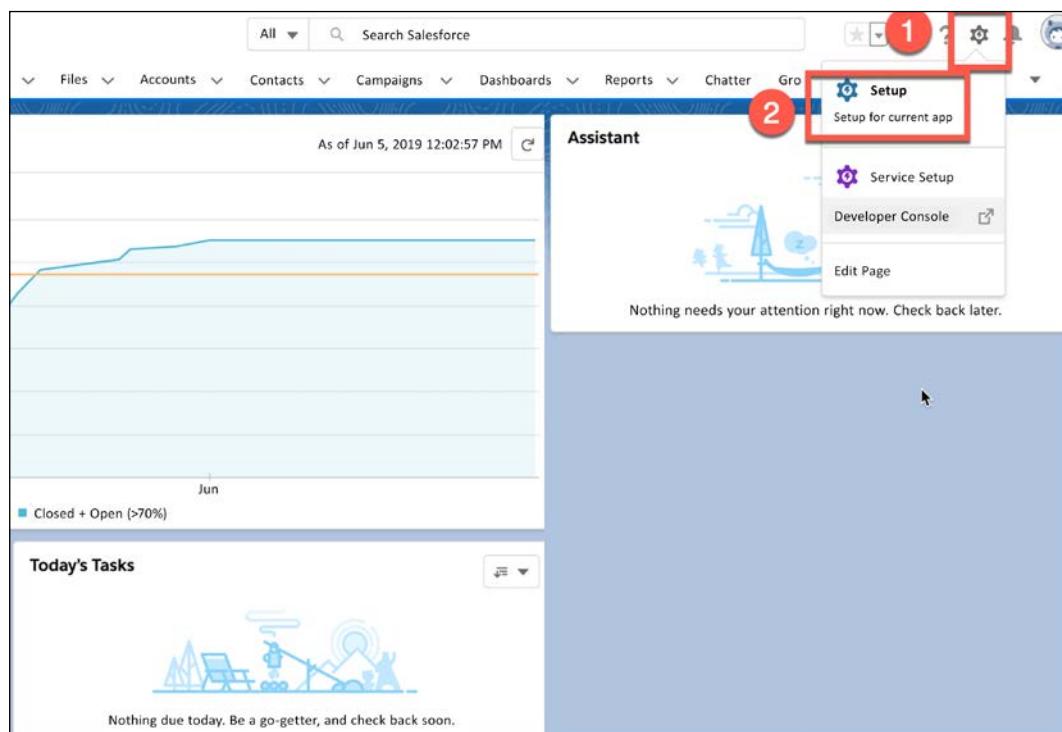


Figure 9.1: Finding the Setup page from the gear icon at the top-right of the screen

Click on the gear icon at the top of the page (1) and then click on **Setup** (2).

The following screenshots show the landing page after clicking on **Setup**:

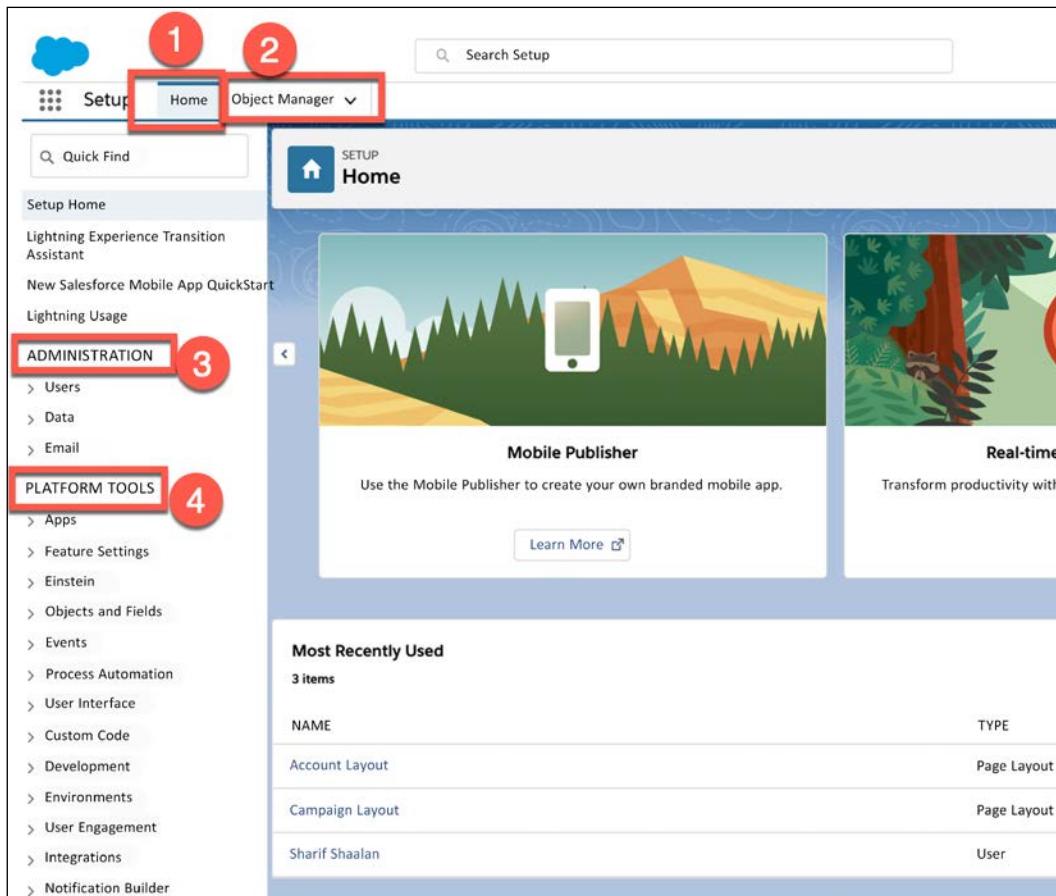


Figure 9.2: Setup landing page with highlighted sections

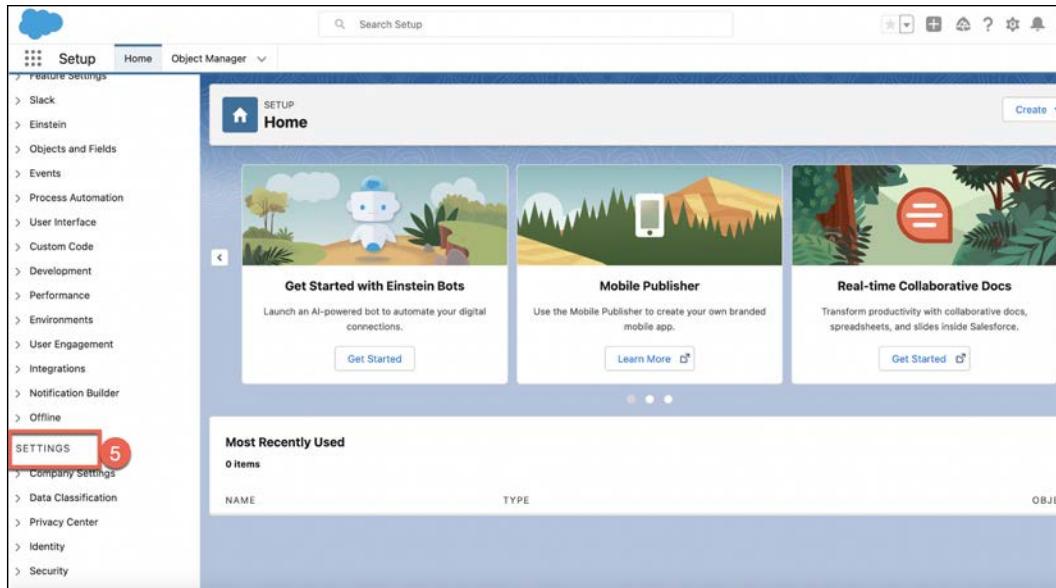


Figure 9.3: Setup landing page continued

As you can see in the preceding screenshots, there are several areas of interest:

- The **Home** tab (1) contains all of the settings related to administration outside of the **Object Manager** tab.
- The **Object Manager** tab (2) contains all of the administration options related to standard and custom objects.
- **ADMINISTRATION** (3) is a section of the **Home** tab.
- **PLATFORM TOOLS** (4) is a section of the **Home** tab.
- **SETTINGS** (5) is a section of the **Home** tab.

All of these areas will be covered in this chapter.

As well as these, there are eight items that fall outside of the **Home** tab; we will cover these here before we dig deeper into the sections directly under the **Home** tab:

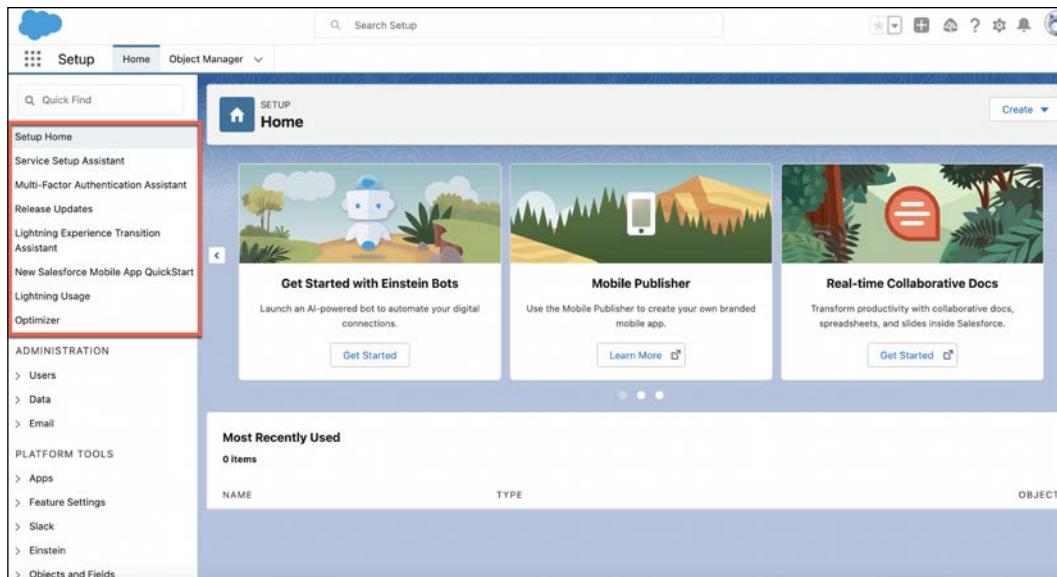


Figure 9.4: Highlighted sections outside of the Home tab

As you can see in the preceding screenshot, the following eight items fall outside of the **ADMINISTRATION**, **PLATFORM TOOLS**, and **SETTINGS** sections:

- **Setup Home:** This item provides quick start items for setting up **Einstein Bots**, **Mobile Publisher**, and **Real-time Collaborative** docs. It also shows all of the recently used setup items.
- **Service Setup Assistant:** This item provides a quick start method to set up a Service Cloud app.
- **Multi-Factor Authentication Assistant:** As multi-factor authentication is now required to log into Salesforce, this item will walk you through the setup process.
- **Release Updates:** This item will show you all actions needed to enable release features that must be activated.
- **Lightning Experience Transition Assistant:** This tool allows admins that use Salesforce Classic to analyze and transition their org to Salesforce Lightning.
- **New Salesforce Mobile App QuickStart:** This tool provides a step-by-step guide for admins to configure the Salesforce mobile app.
- **Lightning Usage:** This tool allows admins to track the usage and adoption of Salesforce Lightning for organizations that are in the middle of making the transition to Salesforce Lightning.

- **Optimizer:** This tool allows you to analyze your Salesforce setup to find ways to simplify customizations and drive feature adoption. Consider running Salesforce Optimizer as part of your monthly maintenance, before installing a new app, before each Salesforce release, or at least once a quarter.

Now that we have seen how to navigate to **Setup** and looked at the components of the page, let's look at the various sections in more detail.



Using the **Quick Find** search bar in **Setup** takes you directly to the section in **Setup** that you wish to navigate to as you carry out your day-to-day admin work.

Delving into the ADMINISTRATION section

In *Navigating to the Setup page*, we saw that there are three sections for us to look at – we will start with **ADMINISTRATION** and what is covered there.

Under the **Home** tab, the first section is the **ADMINISTRATION** section. This section allows you to make changes to three subsections within **ADMINISTRATION**—**Users**, **Data**, and **Email**. The following screenshot shows you this section:

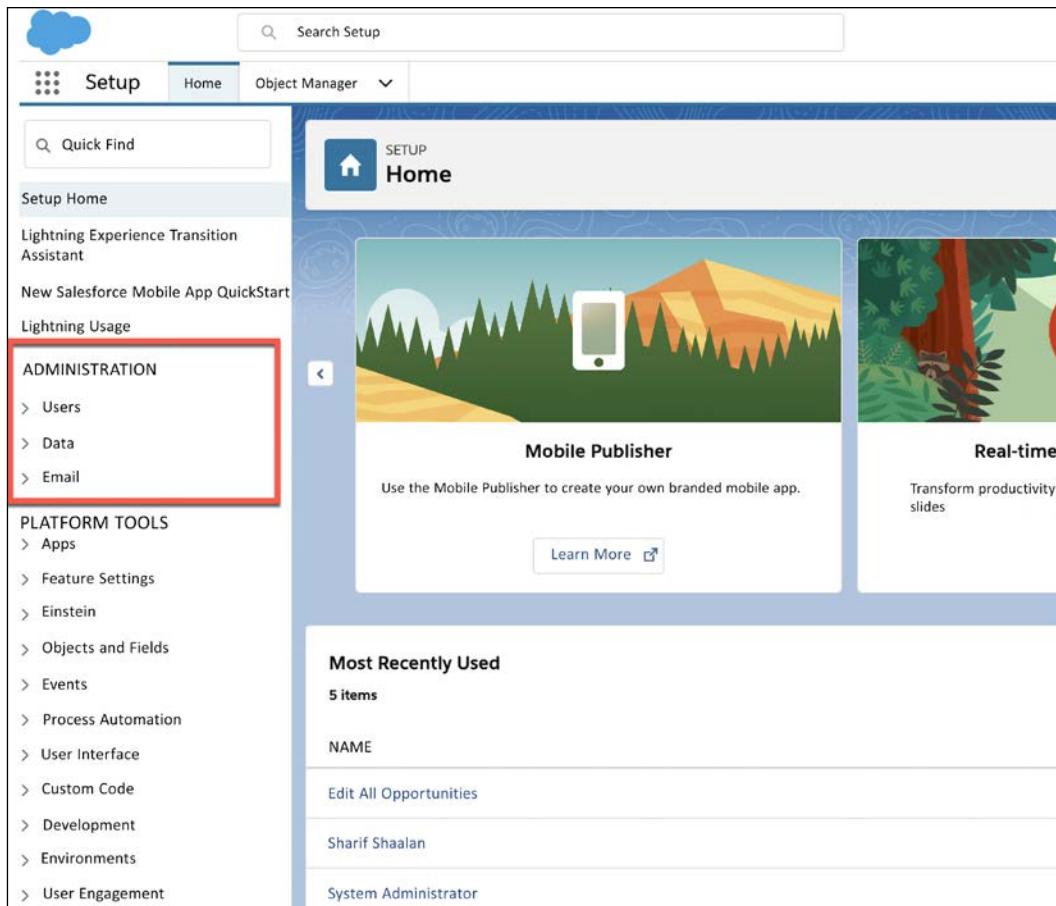


Figure 9.5: ADMINISTRATION section of the Home tab

Now, let's look at these subsections in more detail.

Users

The following screenshot shows you the **Users** subsection:

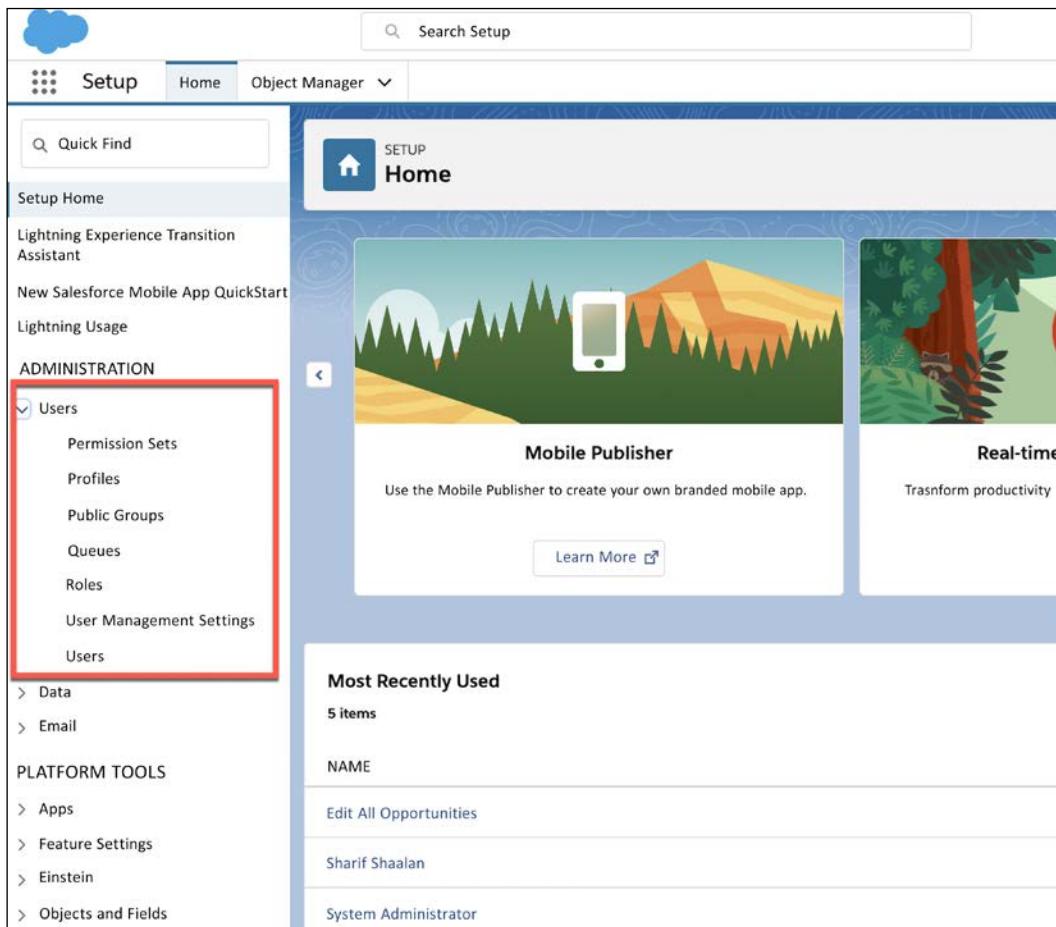


Figure 9.6: Users subsection of the ADMINISTRATION section

The **Users** subsection focuses on user permissions, user creation, and recording assignments. This is a section that is very heavily used by admins as this is where the initial setup of users and assigning their permissions happens. When a new user is created in Salesforce, a role and a profile are assigned to them. You can also assign one-off permissions using permission sets. A user can be assigned to a public group, which is used for sharing folders and views, among other items. A user can also be part of a lead or case assignment queue. All of these settings can be found in this **Users** section.

The following settings are included under the **Users** subsection:

- **Permission Sets:** Permission sets allow you to add a subset of permissions to a user's profile. This is for one-off permissions that do not apply to all users with specific permissions.
- **Profiles:** This allows you to create and adjust profiles for users. Profiles are a foundation of Salesforce security and will be covered in *Chapter 10, An Overview of Sharing and Visibility*.
- **Public Groups:** Users can be added to public groups and these groups can be given access to certain Salesforce items, such as report folders or views.
- **Queues:** Queues are used by leads and cases. A user can belong to a queue and they will be able to view records assigned to a specific queue and, in turn, take one of these records and reassign it from the queue to themselves.
- **Roles:** Roles are another security bedrock that will be covered in more detail in *Chapter 10, An Overview of Sharing and Visibility*. Roles allow the admin to set up a company hierarchy to help control the security options.
- **User Management Settings:** These are the settings that relate to specific users, such as scrambling personal information if the user does not want it to be visible.
- **Users:** This is where you add and remove Salesforce users.

Now that we have looked at the items under the **Users** subsection, let's take a look at the **Data** subsection.



When managing users, there is an option to freeze users. This option is useful when you need to deactivate a user, but the user is connected to a feature or functionality in some way and there needs to be some analysis before carrying out the actual deactivation. This feature makes sure the user cannot log into Salesforce while the analysis is conducted.

Data

The following screenshot shows the **Data** subsection:

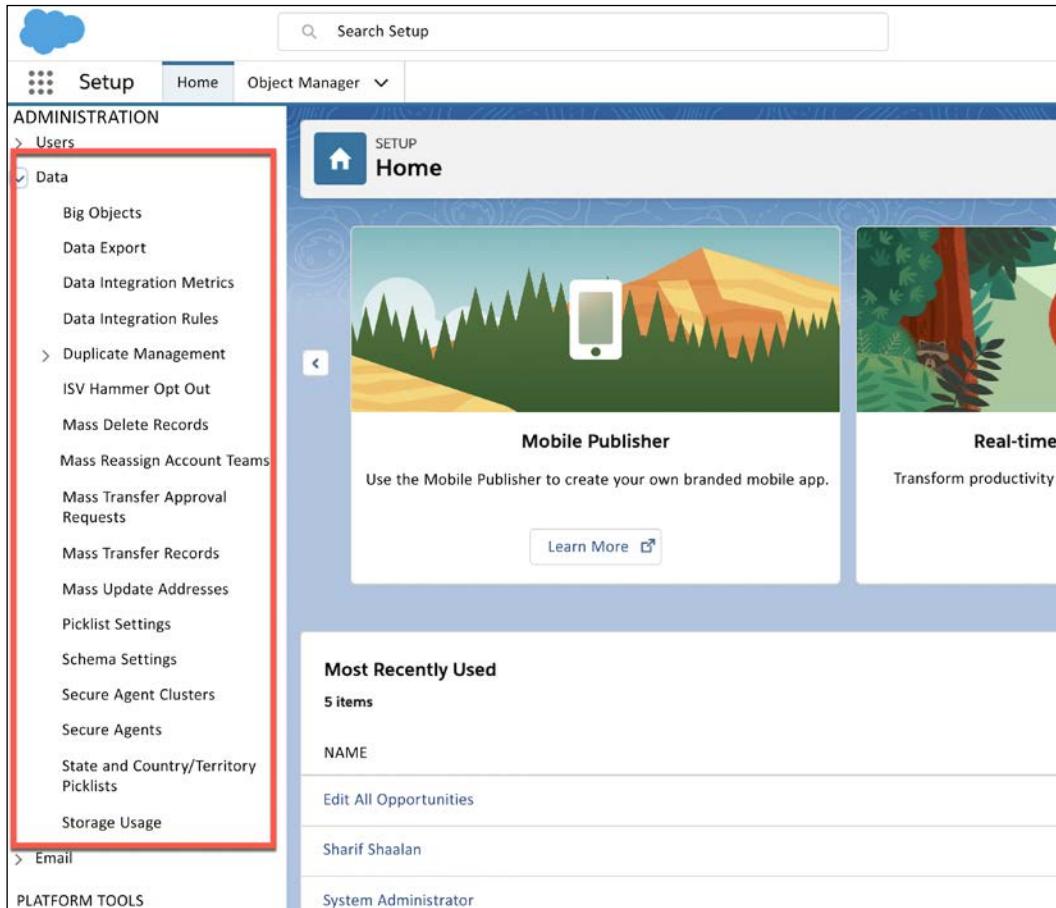


Figure 9.7: Data subsection of the ADMINISTRATION section

The **Data** subsection contains the settings for all the data-related items. This is another section that is heavily used by admins. This section contains the tools needed for data transformation (that is, importing, exporting, updating, and deleting), as well as the tools for duplicate management that are needed to keep a database clean of duplicates. This section also contains the picklist settings that are often used as a basis for data integrity.

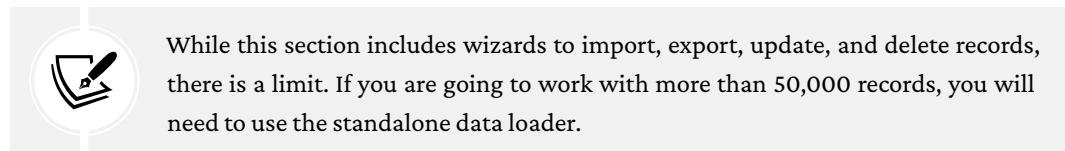
Let's take a look at all of the subsections under **Data**:

- **Big Objects:** Big objects are special custom objects for storing large data-volume objects.

This is where you would navigate to create big objects.

- **Data Export:** This setting allows you to export all of your organization's data as a backup.
- **Data Integration Metrics:** This section shows you the metrics related to data integration rules.
- **Data Integration Rules:** Data integration rules are tied to any activated data services, such as data cleansing services.
- **Duplicate Management:** This section allows you to create duplicate rules and matching rules for data that comes into Salesforce to help maintain the data quality.
- **ISV Hammer Opt Out:** This setting ensures testing for new Salesforce releases is carried out and helps **Independent Software Vendors (ISVs)** stay compliant with upgrades. It is recommended to opt into this setting.
- **Mass Delete Records:** This wizard allows you to mass delete records based on filters.
- **Mass Reassign Account Teams:** This allows you to mass add a user to many account teams, mass remove a user from account teams, and mass reassign account teams from one user to another.
- **Mass Transfer Approval Requests:** This allows you to mass transfer record approvals to another user if, for instance, someone leaves the company or is on an extended vacation and they have specific approvals assigned to them.
- **Mass Transfer Records:** This setting allows you to mass transfer records to another user.
- **Mass Update Addresses:** This wizard allows you to mass-update the address field on records.
- **Picklist Settings:** This setting allows you to disable editing the picklist values' API names.
- **Schema Settings:** This setting allows you to restrict certain access to schema, such as custom metadata.
- **Secure Agent Clusters:** Secure Agent clusters provide failover protection, ensuring that your users can always access on-premises external data sources from Salesforce.
- **Secure Agents:** Secure Agents let you safely connect Salesforce to external data stored on-premises.
- **State and Country/Territory Picklists:** This setting allows you to set up the state and country picklist values.
- **Storage Usage:** This setting shows you your data storage and how close you are to the limit.

Now that we have looked at the items under the **Data** subsection, let's take a look at the **Email** subsection.



Email

The following screenshot shows you the **Email** subsection:

A screenshot of the Salesforce Setup Home page. The left sidebar has a red box highlighting the 'Email' subsection under 'Data'. The main content area shows the 'Home' tab selected, featuring sections for 'Mobile Publisher' (with an illustration of a smartphone) and 'Real-time' (with an illustration of a raccoon). Below these are sections for 'Most Recently Used' items like 'Edit All Opportunities', 'Sharif Shaalan', and 'System Administrator'. The top navigation bar includes 'Setup', 'Home', and 'Object Manager'.

Figure 9.8: Email subsection of the ADMINISTRATION section

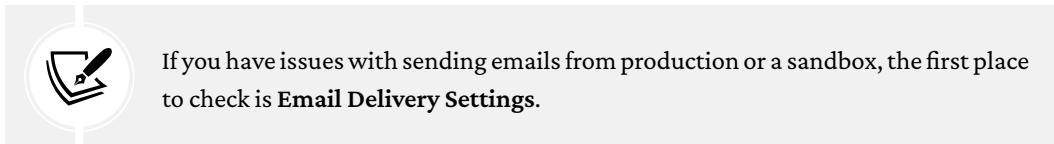
The **Email** subsection contains the settings for all email-related items. As an admin, you will find yourself doing a lot of work here as this section contains items related to third-party email integration tools, email templates, and organization-wide email addresses that may be used by your sales and support teams.

Let's take a look at all the items under **Email**:

- **Apex Exception Email:** Here, you can set the email addresses that receive alerts when there is an Apex exception.
- **Classic Email Templates:** This item contains any email templates that were built in Salesforce Classic.
- **Classic Letterheads:** This item contains any letterheads that were created in Salesforce Classic.
- **Compliance BCC Email:** This item allows you to add a BCC email address for all outgoing emails relating to compliance.
- **DKIM Keys:** This is where you set the **DomainKeys Identified Mail (DKIM)** keys if you want to sign outgoing emails.
- **Deliverability:** Configure the settings on this page to improve your organization's email deliverability.
- **Email Attachments:** These settings allow you to configure settings such as the email attachment size allowance.
- **Email Delivery Settings:** This item allows you to set up email relays and email domain filters.
- **Email Footers:** This setting allows you to add footers to emails sent from Salesforce.
- **Email to Salesforce:** This item allows you to set up a feature where an activity is logged in Salesforce when you send an email from a third party, by providing a unique BCC email address to add to outgoing emails.
- **Enhanced Email:** This item allows you to set up emails in their own objects, rather than as a type of activity.
- **Gmail Integration and Sync:** This contains the settings to turn on Gmail integration.
- **Lightning Email Templates:** This item contains email templates created for Lightning.
- **Mail Merge Templates:** This item contains the mail merge templates you create.
- **Organization-Wide Addresses:** This setting is used to set up an organization-wide email address, such as support@yourcompany.com, and make it available for use by any user as they send out emails.
- **Outlook Configurations:** This item contains the rules used for Outlook integration.
- **Outlook Integration and Sync:** This item contains further settings related to Outlook integration.

- **Send through External Email Services:** This item allows you to send emails directly from Gmail or Office 365.
- **Test Deliverability:** Here, you can test the deliverability to specific email addresses to see whether emails are blocked for any reason.

Now that we have looked at an overview of all the settings under the **ADMINISTRATION** section, let's take a look at the **PLATFORM TOOLS** section.



Exploring the **PLATFORM TOOLS** section

The **PLATFORM TOOLS** section deals with the configuration and development features of the Salesforce application. Here you will find workflow automation tools as well as tools for creating and managing metadata in Salesforce such as **Automation**, **Objects & Fields**, as well as other items. The **PLATFORM TOOLS** section is heavily used when customizing your Salesforce instance.

The following screenshot shows you how to access this section on the **Setup** page:

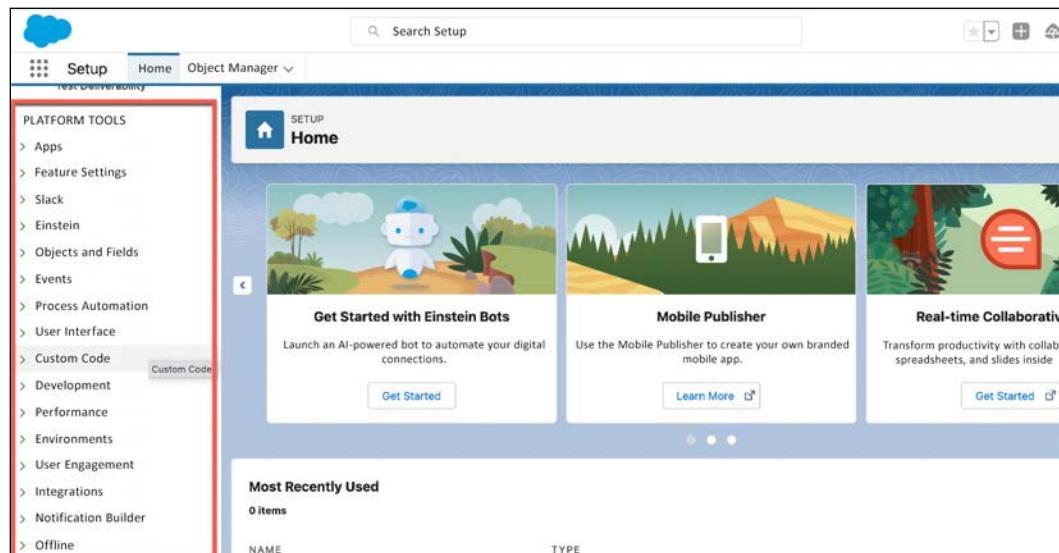


Figure 9.9: **PLATFORM TOOLS** section of the Home tab

Let's take a look at what the subsections highlighted in the preceding screenshot contain.

Apps

Apps provide a set of functionality grouped together. Some of the use cases of the **Apps** sub-section for an admin include creating an app for a specific division in your company, finding a third-party application to install, and customizing and setting up Salesforce Mobile.

The following settings are available under the **Apps** subsection:

- **App Manager:** This item shows you all of your Classic and Lightning apps and allows you to edit them.
- **AppExchange Marketplace:** This item links you directly to AppExchange, where you can download pre-built apps (both free and paid).
- **Connected Apps:** This item allows you to create and view connected apps, such as OAuth apps.
- **Lightning Bolt:** Bolt solutions address the needs of specific industries and functions with tailored apps and business processes.
- **Mobile Apps:** This item allows you to customize your mobile apps.
- **Packaging:** This item allows you to view your installed packages and create your own packages.

Now that we have looked at items under the **Apps** subsection, let's take a look at the **Feature Settings** subsection.



The AppExchange marketplace is a great place to search before building custom functionality. There are both free and paid apps that you could find very helpful.

Feature Settings

This subsection covers features for specific categories and business processes in Salesforce. As an admin, some of the use cases for this section include settings related to specific objects, such as opportunities as leads. It also includes the settings related to features such as Quip or Salesforce files.

The following settings are available for the **Feature Settings** subsection:

- **Analytics:** This item contains all the settings related to reporting and dashboards.
- **Chatter:** This item contains all the settings related to Chatter. Chatter is an internal business social network for Salesforce.

- **Cisco Webex:** This item contains the settings for using Webex within Salesforce.
- **Communities:** This item contains all settings to create and manage a Salesforce community. Communities are customer- or partner-facing portals.
- **Data.com:** This item contains all settings related to setting up **Data.com**, a data quality add-on.
- **Home:** This item allows you to set up and manage different home page layouts.
- **Marketing:** This item contains the settings for marketing-related objects, such as leads and campaigns.
- **Office 365:** This item contains the settings for setting up Skype on Salesforce.
- **Quip:** This item contains settings for Quip, a shared document tool add-on for Salesforce.
- **Sales:** This item contains all the settings for sales-related objects, such as accounts, opportunities, products, and quotes.



The **Sales** section is very heavily used by admins, especially the lead and opportunity settings.

- **Salesforce Files:** This item contains the settings for files. Files are documents that you upload to records or libraries in Salesforce.
- **Service:** This item contains the settings for all service-related objects, such as cases, Omni-Channel, and Field Service.
- **Survey:** This item contains the settings for Salesforce surveys.
- **Topics:** This item contains the settings for Salesforce topics.

Now that we have taken a look at items in the **Feature Settings** subsection, let's take a quick look at Slack.

Slack

With the recent addition of Slack to the Salesforce tools, this subsection allows you to enable the **Slack for Salesforce** connection. This connection allows you to integrate the Slack messaging platform with Salesforce. Next, we will look at the Einstein subsection.

Einstein

Einstein is the AI tool for Salesforce. The **Einstein** subsection of **PLATFORM TOOLS** may be used to configure the Einstein search and check whether your organization is ready to work with Einstein AI. Let's take a look at the available settings:

- **Einstein Platform:** This item allows you to turn on the paid portion of Einstein.
- **Einstein Sales:** This item allows you to set up Einstein Activity Capture.
- **Einstein Search:** This item allows you to configure Einstein Search.
- **Readiness Assessor:** This wizard allows you to analyze your organization's data to see whether you are ready to use Einstein.

Now that we have looked at the items in the **Einstein** subsection, let's take a look at the **Objects and Fields** subsection.

Objects and Fields

This subsection covers the object and field settings. This is a subsection that you will use quite frequently as an admin since the **Object Manager** tab takes you to the settings for all of the objects and items related to objects, such as custom fields, page layouts, and record types.

The following settings are available under the **Objects and Fields** subsection:

- **Object Manager:** This item redirects you to the **Object Manager** tab. We will cover this in more detail in the *Using the Object Manager tab* section of this chapter.
- **Picklist Value Sets:** This setting allows you to set global picklists, which allow you to use one picklist across lots of different objects and create values for those picklists.
- **Schema Builder:** This item allows you to view a dynamic **Entity Relationship Diagram (ERD)** for your organization.

Now that we have looked at the items under the **Objects and Fields** subsection, let's take a look at the **Events** subsection.



If someone requests an ERD, the schema builder is a good place to start as it shows you all of your Salesforce objects and how they connect to each other.

Events

Event monitoring helps you audit your Salesforce instance for all types of activities. This is an add-on service. It can be used from the **Event Manager** page, which allows you to view all events.

Next, let's take a look at the **Process Automation** subsection.

Process Automation

This subsection contains the settings to create all things related to automation. As an admin, you will use this subsection quite often as it contains process builders, workflows, approval processes, and flows (we will cover flows in detail in *Chapter 16, Salesforce Flow*).

The following settings are available in the **Process Automation** subsection:

- **Approval Processes:** This item allows you to create and edit approval processes.
- **Automation Home (Beta):** This item provides a dashboard to monitor and manage automation.
- **Flows:** This item allows you to create and edit flows.
- **Migrate to Flows (Beta):** As process builder and workflows will be retired, this section provides a wizard to migrate existing process builders and workflows to Flow.
- **Next Best Action:** This item allows you to create strategies for the Einstein tool's next best action.
- **Paused Flow Interviews:** This item allows you to monitor and troubleshoot flows that didn't run.
- **Post Templates:** Approval post templates allow you to customize the content of approval request posts.
- **Process Automation Settings:** This item is a one-stop shop for the high-level settings related to the different automation options.
- **Process Builder:** This item allows you to create and edit process builders.
- **Workflow Actions:** This item shows you all the workflow actions that have been created.
- **Workflow Rules:** This item allows you to create and edit workflow rules.

Now that we have looked at the items in the **Process Automation** subsection, let's take a look at the **User Interface** subsection.



Automation Home is a great place to bring all the things related to automation together. This is a new feature that will undoubtedly only get better going forward.

User Interface

This subsection contains all the settings related to the UI. This is another subsection that you will heavily use as an admin. Some of the use cases for this subsection include creating Lightning record pages and creating global actions.

The following settings are available under the **User Interface** subsection:

- **Action Link Templates:** An action link is a button on a feed element that targets an API, a web page, or a file. This section allows you to create action links.
- **Actions & Recommendations:** This item allows you to create actions and recommendations to guide users in specific processes.
- **App Menu:** This item allows you to customize what shows up in the App Launcher.
- **Custom Labels:** This item allows you to create custom labels. These can be accessed and used in code.
- **Density Settings:** This setting allows you to change aspects of the UI such as visible white space.
- **Global Actions:** This item allows you to create and edit global actions.
- **Lightning App Builder:** This item allows you to create Lightning pages.
- **Lightning Extension:** This item allows you to configure the Lightning Extension settings. Lightning Extension is a browser extension that's designed to complement the user experience with continuous productivity feature releases.
- **Path Settings:** This item allows you to create different paths to help guide users on specific records and next steps.
- **Quick Text Settings:** This item allows you to configure the settings related to quick text, which helps users be more productive by setting up text shortcuts.
- **Record Page Settings:** This item allows you to choose different layouts for Lightning pages.
- **Rename Tabs and Labels:** This item allows you to rename tabs and objects. For example, you may want to rename accounts as organizations or rename specific standard fields.
- **Sites and Domains:** This item allows you to manage domains, sites, and custom URLs.

- **Tabs:** This item allows you to create and manage tabs.
- **Themes and Branding:** This item gives you the theme and branding options for your organization.
- **Translation Workbench:** This item provides you with various Salesforce translation options.
- **User Interface:** This item provides you with various high-level user interface settings.

Now that we have looked at the items under the **User Interface** subsection, let's take a look at the **Custom Code** subsection.



Remember that the Lightning App Builder allows you to create and edit Lightning pages. The page layout section of an object allows you to edit the **Details** and **Related Lists** sections of your Lightning pages.

Custom Code

This subsection contains all the code-related settings. Depending on how complex your organization is, you may spend a significant amount of time here, especially if you are working with a developer. Some of the use cases for this subsection include creating Apex triggers and the Apex classes used for custom automation and custom UIs.

The following settings are available under the **Custom Code** subsection:

- **Apex Classes:** This item shows all the Apex classes that exist in the org.
- **Apex Settings:** This item has a few Apex-related settings options.
- **Apex Test Execution:** This item allows you to run test classes as needed.
- **Apex Test History:** This item shows you all the tests that have run and which tests passed and failed.
- **Apex Triggers:** This item contains all the Apex triggers that exist in the org.
- **Canvas App Previewer:** Canvas apps are another type of app that can be utilized. This item allows you to preview your canvas apps.
- **Custom Metadata Types:** Custom metadata types enable you to create your own setup objects whose records are metadata rather than data. This item allows you to create custom metadata types.
- **Custom Permissions:** This item allows you to create custom permissions accessed by code.

- **Custom Settings:** This item allows you to create custom settings related to code.
- **Email Services:** This item allows you to create email services. Email services are automated processes that use Apex classes to process the contents, headers, and attachments of inbound emails.
- **Lightning Components:** This item contains all of your custom Lightning components.
- **Platform Cache:** Platform cache partitions let you segment the org's available cache space. This item allows you to create partitions.
- **Remote Access:** Remote access is no longer used; it has been moved to connected apps.
- **Static Resources:** This item allows you to create static resources that can be referenced in code.
- **Tools:** This item provides links to various development tools.
- **Visualforce Components:** This item contains all of your org's Visualforce components.
- **Visualforce Pages:** This item contains all of your org's Visualforce pages.

Now that we have looked at the items under the **Custom Code** subsection, let's take a look at the **Development** subsection.



Knowing where to find **Custom Settings** will be useful since many third-party apps use this functionality to store settings related to their apps.

Development

This subsection allows you to access the **Dev Hub** page. The **Dev Hub** page allows you to create and manage scratch orgs. Scratch orgs are disposable Salesforce orgs that are used to support development and testing. They are fully configurable, allowing developers to emulate different Salesforce editions with different features and preferences.

Now that we have looked at the item in the **Development** subsection, let's take a look at the **Performance** subsection.

Performance

This subsection allows you to build to scale; there are step-by-step instructions on how to build scalable applications for large data volumes.

Now that we have looked at the item under the **Performance** subsection, let's take a look at the **Environments** subsection.

Environments

The **Environments** subsection contains the settings related to moving code and metadata between environments. As an admin, you will spend a significant amount of time here since you should always build features in a sandbox for testing and then move them to production. Some of the use cases for this subsection include creating change sets to deploy code between environments, creating custom jobs, and monitoring these jobs.

The following settings are available under the **Environments** subsection:

- **Deploy:** This item contains the settings related to deploying code.
- **Jobs:** This item contains the settings to view and set up various Apex jobs.
- **Logs:** This item contains debug logs and email file logs. Debug logs are very important to admins as they allow you to monitor the actions of a specific user and view detailed system logs of the actions they take. An example use case here is a user that gets an error when carrying out an action. You can add a user under **User Trace Flags** (1), as you can see in the following screenshot:

The screenshot shows the 'Debug Logs' page in the Salesforce Setup interface. At the top, there's a 'SETUP' icon and the title 'Debug Logs'. Below the title, a sub-section titled 'User Trace Flags' is highlighted with a red box and a circled '1'. It shows a table with columns: Action, Name (sorted by Name ↑), LogType, and Requested By. One row is visible: 'Delete | Edit | Filters Shaalan, Sharif' with LogType 'USER_DEBUG' and Requested By 'Sharif Shaalan'. Below this is another section titled 'Debug Logs' highlighted with a red box and a circled '2'. It also shows a table with columns: User, Request Type, and Application. One row is visible: 'View | Download | Delete Sharif Shaalan' with Request Type 'Application' and Application 'Browser'. There are 'New' and 'Delete All' buttons at the top of each table.

Figure 9.10: Important sections of Debug Logs for tracing user errors

The next step is to ask the user to replicate the action that produced the error. Once the action is replicated, you can download the **Debug Logs** (2), as you can see in the preceding screenshot, to get details on the error. The user is traced for 24 hours:

- **Monitoring:** This item allows you to monitor various types of jobs and automation.
- **System Overview:** This item shows a complete overview of the system and where your org is with certain limits.

Now that we have looked at the items in the **Environments** subsection, let's take a look at the **User Engagement** subsection.



System Overview is a great place to monitor your Salesforce limits to make sure you are not close to exceeding any of them.

User Engagement

This subsection focuses on driving user engagement. Let's take a look at these settings:

- **Adoption Assistance:** This item contains settings specific to switching to Lightning and driving user adoption.
- **Help Menu:** This item allows you to customize the **Help** menu.
- **In-App Guidance:** This item allows you to set up in-app guidance to help drive user adoption.

Now that we have looked at the items in the **User Engagement** subsection, let's take a look at the **Integrations** subsection.

Integrations

This subsection focuses on the integration settings. Some of the use cases for this section include building integrations with external systems, importing data, and working with external objects. Let's take a look at what these settings are:

- **API:** This item contains links to help you build integration with various APIs.
- **Change Data Capture:** This sends notifications for created, updated, deleted, and undeleted records. All custom objects and a subset of standard objects are supported.
- **Data Import Wizard:** This allows you access to the Data Import Wizard to import data.

- **Data Loader:** This allows you to access the Data Loader, which offers more features than the Data Import Wizard.
- **Dataloader.io:** This links to [dataloader.io](#), which is a web-based data loader and has paid options.
- **External Data Sources:** This allows you to manage external data sources connected to Salesforce.
- **External Objects:** These are custom objects that connect to external data sources.
- **External Services:** This item allows you to add and configure external services.
- **Platform Events:** Platform events are used to define the data that is delivered in custom notifications.
- **Teams Integration:** This item allows you to set up an integration between Salesforce and Microsoft teams.

Now that we have looked at the items under the **Integrations** subsection, let's take a look at the **Notification Builder** subsection.



Dataloader.io is free to use to load data up to a certain amount of records. It is worth looking into as it has several usability features that are not included in the regular data loader.

Notification builder

This subsection contains the settings for the notification builder:

- **Custom Notifications:** This item allows you to create custom notifications.
- **Notification Delivery Settings:** This allows you to choose where notifications show up, such as on mobile, desktop, and so on.

Next, we will look at the **Offline** subsection.

Offline

This subsection allows you to set up briefcases to be used to access Salesforce offline. In the **Briefcase Builder** you can create a briefcase and then select the data that you want to include. Then, assign users and groups to the briefcase and activate it at the desired time. You can also find the startup wizard for help with using this feature.

That was a lot of information! As you use Salesforce as an admin, you will come across many of these settings. Let's take a look at the last main section under the **Setup** home tab—**SETTINGS**.

Understanding the SETTINGS section

The last of the three main sections of the **Setup** home tab is **SETTINGS**. This section contains various settings that were not captured in the **ADMINISTRATION** and **PLATFORM TOOLS** sections. The following screenshot shows you where you can find the **SETTINGS** section:

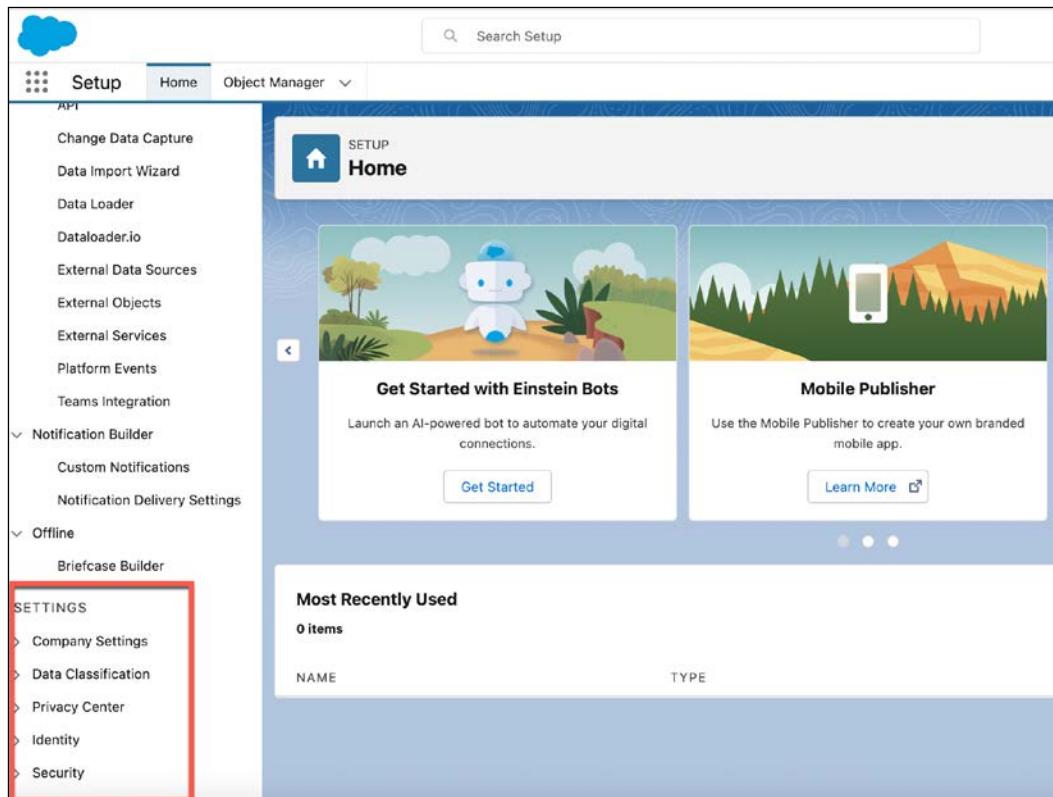


Figure 9.11: The **SETTINGS** section of the Home tab

Let's take a look at what settings are included here.

Company Settings

The **Company Settings** subsection includes settings related to the organization. Some of the use cases for this section include finding your org ID for a Salesforce case, setting up your fiscal year, and setting up company holidays. Let's look at all of these settings:

- **Business Hours:** This setting allows you to set your organization's business hours.
- **Calendar Settings:** This item allows you to add public calendars and resources for your company.
- **Company Information:** This contains all of your basic company settings, including licenses and your org ID.
- **Data Protection and Privacy:** This setting allows you to give access to data protection and privacy details in lead, contact, and person accounts.
- **Fiscal Year:** This setting allows you to set the fiscal year for your organization.
- **Holidays:** This item allows you to add the holidays your company observes.
- **Language Settings:** This item allows you to add the languages you want to be available to your users.
- **My Domain:** This is where you set up My Domain to get a custom domain for your org.

Now that we have looked at the items under the **Company Settings** subsection, let's take a look at the **Data Classification** subsection.



It is a good idea to set up **My Domain** as it lets you customize your login page with your company branding, as well as set up **single sign-on (SSO)**, among other benefits.

Data Classification

The Data Classification settings are related to data marked as sensitive in Salesforce:

- **Data Classification Download:** This allows you to download your data classification information to a .csv file.
- **Data Classification Settings:** This item allows you to set up data sensitivity picklist values.
- **Data Classification Upload:** This item allows you to upload data classification information through a .csv file.

Now that we have looked at the items in the **Data Classification** subsection, let's take a look at the **Privacy Center** subsection.

Privacy Center

This section allows you to track changes related to privacy consent in your org with platform events. Enable **Consent Event**, then subscribe to the standard platform event channel to receive notifications.

Now that we have looked at the items under the **Privacy Center** section, let's take a look at the **Identity** section.

Identity

This subsection contains all the identity-related settings. A use case for this subsection includes using Salesforce as an identity or service provider for SSO. Let's look at all of the settings in this section:

- **Auth. Providers:** This item allows you to add and manage authentication providers to allow users to log in using a service such as **Google Authenticator** to allow login.
- **Identity Connect:** This item contains the **Identity Connect** settings. Identity Connect provides **Active Directory (AD)** integration, so users can log in with AD credentials and connect to Salesforce using SSO.
- **Identity Provider:** This item allows you to set up and manage Salesforce as an identity provider.
- **Identity Provider Event Log:** This log records the results of Service Provider-initiated and Identity Provider-initiated SSO attempts where this Salesforce organization is acting as an Identity Provider. Only the 50 most recent events are shown. Create a report to view the full history.
- **Identity Verification:** This item contains various identity verification settings.
- **Identity Verification History:** This item shows all verification attempts.
- **Login Flows:** This item allows you to set up login flows that introduce business processes during login.
- **Login History:** This item shows all the login history. The **Login History** page shows up to 20,000 records of user logins for the past 6 months.
- **OAuth Custom Scopes:** This item allows you to create custom OAuth scopes.
- **Single Sign-On Settings:** This item allows you to set up and manage SSO.

Now that we have looked at the items in the **Identity** subsection, let's take a look at the **Security** subsection.



Login History is a good place to start if you need to monitor the login activity of a user for dates or times as needed. This is sometimes requested by HR departments within an organization.

Security

This subsection contains all the security-related settings. As an admin, you will spend a lot of time here, initially setting up security and updating settings as needed. Some of the use cases for this sub section include running the security health check and controlling network access. We will cover security in more detail in *Chapter 10, An Overview of Sharing and Visibility*, and *Chapter 11, User Management and Data Security*.

The following settings are available in the **Security** subsection:

- **Activations:** This item shows the login IP address of the browser or application that the user used to log in.
- **CORS:** This page lists the origins that are whitelisted for **Cross-Origin Resource Sharing (CORS)**.
- **CSP Trusted Sites:** This page has a list of web addresses (URLs) that your organization can use to access resources for Lightning components, either within your organization's Lightning Experience or through CSP-secured Lightning communities.
- **Certificate and Key Management:** This item allows you to manage your certificates to authenticate SSO with an external website, use your org as an identity provider, or verify requests to external sites from Salesforce orgs.
- **Delegated Administration:** This allows you to delegate user administration, custom object administration, or both to the delegated administrators of a group.
- **Event Monitoring:** This allows you to access the event monitoring settings and set transaction security policies.
- **Expire All Passwords:** This setting allows you to expire all passwords for users in your organization for cases where you need to deny access to all users for a business reason.
- **Field Accessibility:** This item allows you to set field-level security for all fields.
- **File Upload and Download Security:** This item allows you to control how various file types are handled during the upload and download processes.
- **Health Check:** This page allows you to run a security health check on your instance.
- **Login Access Policies:** This item allows you to grant login access to Salesforce and third-party applications.
- **Named Credentials:** This setting allows you to set a callout endpoint and its required authentication parameters.
- **Network Access:** This page allows you to set trusted IP ranges to access your org.

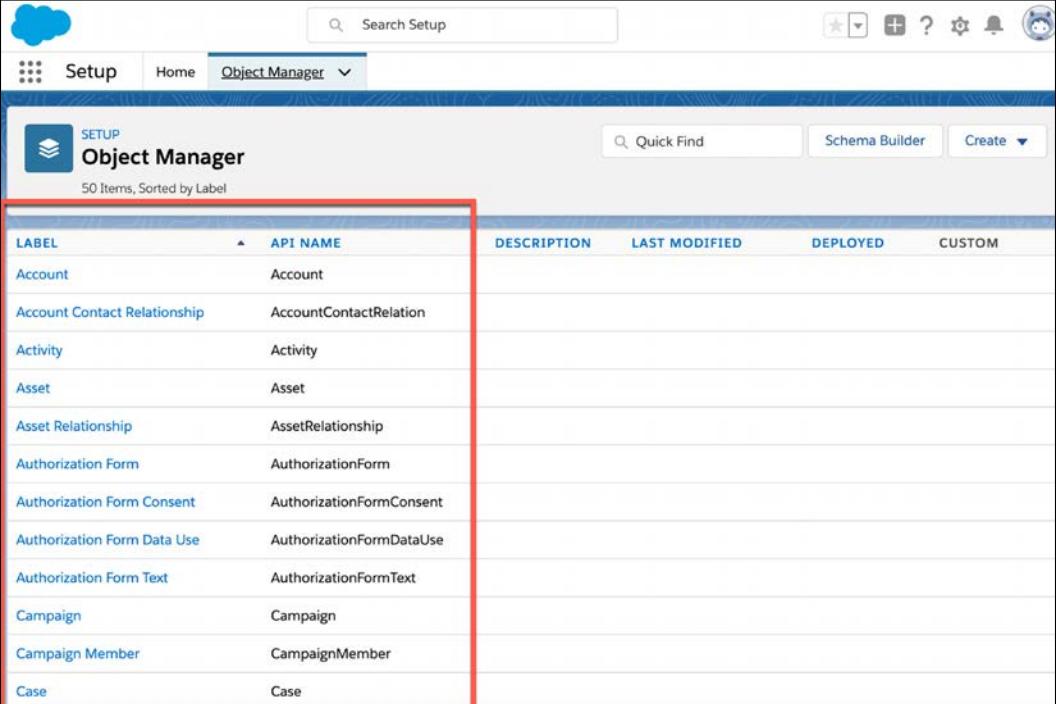
- **Password Policies:** This item allows you to set various login policies for your org.
- **Platform Encryption:** This item allows you to access the platform encryption settings and key management.
- **Private Connect:** Salesforce Private Connect is a fast, easy, and secure way to connect Salesforce orgs with AWS data centers. Salesforce developers can set up the connection quickly and easily in a point-and-click interface.
- **Remote Site Settings:** This item allows you to set the web addresses that your organization can invoke from Salesforce.
- **Security Alerts:** This item gives you instructions on the steps you need to take to roll out various security settings on Salesforce.
- **Session Management:** This page allows you to view information about active user settings.
- **Session Settings:** This page allows you to set the session security and session expiration timeout for your organization.
- **Sharing Settings:** This page allows you to set up organization-wide security defaults for objects, as well as sharing rules.
- **Trusted URLs for Redirects:** Allow redirects outside the Salesforce domain to trusted URLs without showing the user a warning message.
- **View Setup Audit Trail:** This item allows you to see the last 20 entries for actions carried out in Salesforce. You can also download the last 6 months of entries to a CSV file.

Now that we have gone through all of the items under the **Home** tab, let's wrap up by taking a look at the other tab on the **Setup** page – the **Object Manager** tab.

Using the Object Manager tab

The **Object Manager** section allows you to manage customization settings related to standard and custom objects. Standard objects include the objects we covered earlier in this book in *Section 1, Salesforce for Sales, Marketing, and Customer Relationship Management*.

Custom objects are any new objects you create to support your business process. You can see all of the listed objects in the following screenshot:



The screenshot shows the Salesforce Object Manager page. At the top, there's a navigation bar with icons for Setup, Home, and Object Manager. Below that is a header with 'SETUP' and 'Object Manager' buttons, a search bar labeled 'Search Setup', and various system icons. The main area is titled 'Object Manager' and shows a list of 50 items sorted by Label. A red box highlights the first 10 rows of the table. The columns are labeled: LABEL, API NAME, DESCRIPTION, LAST MODIFIED, DEPLOYED, and CUSTOM. The highlighted data is as follows:

LABEL	API NAME	DESCRIPTION	LAST MODIFIED	DEPLOYED	CUSTOM
Account	Account				
Account Contact Relationship	AccountContactRelation				
Activity	Activity				
Asset	Asset				
Asset Relationship	AssetRelationship				
Authorization Form	AuthorizationForm				
Authorization Form Consent	AuthorizationFormConsent				
Authorization Form Data Use	AuthorizationFormDataUse				
Authorization Form Text	AuthorizationFormText				
Campaign	Campaign				
Campaign Member	CampaignMember				
Case	Case				

Figure 9.12: Objects listed in the Object Manager

As you can see in the preceding screenshot, both standard and custom objects are included.

In the following screenshot, you can see the options available when clicking on one of these objects:

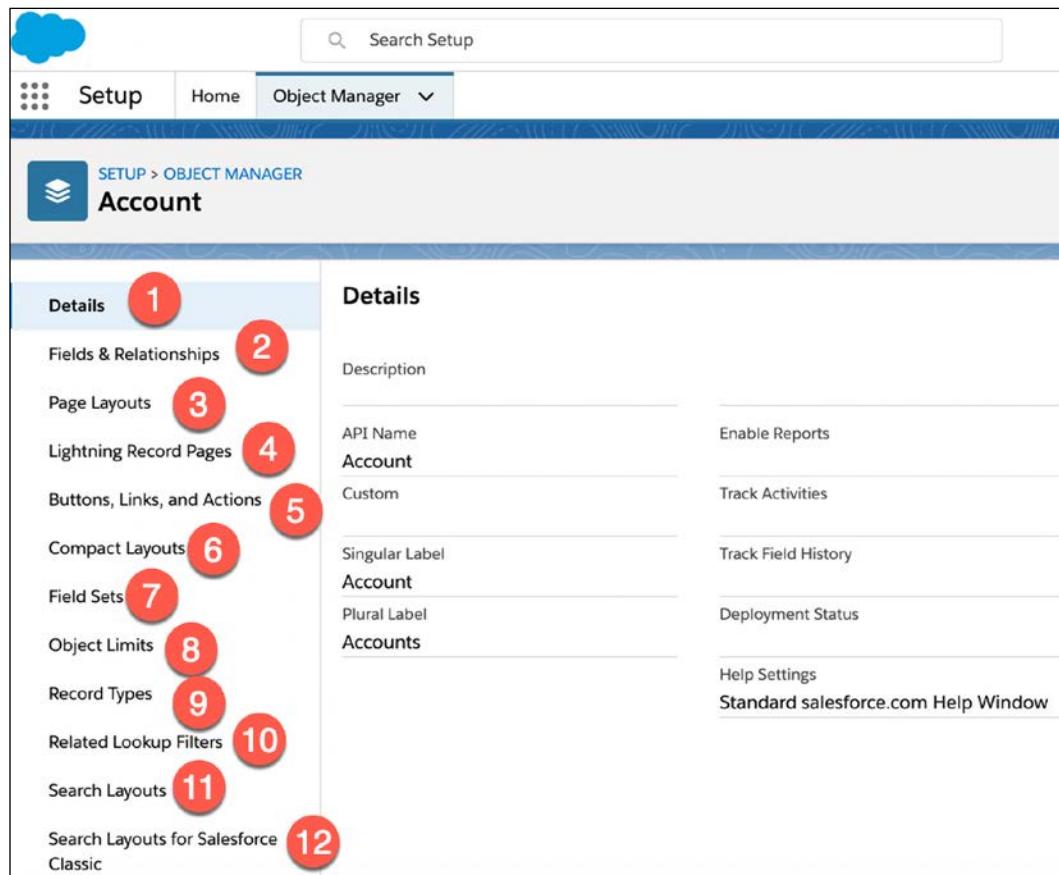


Figure 9.13: Options available in the Object Manager for a selected object

There are 12 subsections that relate to our example, the standard **Account** object. Let's take a look at the options here:

- **Details:** This subsection shows you the details of an object, such as its name, the API name, and the labels.
- **Fields & Relationships:** This subsection allows you to create new fields, including relationship fields to other objects.

- **Page Layouts:** This subsection allows you to edit the core page layouts available for an object. This layout shows up in the **Details** section of the Lightning layout and is the main classic layout.
- **Lightning Record Pages:** This subsection allows you to edit the Lightning page layouts related to an object.
- **Buttons, Links, and Actions:** This subsection allows you to create new buttons, links, and actions, as well as edit existing ones for an object.
- **Compact Layouts:** This subsection allows you to edit the compact layouts that show up in various places both on the desktop and on mobile.
- **Field Sets:** This subsection allows you to create and edit field sets for an object. **Field Sets** allows you to group fields together in a section and call them using code if needed.



Field Sets is a great feature, especially when working with custom code. For custom pages, you can reference a field set instead of individual fields. This gives the admin the ability to swap fields in and out of the changeset without needing the developer to update code.

- **Object Limits:** This subsection shows you all object limits for an object.
- **Record Types:** This subsection allows you to create record types for an object. Record types allow you to use the same object for various business processes and assign different page layouts for the record types.
- **Related Lookup Filters:** This subsection allows you to add filters to lookup fields to allow only specific records to be connected to an object from a related object.
- **Search Layouts:** This subsection allows you to customize what columns are returned in various search pages throughout the application in Lightning.
- **Search Layouts for Salesforce Classic:** This subsection allows you to customize what columns are returned in various search pages throughout the application for an object in Classic.

These settings are used to fully configure an object in Salesforce. Once you create an object, navigate to this section to create all of the fields for the object, the relationships to other objects, the page layouts, the record types, and any search-related settings.

That was a lot of information! In this section, we learned about the features of **Object Manager**. We will now summarize what we covered in this chapter.

Summary

Setup is where much of the admin work happens. We took a look at the high-level functions of the sections on this page, some of which will be covered in more detail in later chapters. In this chapter, we learned that there are two tabs on the **Setup** page—**Home** and **Object Manager**. On the **Home** tab, we learned that there are three main sections—**ADMINISTRATION**, **PLATFORM TOOLS**, and **SETTINGS**. We looked at the settings in these three sections and learned what each one does. We also learned that in the **Object Manager** section, we can access various settings that help admins configure metadata and customize the application to meet business needs.

In the next chapter, we will take a deep dive into **sharing and visibility!**

Questions

1. Which tab is used for non-object settings?
2. Which tab is used for managing object settings?
3. In the **ADMINISTRATION** section, which subsection allows you to mass delete records?
4. In the **ADMINISTRATION** section, which subsection allows you to create users?
5. In the **PLATFORM TOOLS** section, which subsection allows you to access Process Builder?
6. In the **SETTINGS** section, which subsection allows you to see your org ID?
7. On the **Object Manager** tab, which setting allows you to edit the Lightning page layout?

Further reading

- Explore the Salesforce Setup Menu:
https://help.salesforce.com/articleView?id=basics_nav_setup.htm&type=5
- Navigate the Setup page: https://trailhead.salesforce.com/en/content/learn/modules/starting_force_com/starting_tour

Join our community on Discord

Join our community's Discord space for discussions with the authors and other readers:

<https://packt.link/rLptF>



10

An Overview of Sharing and Visibility

Sharing and visibility are the cornerstones of data security in Salesforce. In the context of a business, the first decision that an organization makes is whether to have an open policy, which means all the users can see all the records. Depending on the nature of the business, this is not always possible and some records and/or fields need to be secure and only visible to certain people. If this is the case, the system needs to be set to completely private from the start; then, access is granted using several layers of administration features.

In this chapter, we will cover the following sharing and visibility security features in detail:

- Using organization-wide defaults
- Understanding the role hierarchy
- Applying sharing rules
- Setting team access
- Setting profile access
- Using permission sets
- System and user permissions, implicit sharing, and Apex sharing

With the help of these topics, you will be able to set up sharing and visibility for your org and learn about the different options available to grant and restrict access to data. We will learn about more aspects of security in *Chapter 11, User Management and Data Security*.

Technical requirements

For this chapter, make sure you log in to your development org and follow along as we work through the different sharing and visibility settings available to a system administrator.

Using organization-wide defaults

The first decision that needs to be made, as mentioned in the introduction, is whether you want to have an open organization, where all data is visible and editable by everyone, or whether any data needs to be restricted from being viewed or edited by certain people. Let's see how this works with a use case.

Business use case

You are the Salesforce admin for XYZ Widgets. You need to limit the visibility of accounts to account owners and their managers only. The first step is to make sure the **organization-wide (org-wide)** default settings for the account objects are set to private.

Setting up org-wide defaults

Org-wide defaults allow you to adjust these settings on an object-by-object basis. The following org-wide defaults are available for standard and custom objects:

- **Private:** This means the records in the object are only visible to and can only be edited by the record owner and anyone above the record owner in the role hierarchy (we will cover the role hierarchy later in this chapter).
- **Public read-only:** This means the records in the object are visible to all users but can only be edited by the record owner and anyone above the record owner in the role hierarchy.
- **Public read/write:** This means the records in the object are visible to and can be edited by all users.
- **Public read/write/transfer:** This is a setting found in certain objects, such as leads and cases. It means the records in these objects are visible to and can be edited by all users, and the records can also be transferred to new owners by anyone.
- **Controlled by parent:** This is the setting in objects that are a detail/child in a master/detail relationship. It means the child object inherits the org-wide default of the parent object.

These settings are the core of the security model. If any restrictions are required on an object, they must first be set to **private**, then access is granted using one of the many security features that we will cover in this chapter.

Let's take a look at how we access these settings. As the following screenshot shows, we can access this setting from the **Setup** page, as discussed in *Chapter 9, Setup and Configuration*:

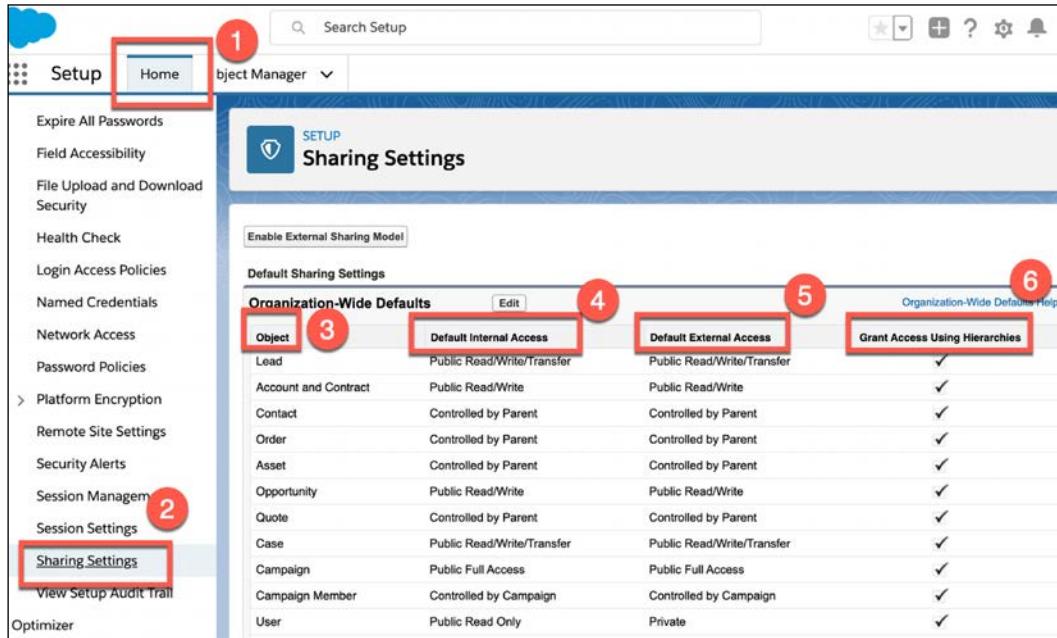


Figure 10.1: Navigating to org-wide settings from the Setup page

As you can see in the preceding screenshot, there are several items to review:

1. You can access the **Sharing Settings** page by clicking on the **Home** tab on the **Setup** page.
2. Once you have opened the **Home** tab, click on **Sharing Settings**. This brings up the options you see below.
3. **Object:** This is the object that you set the org-wide default for.
4. **Default Internal Access:** This is the org-wide default setting for internal use, such as your regular internal Salesforce users.
5. **Default External Access:** This is the org-wide default setting for external use, such as communities. This access setting defaults to the same as the internal access setting and can be adjusted accordingly.
6. **Grant Access Using Hierarchies:** This setting lets you allow users higher up in the role hierarchy to inherit the access of users below them in the hierarchy.

As the admin, you can set the account object to **Private** to achieve the first part of the requirement, allowing only the account owner to see the accounts they own. Note that whenever you make changes to the org-wide defaults, the sharing privileges are re-evaluated and recalculated so that access is added or removed accordingly.

Now that we have seen how to set the foundation for data security, let's see how we can open up access once an object is set to **Private**. The first feature we will look at is the role hierarchy.

Understanding the role hierarchy

Every user record in Salesforce has the option to be added to a role. That role is part of an overall hierarchy. The most common use case is when someone higher in the role hierarchy inherits the permissions to objects of users that are below them. For example, the sales manager role inherits the permissions of someone in the sales rep role as the manager comes above the sales rep in the hierarchy. There are also instances such as Sales Ops where the user may not be higher in the organizational hierarchy, but sits higher on the role hierarchy due to the need to have visibility in all levels of the business.

Business use case

As the Salesforce admin for XYZ Widgets, you need to limit the visibility of accounts to account owners and their managers. The previous step of setting up the org-wide default settings for accounts as private assures you that only the account owners can see the accounts they own. Setting up a role hierarchy will take care of the second part of the requirement, allowing managers to also be able to view the accounts owned by the reps they manage.

Let's take a look at how we can access this setting.

Finding the role hierarchy

As the following screenshot shows, we can access this setting from the **Setup** menu, as discussed in *Chapter 9, Setup and Configuration*:

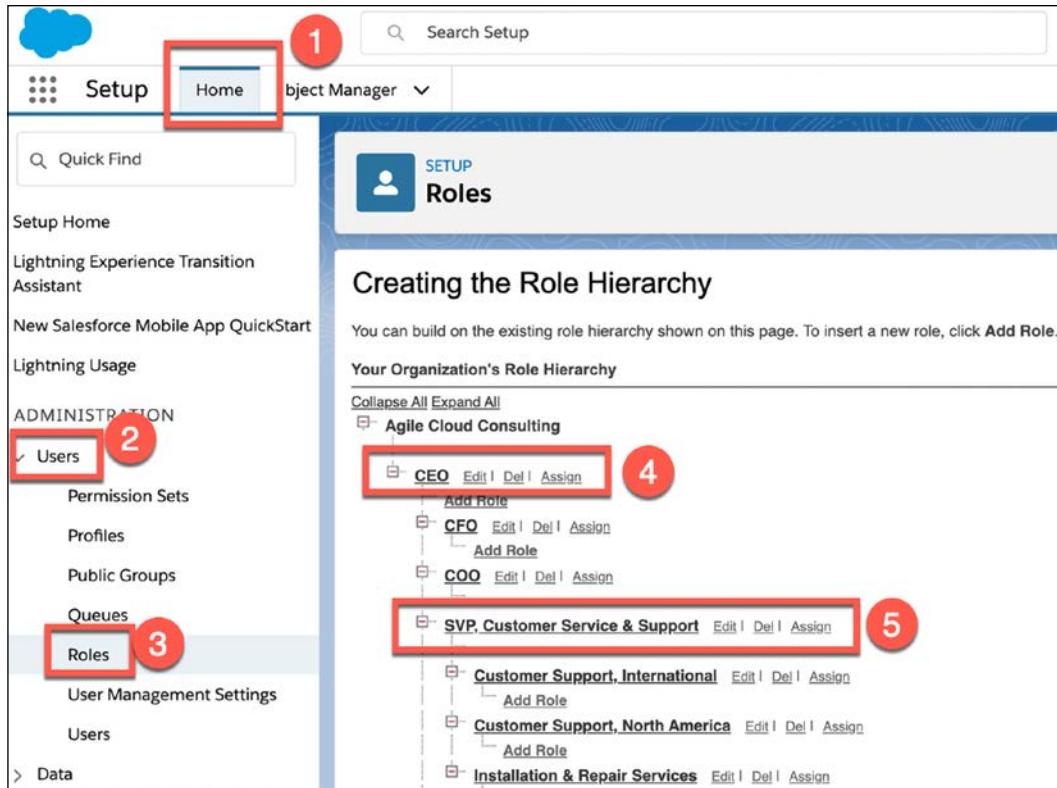


Figure 10.2: Finding the Role Hierarchy page from Setup

Let's look at the highlighted areas in more detail:

1. You can access the **Role Hierarchy** page by navigating to the **Home** tab on the **Setup** page.
2. Under the **Home** tab, go to the **Users** section.
3. Under the **Users** section, click on the **Roles** link.
4. In this example, the **CEO** inherits all the settings for users below **CEO** in the hierarchy (as long as the **Grant Access Using Hierarchies** checkbox is checked on the org-wide default settings).
5. The **SVP, Customer Service & Support** role inherits the access of all of the users below **SVP, Customer Service & Support**. Note that since **SVP, Customer Service & Support**, **COO**, and **CFO** are on the same hierarchy level, **COO** and **CFO** do not inherit the access of the users directly under **SVP, Customer Service & Support**.

Now that we have seen how to open up access using roles, let's take a look at another security feature—sharing rules.

Applying sharing rules

Sharing rules allow you to open up access to records based on record ownership (which is based on ownership) or specific criteria (which is based on criteria) on a record, such as a specific field value.

Business use case

As the Salesforce admin for XYZ Widgets, you need to open up view access to accounts owned by a specific user with a specified team leader. You decide to use an account-sharing rule.

Adding sharing rules

Let's take a look at how we can access these settings. As the following screenshot shows, we can access this setting from the **Setup** page, as discussed in *Chapter 9, Setup and Configuration*:

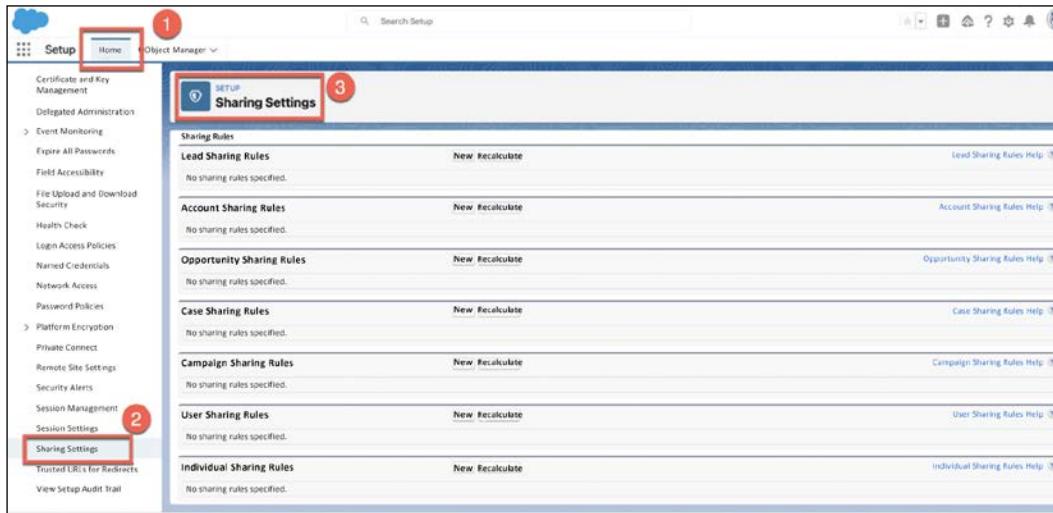


Figure 10.3: Finding the Sharing Settings page from Setup

Here we can see that there are several items to review:

1. You can access the **Sharing Settings** page by navigating to the **Home** tab on the **Setup** page.
2. Once you have opened the **Home** tab, click on **Sharing Settings**.
3. Here, when you scroll down, you will see the option to add sharing rules for each object.

Let's take a look at the two kinds of sharing rules.

Ownership-based sharing

Ownership-based sharing allows you to share records based on ownership. There are several steps we need to take in order to do this:

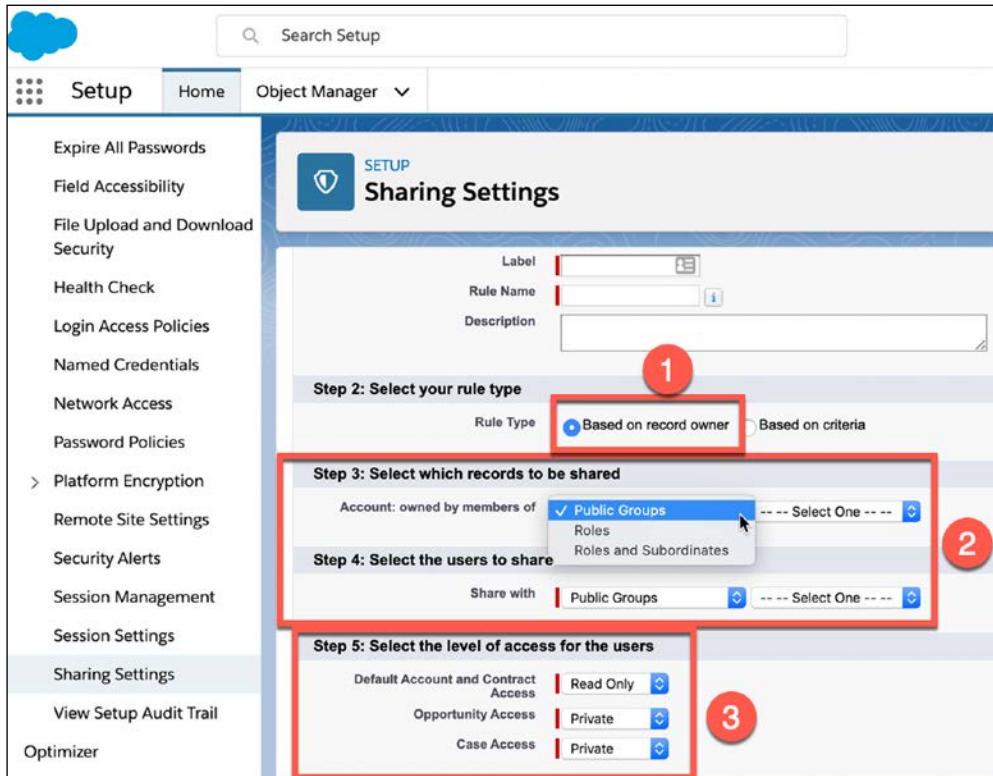


Figure 10.4: Highlighted steps to set up ownership-based sharing rules

Let's look at these steps in more detail:

1. The **Based on record owner** radio button allows you to set this rule up as an ownership-based rule.
2. The records to be shared could be owned by a specific group (a group of owners), owners within a specific role, or owners within a specific role and all subordinates of the role. The same options are available for sharing these records with specific groups, roles, or roles and subordinates.
3. Finally, if the object to be shared is a parent in a master-detail relationship, you can control the access to the child records. This option is available for standard objects, such as accounts.

To cover this business use case, you would create an ownership-based account-sharing rule.

Next, let's take a look at criteria-based sharing rules.

Criteria-based sharing

Criteria-based sharing allows you to share records based on specific criteria on a record. As you can see in the following screenshot, there are several steps to take in order to do this:

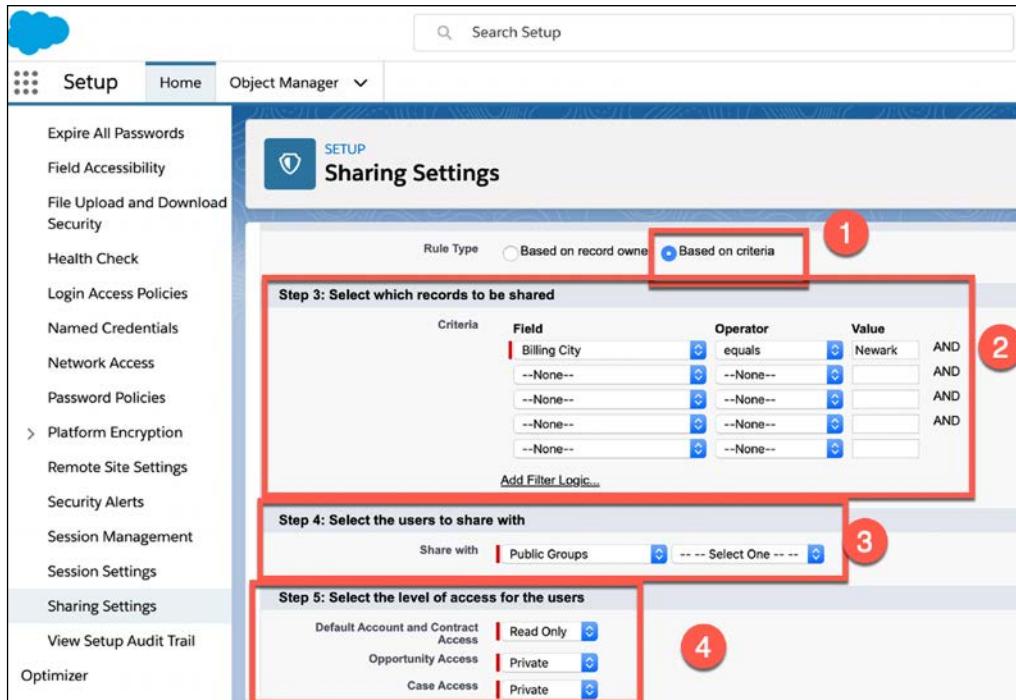


Figure 10.5: Highlighted steps to set up criteria-based sharing rules

Here we can see the following:

1. The **Based on criteria** radio button allows you to set this rule up as a criteria-based rule.
2. The criteria can be set based on any field on the record. In this example, we set **Billing City** to Newark. This means that any record with this billing city is shared according to the rule.
3. The records can be shared with a specific group (a group of owners), owners within a specific role, or owners within a specific role and all subordinates of the role.
4. Finally, if the object that is shared is a parent in a master-detail relationship, you can control the access to the child records. This option exists for standard objects, such as accounts.

Now that we have seen how to open up access using sharing rules, let's take a look at another security feature—team access.

Setting team access

Teams are a feature available on the account object and the opportunity object. For accounts, they are called account teams, and for opportunities, they are called sales teams. Teams allow you to add users to specific accounts and opportunities. They consist of specific users for whom the record owner can set access to the record.

Business use case

You are the Salesforce admin for XYZ Widgets. The sales manager wants an account team, which consists of an engagement manager and a support specialist, to have access to certain accounts. The account record owner should be able to add two users to the team and grant the engagement manager read-only access, while granting the support specialist read/write access. Let's see how this works.

Adding a user and setting team access

Team-related lists are available on the account and opportunity objects when the teams feature is enabled. Let's take a look at what this looks like when adding team members to the account team in the following screenshot:

User	Team Role	Account Access	Case Access	Opportunity Access
1		Read/Write	Read/Write	Read/Write
2		Read/Write	Read/Write	Read/Write
3		Read/Write	Read/Write	Read/Write

Figure 10.6: List of users in a team and their access details

As shown in *Figure 10.6*, you can select a specific user and the role on the team, as well as set the access to the account and related objects for the user.

Now that we have seen how to allow access using teams, let's take a look at another security feature—profiles.

Setting profile access

Profiles are a very important and powerful security feature. In the same way that each user in Salesforce can have a role, each user must have a profile. Profiles allow you to set access to objects that are more powerful and overwrite other security settings. While profiles cover a multitude of settings, we will only focus on the object settings in the context of sharing and visibility here.

Business use case

You are the Salesforce admin for XYZ Widgets. The sales manager has requested that a group of users, all of which have the **Service Manager** profile, should have **View All** access to the accounts object. You will do this by updating the **Service Manager** profile.

Updating profiles

Let's take a look at how we access the profile settings. As the following screenshot shows, we can access this setting from the **Setup** page, as discussed in *Chapter 9, Setup and Configuration*:

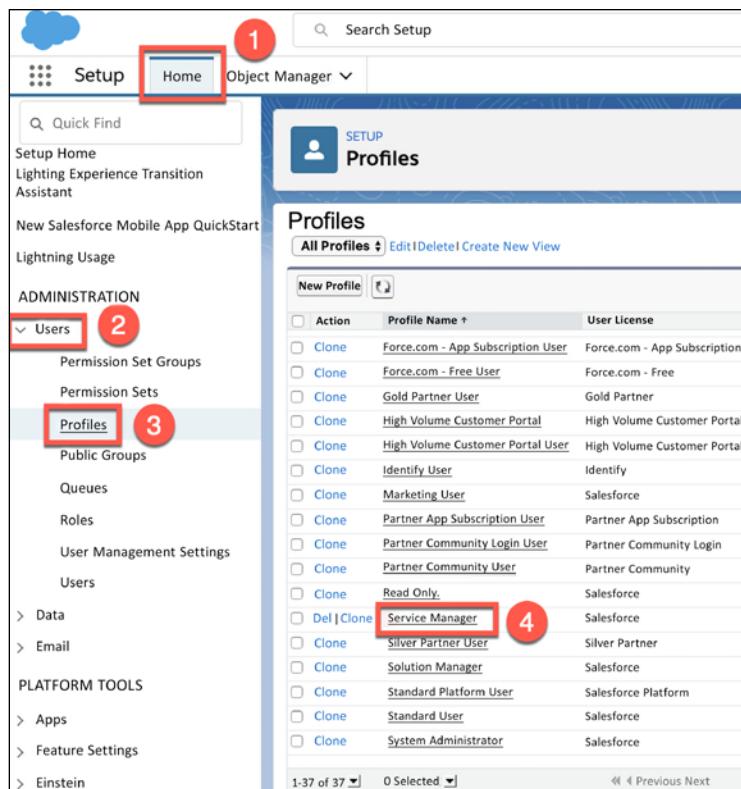


Figure 10.7: Finding the Profiles page from Setup

Let's look at the highlighted areas in more detail:

1. You can access the **Sharing Settings** page by navigating to the **Home** tab on the **Setup** page.
2. Once on the **Home** tab, expand the **Users** section.
3. Under the **Users** section, click on **Profiles**.
4. There are many standard and custom profiles. Click on the **Service Manager** profile.

When you click on **Service Manager**, the following landing page shows up:

The screenshot shows the Salesforce Profiles page for the 'Service Manager' profile. At the top, there is a header with a user icon, 'SETUP', and 'Profiles'. Below the header, the profile name 'Service Manager' is displayed. A search bar and buttons for 'Clone', 'Delete', and 'Edit Properties' are visible. The main content area is divided into sections: 'Profile Overview' and 'Apps'. The 'Profile Overview' section includes fields for 'Description' (set to 'Salesforce'), 'User License' (set to 'Salesforce'), and 'Last Modified By' (set to 'Shari Shaalan, 4/23/2020 11:12 AM'). The 'Assigned Users' button is also present. The 'Apps' section lists various settings under 'Assigned Apps' and 'Object Settings'. A red box highlights the 'Object Settings' section, which contains a list of permissions: 'Object Settings' (Permissions to access objects and fields, and settings that specify which record types, page layouts, and tabs are visible), 'App Permissions' (Permissions to perform app-specific action, such as "Manage Call Centers"), 'Apex Class Access' (Permissions to execute Apex classes), 'Visualforce Page Access' (Permissions to execute Visualforce pages), 'External Data Source Access' (Permissions to authenticate against external data sources), 'Named Credential Access' (Permissions to authenticate against named credentials), and 'Flow Access' (Permissions to execute Flows). A link 'Learn More' is also present in the 'Object Settings' section.

Figure 10.8: Landing page after clicking on a profile

As shown in *Figure 10.8*, there are many settings available on the **Profiles** page. Let's take a look at the **Object Settings** section as it relates to sharing and visibility.

In the following screenshot, you can see the options available for the **Accounts** object:

The screenshot shows the Salesforce Setup interface under the Profiles section. A blue header bar at the top has a user icon and the word "SETUP". Below it, a sub-header "Profiles" is displayed above a "Service Manager" profile card. The profile card includes a "Find Settings..." search bar and buttons for "Clone", "Delete", and "Edit Properties". The main content area shows the "Object Settings" for the "Accounts" object. At the top of this section, there are tabs for "Profile Overview" and "Object Settings" (with "Accounts" selected), and buttons for "Save" and "Cancel". Below these are sections for "Tab Settings" (with "Default On" set to a dropdown value) and "Account: Record Types and Page Layout Assignments". This section contains a table with "Record Types" (Master) and "Page Layout Assignment" (Account Layout). The "Object Permissions" section follows, containing a table with permissions: Read, Create, Edit, and View All. The "View All" row is highlighted with a red box. The final section is "Field Permissions", which lists "Account Name" with "Read Access" and "Edit Access" both checked.

Permission Name	Enabled
Read	<input checked="" type="checkbox"/>
Create	<input checked="" type="checkbox"/>
Edit	<input checked="" type="checkbox"/>
View All	<input checked="" type="checkbox"/>

Field Name	Read Access	Edit Access
Account Name	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Figure 10.9: View All object permission enabled for the Service Manager profile

In the preceding screenshot, you can see **Object Permissions**. Let's look at what these permissions do:

- **Read:** This allows read-only access to the object. This is applied if you want users to be able to see a record but not be able to make any changes to it.
- **Create:** This allows create access to the object. This is applied if you want users to be able to create a record on a specific object.

- **Edit:** This allows edit access to the object. This is applied if you want users to be able to read as well as make changes to a record on an object.
- **Delete:** This allows delete access to the object. This is applied if you want users to be able to delete a record on the object from Salesforce.
- **View All:** This is very important as it overrides the org-wide defaults. For example, you may have the org-wide default set to private, but if someone has a profile with **View All** on the object, they will be able to view all records for the object, regardless of the org-wide setting.
- **Modify All:** This is, again, very important as it overrides the org-wide defaults. For example, you may have the org-wide default set to private, but if someone has a profile with **Modify All** on the object, they can modify all records for the object, regardless of the org-wide setting.

Choose the **View All** option and save. This completes the setup of the requirement that allows access to the **Account** object for the **Service Manager** profile. Now that we have seen how to open up access using profiles, let's take a look at our last security feature—permission sets.

Using permission sets

Permission sets are the last feature we will look at for allowing access. You use permission sets if you have a group of users that all have the same profile but there is one person that needs extra access for a business reason. It would not make sense to create a whole other profile for just one permission. Permission sets allow you to add a single permission to the user's record, letting you bypass creating a whole new profile for one additional setting.

Business use case

You are the Salesforce admin for XYZ Widgets. The sales manager has requested for a certain sales team lead to be able to modify all access to **Opportunities** in order to edit all the opportunities for their team. You do not want to create a separate profile for this user, so using a permission set would be perfect! Let's see how to go about this.

Modifying access with permission sets

Let's take a look at how we can access the permission sets settings. As the following screenshot shows, we can access this setting from the **Setup** page, as discussed in *Chapter 9, Setup and Configuration*:

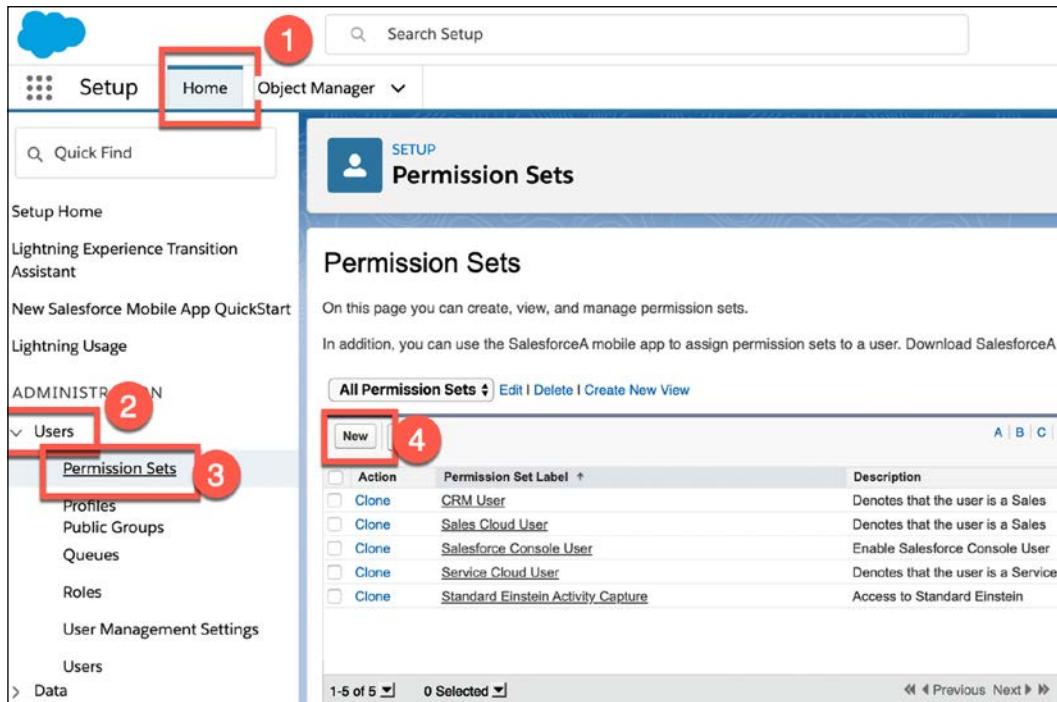


Figure 10.10: Finding the Permission Sets page from the Setup menu

Let's go through the highlighted areas of *Figure 10.10*:

1. You can access the **Permission Sets** page by navigating to the **Home** tab on the **Setup** page.
2. Once on the **Home** tab, expand the **Users** section.
3. Under the **Users** section, click on **Permission Sets**.
4. Click on **New** to create a permission set.

In the following screenshot, you can see the **Permission Sets** creation page:

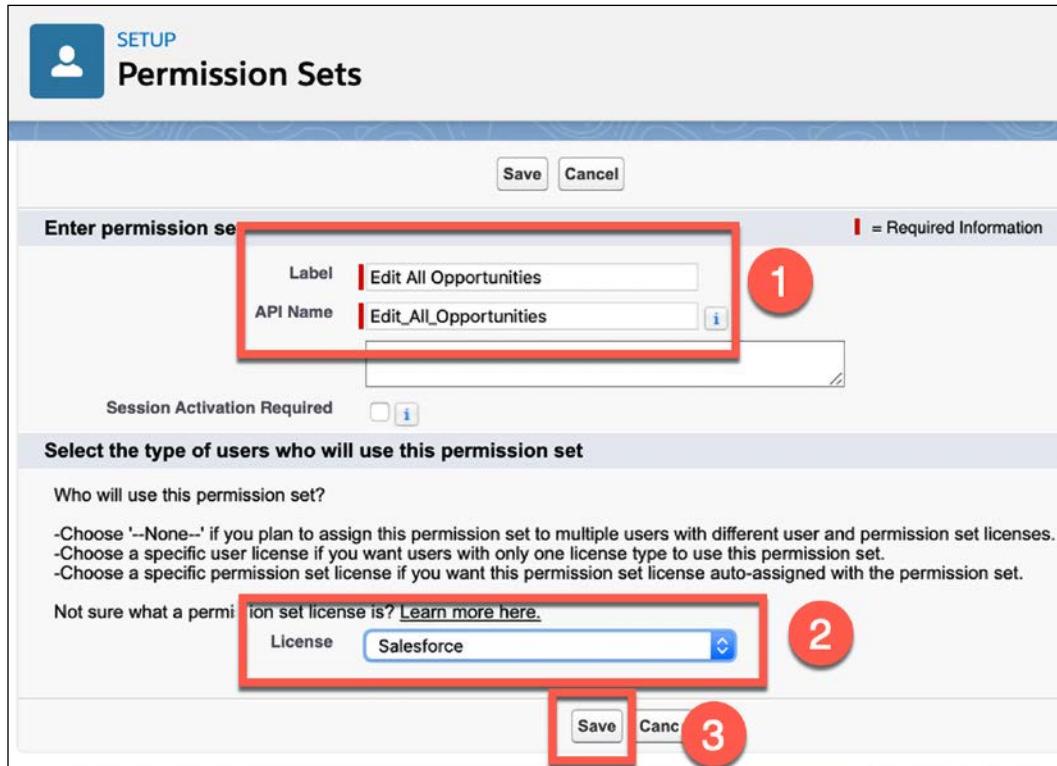


Figure 10.11: Highlighted areas of the Permissions Sets creation page

In the highlighted areas, we can observe the following:

1. You can set the name of the permission set and edit all the opportunities.
2. You can set the Salesforce license for the permission set.
3. You can then save the permission setting.

After saving the permission setting, you can see the permissions added to the **Opportunities** object:

The screenshot shows the Salesforce Setup interface. On the left, the navigation sidebar includes links like Setup Home, Lightning Experience Transition Assistant, New Salesforce Mobile App QuickStart, Lightning Usage, ADMINISTRATION, Users (with sub-links for Permission Sets, Profiles, Public Groups, Queues, Roles, User Management Settings, and Users), and Data. The main content area is titled "Permission Sets" under "SETUP". It shows the "Opportunities" object settings. Under "Tab Settings", there are two tabs: "Available" and "Visible", each with a single item. A red box highlights the "Object Permissions" section, which contains a table with columns "Permission Name" and "Enabled". The permissions listed are Read, Create, Edit, Delete, View All, and Modify All, all of which have the "Enabled" checkbox checked. Below this is a "Field Permissions" section with a table for the "Account Name" field, showing "Read Access" and "Edit Access" checkboxes, both of which are unchecked.

Permission Name	Enabled
Read	<input checked="" type="checkbox"/>
Create	<input checked="" type="checkbox"/>
Edit	<input checked="" type="checkbox"/>
Delete	<input checked="" type="checkbox"/>
View All	<input checked="" type="checkbox"/>
Modify All	<input checked="" type="checkbox"/>

Figure 10.12: Overview of the enabled object permissions in this permission set

By selecting the appropriate options, the required permissions are set. From the preceding screenshot, you can see that I have added all the object permissions, including **Modify All**.

You can also add this permission to the user record. Navigate to the user record, scroll down to the **Permission Set Assignments** list, then click on **Edit Assignments**:

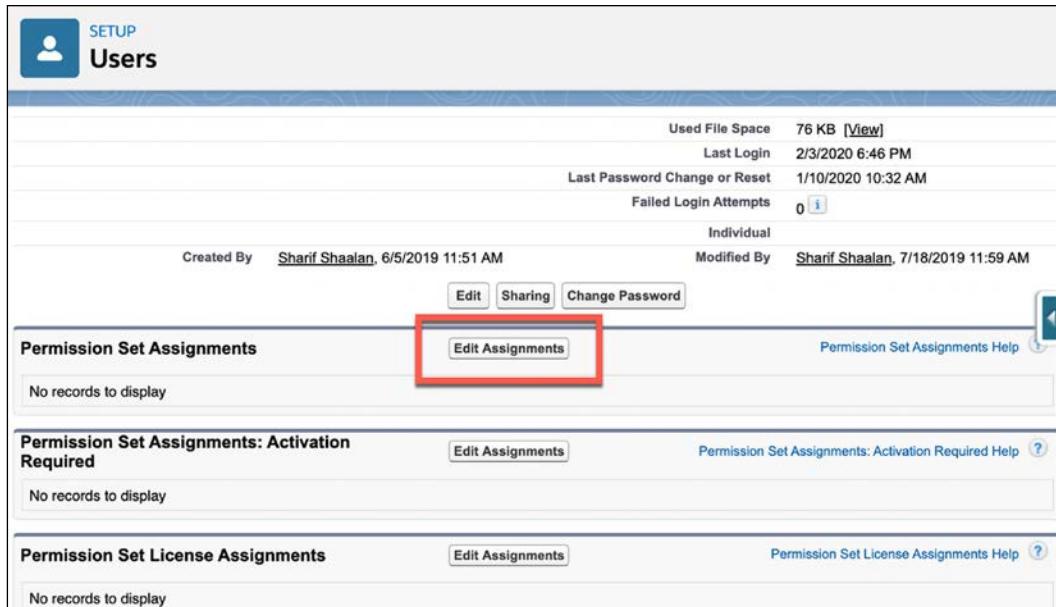


Figure 10.13: Button to edit the permission sets assigned to a user

In the following screenshot, you can see the final step to add the permission set:

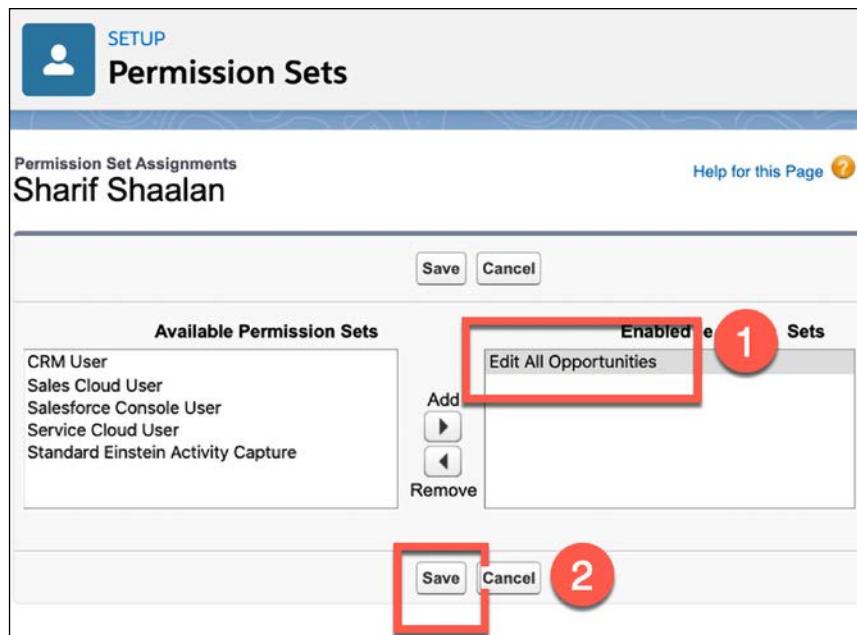
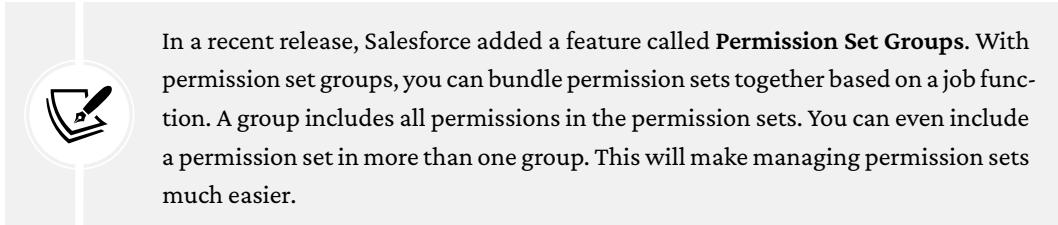


Figure 10.14: Adding a permission set to a user's assigned permission sets

The preceding screenshot shows all of the available permission sets on the left:

1. I added the **Edit All Opportunities** permission set.
2. Then, click on **Save** to save this.

The team lead can now edit all the opportunities, even though they share the same profile as the other sales reps.



Next, let's take a look at some additional sharing and visibility features.

System and user permissions, implicit sharing, and Apex sharing

In this section, we will touch on system and user permissions, implicit sharing, and Apex sharing.

System and user permissions

System permissions are permissions that apply to all apps, such as **View All Data** or **Modify All Data**. User permissions are permissions that are tied to user management and access. Both of these sections can be found on profiles and permission sets under the **System Permissions** link, as you can see in the following screenshot:

The screenshot shows the Salesforce Profiles page under the SETUP tab. The left sidebar lists 'Profiles' and 'System'. The main content area displays various permission categories:

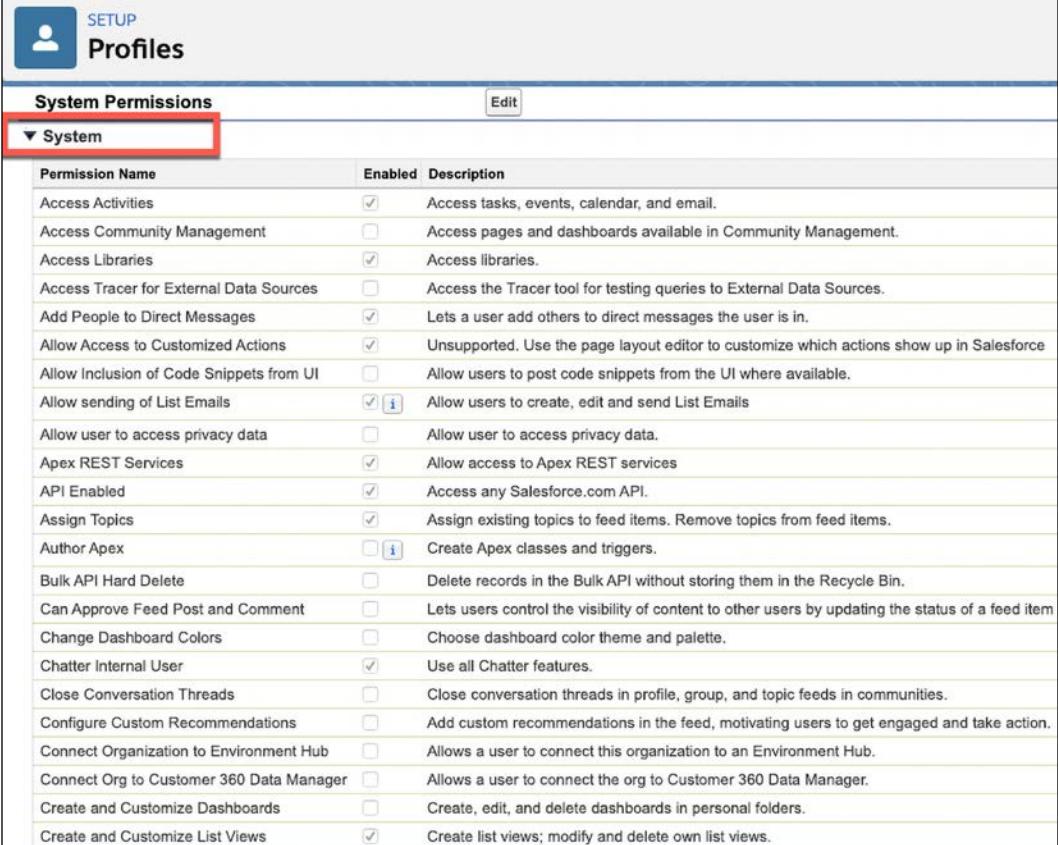
- Apex Class Access**: Permissions to execute Apex classes.
- Visualforce Page Access**: Permissions to execute Visualforce pages.
- External Data Source Access**: Permissions to authenticate against external data sources.
- Named Credential Access**: Permissions to authenticate against named credentials.
- Flow Access**: Permissions to execute Flows.
- Custom Permissions**: Permissions to access custom processes and apps.
- Custom Metadata Types**: Permissions to access custom metadata types.
- Custom Setting Definitions**: Permissions to access custom settings.

Under the 'System' section:

- System Permissions**: Permissions to perform actions that apply across apps, such as "Modify All Data". This item is highlighted with a red box.
- Permissions to access desktop clients, such as "Connect for Office".
- Login Hours**: Settings that control when users can log in.
- Login IP Ranges**: Settings that control the IP addresses from which users can log in.
- Session Settings**: Settings that control required session security level and timeout for inactive sessions.
- Password Policies**: Profile Based password policies.
- Default Community**: Setting for assigning a default community to a user profile.

Figure 10.15: Link for System Permissions found on profiles and permission sets

This takes us to the next page, which shows us a list of permissions:



System Permissions		
Permission Name	Enabled	Description
Access Activities	<input checked="" type="checkbox"/>	Access tasks, events, calendar, and email.
Access Community Management	<input type="checkbox"/>	Access pages and dashboards available in Community Management.
Access Libraries	<input checked="" type="checkbox"/>	Access libraries.
Access Tracer for External Data Sources	<input type="checkbox"/>	Access the Tracer tool for testing queries to External Data Sources.
Add People to Direct Messages	<input checked="" type="checkbox"/>	Lets a user add others to direct messages the user is in.
Allow Access to Customized Actions	<input checked="" type="checkbox"/>	Unsupported. Use the page layout editor to customize which actions show up in Salesforce
Allow Inclusion of Code Snippets from UI	<input type="checkbox"/>	Allow users to post code snippets from the UI where available.
Allow sending of List Emails	<input checked="" type="checkbox"/> i	Allow users to create, edit and send List Emails
Allow user to access privacy data	<input type="checkbox"/>	Allow user to access privacy data.
Apex REST Services	<input checked="" type="checkbox"/>	Allow access to Apex REST services
API Enabled	<input checked="" type="checkbox"/>	Access any Salesforce.com API.
Assign Topics	<input checked="" type="checkbox"/>	Assign existing topics to feed items. Remove topics from feed items.
Author Apex	<input type="checkbox"/> i	Create Apex classes and triggers.
Bulk API Hard Delete	<input type="checkbox"/>	Delete records in the Bulk API without storing them in the Recycle Bin.
Can Approve Feed Post and Comment	<input type="checkbox"/>	Lets users control the visibility of content to other users by updating the status of a feed item
Change Dashboard Colors	<input type="checkbox"/>	Choose dashboard color theme and palette.
Chatter Internal User	<input checked="" type="checkbox"/>	Use all Chatter features.
Close Conversation Threads	<input type="checkbox"/>	Close conversation threads in profile, group, and topic feeds in communities.
Configure Custom Recommendations	<input type="checkbox"/>	Add custom recommendations in the feed, motivating users to get engaged and take action.
Connect Organization to Environment Hub	<input type="checkbox"/>	Allows a user to connect this organization to an Environment Hub.
Connect Org to Customer 360 Data Manager	<input type="checkbox"/>	Allows a user to connect the org to Customer 360 Data Manager.
Create and Customize Dashboards	<input type="checkbox"/>	Create, edit, and delete dashboards in personal folders.
Create and Customize List Views	<input checked="" type="checkbox"/>	Create list views; modify and delete own list views.

Figure 10.16: List of permissions after clicking the System Permissions link

All of the available system permissions appear under **System**. Scrolling down on this page takes you to the following section:

Permission Name	Enabled	Description
Assign Permission Sets	<input type="checkbox"/>	Assign permission sets to users.
Manage Internal Users	<input type="checkbox"/>	Create and edit internal users.
Manage IP Addresses	<input type="checkbox"/>	Create, edit, and delete trusted IP ranges.
Manage Login Access Policies	<input type="checkbox"/>	Specify the login access policies that apply to administrators and support organizations.
Manage Password Policies	<input type="checkbox"/>	Set password restrictions and login lockout policies for all users.
Manage Profiles and Permission Sets	<input type="checkbox"/>	Create, edit, and delete profiles and permission sets.
Manage Roles	<input type="checkbox"/>	Create, edit, and delete roles.
Manage Sharing	<input type="checkbox"/>	Create, edit, and recalculate sharing rules, edit organization-wide defaults, and enable the external sharing model.
Manage Users	<input checked="" type="checkbox"/> 	Create, edit, and deactivate users, and manage security settings, including profiles and roles.
Reset User Passwords and Unlock Users	<input checked="" type="checkbox"/> 	Unlock users whose accounts are locked, and reset user passwords.
View All Users	<input type="checkbox"/>	View all users, regardless of sharing settings.

Figure 10.17: Users section of System Permissions

As you can see in the preceding screenshot, the **Users** section contains the available user permissions, such as **Manage Roles** and **Manage Profiles and Permission Sets**. Next, let's look at what implicit sharing is.

Implicit sharing

Implicit sharing is built-in sharing, which occurs in the following use cases:

- If you have access to a child record of an account, you implicitly have read-only access to the account.
- If you have access to an account, you implicitly have access to the associated child records. The account owner's role determines the child record access you have.
- Account portal users have implicit read-only access to the account and all of the contacts on an account.
- If a portal user is a contact on a case, that portal user has implicit read and write access to the case.

Finally, let's look at Apex sharing.

Apex sharing

Apex sharing is a way of sharing a record programmatically. Each object has a `share` object that can be accessed programmatically to grant sharing access via code. An example is an account object that has an `AccountShare` object associated with it. A developer can access this object via Apex code to fulfill the sharing requirements. This type of sharing requires Apex code and is outside of a non-developer's abilities and the scope of this book. We have included links to further reading at the conclusion of this chapter if you would like to learn more about this topic.

Let's summarize what we have learned in this chapter.

Summary

In this chapter, we learned that org-wide settings are the foundation of sharing and visibility. If anything needs to be restricted, you need to first remove all access by making the object private, then open up access as needed using various security features.

We learned what roles are and how they are used to grant access to records. We learned how to add ownership-based and criteria-based sharing rules to grant access to records. We saw what the account and sales teams are and how to add them to accounts and opportunities. Finally, we learned how to further grant record access using profiles and permission sets.

In the following chapter, we will cover **User Management and Data Security**.

Questions

1. What is the first decision that should be made when looking at org-wide settings?
2. What does the **Grant Access Using Hierarchies** checkbox do?
3. What are the two types of sharing rules?
4. Who can add team members to the account and sales teams?
5. Does the **Modify All Data** data setting on a profile work if the org-wide setting for an object is private?
6. When would you use permission sets?
7. Where is a permission set added after it is created?

Further reading

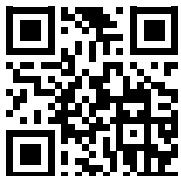
- An overview of data security: https://trailhead.salesforce.com/en/content/learn/modules/data_security/data_security_overview

- More information on Apex sharing: https://developer.salesforce.com/docs/atlas.en-us.apexcode.meta/apexcode/apex_bulk_sharing_creating_with_apex.htm
- Permission set groups: <https://trailhead.salesforce.com/en/content/learn/modules/permission-set-groups>

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11

User Management and Data Security

User management is a key activity for a Salesforce administrator. When a new employee joins an organization and needs access to Salesforce, the way that user is created will determine what level of data access is granted to that user.

In this chapter, we will cover the following user management features in relation to data security:

- Creating users
- Understanding record ownership
- Learning how record ownership relates to data security
- Understanding ownership skew

With the help of these topics, you will be able to create a user and learn about the implications of record ownership on data security.

Technical requirements

For this chapter, make sure you log in to your development org and follow along as we work through the creation of users and analyzing record ownership.

Creating users

First, we will look at a business use case that requires a system administrator to create a new user in Salesforce.

Business use case

You are the Salesforce admin for XYZ Widgets. A new hire, John Smith, has been onboarded and needs access to Salesforce. John is part of the Eastern Sales Team and needs to be added to the Standard User profile.

Creating a user in action

Figure 11.1 demonstrates the steps to begin creating a user:

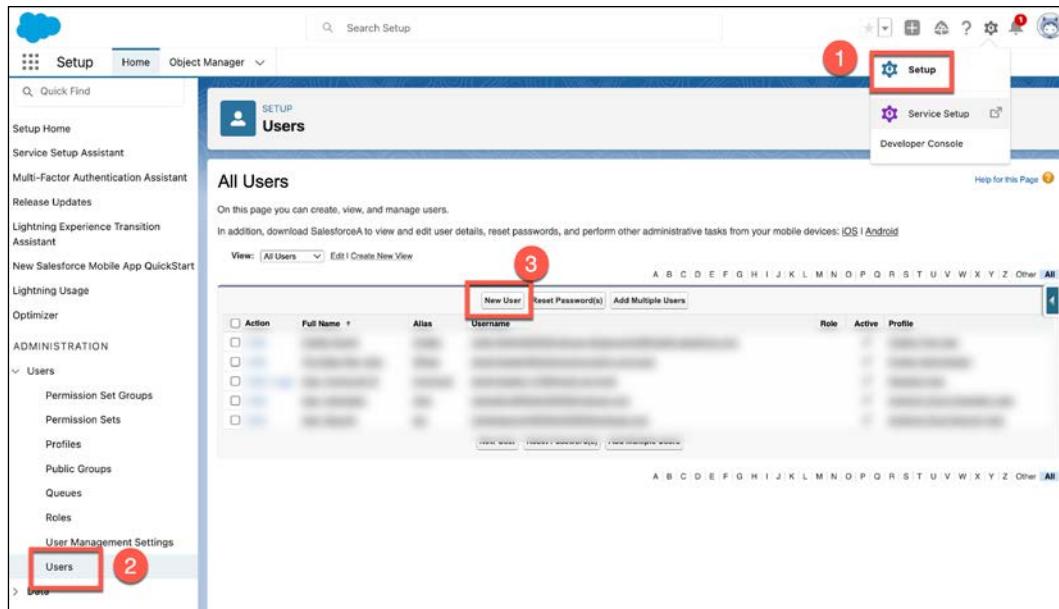


Figure 11.1: Navigating to the user creation page

The steps are as follows:

1. Navigate to the Setup page.
2. Choose the Users option.
3. Click on New User.

Taking these steps will bring you to the following page. There are settings here related to some products that are not in the scope of this book. We will briefly show them and concentrate on the main settings needed to set up a user.

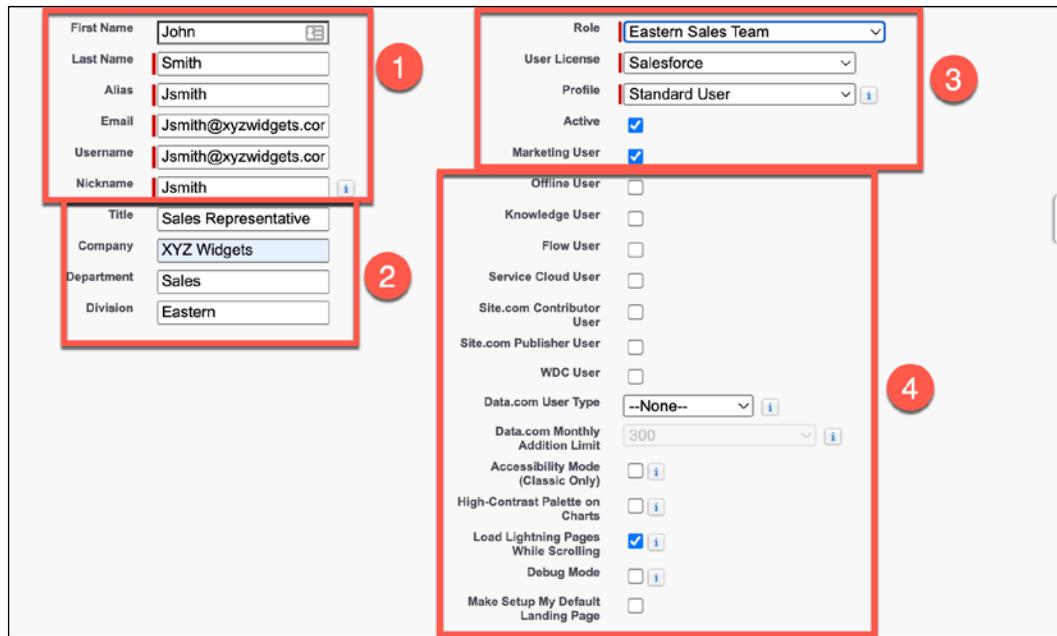
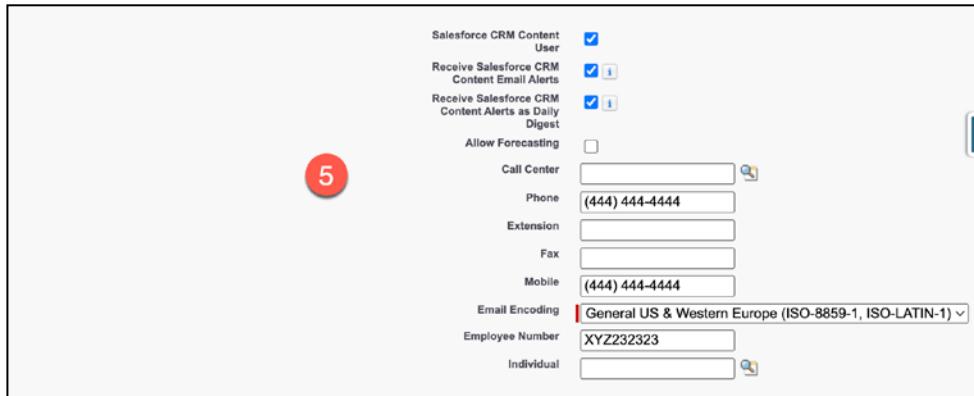


Figure 11.2: Creating a user page, first section

In the highlighted areas of the preceding screenshot, we have taken the following steps:

1. Here, you will add the **First Name** (John), **Last Name** (Smith), **Alias** (Jsmith), **Email** (Jsmith@xyzwidgits.com), **Username** (Jsmith@xyzwidgets.com), and **Nickname** (Jsmith) for the user. The **Alias** is a shortened version of the name that can appear on items such as related lists to show ownership. The **Nickname** is used in Experience Cloud as an option for the name.
2. Next, add the **Title**, **Company**, **Department**, and **Division** for the user.
3. This section is very important for security. Here, you will add the **Role**, **User License**, and **Profile** for this user. As noted in *Chapter 10*, the **Role** and **Profile** are critical for security purposes related to allowing or restricting access. In this section, you will also check the **Active** checkbox and check the **Marketing User** checkbox, if the user needs access to create campaigns.

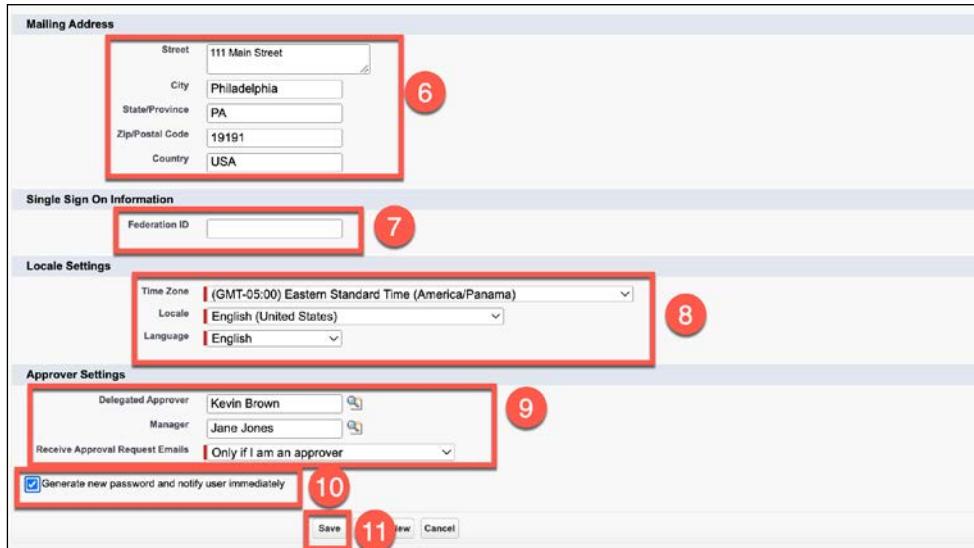
4. This section contains settings for optional products and features that are not required for initial user creation. Scrolling down will bring us to the following section:



The screenshot shows the 'Salesforce CRM Content' section of the user creation form. It includes checkboxes for 'User', 'Receive Salesforce CRM Content Email Alerts', and 'Receive Salesforce CRM Content Alerts as Daily Digest'. Below these are fields for 'Call Center', 'Phone' (containing '(444) 444-4444'), 'Extension', 'Fax', 'Mobile' (containing '(444) 444-4444'), and 'Email Encoding' (set to 'General US & Western Europe (ISO-8859-1, ISO-LATIN-1)'). There is also a field for 'Employee Number' (containing 'XYZ232323') and an 'Individual' checkbox.

Figure 11.3: Creating a user page, second section

5. This section contains additional settings for optional products and features as well as some notification settings. **Phone** and **Employee Number** options are also here. Scrolling down will bring us to the following section:



The screenshot shows several sections of the user creation form.
 - **Mailing Address**: Fields for Street (111 Main Street), City (Philadelphia), State/Province (PA), Zip/Postal Code (19191), and Country (USA). The entire group is highlighted with a red box and labeled 6.
 - **Single Sign On Information**: A 'Federation ID' input field, highlighted with a red box and labeled 7.
 - **Locale Settings**: Time Zone dropdown set to '(GMT-05:00) Eastern Standard Time (America/Panama)', Locale dropdown set to 'English (United States)', and Language dropdown set to 'English'. The entire group is highlighted with a red box and labeled 8.
 - **Approver Settings**: Fields for 'Delegated Approver' (Kevin Brown) and 'Manager' (Jane Jones), both highlighted with a red box and labeled 9. Below these are dropdowns for 'Receive Approval Request Emails' (set to 'Only if I am an approver') and 'Generate new password and notify user immediately' (checkbox checked). The 'Generate new password' checkbox is highlighted with a red box and labeled 10.
 - At the bottom are 'Save', 'New', and 'Cancel' buttons, with 'Save' highlighted with a red box and labeled 11.

Figure 11.4: Creating a user page, third section

6. Here, you should add the user's mailing address.
7. If you are setting up **Single Sign On** with a Federation ID, this would be added here. This is not needed for the initial setup of a user if you are not using **Single Sign On**.
8. In this section, you can update the **Time Zone**, **Locale**, and **Language** for the user.
9. This area allows you to set up **Approver Settings** for the user. Approvals are covered in *Chapter 17, Approval Processes*.
10. This checkbox must be checked if you want the user to receive the password immediately.
11. Finally, click **Save** to create the user and automatically send the activation email.

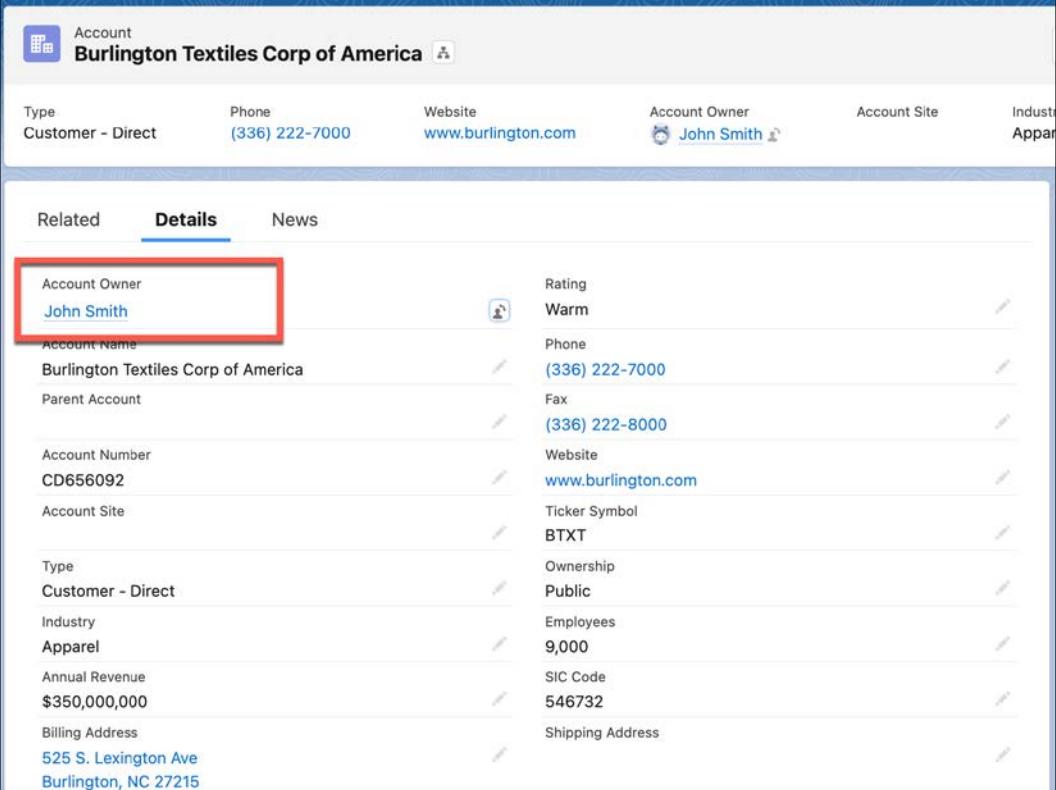
Now that we have successfully created a user, let's look at record ownership.

Understanding record ownership

Record ownership is central to the access capabilities built into the Salesforce platform. This ownership allows you to specify which users should be able to access specific records. Every record created in Salesforce has an owner. An owner is a user in the system (such as the user we created in the previous section). At a minimum, the record owner would have access to the record they own. This access can then be expanded to other users using various sharing and visibility features that were covered in *Chapter 10, An Overview of Sharing and Visibility*. All organizations have some level of independent work, ad hoc collaboration, and structured collaboration. These use cases are all covered by record ownership and sharing features built into the Salesforce platform. *Figure 11.5* below shows the record owner field, in this case, **Account Owner**. The owner field on all objects determines who the owner of the record is.



The only exception to this is the detail records in master-detail relationships. Those records automatically inherit the owner of the master record.



The screenshot shows the Salesforce interface for managing an account. At the top, it displays the account name, "Burlington Textiles Corp of America". Below this, there are several tabs: "Related", "Details" (which is currently selected), and "News". The main content area is titled "Account Owner" and lists "John Smith" as the owner. A red box highlights this entry. To the right of the owner information, there are other account details such as rating, phone number, fax number, website, and industry. The account is categorized as "Apparel". Other fields shown include account number (CD656092), parent account, account site, type (Customer - Direct), industry (Apparel), annual revenue (\$350,000,000), billing address (525 S. Lexington Ave, Burlington, NC 27215), ownership (Public), employees (9,000), SIC code (546732), and shipping address.

Field	Value
Type	Customer - Direct
Phone	(336) 222-7000
Website	www.burlington.com
Account Owner	John Smith
Rating	Warm
Phone	(336) 222-7000
Fax	(336) 222-8000
Website	www.burlington.com
Ticker Symbol	BTXT
Ownership	Public
Employees	9,000
SIC Code	546732
Billing Address	525 S. Lexington Ave Burlington, NC 27215
Shipping Address	

Figure 11.5: Account owner

Since **John Smith** is the owner, he has full access to this specific record.

Record ownership and data security

To balance the flexibility for collaboration and the need for data security, Salesforce includes multiple features to restrict access to data. Many of these features were discussed in *Chapter 10, An Overview of Sharing and Visibility*, but we will summarize a few key features below:

- **Organization-wide defaults:** When you set an object's organization-wide default to **Private**, only the users that own records belonging to that object have access. This can be extended using the various sharing options, profile, and role settings.
- You can configure custom objects to prevent users from automatically inheriting access to them through the role hierarchy.
- You can prevent users from deleting records through profile settings. This may also include record owners.

All of the Salesforce Platform sharing capabilities are supported by three components of the ownership-based sharing architecture:

- An **Owner** field for all records (except detail records in master-detail relationships)
- Object share tables that define access for users and groups
- Group membership tables, which grant access to groups, queues, role hierarchy, and territory hierarchy

While much of this is happening in the background, you should be aware of this architecture to understand the implications of ownership skew.

Understanding ownership skew

When a single user owns more than 10,000 records of an object, it is called data skew. This is sometimes done when organizations want to park unused data somewhere, or want to assign a dummy user to own many records for a particular object. This practice may cause performance issues if those users are moved around the role hierarchy or if they are moved into or out of a role or group that is the source group for a sharing rule. The reason this is an issue is if a change is made to the sharing of a record, Salesforce must move a large number of entries into the sharing tables, which can take a long time and lock the records in that object. Locking the records would give other users trying to edit these affected records an error if they attempt to work with one of the records during the calculation.

There are a few ways to help remedy this issue:

- Distribute ownership of records access to a greater number of users. This will reduce the number of re-calculations that need to be made in the ownership table.
- Not assigning a role to the dummy user that owns these records. Removing the role reduces the re-calculation that is done on roles, thus reducing the overall time needed for the calculation.
- If the user must have a role to share data, the following may help by reducing the re-calculation:
 - Place them in a separate role at the top of the hierarchy
 - Don't move them out of that top-level role
 - Keep them out of public groups that could be used as the source for sharing rules

Let's summarize what we have learned in this chapter.

Summary

In this chapter, we learned how to create a user in Salesforce. We then discovered what record ownership is and how it relates to data security. We looked at the “under the hood” sharing components of the Salesforce platform and how these components may affect performance if ownership skew occurs. Finally, we learned how we can remedy ownership skew if it does occur.

In the next chapter, we will cover how to manage projects effectively using sandboxes and change sets.

Questions

1. What is the **Marketing User** checkbox used for when creating a user?
2. Where do you set the time zone for a user?
3. What is the exception to every record having an owner in Salesforce?
4. How do organization-wide defaults help to secure data?
5. What is ownership skew?

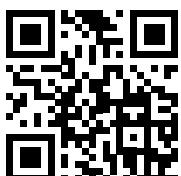
Further reading

- *The Complete Guide to Salesforce User Management:* <https://www.salesforce.com/resources/guides/salesforce-user-management-guide/>
- *Manage Users:* https://help.salesforce.com/s/articleView?id=sf.users_mgmt_overview.htm&type=5
- *Behind the scenes of record ownership in Salesforce:* <https://developer.salesforce.com/blogs/engineering/2013/10/behind-the-scenes-of-record-ownership-in-salesforce#:~:text=Record%20ownership%20is%20at%20the,records%20or%20types%20of%20records>
- *Ownership Data Skew:* https://developer.salesforce.com/docs/atlas.en-us.draes.meta/draes/draes_group_membership_data_skew.htm

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<https://packt.link/rLptF>



12

Managing Projects with Sandboxes and Change Sets

One of the key things when it comes to effectively managing projects on the Salesforce platform is understanding **sandboxes**. A sandbox is a copy of your organization in a separate environment that you can use for a variety of purposes, such as testing and training. It also helps to understand how the right environment management strategy can help you ensure your code and configuration have been built and tested with quality before being deployed to your production environment. These changes are then deployed from a sandbox to your production environment using **change sets**.

We will cover the following topics in this chapter:

- Creating and using sandboxes
- Using different types of sandboxes
- Creating change sets
- Deploying change sets

With the help of these topics, you will be able to understand how to create sandboxes, as well as knowing which type of sandbox to create. You will also learn how to build and deploy change sets so that you can move your changes from one sandbox to another or move them to your production environment.

Technical requirements

For this chapter, all you need to do is follow along with the screenshots provided—development environments *do not* contain sandboxes, so you will not be able to create a practice sandbox in your development environment.

Creating and using sandboxes

When working day to day as an admin, it is important that you do not make changes that can disrupt your active users. For this reason, we create and test new features in sandboxes. Sandboxes are environments that are isolated from your production Salesforce environment. This means you can make and test changes and they will have no impact whatsoever on your live users. In this section, we will introduce a business use case and learn how to create a sandbox.

Business use case

You are the Salesforce admin at XYZ Widgets. You have some configuration and automation ideas that you would like to build and test, but you don't want to cause any interruptions in the live production organization. You decide to create a sandbox to complete and test your work. Once the work has been completed and tested, you will push it to production using change sets. Let's see how all of this works.

Creating a sandbox

When you create a sandbox, all of your *metadata* is copied to the sandbox. Metadata is the actual object and field configuration, as well as your setup items. This is the opposite of regular *data*, which is what is entered into those objects. There is one type of sandbox that copies both metadata and data; we will discuss this in the next section. Follow these steps to create a sandbox:

1. Let's take a look at how to create a sandbox. First, navigate to **Setup** and then the **Home** tab (1):

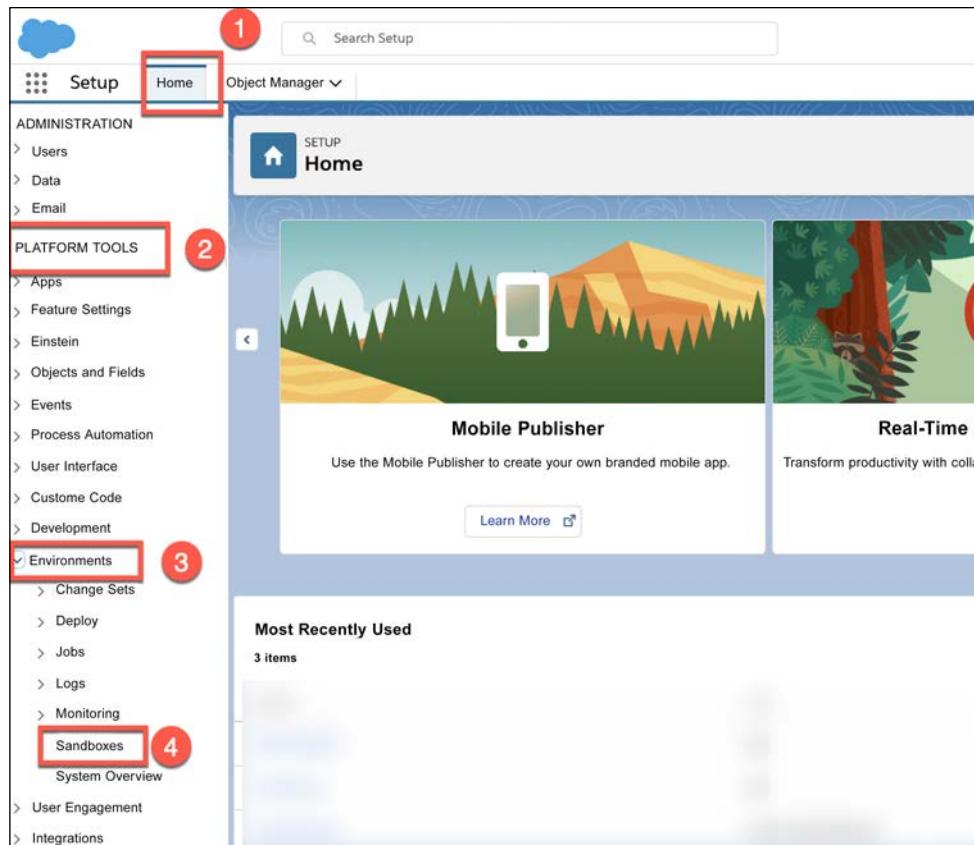


Figure 12.1: Navigating to Sandboxes from the Home tab

2. From the **Home** tab, go to **PLATFORM TOOLS** (2) | **Environments** (3) | **Sandboxes** (4).

3. This will show the sandbox management and creation screen:

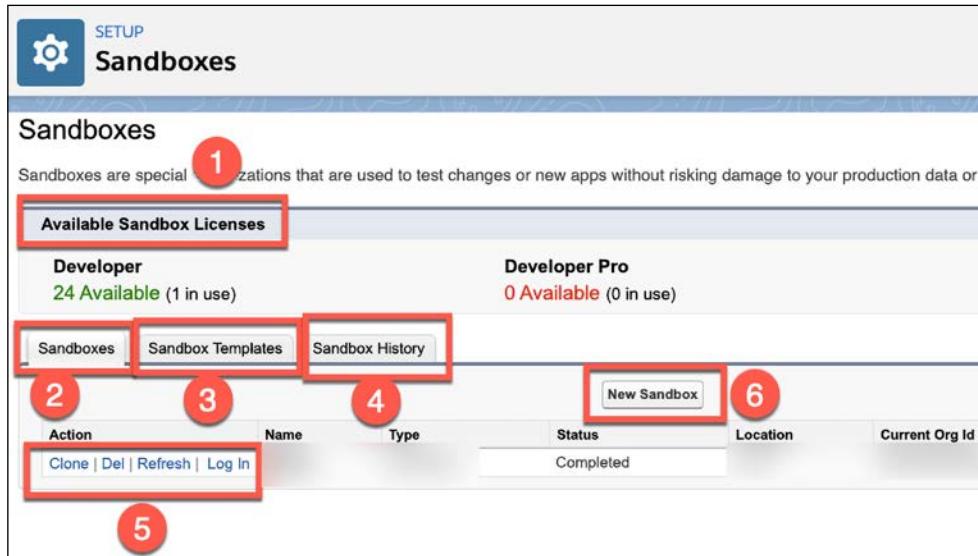


Figure 12.2: Layout of the Sandboxes screen

Let's check out the sections that are numbered in the preceding screenshot:

1. **Available Sandbox Licenses:** This section shows you how many sandboxes of each type you have available. We will discuss the different types of sandboxes in the next section.
2. **Sandboxes:** This tab shows you all of your created sandboxes and the status of each.
3. **Sandbox Templates:** This section allows you to build templates so that you can pull specific testing data into your sandbox if you are using a Partial Copy or a Full Copy sandbox. For example, you can use a template to copy a sample dataset from the Account, Contact, and Opportunity objects in production so that they're displayed within the sandbox when it is created.
4. **Sandbox History:** This tab shows the history of when the sandbox was created, who it was created by, and the last time it was refreshed.
5. **Sandbox actions:** These are the actions you can perform on an existing sandbox. They include the following:
 - **Clone:** Allows you to copy a sandbox to a new sandbox
 - **Del (Delete):** Allows you to delete a sandbox
 - **Refresh:** Allows you to refresh a sandbox, which means recreating the sandbox with the latest production metadata

- **Log In:** Allows you to log in to the sandbox
6. **New Sandbox:** Allows you to create a new sandbox.

The sandbox creation screen appears when **New Sandbox** is clicked:

The screenshot shows the 'Create Sandbox' page under the 'SETUP' tab. The 'Sandbox Information' section is highlighted. A red circle labeled '1' is over the 'Name' field containing 'Config'. A red circle labeled '2' is over the 'Description' box which says 'Used for configuration and automation build and testing'. A red circle labeled '3' is over the 'Create From' dropdown set to 'Production'. A red circle labeled '4' is over the 'Next' button at the bottom left.

Sandbox License			
Developer	Developer Pro	Partial Copy	Full
Refresh Interval: 1 Day	Refresh Interval: 1 Day	Refresh Interval: 5 Days	Refresh Interval: 29 Days
Capacity: 200 MB	Capacity: 1 GB	Capacity: 5 GB	Capacity: Same as Source
Includes: • Configuration • Apex & Metadata • All Users	Includes: • Configuration • Apex & Metadata • All Users	Includes: • Configuration • Apex & Metadata • All Users • Records (sample of selected objects) • Sandbox Template Support	Includes: • Configuration • Apex & Metadata • All Users • Records (all or selected objects) • Sandbox Template Support • History & Chatter Data (optional)
Licenses In Use: 1 of 25	Licenses In Use: 0 of 0	Licenses In Use: 0 of 1	Licenses In Use: 0 of 0
Next	Next	No templates exist for this organization.	No licenses are available for your selected sandbox type. Contact your Salesforce representative to purchase additional licenses.

Figure 12.3: Setup items on the sandbox creation screen

As numbered in the preceding screenshot, there are several important items here:

1. **Name:** This is where you name the sandbox. Your sandbox name will be added to your production username when you log in to the production environment. For example, if your production username is `john.doe@xyz.com` and you name your sandbox `testing`, your username for the testing sandbox will be `john.doe@xyz.com.testing` and your password will be the same as your production password. It is also a good time to mention that when you log in to production, you log in at `login.salesforce.com`, but when you log in to a sandbox, you log in at `test.salesforce.com`.

2. **Description:** This is where you can add the purpose of the sandbox. I have added Used for configuration and automation build and testing.



Tip: The **Description** field should always be used to document the purpose of the sandbox for future administrators that may work within the Salesforce org.

3. **Create From:** This gives you the option to create the sandbox from production, meaning it will copy the data and metadata from your live production organization or from another sandbox that already exists.
4. **Next:** This button begins the creation of the selected sandbox type.

Once the sandbox starts being processed, it may take from a few minutes to 24 hours or longer to complete, depending on your position in the request queue and how big your sandbox is, capacity-wise. Note that this also depends on the day and time of day the action has been launched. Once it is complete, you will receive an email and then you can log in. Now that we have learned how to create a sandbox, let's look at the different types of sandboxes and their uses.

Using different types of sandboxes

There are four types of sandboxes:

- Developer
- Developer Pro
- Partial Copy
- Full Copy

Each type of sandbox has different features and possible uses within the business. Their main differences have to do with how long an interval they have between refreshing, as well as capacity differences and different sandbox features. Let's take a look at these types and the differences between them in the following sections.

Developer sandboxes

Developer sandboxes are the most common types of sandboxes. There is no extra fee for this sandbox and it can be refreshed daily. This sandbox has a capacity of 200 MB and includes **Configuration, Apex & Metadata**, and **All Users** from the production organization. The most common use case for this sandbox is for coding since you have to build code in a sandbox in order to push it to production. It can also be used to make configuration changes, as well as to test those changes before you make them live in your production environment.

Developer Pro sandboxes

Developer Pro sandboxes are exactly the same as Developer sandboxes except for two things: there is usually an extra fee for the Developer Pro sandbox and the capacity is 1 GB instead of 200 MB. You should use this sandbox if you need to test with more data than what's allowed in the Developer sandbox.

Partial Copy sandboxes

Partial Copy sandboxes contain everything a Developer Pro sandbox contains, but with the following exceptions:

- It will cost more than a Developer Pro sandbox
- The refresh interval is less frequent: 5 days, instead of daily
- The capacity is 5 GB
- It includes a sample of data from select objects
- It has sandbox template support

This sandbox is best used for testing with data samples and training it for organizations where a full sandbox is cost-prohibitive.

When you create a Partial Copy sandbox, you have the option to choose a data template. This is where you define the objects that the data sample is created from:

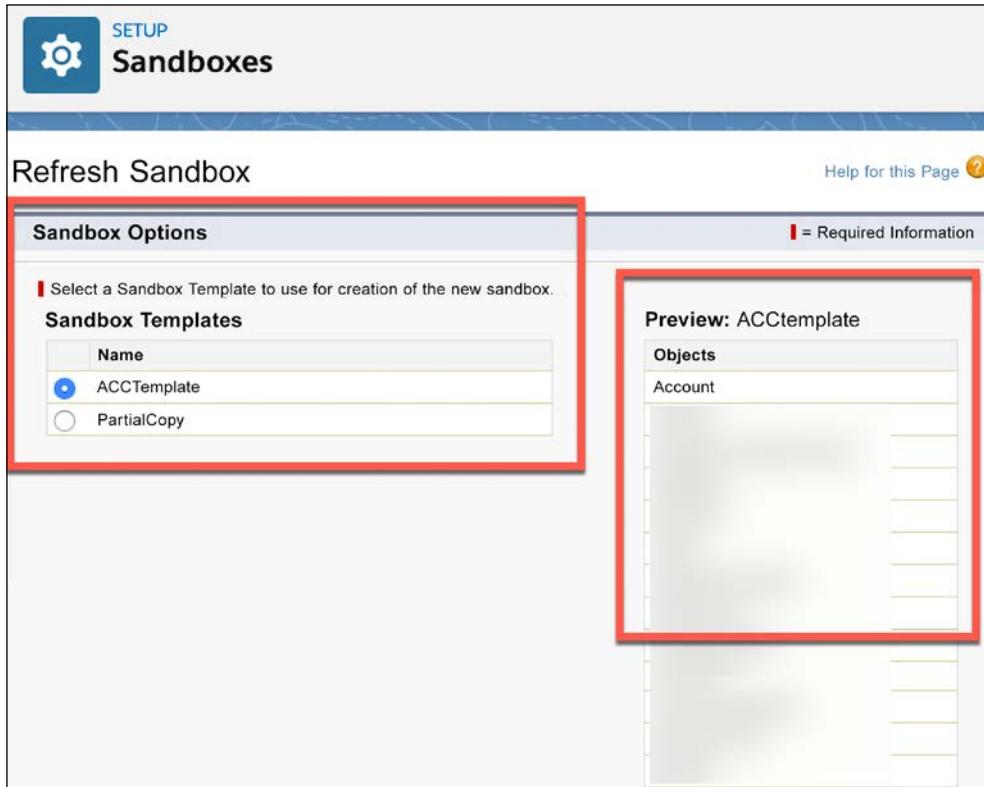


Figure 12.4: Selecting a data template for a Partial Copy sandbox

As you can see in the preceding screenshot, we have defined a template and can see a preview of the objects included in that template. Next, let's look at Full Copy sandboxes.

Full Copy sandboxes

Full Copy sandboxes contain everything a Partial Copy sandbox contains, but with the following exceptions:

- It will cost more than a Partial Copy sandbox

- The refresh interval is 29 days; this is important as you need to have a solid strategy for how you use this type of sandbox
- The storage capacity is the same as the storage capacity you have in your production instance
- It includes *all* data from the source
- It has sandbox template support
- It allows you to copy Chatter and history data

One use for this sandbox is **user acceptance training (UAT)** as it is an exact data and metadata replica of production. It can also be used for data migration and integration testing.

Now that we have learned about the different types of sandboxes, let's take a look at how to move the changes we make from one environment to another.

Creating change sets

After creating features and testing them in our sandbox, the next step is to move these features from the test environment to the live production environment. This can be done using change sets. Change sets allow you to move your metadata and configuration changes from the source environment to a target environment. In this section, we will introduce a business use case and learn how to create a change set.



Note: DevOps Center will eventually replace change sets. See the *Further reading* section at the end of this chapter for more information regarding DevOps Center.

Business use case

In the preceding use case, we created a sandbox called **config**. After you've made your configuration and automation changes for this sandbox and tested them, you will want to move those changes over to the live production environment. Let's see how this works with change sets.

Creating change sets

Let's take a look at how to create change sets. We need to perform the following steps:

1. First, click on the **Home** tab (1) from Setup:

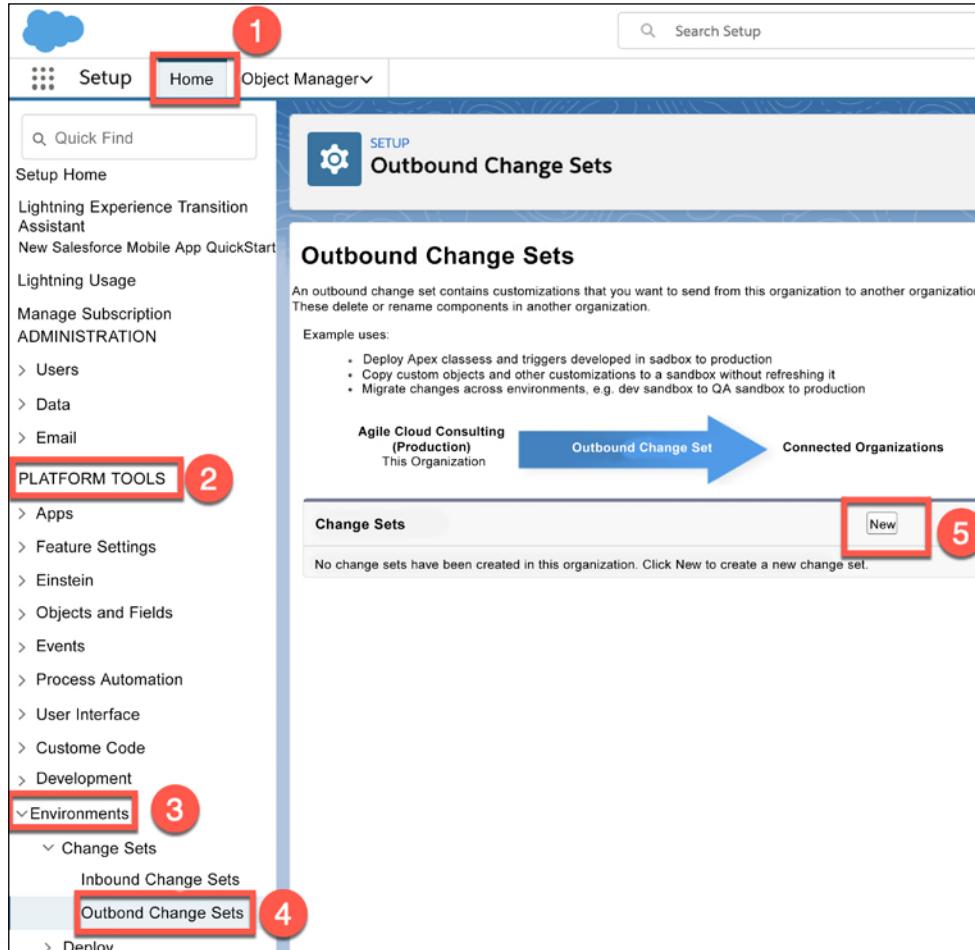


Figure 12.5: Navigating to the button for creating a change set from the Home tab

2. Here, we can see the following:

- a. Go to **PLATFORM TOOLS (2)** | **Environments (3)** | **Outbound Change Sets (4)**. **Outbound Change Sets** means I am building the change set in the source organization (sandbox) so that I can send it outbound to the target organization (production).

- b. Click on **New** (5) to create the change set.
3. The following screenshot shows the first screen you'll see when you start creating your change set:

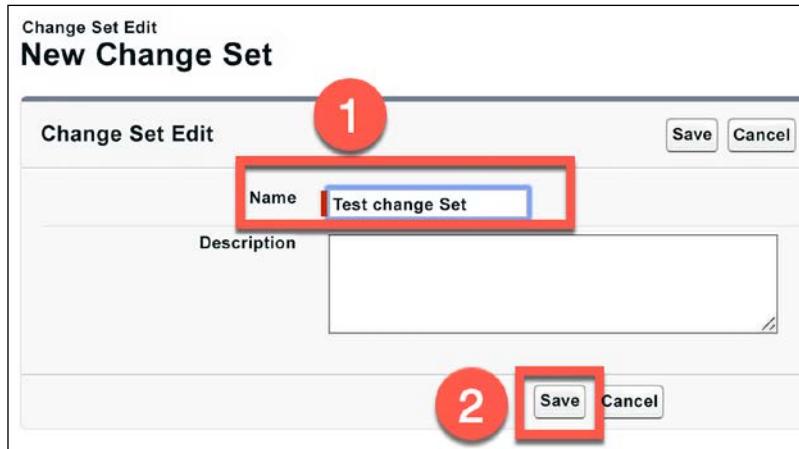


Figure 12.6: Name field when creating a change set

4. Here, enter the change set **Name** (1) and click on **Save** (2). You can also add a description if you wish.
5. You'll then see a second screen when creating the change set:

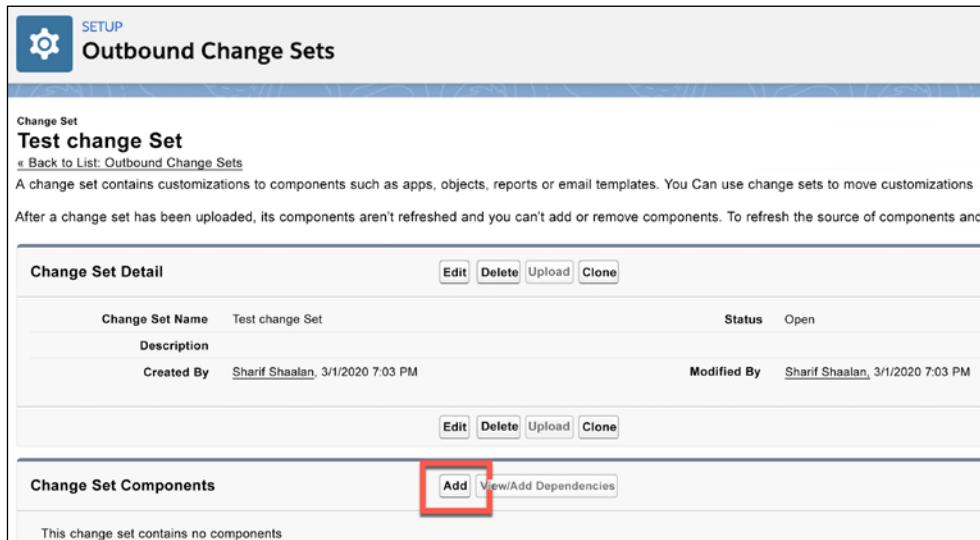


Figure 12.7: Button to add components to a new change set

As shown in the preceding screenshot, the first step is to add the change set's components. Let's see what it looks like when we click on **Add** in the **Change Set Components** section:

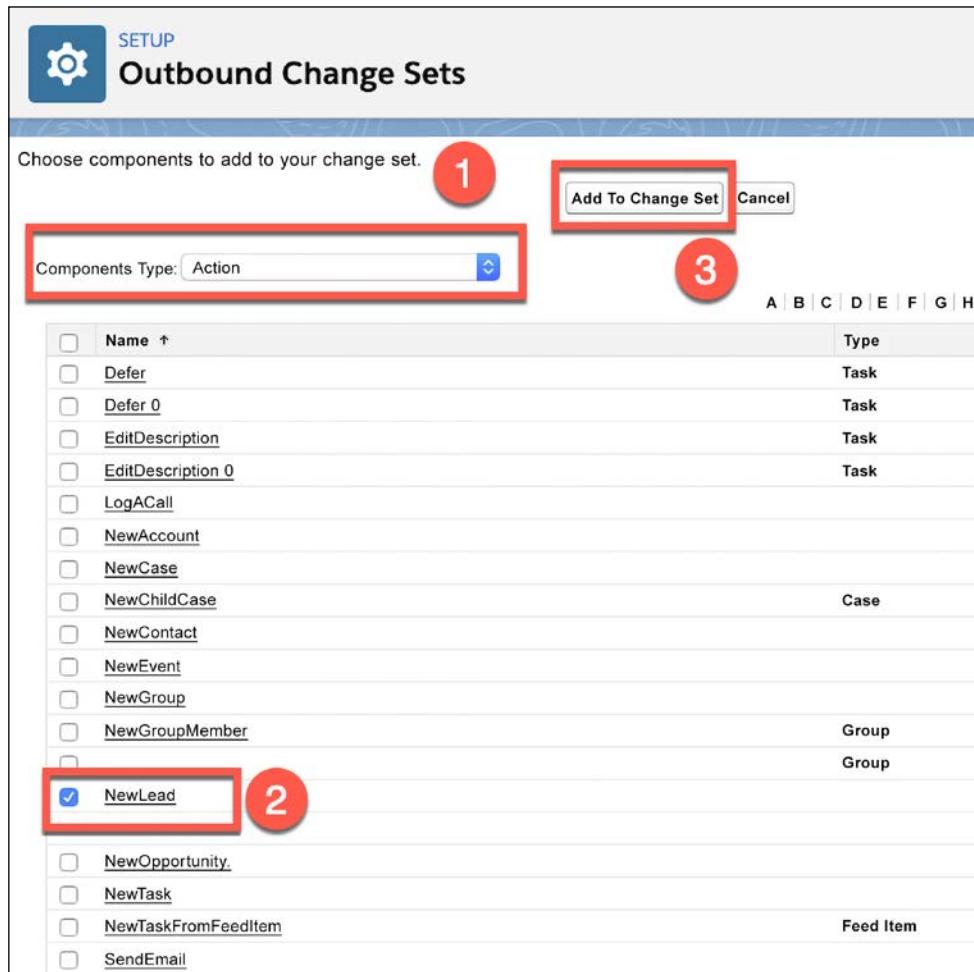


Figure 12.8: Filtering by component type and selecting a component for a new change set

1. You can add all of the components you wish to push to production. This can include any metadata or configuration changes you have made. You can choose from a list of component types (1), choose one or many components of that type (2), and then add them to the change set (3). Let's take a look at the remaining steps we need to follow in order to upload the change set:

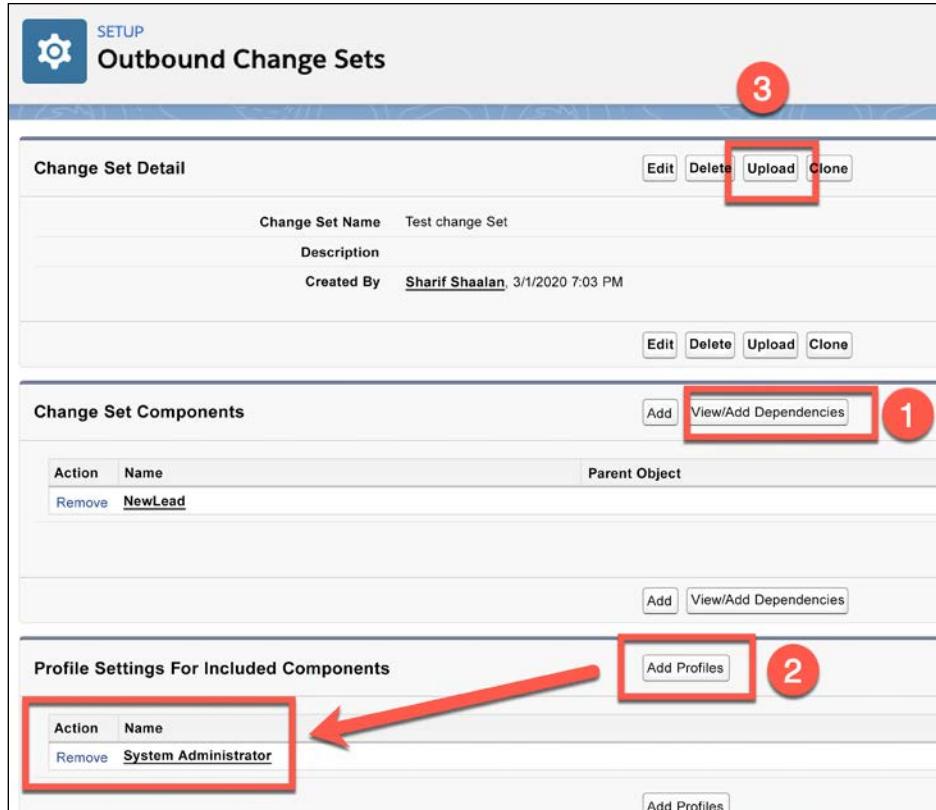


Figure 12.9: Steps to upload a new change set

2. As you can see, there are several steps we need to complete to finish creating the change set:
 - a. **View/Add Dependencies (1):** This allows you to see any dependent components and add them to the change set. This helps make sure you don't forget sections of the code that are needed for your functionality to work, such as custom fields, page layouts, and so on.
 - b. **Profile Settings For Included Components (2):** This allows you to add the security settings for the change set components related to one or more profiles. If you don't add any profiles, your component won't be visible and you will need to adjust the security in the target organization, so adding this here will save a lot of time. It's good practice to add all of the profiles.
 - c. **Upload (3):** Once you have all of your components, you can upload the changes to the target organization (production).

Now that we have learned how to create change sets, let's take a look at how to deploy them to production.

Deploying change sets

Before you can deploy a change set, you have to set up a deployment connection between the source organization (sandbox) and the target organization (production), or a connection from one sandbox to another if you have that use case. You can do this by going to the deployment connections in the target organization and allowing inbound change sets.

Under the **Deploy** tab, click on **Deployment Settings** in the target organization:

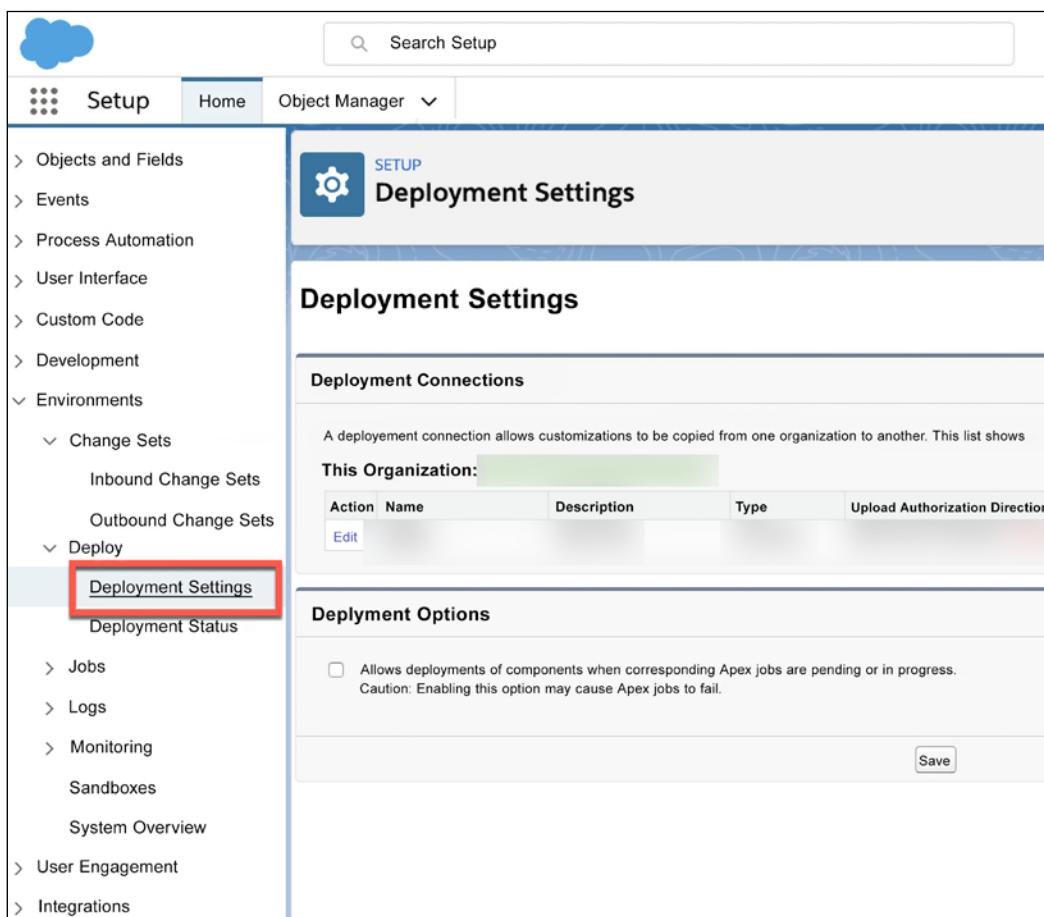


Figure 12.10: Navigating to Deployment Settings from the Home tab

As you can see, some production data has been masked. Let's take a closer look at this screen:

1. Under **Upload Authorization Direction**, you can set up the organization so that it receives inbound change sets from the target organization. Once you've set this connection up, you'll be ready to deploy a change set to production.
2. After clicking **Upload** on the outbound change set in the source organization, it will take up to 30 minutes for the change set to show up in the production (target) organization.
3. In the production organization, go to **Inbound Change Sets**. Here, you will find the uploaded change set. On the change set, you will see a **Deploy** button. This will deploy the change set to production. Once the deployment is complete, you will get a status showing failed or succeeded.

If your deployment fails, you will see a log stating the reason why it failed. At this point, you will have to resolve the issues, rebuild the change set from the sandbox, and redeploy the change set to production.

Now that we have learned how to connect to organizations and deploy a change set to production, let's go over what we have learned in this chapter.

Summary

In this chapter, we introduced sandboxes and how to create them. We discussed the four types of sandboxes, their differences, and how each type is used for different purposes. The purpose of any sandbox, ultimately, is to build and configure features without disrupting the production environment. We saw that once we are done building these features in a sandbox, we can use change sets to move their features.

By doing this, we learned how to create change sets, how to upload the change sets to production, and how to deploy the change sets. These skills will help you build and test your configuration and automation features in a safe environment where you cannot disrupt users. After this, you can push those features to users with the confidence that they will work in production.

In the next chapter, we will learn about some of the most common configuration changes we need to make when configuring objects for our businesses.

Questions

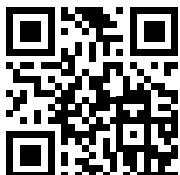
1. What are the four types of sandboxes?
2. Which type of sandbox is commonly used for development?
3. Which type of sandbox is commonly used for data migration testing?
4. Why would you add a profile to a change set?
5. Before you upload a change set, what step must you take?
6. Should the outbound change set be set up in the source or the target organization?
7. What is the refresh interval for a Full Copy sandbox?

Further reading

- Sandbox types and templates: https://help.salesforce.com/articleView?id=create_test_instance.htm&type=5
- Sandboxes: Staging environments for customizing and testing: https://help.salesforce.com/articleView?id=deploy_sandboxes_intro.htm&type=5
- Change sets implementation tips: https://help.salesforce.com/s/articleView?id=sf.changesets_implementation_notes.htm&language=en_US&r=https%3A%2F%2Fwww.google.com%2F&type=5#:~:text=If%20an%20error%20occurs%20during,undergoing%20maintenance%2C%20or%20otherwise%20inaccessible.&text=A%20change%20set%20is%20deployed%20in%20a%20single%20transaction
- DevOps center: <https://developer.salesforce.com/blogs/2022/06/devops-center-is-now-in-open-beta>

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13

Using Data Modeling to Configure Objects for Your Business

One of the core features of using Salesforce is *declarative development*, also known as *clicks, not code*. This feature allows admins to build on the platform without actually having to write code. Admins have the ability to build custom objects to hold the necessary data and configure these custom objects for a business use case. By adding fields and different layouts to the objects, admins give end users the ability to easily interact with the objects as required for their day-to-day work. This process is known as data modeling.

In this chapter, we will cover the following topics in detail:

- Salesforce data modeling
- Creating custom objects
- Creating custom fields
- Creating and using page layouts
- Creating and using record types
- Utilizing the created customizations

With the help of these topics, you will be able to understand data modeling concepts, the use case for creating a custom object, as well as how to configure custom objects using custom fields, page layouts, and record types so that they can be used by end users.

Technical requirements

For this chapter, log into your development organization and simply follow along as we create and customize a custom object.

Salesforce data modeling

A **data model** is a structured way of storing data in an application. The Salesforce platform provides a standard model as well as the tools to customize data models for custom functionality. There are three concepts that relate to these models, **standard objects**, **custom objects**, and **relationships**:

- **Standard objects** include the objects we covered in part one of this book such as Accounts, Contacts, Cases, Opportunities, and Campaigns, along with many other ancillary standard objects.
- **Custom objects** can be used to store information specific to a company's use cases.
- **Relationships** are used to connect objects (both standard and custom) to each other. There are two types of relationships, master-detail and lookup relationships. In this chapter, we will cover creating custom objects and the relationships used to connect these objects in further detail.

Now that we understand the concept of data modeling, let's see how this translates into creating custom objects to meet business requirements.

Creating custom objects

As we discussed in the first section of this book, there are several *standard objects*, such as **Accounts**, **Contacts**, **Opportunities**, **Leads**, and **Cases**, all of which are part of the foundations for customer relationship management and sales.

Outside these core objects, there may be other use cases where you'll need to create new *custom* objects to handle a business use case. Objects, also known as **database tables**, allow you to build the infrastructure needed to store this information. Objects are similar to spreadsheets, where the *object* is the *tab*, the *columns* are the *fields*, and the *rows* are the *actual data* that's created and inserted into these objects. Let's take a look at a business use case where you may need to create a custom object.

Business use case

You are the Salesforce admin at XYZ Widgets. A business use case has come up where your manager has asked you to track the Salesforce certifications held by the customers that are currently doing business with XYZ Widgets.

Knowing which admin and developer certifications a customer has can help the sales representatives at XYZ Widgets present the right products to these customers when on a call. Let's gather the requirements and start building!

Creating a custom object

Looking at the requirements, the first step is to create a Certification custom object.

Perform the following steps to do this:

1. Navigate to the **Setup | Object Manager** tab (1), as shown in the following screenshot:

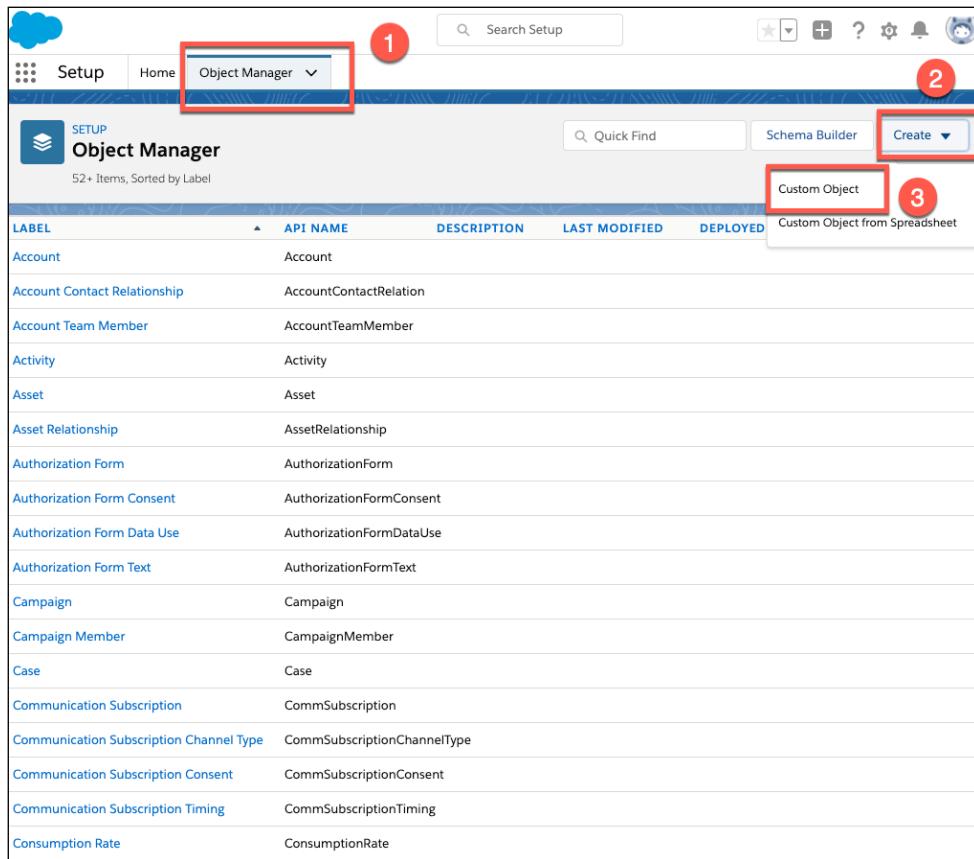


Figure 13.1: Navigating to the Custom Object option from the Object Manager tab

2. Next, click on **Create** (2) and then **Custom Object** (3) in order to start creating the custom Certification object.

In the following screenshot, you can see the **New Custom Object** creation screen:

New Custom Object

Permissions for this object are disabled for all profiles by default. You can enable object permissions in permission sets or by editing custom profiles.

Custom Object Definition Edit

Custom Object Information

The singular and plural labels are used in tabs, page layouts, and reports.

Label	Certification	Example: Account	1
Plural Label	Certifications	Example: Accounts	
Starts with vowel sound	<input type="checkbox"/>		

The Object Name is used when referencing the object via the API.

Object Name	Certification	Example: Account	2
-------------	---------------	------------------	---

Description

This object will contain records for Salesforce certifications related to contacts.

Context-Sensitive Help Setting

Open the standard Salesforce.com Help & Training window
 Open a window using a Visualforce page

Content Name

--None--

Enter Record Name Label and Format

The Record Name appears in page layouts, key lists, related lists, lookups, and search results. For example, the Record Name for Account is "Account Name"

Record Name	Certification Number	Example: Account Name	3
Data Type	Auto Number		
Display Format	CERT(00000)	Example: A-(0000) What Is This?	
Starting Number	1		

Figure 13.2: Fields to complete when creating a new custom object

From the preceding screenshot, we can see that there are several important sections when creating a new object (the following points have been labeled in the preceding screenshot):

1. In this section, I entered the object's **Label** and **Plural Label** (Certification and Certifications, respectively).
2. Next, I entered the **Object Name** of the API (the name used for programmatic purposes) and a **Description**. Additionally, a personal choice is to opt for the standard help and training, as opposed to customizing them.
3. In the third section, I opted for the records in the object to be auto-numbered, as opposed to them having text names. So, I set the **Data Type** to **Auto Number**, added a **Display Format**, and added a **Starting Number**.

In the following screenshot, you can see some more features that can be added when creating a custom object:

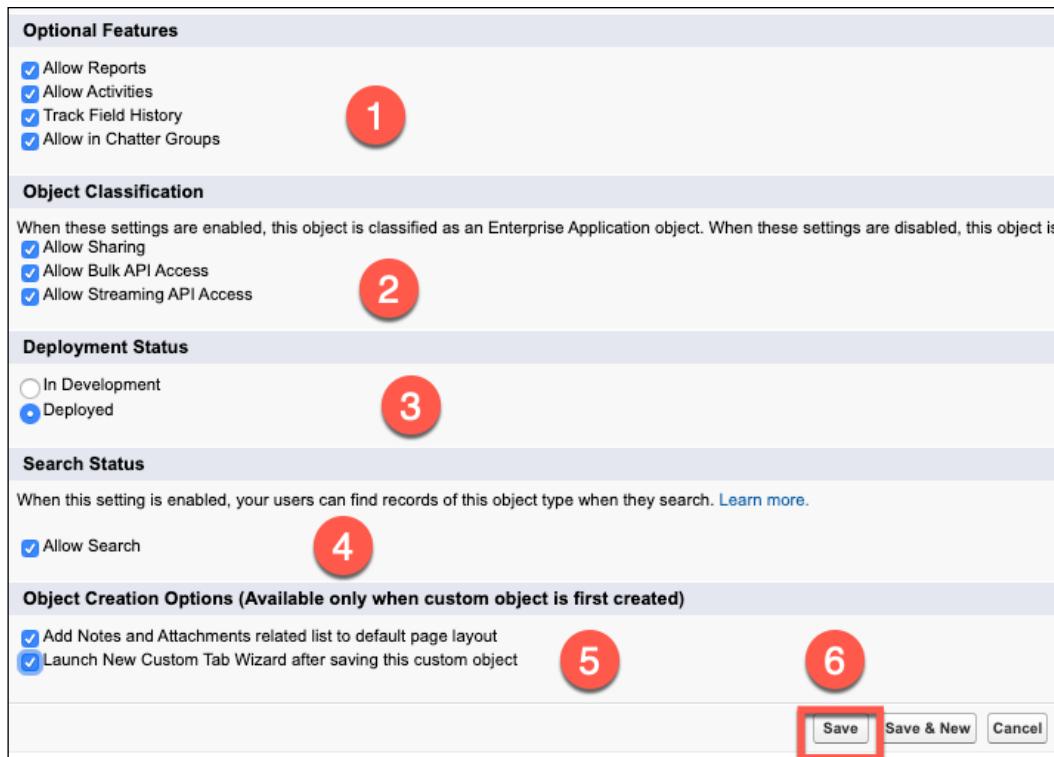


Figure 13.3: Additional features for a custom object

As shown in the preceding screenshot, there are several more items that can be configured when creating the custom object (the following points have been labeled in the preceding screenshot):

1. **Optional Features** provides the following options:
 - a. **Allow Reports**: Allows you to report on records that will be created in this object
 - b. **Allow Activities**: Allows you to create tasks and events on this object
 - c. **Track Field History**: Allows you to track the field change history on up to 20 fields of this object
 - d. **Allow in Chatter Groups**: Allows this object to be accessible in Chatter groups
2. **Object Classification**: Check these boxes to classify the object as an Enterprise custom object without API limitations.
3. **Deployment Status**: Set to **Deployed** when you are ready for this object to show up.
4. **Search Status**: Allows you to search for records for this object.

5. **Object Creation Options:** Here, you can add a **Notes and Attachments** section and launch the **Custom Tab Wizard**.
6. Click on **Save** to move on to the **Custom Tab Wizard**.

The following screenshot shows the screen you land on after saving your settings:

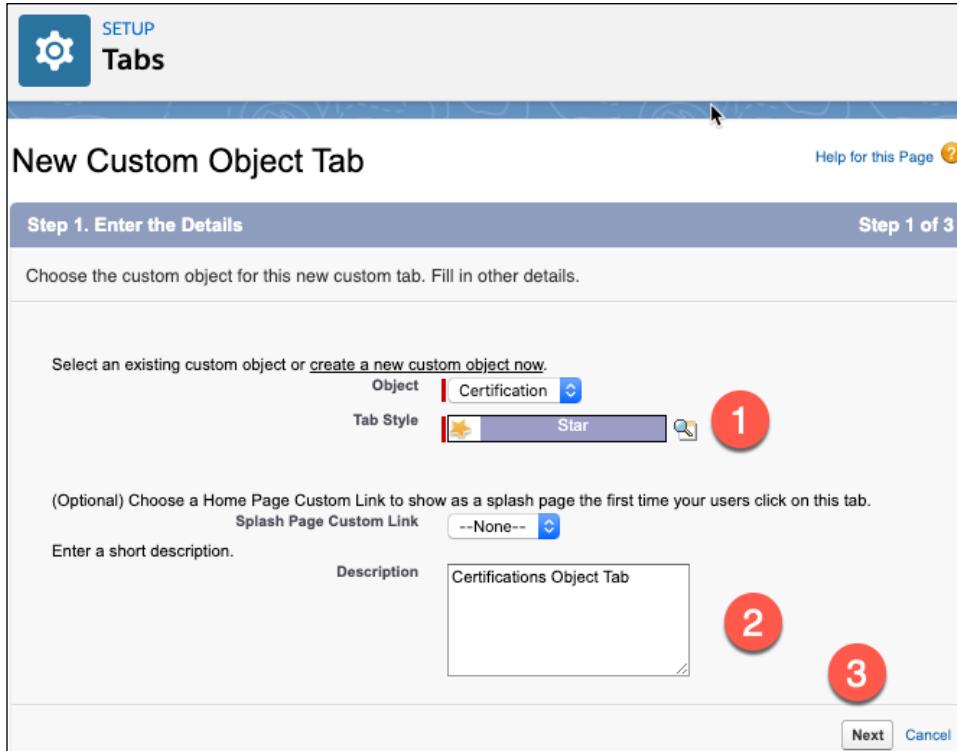


Figure 13.4: Fields for naming and describing a custom object after configuring settings

From the preceding screenshot, you can see that I added an object name, selected a tab icon, added a description, and clicked on **Next** on the custom tab screen.

The following is the next page you will see:

The screenshot shows the 'Tabs' section under 'SETUP'. The title is 'New Custom Object Tab'. It's step 2 of 3, titled 'Add to Profiles'. A note says: 'Choose the user profiles for which the new custom tab will be available. You may also examine or alter the visibility of tabs from the detail and edit pages of each profile.' There are two radio buttons: 'Apply one tab visibility to all profiles' (selected) and 'Apply a different tab visibility for each profile'. A red circle with the number '1' highlights the first radio button. Below is a table with columns 'Profile' and 'Tab Visibility'. The profiles listed are: Analytics Cloud Integration User, Analytics Cloud Security User, Authenticated Website, Authenticated Website, Contract Manager, Cross Org Data Proxy User, Custom: Marketing Profile, Custom: Sales Profile, Custom: Support Profile, Customer Community Login User, Customer Community Plus Login User, Customer Community Plus User, Customer Community User, and Customer Portal Manager Custom. All 'Tab Visibility' dropdowns show 'Default On'.

Profile	Tab Visibility
Analytics Cloud Integration User	Default On
Analytics Cloud Security User	Default On
Authenticated Website	Default On
Authenticated Website	Default On
Contract Manager	Default On
Cross Org Data Proxy User	Default On
Custom: Marketing Profile	Default On
Custom: Sales Profile	Default On
Custom: Support Profile	Default On
Customer Community Login User	Default On
Customer Community Plus Login User	Default On
Customer Community Plus User	Default On
Customer Community User	Default On
Customer Portal Manager Custom	Default On

Figure 13.5: Configuring tab visibility for a custom object

Here, you have the option to apply tab visibility to all or some of the profiles. Tab visibility determines whether the application contains a tab for this new object. For example, you may want the certification tab to show up in the **Sales** app:

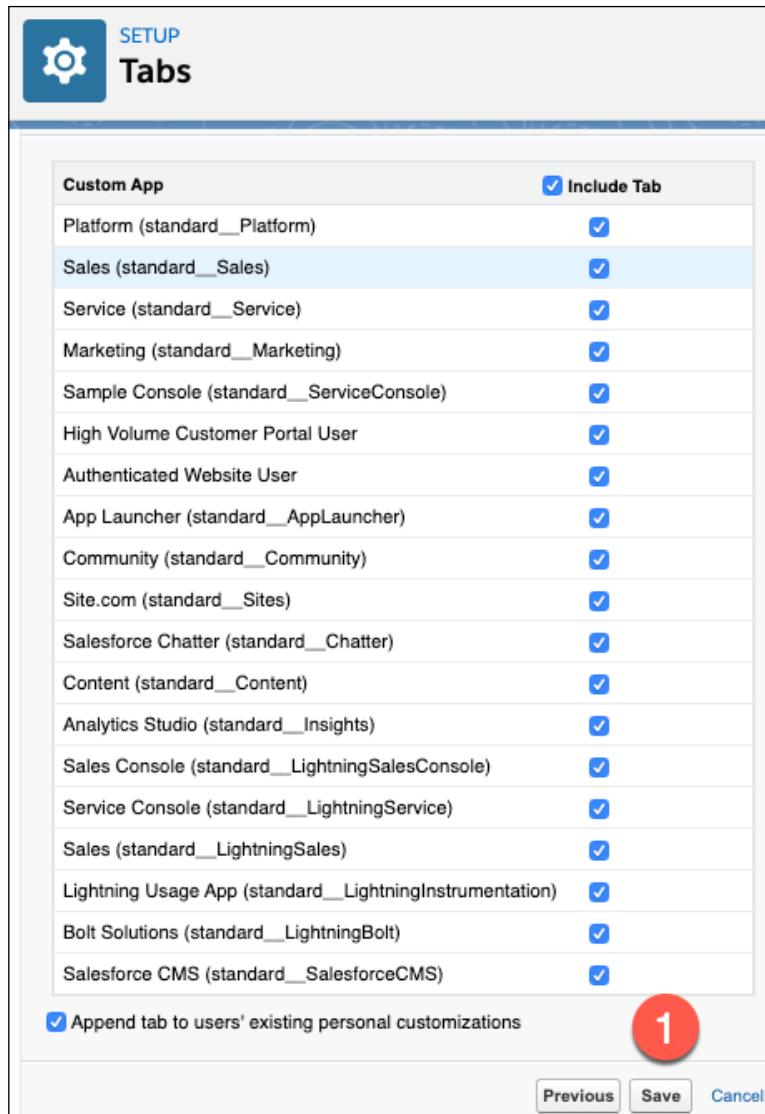


Figure 13.6: Setting the visibility of the custom object tab for the Sales app

In the preceding screenshot, you can see that you have the option to add the tab to one or more custom apps. This will make it easier to access this object when a user is using any of the apps the tab is added to. Click **Save** to finish creating the object.

The following screenshot shows the page you'll land on when you've finished creating the custom object:

The screenshot shows the Salesforce Object Manager interface. At the top, there's a navigation bar with 'Setup', 'Home', and 'Object Manager'. A red box highlights the 'Object Manager' tab. Below it, the breadcrumb trail shows 'SETUP > OBJECT MANAGER' and the object name 'Certification'. Another red box highlights the 'Certification' object name. The main area is divided into two columns: 'Details' on the left and 'Details' on the right. The left column lists various configuration tabs: Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, Search Layouts for Salesforce Classic, Triggers, and Validation Rules. The right column displays specific details for the 'Certification' object, including its API Name ('Certification__c'), Singular Label ('Certification'), Plural Label ('Certifications'), and several checkboxes for reporting and tracking features like 'Enable Reports', 'Track Activities', 'Track Field History', and 'Deployment Status' (set to 'Deployed'). There are also links for 'Help Settings' and 'Standard salesforce.com Help Window'. At the bottom right of the main area are 'Edit' and 'Delete' buttons.

Figure 13.7: Viewing the created custom object from the Object Manager tab

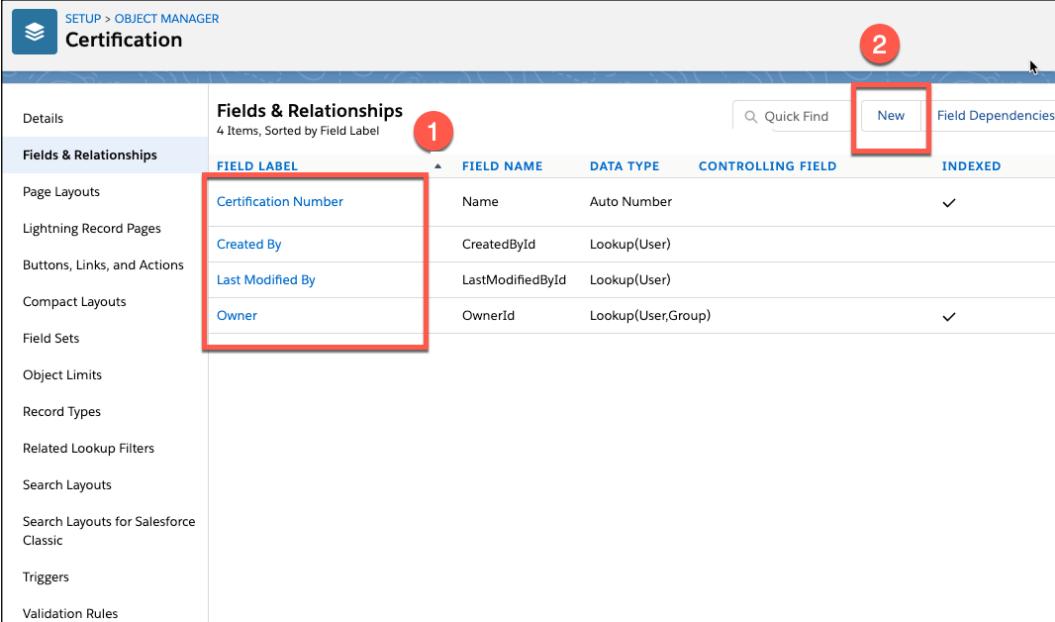
In the preceding screenshot, you can see we have landed back on the Object Manager and that there is now a new **Certification** object.

With that, our first requirement is complete – we have created the **Certification** object. The next step is to create some fields for the information you would like to capture on the **Certification** object.

Creating custom fields

Now that we have created our custom **Certification** object, the next step is to create the fields that will capture information on these objects. The first and most important field to create will be the relationship field so that we can connect **Certifications** to **Contacts**.

By going to the **Setup | Object Manager** tab, you can see how we begin the process of creating this field:



Fields & Relationships 4 Items, Sorted by Field Label				
	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
1	Certification Number	Name	Auto Number	✓
	Created By	CreatedById	Lookup(User)	
	Last Modified By	LastModifiedById	Lookup(User)	
	Owner	OwnerId	Lookup(User,Group)	✓

Figure 13.8: List of fields and an option to add a new field to the custom object

As shown in the preceding screenshot, there are four fields that were automatically created when the object was created (1). These are **Certification Number**, **Created By**, **Last Modified By**, and **Owner**. To create a new field, click on **New** (2).

The following screenshot shows the **New Custom Field** page. Notice the description of each field type as you create the necessary fields:

The screenshot shows the 'New Custom Field' setup page in Salesforce. On the left, there's a sidebar with links to 'Details', 'Fields & Relationships', 'Page Layouts', 'Lightning Record Pages', 'Buttons, Links, and Actions', 'Compact Layouts', 'Field Sets', 'Object Limits', 'Record Types', 'Related Lookup Filters', 'Search Layouts', 'Search Layouts for Salesforce Classic', 'Triggers', and 'Validation Rules'. The main area is titled 'Step 1. Choose the field type' and has a sub-section 'Data Type'. It lists several options: 'None Selected' (radio button), 'Auto Number' (radio button), 'Formula' (radio button), 'Roll-Up Summary' (radio button), 'Lookup Relationship' (radio button), 'Master-Detail Relationship' (radio button, highlighted with a red box and a red circle containing '1'), 'External Lookup Relationship' (radio button), 'Checkbox' (radio button), and 'Currency' (radio button). At the top right of the main area, there's a 'Step 1' label and a 'Next Step' button, which is also highlighted with a red box and a red circle containing '2'.

Figure 13.9: Selecting the data type when creating a custom field

As shown in the preceding screenshot, there are two types of internal relationships (1):

- You can choose a **Lookup Relationship**, which allows you to look up any object and connect the certification object.
- I chose to make this a **Master-Detail Relationship**, which means that the certification has to have a contact before it can be created. This makes sense because if the contact were to be deleted, the certification would have no use for the certification records related to that contact in Salesforce.

After selecting an internal relationship, click **Next (2)**.

The following screenshot shows the next screen in the field creation sequence:

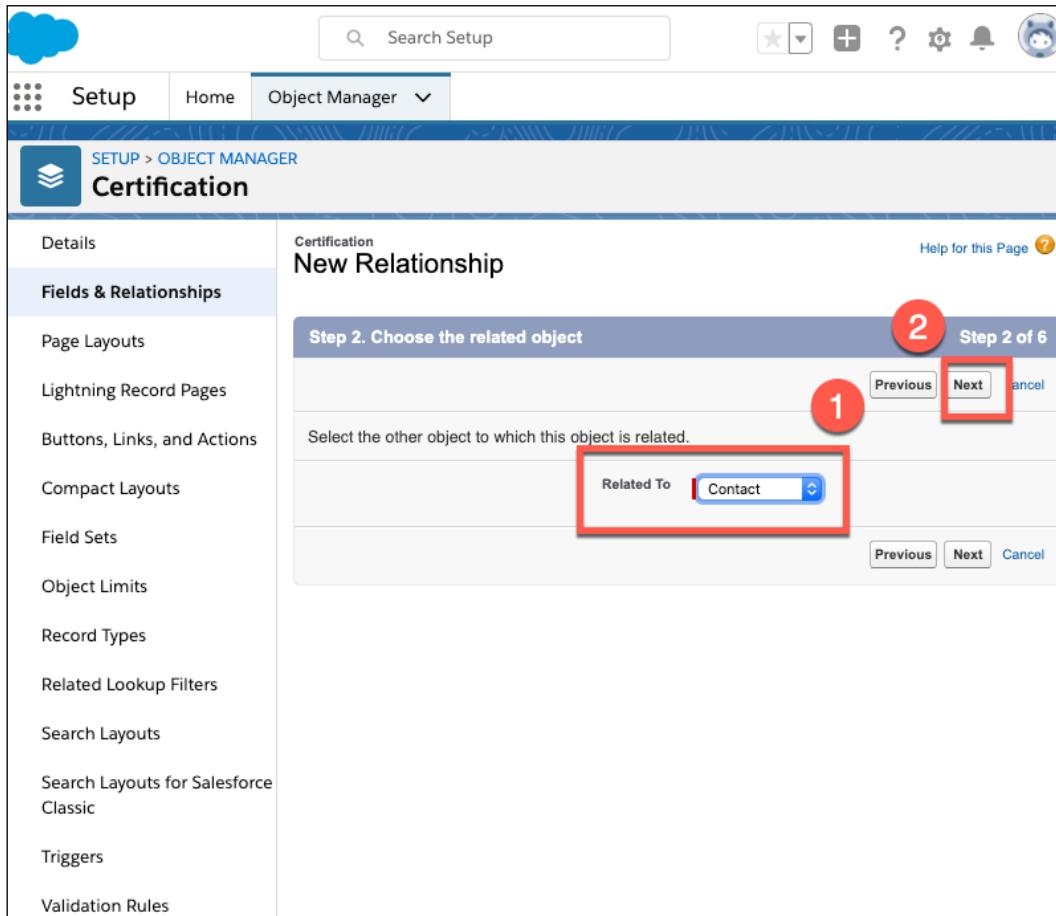


Figure 13.10: Creating a relationship between two objects when creating a field

Next, we choose the related object – in this case, **Contact (1)** – and click **Next (2)**.

The following screenshot allows us to add some details about this field:

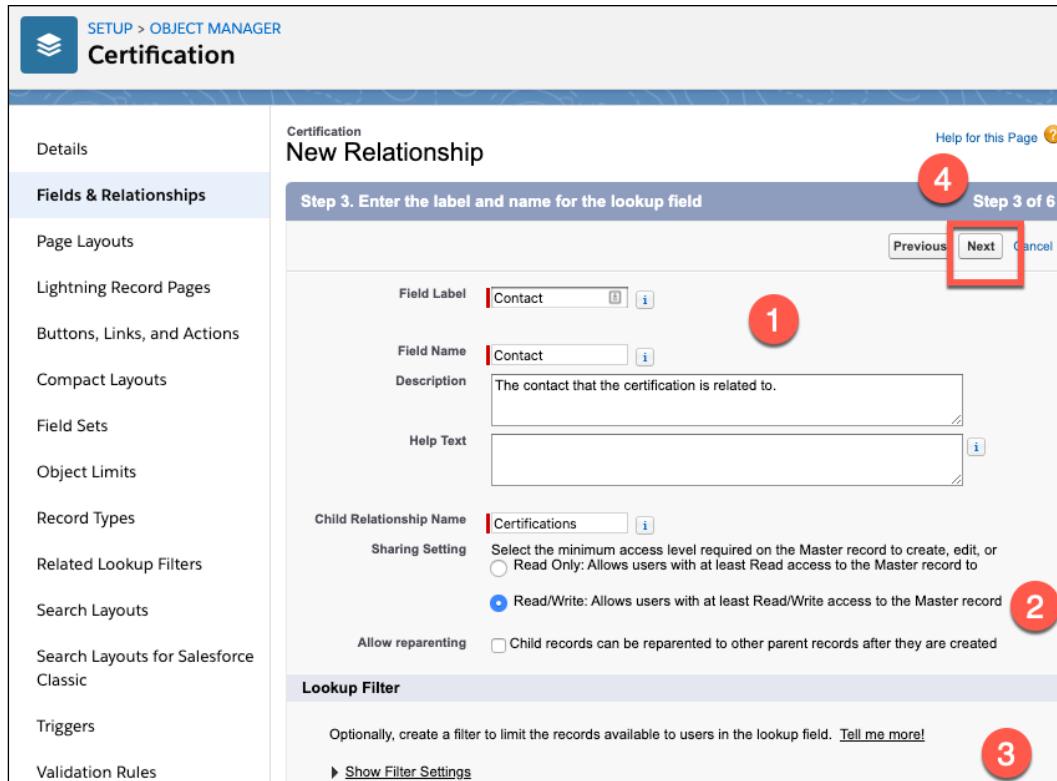


Figure 13.11: Adding a label, name, and description when creating a field

As shown in the preceding screenshot, we have added a few things (the following points have been labeled in the preceding screenshot):

1. Here, we added the **Field Label** and API name, as well as a **Description** and optional **Help Text**.
2. In this section, we have several sharing options. We chose **Read/Write** as the minimum sharing access on the contact record so that we can create a certification record.
3. Optionally, you can add a **Lookup Filter** to allow a certification record to be created for certain types of contacts. We won't create one for this example.
4. Click **Next** to proceed to the next step.

The next step is to set the field-level security for the new field, as shown in the following screenshot:

Certification
New Relationship

Step 4. Establish field-level security for reference field

Step 4 of 6

Field Label: Contact
Data Type: Master-Detail
Field Name: Contact
Description: The contact that the certification is related to.

These are the field-level settings for a Master-Detail relationship. They cannot be changed.

Field-Level Security for Profile	Visible	Read-Only
Analytics Cloud Integration User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analytics Cloud Security User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Authenticated Website	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Authenticated Website	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contract Manager	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cross Org Data Proxy User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom: Marketing Profile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom: Sales Profile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom: Support Profile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Customer Community Login User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Customer Community Plus Login User	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Customer Community Plus User	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Figure 13.12: Setting the security of the field by managing visibility for different profiles

Here, we can choose which profiles will be able to see the new field (1). Click on Next (2).

On the next page, you can add the field to specific layouts:

Certification
New Relationship

Step 5. Add reference field to Page Layouts

Step 5 of 6

Field Label: Contact
Data Type: Master-Detail
Field Name: Contact
Description: The contact that the certification is related to.

These are the page layouts that will include this field. Because this is a Master-Detail relationship, the field is required.

Add Field	Page Layout Name
<input checked="" type="checkbox"/>	Certification Layout

Figure 13.13: Adding the custom field to a page layout

As shown in the preceding screenshot, I added the field to the existing certification **Page Layout** (1) and clicked **Next** (2) to proceed to the next step.

The following screenshot shows the final steps in creating a custom field:

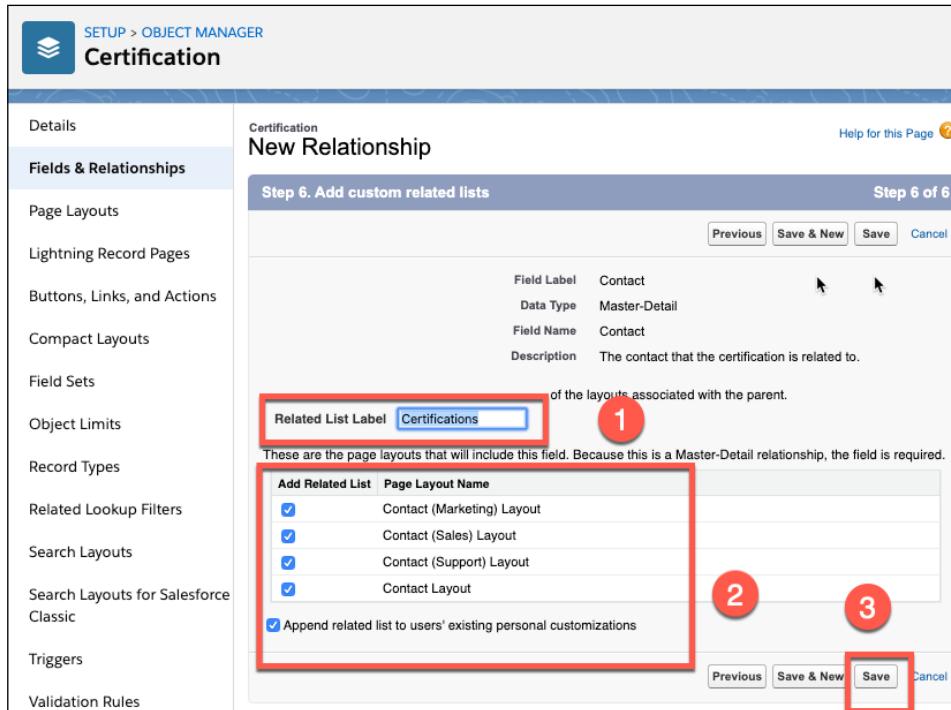


Figure 13.14: Final configuration areas before creating a custom field

As shown in the preceding screenshot, I have set a few final options for the field (the following points have been labeled in the preceding screenshot):

1. The **Related List Label of Certifications** that will show up on the contact record
2. The contact page layouts to add this related list to
3. Then click **Save** to finish creating the field

Now that we have created this field, we can create a few more in the developer organization that we can then use in our example:

1. Create a **Date** field called **Certification Start Date**.
2. Create a checkbox field called **Active**.

3. Create a picklist field called **Certification** with the following options:

- Admin
- Advanced Admin
- Platform Developer I
- Platform Developer II

With that, we have created our fields! The relationship field is very important because it ties two objects together. Next, let's take a look at custom page layouts for the new object and its related fields.

Creating and using page layouts

Page layouts are the user interfaces where we interact with the object and fields that we created. When looking at page layouts, there are two types to consider. The first is the Lightning page layout, which is used for configuring the layout for a record in the Lightning Experience and includes many usability options.



You can read more about Lightning page layout in the *Further reading* section at the end of this chapter. We will also cover this in more detail in *Chapter 14, Lightning Experience Customization*.

The second is the page layout related to the actual object. This is the page layout we will look at in this section. It maps directly to the **Details** section of a Lightning page's layout.

Page layouts are used to display the fields related to objects and allow you to enter data into those fields. This gives admins the flexibility to show different page layouts to different users based on profiles and/or record types. We will cover record types in the next section. Now, let's take a look at how to create page layouts using our previous **Certification** object example. Although a page layout is automatically created when you create an object, we will create a new page layout for the purpose of this exercise.

In the following screenshot, you can see that we've navigated to the **Certification** object we created in the *Creating a custom object* section:

The screenshot shows the Salesforce Setup interface with the following details:

Header: Search Setup, Home, Object Manager

Breadcrumb: SETUP > OBJECT MANAGER

Section: Certification

Left Sidebar (Details):

- Fields & Relationships
- Page Layouts** (highlighted with a red box)
- Lightning Record Pages
- Buttons, Links, and Actions
- Compact Layouts
- Field Sets
- Object Limits
- Record Types
- Related Lookup Filters
- Search Layouts
- Search Layouts for Salesforce Classic
- Triggers
- Validation Rules

Right Panel (Details):

Setting	Value
Description	This object will contain records for Salesforce certifications related to contacts.
API Name	Certification__c
Custom	✓
Singular Label	Certification
Plural Label	Certifications
Enable Reports	✓
Track Activities	✓
Track Field History	✓
Deployment Status	Deployed
Help Settings	Standard salesforce.com Help Window

Figure 13.15: Selecting Page Layouts from the Details section of the Certification object

Then, click on the **Page Layouts** section under **Details**.

In the following screenshot, you can see that I clicked on **New** and was brought to the **Create New Page Layout** page:

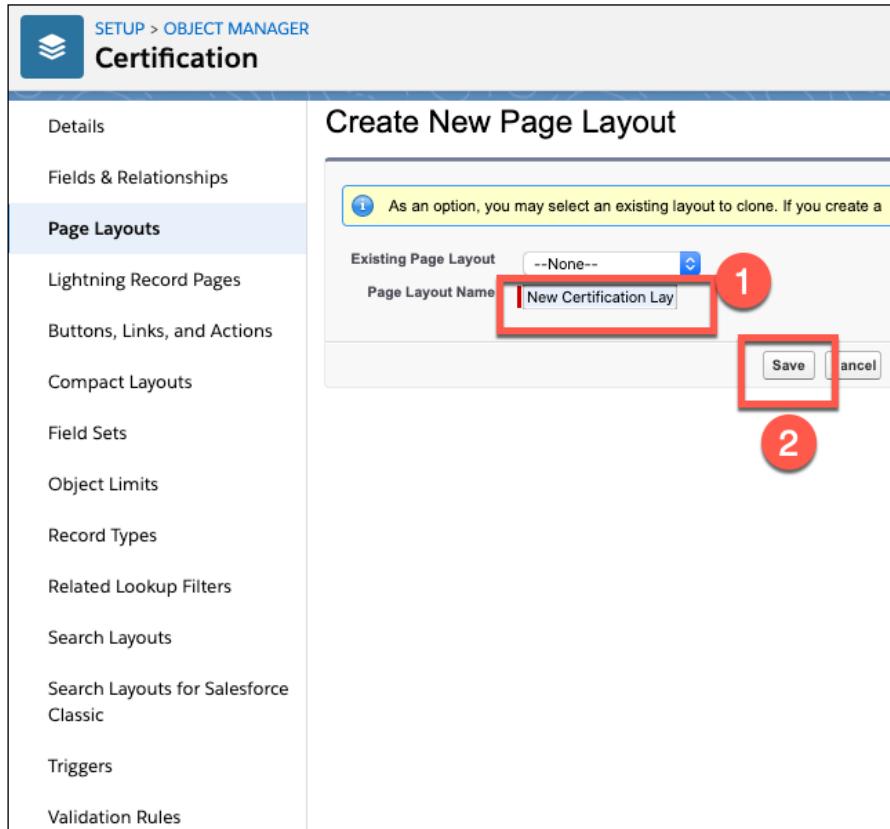


Figure 13.16: Creating and naming a new page layout using the Page Layouts option

Add the new **Page Layout Name** (1) and click **Save** (2). Note that you have the option to clone an existing page layout.

In the following screenshot, you can see the **Page Layouts** edit screen:

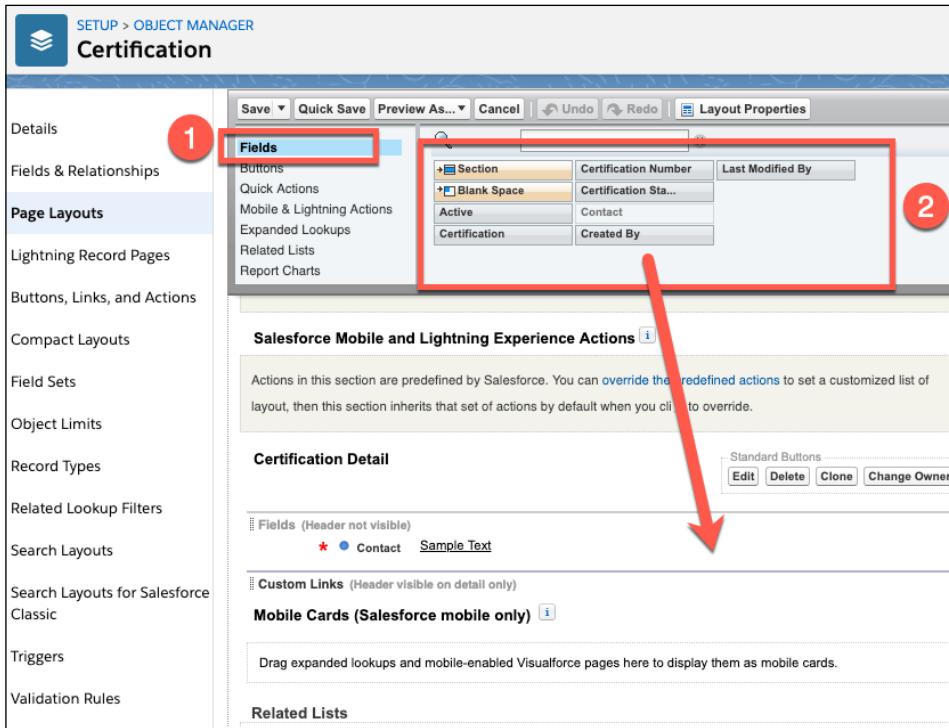


Figure 13.17: Edit screen for the newly created page layout

From the preceding screenshot, we can see that we clicked on the **Fields** section (1). Now, we can create a section and drag fields onto the layout (2).

In the following screenshot, you can see the section and fields we added:

The screenshot shows the Salesforce Object Manager interface for the 'Certification' object. The left sidebar lists various setup categories. The 'Page Layouts' category is currently selected. The main area displays the 'Certification Detail' page layout. A red box labeled '1' highlights the top section of the layout, which includes fields for 'Active' (checkbox), 'Certification Start Date' (date input), and 'Certification' (text input). A red box labeled '2' highlights a new 'System Information' section below it, which contains 'Created By' and 'Last Modified By' fields.

Figure 13.18: Added areas to the page layout

I added the new custom fields to the top section (1) and added the **Created By** and **Last Modified By** fields under a new **System Information** section.

In the following screenshot, you can see the final step when it comes to editing the layout:

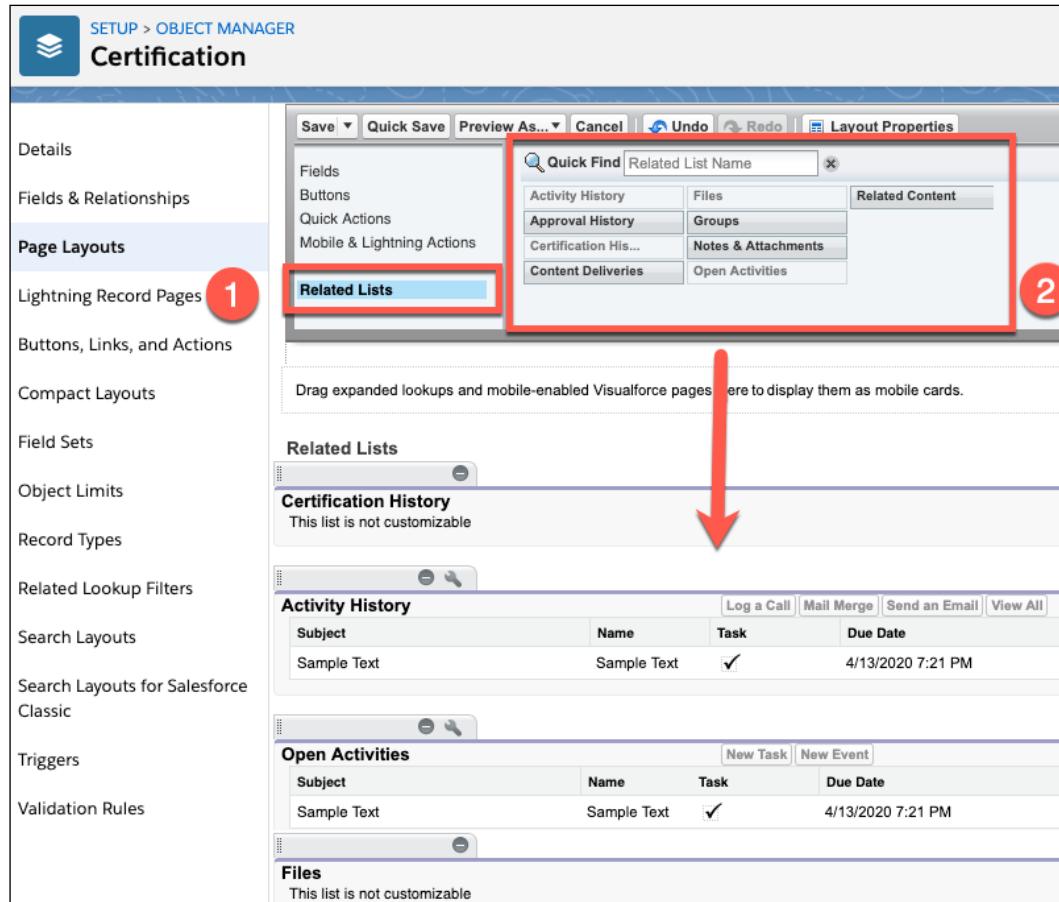


Figure 13.19: Adding related lists to the page layout

Finally, navigate to the **Related Lists** section (1) and add the related lists (2) to the bottom section of the page layout.

Using the **Certification** object, we have successfully created a page layout. Now, let's take a look at record types.

Creating and using record types

Record types are the last piece of the puzzle. It is important to note that record types are not always needed; it depends on your business process. Record types are used when you need to show different page layouts, apply different processes, and/or need to show different picklist values based on a business use case. In this example, we will create two record types for the **Certification** object in order to show the correct picklist values in the **Certification** custom field. The record types will be **Admin** and **Developer**, and the goal is to show the admin certifications for **Admin** and the developer certifications for **Developer**. Let's learn how to create these two record types and update the available picklist values.

First, navigate back to the **Certification** custom object, as shown in the following screenshot:

The screenshot shows the Salesforce Object Manager interface for the **Certification** object. On the left, there's a sidebar with various navigation links: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, and **Record Types**. The **Record Types** link is highlighted with a red box and the number 1. The main content area has a header "Record Types" with a sub-header "0 Items, Sorted by Record Type Label". Below the header is a table with four columns: RECORD TYPE LABEL, DESCRIPTION, ACTIVE, and MODIFIED BY. At the top right of the table, there's a "New" button, which is also highlighted with a red box and the number 2. The table currently displays no items.

Figure 13.20: Option to create a new record type from the Details section of an object

Click on **Record Types** (1) | **New** (2).

The following screenshot shows the **Record Type** creation screen:

SETUP > OBJECT MANAGER
Certification

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Search Layouts

Search Layouts for Salesforce Classic

Triggers

Validation Rules

Record Type

Existing Record Type: --Master--

Record Type Label: Admin

Record Type Name: Admin

Description:

Active:

Select the Enable for Profile checkbox to make the new record type available to a profile. Users assigned to this profile

Profile Name	Record Types Currently Available	Enable for Profile	Make Default
Analytics Cloud Integration User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analytics Cloud Security User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chatter External User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chatter Free User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chatter Moderator User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contract Manager	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cross Org Data Proxy User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom: Marketing Profile	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom: Sales Profile	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom: Support Profile	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Force.com - App Subscription User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Force.com - Free User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Gold Partner User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Figure 13.21: Adding a label and name to the new record type

I added **Admin** as the **Record Type Label** and **Record Type Name** and also enabled this record type for all profiles, before clicking on **Next**.

The following screenshot shows the next step in this process:

The screenshot shows the Salesforce Setup interface for the 'Certification' object. The left sidebar lists various configuration tabs: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types (which is selected), Related Lookup Filters, Search Layouts, Search Layouts for Salesforce Classic, Triggers, and Validation Rules. The main content area is titled 'Step 2. Assign page layouts'. It shows the 'Certification Record Type' is set to 'Admin' and the 'Record Type Name' is also 'Admin'. A descriptive note says: 'Select the page layout that users with this profile see for records with this record type. After saving, choose the layout for each user profile.' Below this, there are two radio button options: 'Apply one layout to all profiles' (selected) and 'Apply a different layout for each profile'. A dropdown menu labeled 'New Certification Layout' is highlighted with a red box. The right side of the screen displays a table mapping profiles to page layouts. The columns are 'Profile:' and 'Page Layout'. The profiles listed are: Analytics Cloud Integration User, Analytics Cloud Security User, Chatter External User, Chatter Free User, Chatter Moderator User, Contract Manager, Cross Org Data Proxy User, Custom: Marketing Profile, Custom: Sales Profile, Custom: Support Profile, Force.com - App Subscription User, Force.com - Free User, Gold Partner User, Identity User, and Marketing User. Each profile has a corresponding dropdown menu containing the 'New Certification Layout' option.

Figure 13.22: Applying a page layout

Apply the **Certification** page layout we created in the previous section to all profiles and click **Next**.

In the following screenshot, you can see the created record type:

The screenshot shows the Salesforce 'Record Types' page for the 'Certification' object. The left sidebar lists various configuration options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, and Record Types. The 'Record Types' option is selected and highlighted with a blue background. The main content area displays the properties for the 'Admin' record type. It includes fields for Record Type Label (Admin), Record Type Name (Admin), Namespace Prefix, Description, and Created By (Sharif Shaalan, 4/13/2020 7:53 PM). Below this, a section titled 'Picklists Available for Editing' lists a single picklist named 'Certification' with an 'Edit' button next to it, which is highlighted with a red box.

Action	Field	Modified Date
Edit	Certification	4/13/2020 7:53 PM

Figure 13.23: Created record type visible on the Record Types page

As shown in the preceding screenshot, all the picklists of the objects are available for editing.

In the following screenshot, you can see the option to **Add** and **Remove** values to/from the picklist for this specific record type:

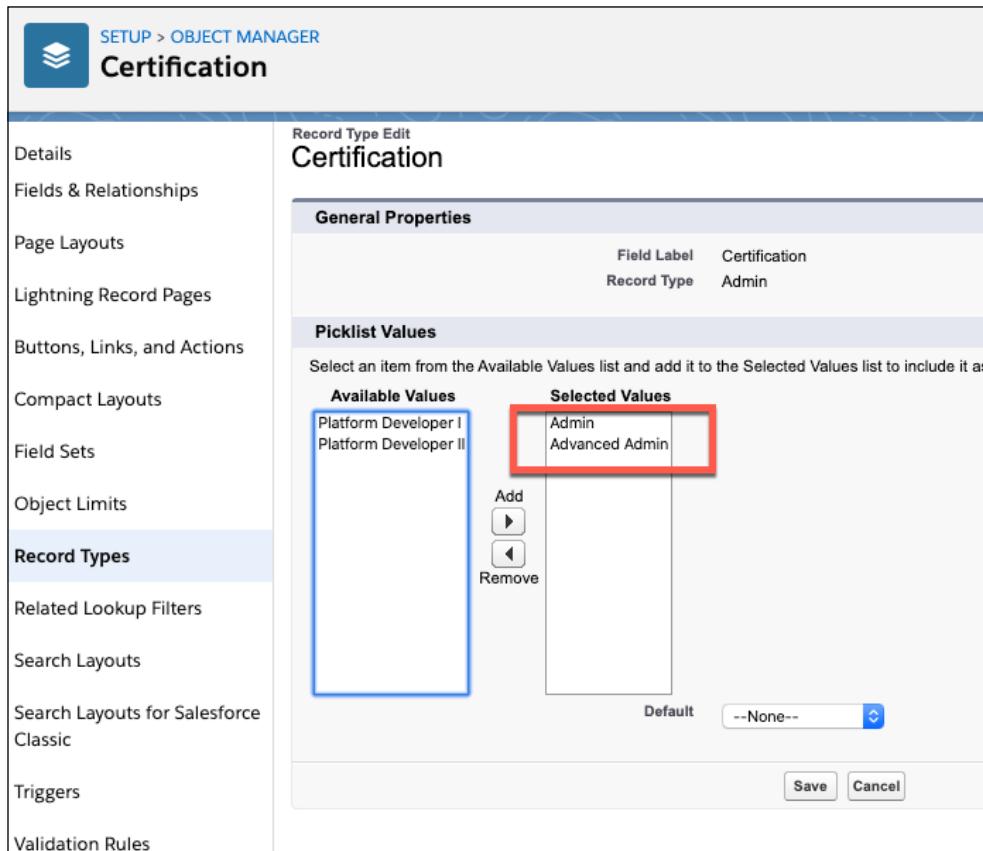


Figure 13.24: Modifying the values of the record type

From the preceding screenshot, you can see that I have added the admin certifications for the **Admin Record Type**. Replicate this exercise for the **Developer Record Type**.

Record types allow us to have flexibility when working with an object. We can show different page layouts and different picklist field values based on which record type is chosen. This makes it easier for admins to use an object for multiple purposes within a similar business case.

Utilizing the created customizations

Now that we have created a custom object, created custom fields, created a page layout, and created record types, let's put these customizations into practice! In the steps below, we will add a certification to a contact:

1. Navigate to the **Contacts** tab (1), as shown in the following screenshot:

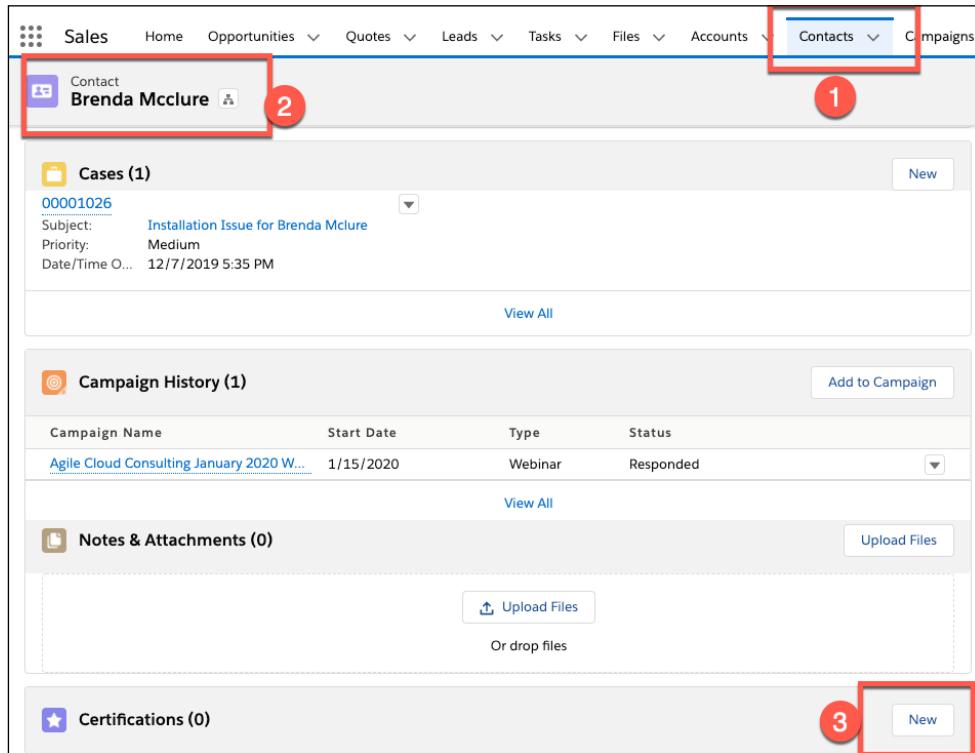


Figure 13.25: Navigating to the Certifications section of the page layout

In the preceding screenshot, you can see that I navigated to the **Brenda Mcclure** contact (2) and scrolled down to the **Certifications** section. Click on **New** (3) to add a new certification.

2. In the following screenshot, you can see the record type selection screen:

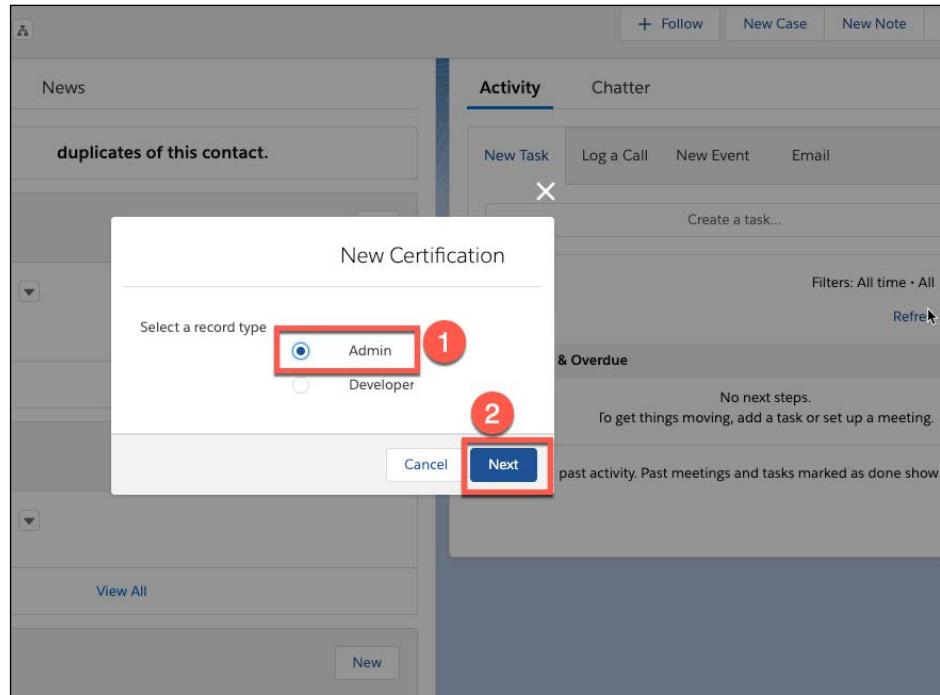


Figure 13.26: Adding the new certification by selecting one of the record types

3. Select the **Admin** record type (1) and click on **Next** (2).

In the following screenshot, you can see the **Certification** edit page:

The screenshot shows the "New Certification: Admin" edit page. It includes fields for "Certification Number" (set to "Active"), "Contact" (set to "Brenda Mcclure"), "Certification Start Date" (set to "4/1/2020"), and "Certification" (set to "Admin"). At the bottom of the page are three buttons: "Cancel", "Save & New", and "Save", with "Save" being highlighted by a red box.

Figure 13.27: New Certification popup

4. As shown in the preceding screenshot, I have filled out the certification fields and clicked **Save**.

In the following screenshot, you can see the newly created certification:

The screenshot shows a portion of a Salesforce page layout. At the top, there is a section titled "Notes & Attachments (0)" with a "Upload Files" button. Below this is a dashed rectangular area with an "Upload Files" button and the text "Or drop files". A red box highlights a section titled "Certifications (1)". This section includes a "New" button, a table with four columns, and a "View All" link. The table columns are: Certification Number, Active, Certification, and Certification Start Date. The single row contains the values: CERT000001, checked (Active), Admin, and 4/1/2020.

Figure 13.28: New certification visible in the Certifications section of the page layout

As shown in the preceding screenshot, the **Admin** certification has been created. Let's go over what we have learned in this chapter.

Summary

In this chapter, we learned data modeling concepts and put these skills into practice by adding a certification to a contact. We learned how to add elements to a custom object, such as relationship fields that allow you to tie objects together. We also learned how to create page layouts and record types so that we can control how picklist values are displayed. With the skills you've learned in this chapter, you can extend Salesforce using *clicks, not code* to handle multiple use cases outside of standard objects.

In the next chapter, we will learn about **Lightning Experience customization**.

Questions

1. Why would you create a master-detail relationship as opposed to a lookup relationship?
2. What are some of the optional features when creating a custom object?
3. What are the two types of internal relationship fields you can create on an object?

4. What part of the page layout shows related items on a record?
5. What is a possible use case for using record types?

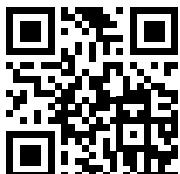
Further reading

- Creating custom objects: https://help.salesforce.com/articleView?id=dev_objectcreate_task_parent.htm&type=5
- Creating custom fields: https://help.salesforce.com/articleView?id=adding_fields.htm&type=5
- Page layouts: https://help.salesforce.com/articleView?id=customize_layout.htm&type=5
- Creating record types: <https://trailhead.salesforce.com/en/content/learn/projects/customize-a-salesforce-object/create-record-types>
- Data modeling: https://trailhead.salesforce.com/en/content/learn/modules/data_modeling
- Lightning page layouts: https://help.salesforce.com/articleView?id=layouts_in_lex.htm&type=5

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<https://packt.link/r1ptF>



14

Lightning Experience Customization

Lightning pages are custom layouts that allow you to design pages for Lightning Experience that are mobile responsive. These pages are built using templates that divide the page into regions that adjust for visibility based on the device used to view the page. Lightning pages support standard components, custom components, and third-party components downloaded from the AppExchange.

In this chapter, we will cover the following Lightning page features in detail:

- Creating Lightning pages
- Understanding Lightning page layouts
- Using Lightning page components
- Assigning and activating Lightning pages

With the help of these topics, you will be able to configure and deploy Lightning pages in your Salesforce org.

Technical requirements

For this chapter, make sure you log in to your development org and follow along as we work through the different customizations to Lightning pages available to a system administrator.

Lightning pages overview

Lightning pages allow you to add custom items to a page with much more flexibility than the older page layouts that are used in Salesforce Classic. Lightning pages allow you to pull in the page layouts and add much more customization and flexibility. You can create three types of Lightning pages:

- An **app page** that you can add to the navigation bar of a Lightning app, which makes it appear when that app is viewed in both Lightning Experience and the Salesforce mobile apps
- A **customized home page** for Lightning Experience
- A **custom record page** for Lightning Experience and the Salesforce mobile app

For our example, we will create a customized record page for Lightning Experience and the Salesforce mobile app.

Business use case

You are the Salesforce admin for XYZ Widgets. The business has asked for an Account Lightning page for the Standard User profile, which would default to show the record details and have a more user-friendly look and feel.

Creating a Lightning page

Now that you have this requirement, you will build a new page that you can present to the users to test.

Let's look at how to build a Lightning page. We will start on the **Setup** page.

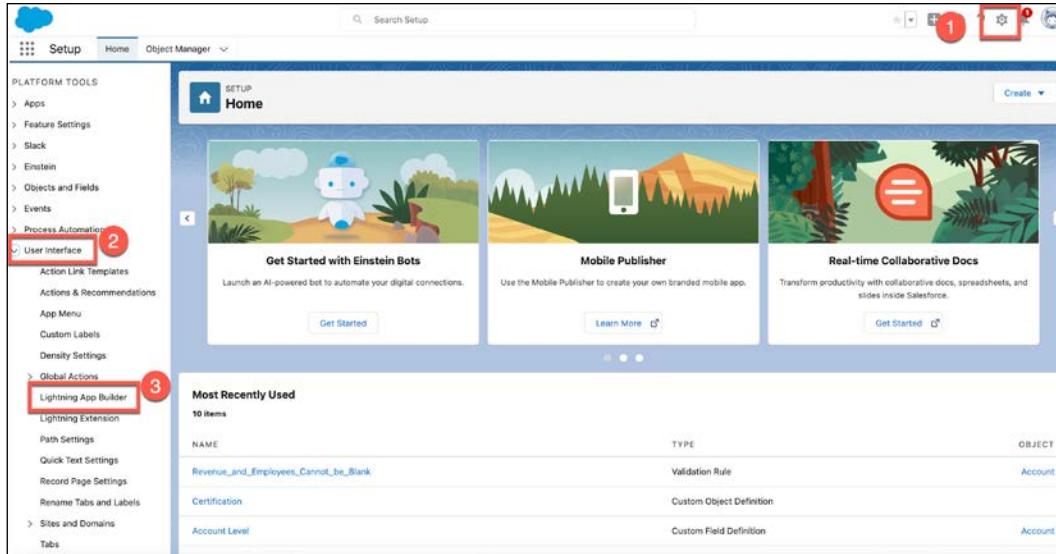


Figure 14.1: Navigating to the Lightning App Builder from Setup

Once you're on the **Setup** page:

1. Click on **Setup**.
2. Click on **User Interface**.
3. Click on **Lightning App Builder**.

This will bring us to the Lightning App Builder detail page shown in *Figure 14.2*:

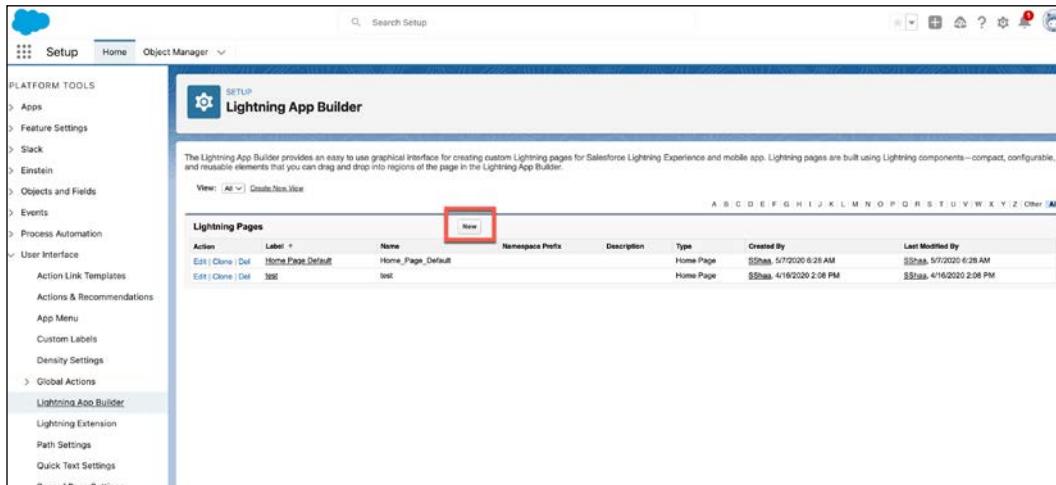


Figure 14.2: Lightning App Builder detail page

On this page, we will click on **New**, which will take us to the Lightning page creation screen, shown in *Figure 14.3*:

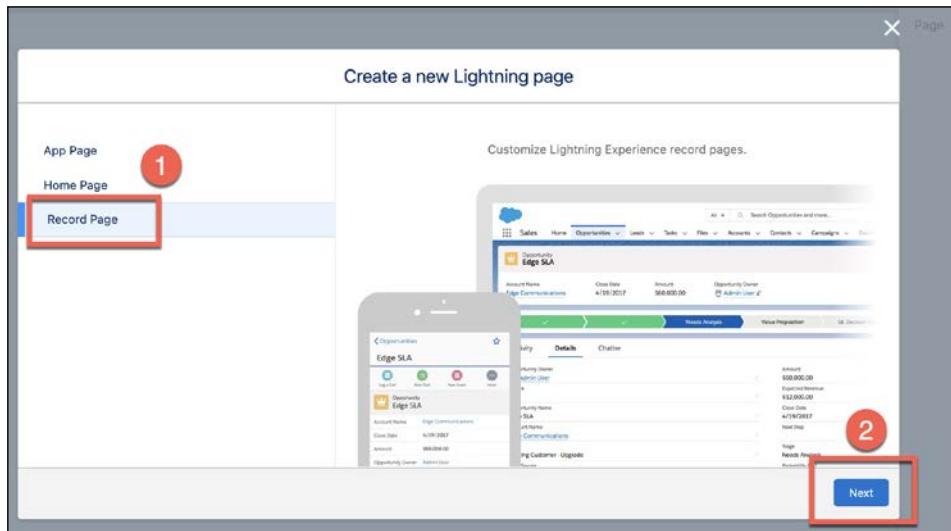


Figure 14.3: Lightning App Builder: Choose Lightning page type

On this page, we will take the following steps:

1. Choose **Record Page**.
2. Click **Next**.

This will take us to the page shown in *Figure 14.4*:

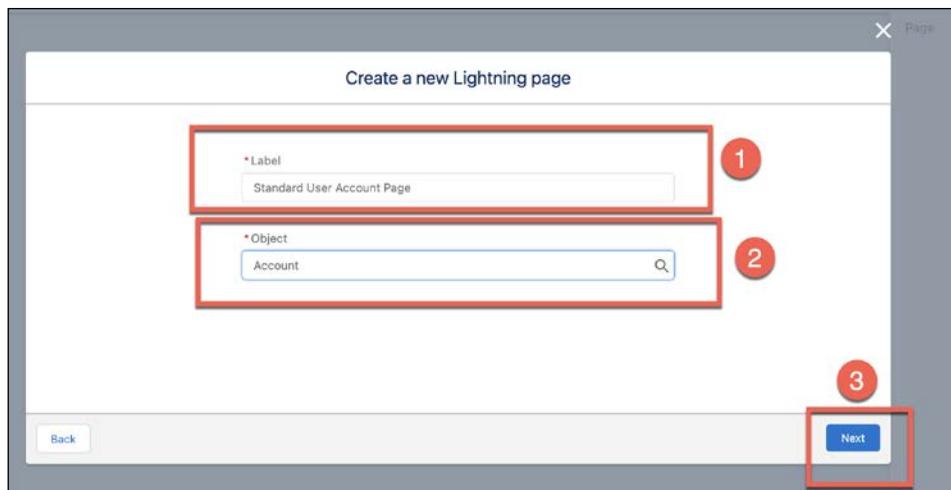


Figure 14.4: Lightning App Builder: Choose label and object

On this page, we will take the following steps:

1. Choose a label for the Lightning page.
2. Choose the object for the Lightning page. In this case, we added the **Account** object.
3. Click **Next**.

This will bring us to the page shown in *Figure 14.5*:

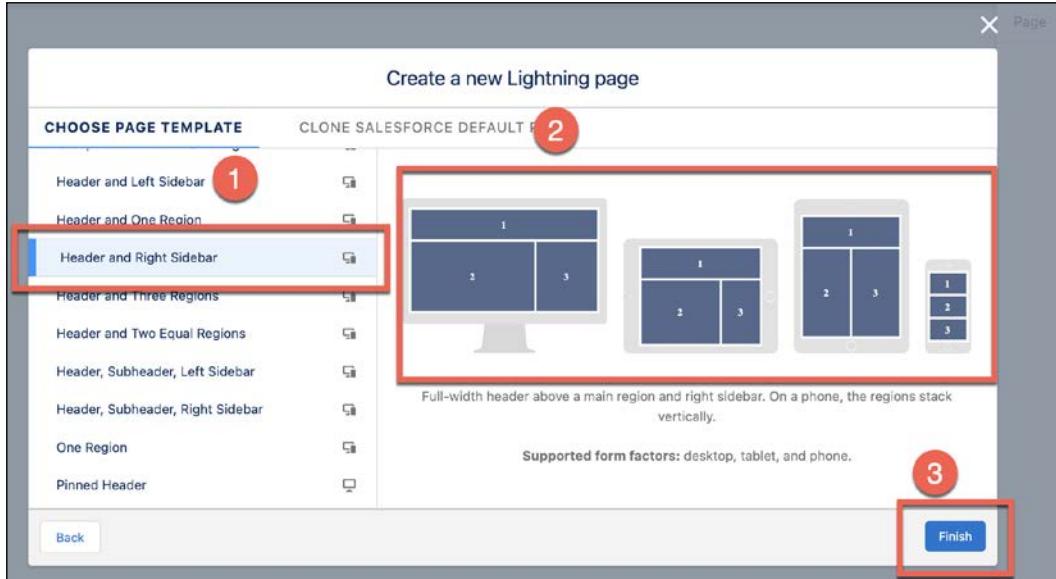


Figure 14.5: Lightning App Builder: Choose a template

On this page, we will take the following steps:

1. Choose the page template.
2. This section shows you how the template will look on different devices.
3. Click **Finish**.

Now that we have created the page, let's look at the sections of the Lightning page configuration page.

Understanding the Lightning page layout

The Lightning page configuration page has three main sections, shown in *Figure 14.6*:

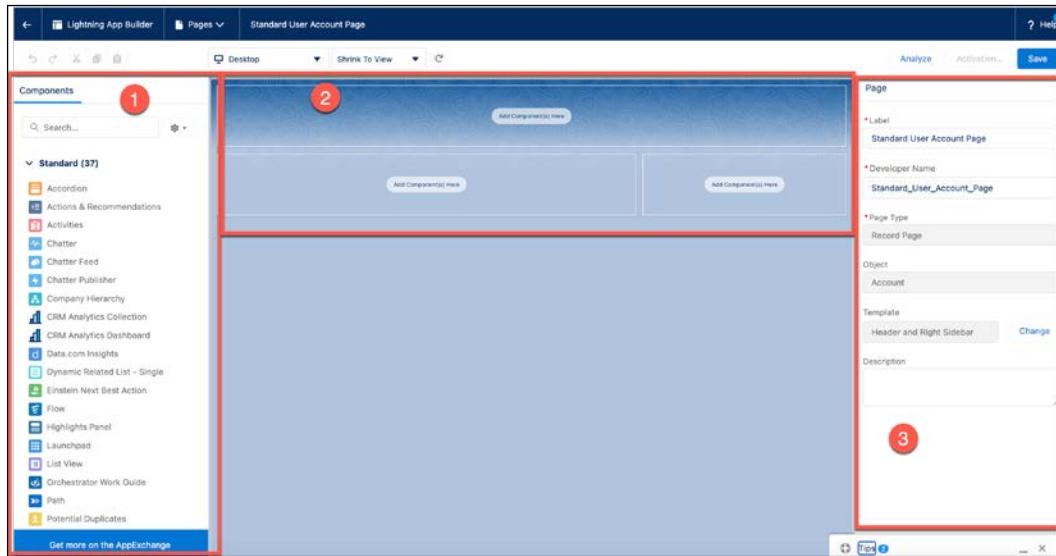


Figure 14.6: Lightning page configuration page

On this page, we see the following sections:

1. This section contains all available standard, custom, and installed third-party components.
2. This section is where you add components to the chosen layout.
3. This is where you customize the chosen component.

Now that we have created the Lightning page, let's finish setting up the Lightning page by adding customizations to meet our requirements.

Using Lightning page components

There are many components available to an admin. These components allow you to add sections to meet various business requirements, such as how to display the details and related items for a record. These components are dragged and dropped onto the available spaces on the template. Let's set this page up for better usability. We will add a highlights section to the top of the page, shown in *Figure 14.7*:

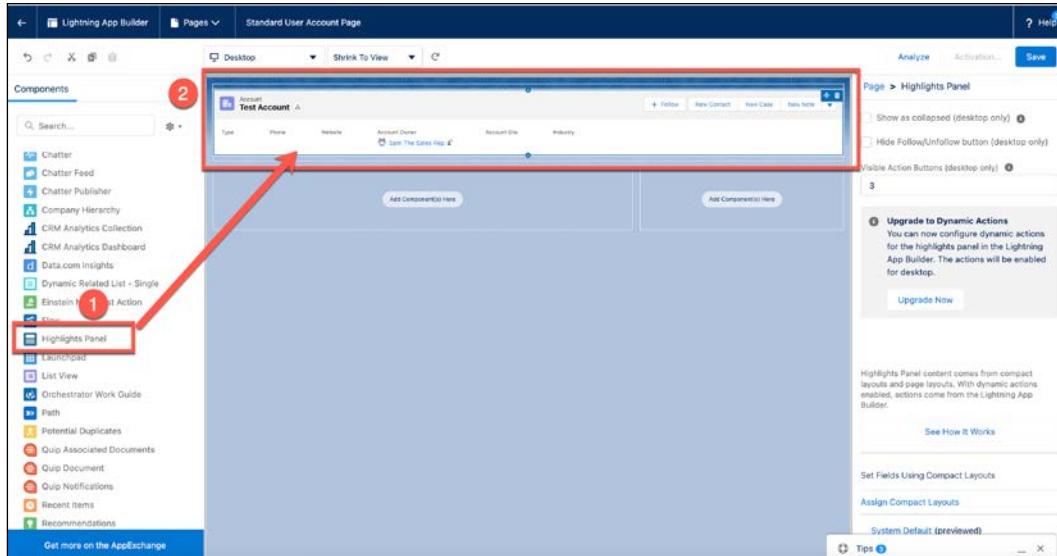


Figure 14.7: Highlights panel

Now, we can take the following steps:

1. Choose the **Highlights Panel**.
2. Drag and drop the **Highlights Panel** onto the top space.

Next, let's add the **Related** and **Details** sections. This will require a few steps, as shown in *Figure 14.8*:

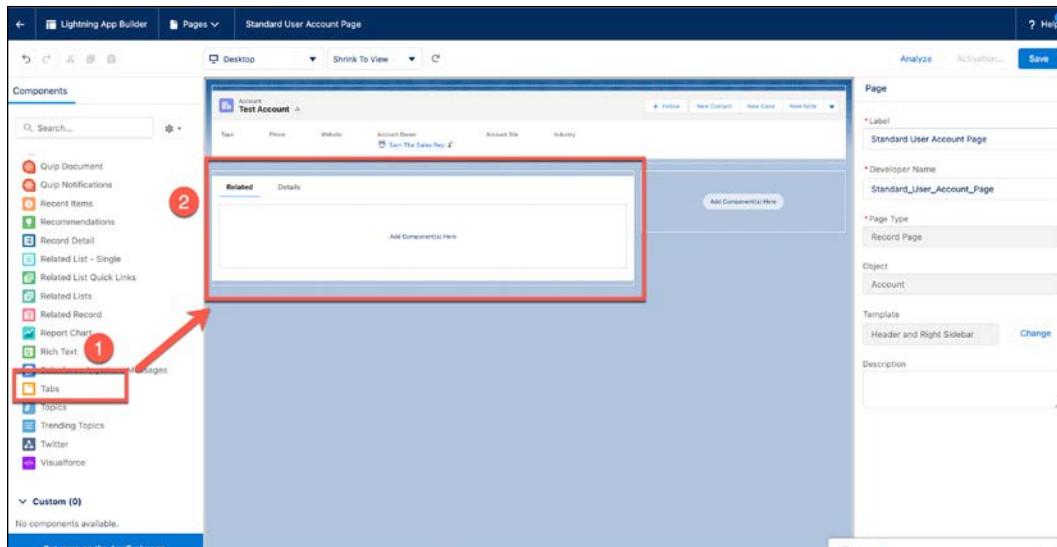


Figure 14.8: Add tabs

The numbers in the preceding screenshot corresponds to the following information:

1. Add the **Tabs** component to the page. This allows you to add multiple tabs to the component.
2. Each tab will have a space to add the component needed for the layout.

Next, we will add the **Related Lists** component, as shown in *Figure 14.9*:

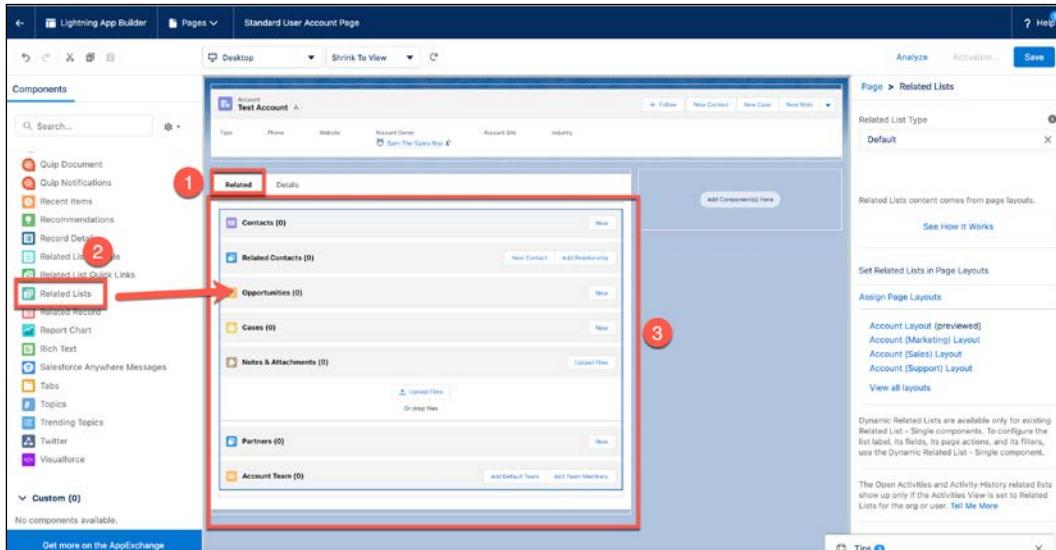


Figure 14.9: Related tab

This allows us to take the following steps:

1. Click on the **Related** tab.
2. Drag and drop the **Related Lists** component into the space.
3. The related lists for the record will now appear on the builder.

Next, let's add the **Details** component, as shown in *Figure 14.10*:

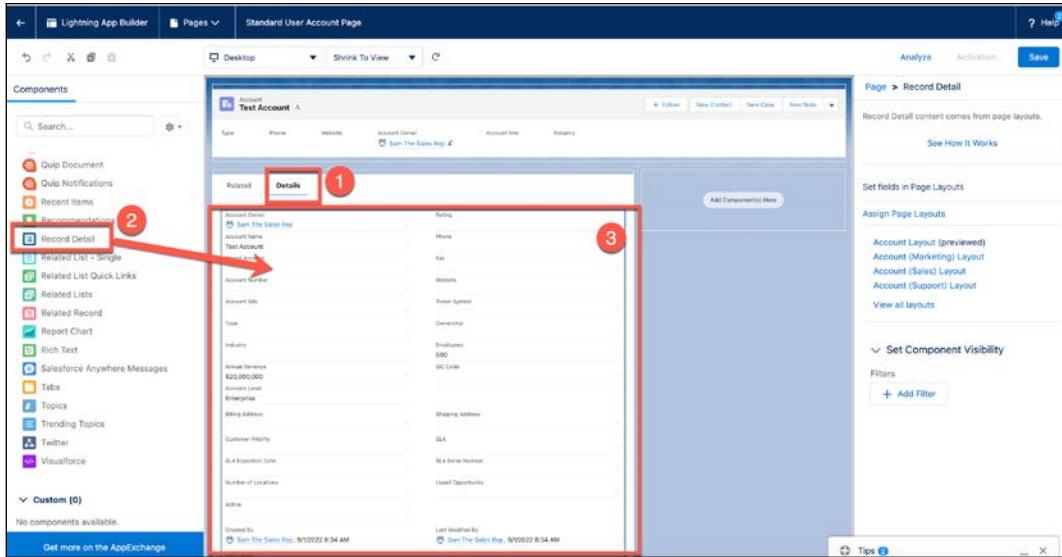


Figure 14.10: Details tab

We can now follow the below steps:

1. Click on the **Details** tab.
2. Drag and drop the **Record Detail** component into the space provided (3).

Now let's set the **Details** tab as the default, as shown in *Figure 14.11*:

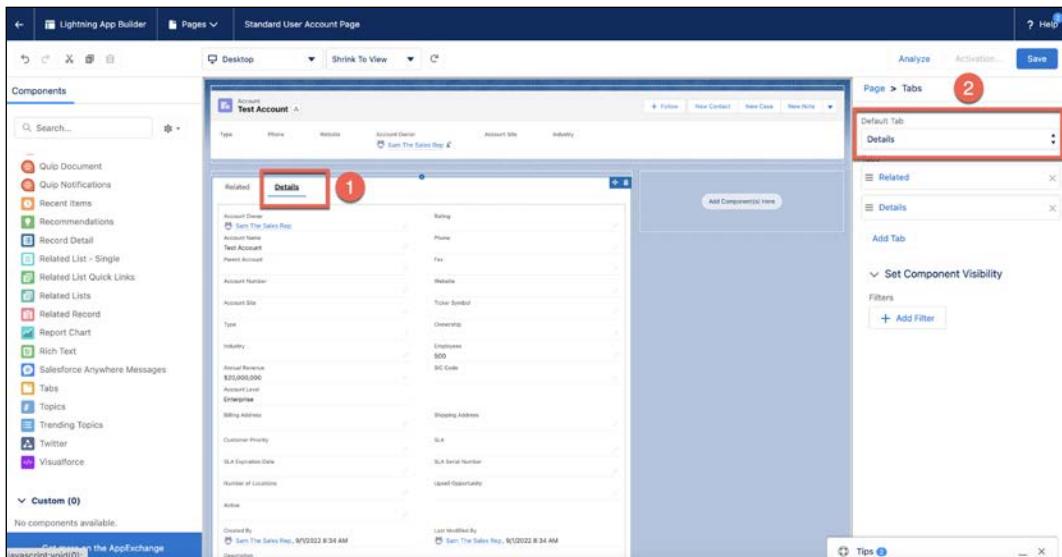


Figure 14.11: Details tab default

Here, we can do the following:

1. Click on the **Details** tab.
2. On the configuration panel, set the default tab to **Details**.

Next, we will add the **Activities** component, as shown in *Figure 14.12*:

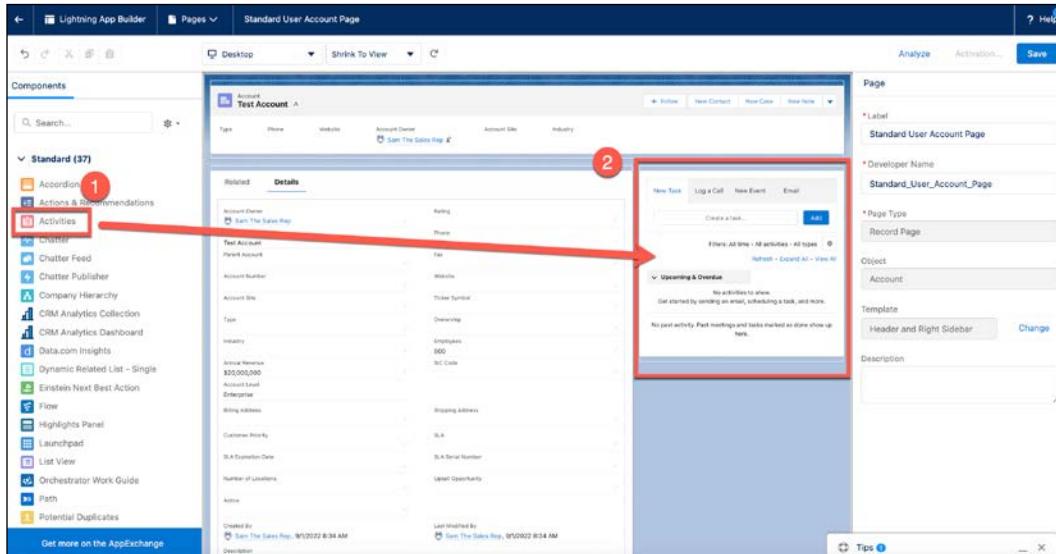


Figure 14.12: Activities component

This allows us to take the following steps:

1. Choose the **Activities** component.
2. Drag and drop the component to the right-side panel.

Now we will add another tab to include the **Chatter** component, as shown in *Figure 14.13*:

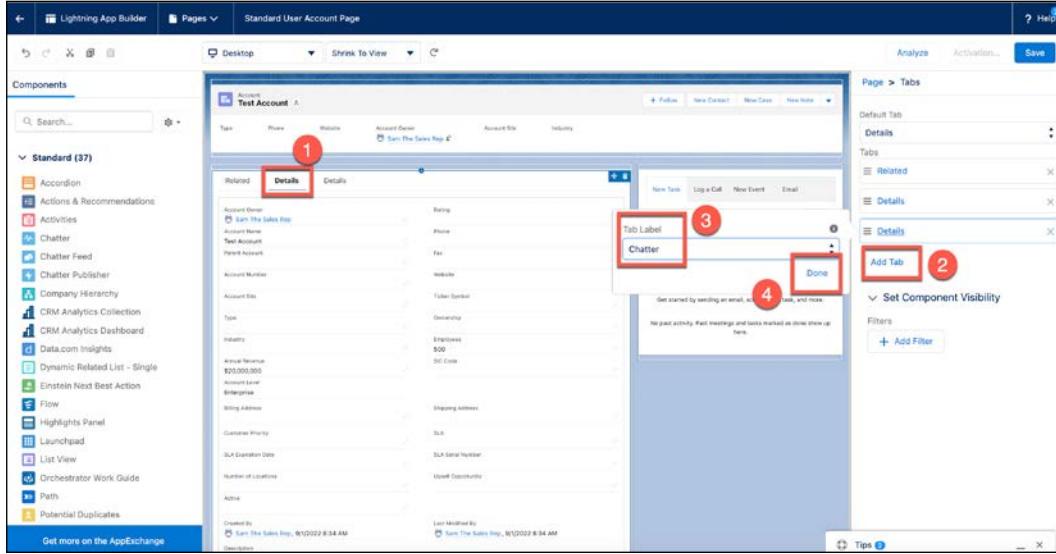


Figure 14.13: Add a new tab

Here, we will do the following:

1. Click on the **Details** tab.
2. Click **Add Tab**.
3. Choose the tab name.
4. Click **Done**.

Now we will add the **Chatter** component to the tab, as shown in *Figure 14.14*:

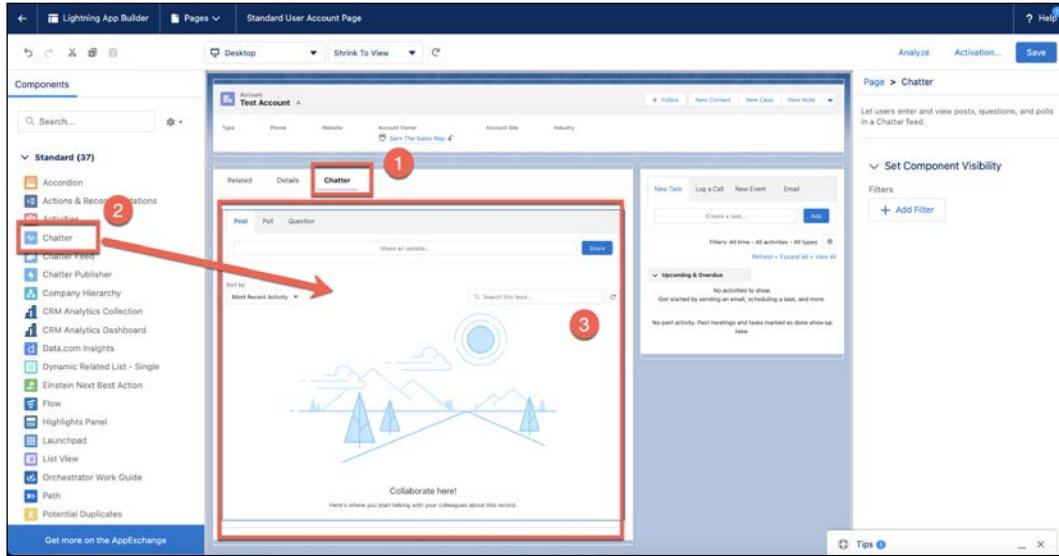


Figure 14.14: Chatter component

We will perform the following steps:

1. Choose the **Chatter** component.
2. Drag and drop the component into the empty space under the **Chatter** tab.
3. The **Chatter** component now shows up in the builder.

Now that we have added all the components, let's activate the Lightning page and assign it to the Standard User profile.

Activating and assigning Lightning pages

Now we will assign and activate this new page, as displayed in *Figure 14.15*:

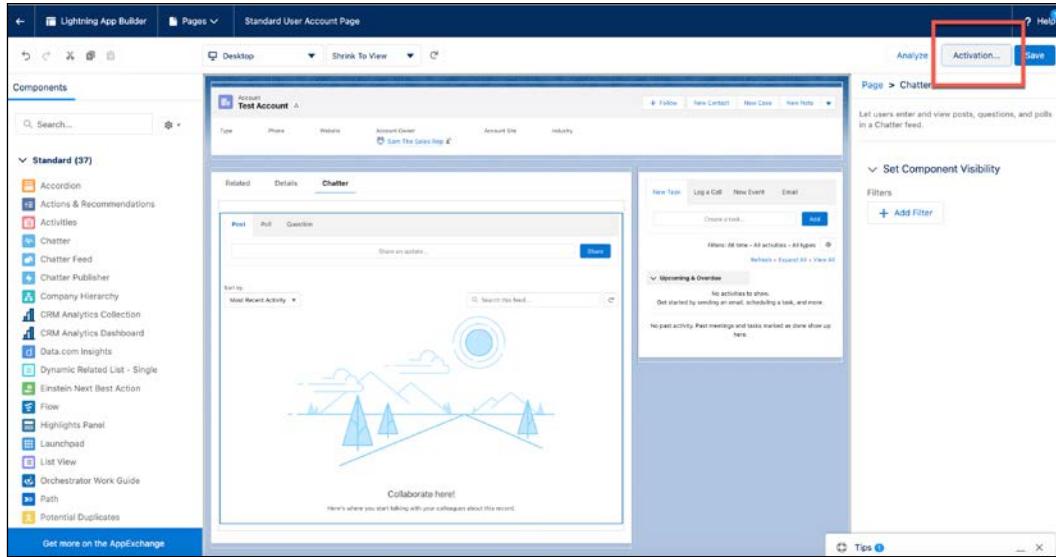


Figure 14.15: Page activation

On this page, click on **Activation**, which will take us to the activation wizard shown in *Figure 14.16*:

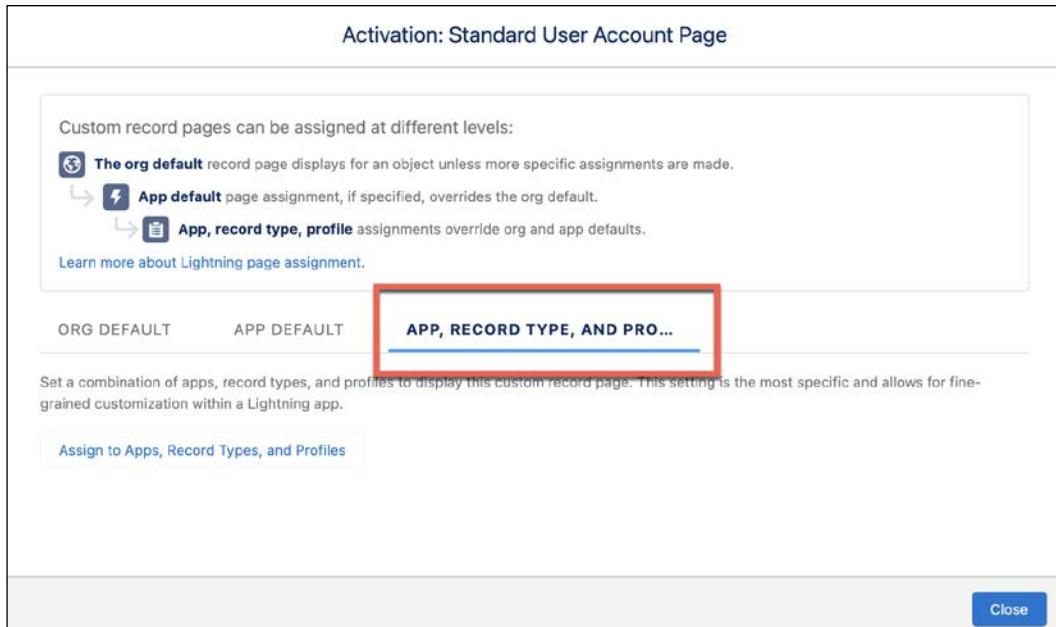


Figure 14.16: Page activation: App, Record Type, and Profiles

On this page, click on APP, RECORD TYPE, AND PROFILE, which will allow you to select apps, as displayed in *Figure 14.17*:

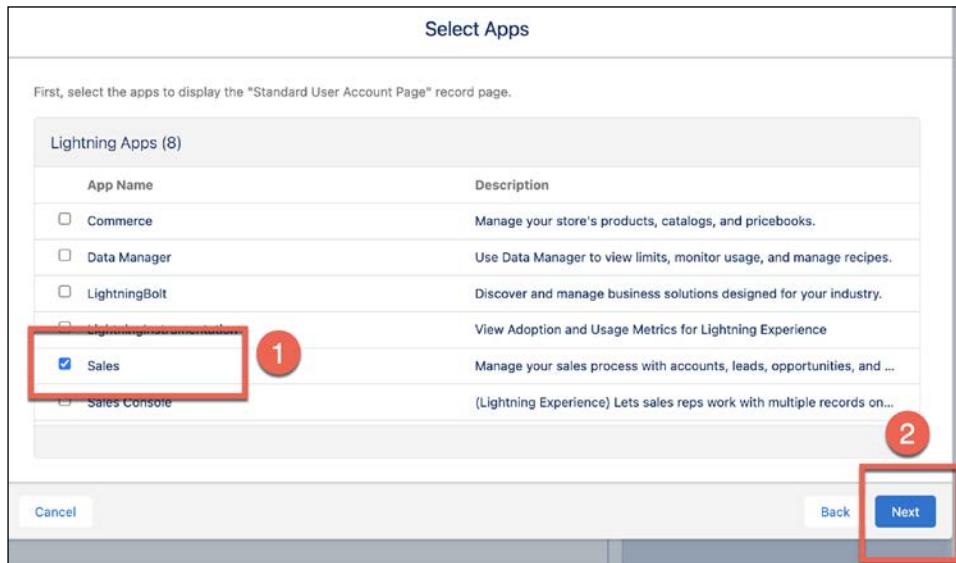


Figure 14.17: Page activation: Select Apps

On this page take the following steps:

1. Choose the **Sales** app.
2. Click **Next**.

This will bring us to the form factor page, shown in *Figure 14.18*:



Figure 14.18: Page activation: Select Form Factor

On this page, we will take the following steps:

1. Choose the form factor to have this page work on **Desktop and phone**.
2. Click **Next**.

This will bring us to the record types page displayed in *Figure 14.19*:

The screenshot shows a configuration interface titled "Selected Record Types". It displays a list of selected record types. There is one item listed: "Master", which has a checked checkbox. The interface includes a header with "Selected Record Types" and a sub-header "Select the record types to display the "Standard User Account Page" record page." At the bottom, there are buttons for "Cancel", "Back", and "Next". The "Next" button is highlighted with a red box and a red circle containing the number 2.

Figure 14.19: Page activation: Selected Record Types

Here, we will take the following steps:

1. Choose the record type.
2. Click **Next**.

This will bring us to the profiles page shown in *Figure 14.20*:

Selected Profiles

Select the profiles to display the "Standard User Account Page" record page.

Profiles (39)	2 Selected
PROFILE	Description
<input type="checkbox"/> Silver Partner User	
<input type="checkbox"/> Solution Manager	
<input type="checkbox"/> Standard Platform User	
<input checked="" type="checkbox"/> Standard User	
<input checked="" type="checkbox"/> System Administrator	
<input type="checkbox"/> Work.com Only User	

Cancel Back **Next**

Figure 14.20: Page activation: Selected Profiles

On this page, we will take the following steps:

1. Choose the **Standard User** and **System Administrator** profiles
2. Click **Next**.

This brings us to the final page, shown in *Figure 14.21*:

Review Assignments

Review the app, record type, profile and form factor combinations that will display the "Standard User Account Page" record page.

Review Assignments (4)					
APP	RECORD TYPE	PROFILE	FORM FACTOR	Current Page	New Page
Sales	Master	Standard User	Desktop	System Default	Standard User Account Page
Sales	Master	System Administrator	Desktop	System Default	Standard User Account Page
Sales	Master	Standard User	Phone	System Default	Standard User Account Page
Sales	Master	System Administrator	Phone	System Default	Standard User Account Page

1

2

Cancel **Back** **Save**

The screenshot shows a table titled 'Review Assignments (4)' with six columns: APP, RECORD TYPE, PROFILE, FORM FACTOR, Current Page, and New Page. There are four rows of data. At the bottom right, there are 'Cancel', 'Back', and 'Save' buttons. A red box highlights the table area, and two red circles with numbers 1 and 2 point to the status message and the 'Save' button respectively.

Figure 14.21: Page activation: Review Assignments

On this page, we will do the following:

1. Review the assignments to make sure they are correct.
2. Click **Save**.

Now that we have assigned and activated the page layout, let's see how it looks for a standard user, as shown in *Figure 14.22*:

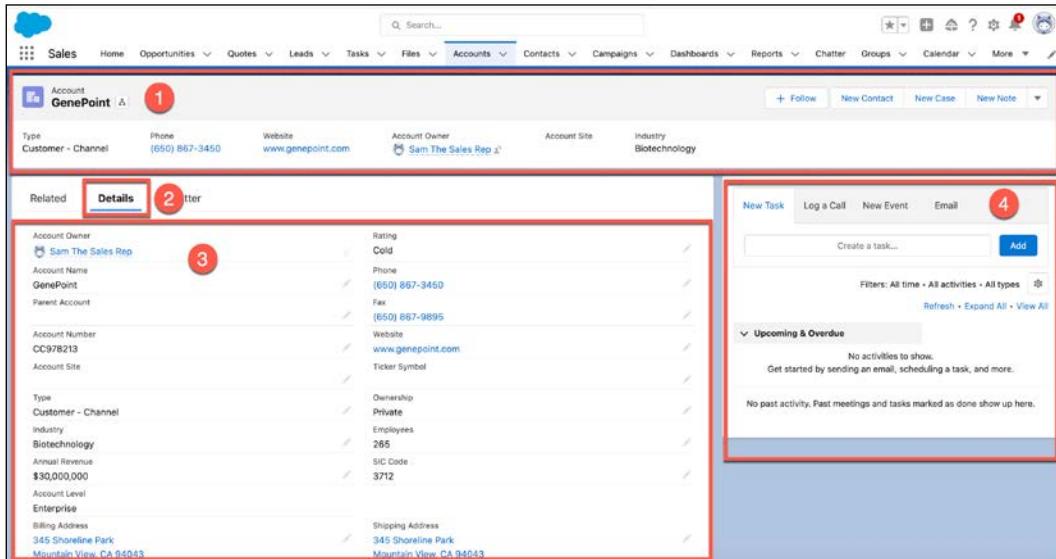


Figure 14.22: Account Lightning page

Let's review the completed page layout:

1. The **Highlights** component is at the top.
2. The **Details** tab is set as the default.
3. We see the **Details** component under the **Details** tab.
4. The **Activities** component is on the right.

The new layout setup is a success!

Summary

In this chapter, we learned how to create Lightning pages. We understood the different sections that make up Lightning page layouts. We added Lightning components to the layout, and finally, we explored how to assign and activate Lightning page layouts.

In the following chapter, we will cover **Approval Processes**.

Questions

1. What are the three types of Lightning pages you can create?
2. What are the three types of Lightning components?
3. How do you add components to sections of the page?
4. What are the three ways you can assign layouts?

Further reading

- *Lightning Pages:* https://help.salesforce.com/s/articleView?id=sf.lightning_page_overview.htm&type=5
- *Build a Custom Record Page for Lightning Experience and the Salesforce Mobile App:* https://trailhead.salesforce.com/content/learn/modules/lightning_app_builder/lightning_app_builder_recordpage

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<https://packt.link/r1ptF>



15

Extending Functionality with Third-Party Applications and Salesforce Mobile

One of the core tenets of organizing a business is not reinventing the wheel. This means that if someone has already built the functionality you are looking to implement, why not use it? In the Salesforce ecosystem, third-party applications serve this purpose. Third-party applications are created and published for installation on Salesforce AppExchange, and they can be free or paid for.

Another popular way of extending the functionality of using Salesforce is through the mobile app.

In this chapter, we will cover the following topics in detail:

- Discovering third-party applications
- Managed and unmanaged package applications
- Salesforce AppExchange
- Installing third-party applications
- Uninstalling third-party applications
- Configuring Salesforce Mobile using a QuickStart

With the help of these topics, you will be able to understand business use cases for third-party applications. You will also find out how to find, install, and uninstall a package. Finally, you will learn how to easily configure the Salesforce mobile app experience. These skills will help the Salesforce admin to become more efficient in finding possible pre-built solutions, as well as help the admin to set up Salesforce Mobile when a functionality is requested by users.

Technical requirements

For this chapter, log in to your development org and follow along as we expand Salesforce with third-party applications and Salesforce Mobile.

Discovering third-party applications

Third-party applications are a way to find and use business-specific functionality that may be needed as an add-on to the Salesforce platform. Think of Salesforce as similar to your iPhone or Android phone. While the platform is robust and delivers a lot of functionality out of the box, some things are not there and must be custom-built or installed as an add-on.

The job of an admin or business analyst is to perform a cost-benefit analysis to determine whether an organization should custom-build functionality or decide to go with a third-party application. There are two types of third-party applications, **managed** and **unmanaged**. We will study them in the following sections.

Managed and unmanaged package applications

Managed package applications are applications that are built by a publisher and the code is *managed*, meaning it is not open source or available for all to see. The intellectual property of the code is protected with a managed package, which also has these other benefits:

- The package can be published and listed on Salesforce AppExchange for free or as a paid option
- The package is upgradeable, meaning the publisher can push an update or allow admins to install an update

Unmanaged package applications are applications that are usually built in a dev org, similar to the one you are using for this book. These packages are open source, meaning all of the code is visible, and are typically not for sale. The unmanaged packages are not upgradeable once installed. These applications are usually used to move functionality from one Salesforce environment to another.



Note that this would be one production Salesforce environment to another production Salesforce environment, since change sets would not work in that use case. See more on change sets in *Chapter 12, Managing Projects with Sandboxes and Change Sets*.

When discussing third-party applications within the context of Salesforce AppExchange, the applications are always managed. Let's see how this works.

Business use case

You are the Salesforce admin for XYZ Widgets. Your executive team wants to make sure Salesforce has maximum adoption and asks you to build a dashboard to track user adoption progress using some key metrics. This will be a big project for you and needs to be prioritized. If only there was a way to make this easier—"Other organizations have to be doing this!" you think to yourself. After doing some research, you find out that Salesforce Labs, a publisher that provides free applications on Salesforce AppExchange, has built this exact dashboard and made it available for free! Let's find it and install it.

Salesforce AppExchange

Salesforce AppExchange is a marketplace for apps that you can find and install on the Salesforce platform. There are both free and paid apps. Let's take a look at how to find an app on AppExchange:

1. Navigate to <https://AppExchange.salesforce.com/>, which takes us to the landing page with a few categories of available solutions, as shown in the following screenshot:

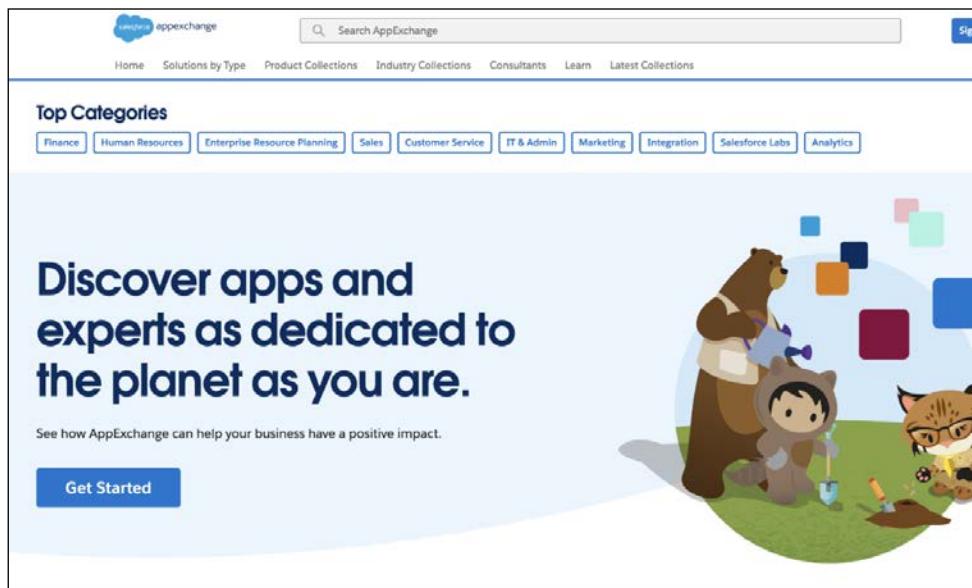


Figure 15.1: Salesforce AppExchange landing page

2. In the search bar, look for a keyword based on our business use case. Here, I have searched for **Adoption** (1). This brought up some options that include the word adoption such as **salesforce adoption dashboards** (2), which is exactly what you need! Refer to the following screenshot for this:

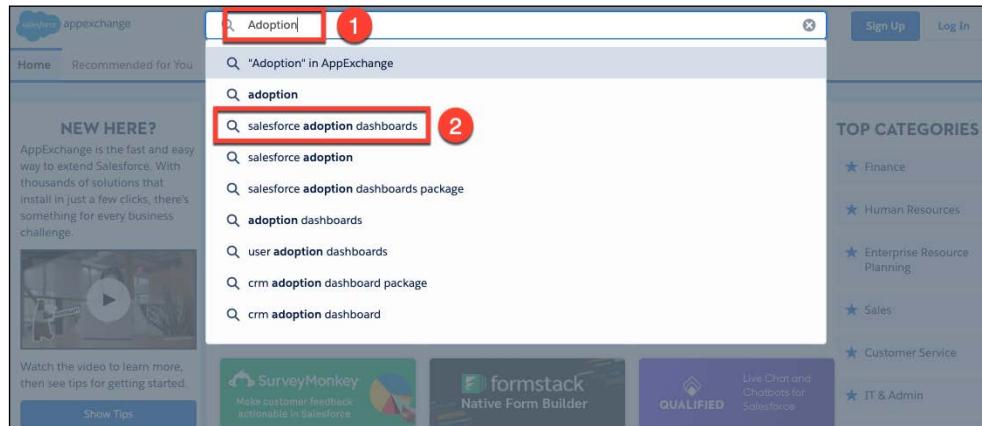


Figure 15.2: Using the AppExchange search bar to find apps

By selecting **salesforce adoption dashboards**, you land on the following screen:

 A screenshot of the AppExchange search results page for "salesforce adoption dashboards". The search bar at the top shows the query "salesforce adoption dashboards". On the left, there are filter panels for "Solution Type" (checked: Apps, Consultants, Content), "Prices" (checked: Free, Paid, Discounted for Nonprofits), and "Editions" (checked: Essentials, Professional, Enterprise, Unlimited, Performance, Force.com, Developer). The main area shows a table of app results. The first result, "Salesforce Adoption Dashboards", is highlighted with a red box and circled with a red number 1. Other results listed include "Salesforce CRM Dashboards", "Salesforce Chatter Dashboards", "Applango for Call Centers", "AppExchange Dashboard Pack for Sales, Marketing and Service", "myFavorites for Salesforce", "BenefitsGuide: Insurance Agency Management", "In-app Guidance: Boost user productivity. Process help. Embedded learning", and "Abaav Performance - Leaderboard, Activity Tracker, Sales Motivation, Coaching".

LISTING	LATEST RELEASE	RATING	PRICE
Salesforce Adoption Dashboards	2/14/2019	★★★★★ (280)	Free
Salesforce CRM Dashboards	6/20/2011	★★★★★ (21)	Free
Salesforce Chatter Dashboards	2/27/2015	★★★★★ (9)	Free
Applango for Call Centers	9/29/2016	★★★★★ (5)	Paid
AppExchange Dashboard Pack for Sales, Marketing and Service	3/15/2009	★★★★★ (24)	Free
myFavorites for Salesforce	9/14/2015	★★★★★ (10)	Paid
BenefitsGuide: Insurance Agency Management	4/17/2020	★★★★★ (18)	Paid
In-app Guidance: Boost user productivity. Process help. Embedded learning	11/3/2017	★★★★★ (20)	Paid
Abaav Performance - Leaderboard, Activity Tracker, Sales Motivation, Coaching	12/18/2019	★★★★★ (1)	Paid

Figure 15.3: Results of using the AppExchange search bar

3. Clicking on **Salesforce Adoption Dashboards** brings us to the following page:

The screenshot shows the AppExchange listing for the 'Salesforce Adoption Dashboards' app. At the top, there's a search bar and navigation links like Home, Recommended for You, Solutions by Type, Product Collections, Industry Collections, Consultants, and Ohana. A 'Sign Up' and 'Log In' button are also present. The main content area shows the app's details: it's free, listed on 10/26/2011, and has a latest release date of 2/14/2019. It has a 4-star rating from 280 reviews. A large green 'Get It Now' button is highlighted with a red border. To the left is a preview of the app's interface, which includes several dashboards showing user login statistics and key feature adoption trends.

Figure 15.4: Selecting an app in the AppExchange

This is the Salesforce Labs app you were looking for! After reading some reviews and checking the great ratings, you decide to install this app.

Installing third-party applications

Now that we have found the app we're looking for, we decide to install it. Since we are working in a dev org, we will install it in production, since a dev org is considered a production org.



You would normally install an app in a sandbox so that you could test it first, if you were working in a paid Salesforce production org.

Let's take a look at how to install the app:

1. In the following screenshot, you can see the page you are brought to when you click on **Get It Now**:

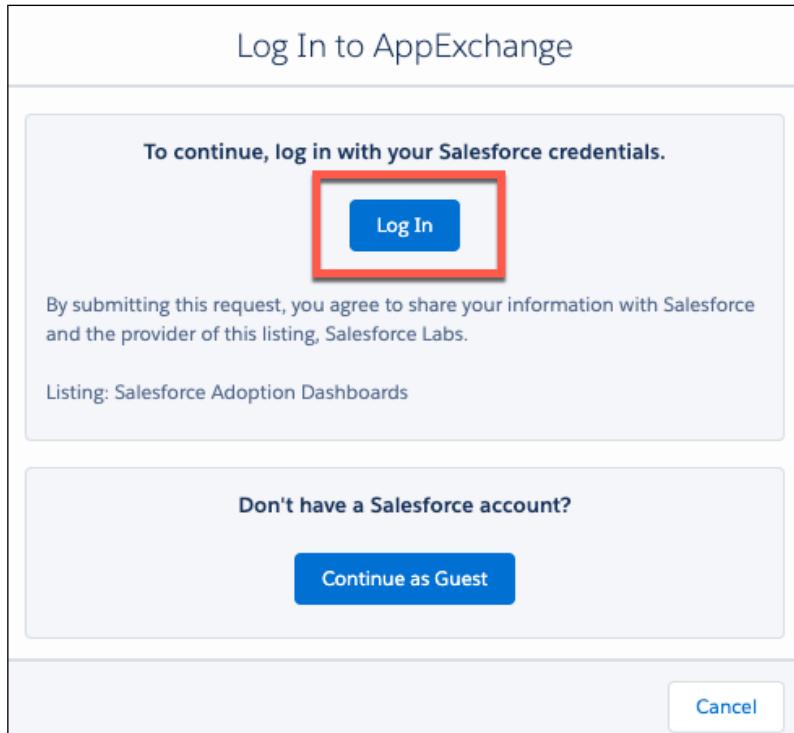


Figure 15.5: Logging in before installing an app

Here, you have the option to log in using Salesforce credentials or continue as a guest. We will choose to log in using Salesforce credentials.

2. Once logged in with your Salesforce credentials, you have the option to **Install in Production** or **Install in Sandbox**. We chose to install this app in production since we are using a dev org, as shown in the following screenshot:

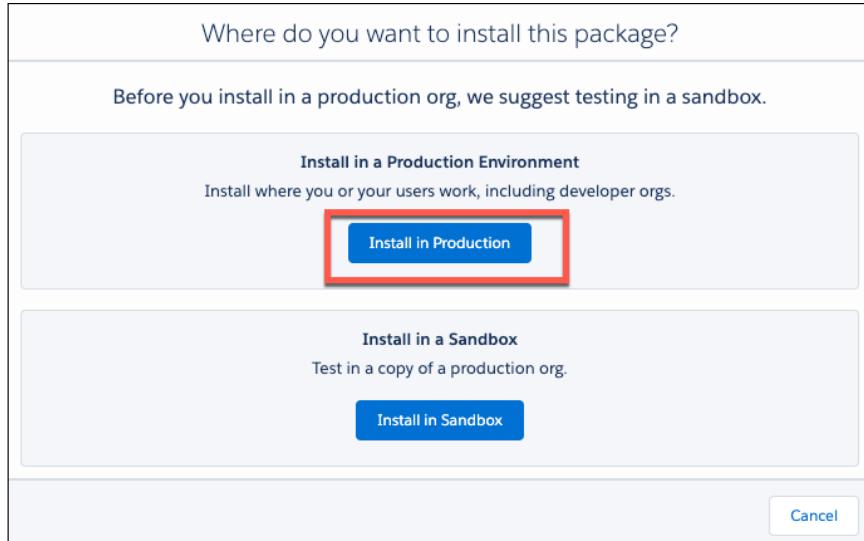


Figure 15.6: Installing an app in production for a development organization

After choosing **Install in Production**, we are brought to the following screen:

The screenshot shows the "Confirm Installation Details" screen. It displays installation details such as Package (Salesforce Adoption Dashboards), Version (1.6 / 1.6.0), Subscription (Free), Duration (Does Not Expire), Organization (Agile Cloud Consulting), and Number of Subscribers (Site-wide). Below this, it lists profile details: First Name (Sharif), Last Name (Shaalan), Job Title (CEO), Email (sharif.shaalan@agilecloudconsulting.com.book), and Phone (9082424180). A section titled "Here are the details we'll share from your profile" includes fields for Company (Agile Cloud Consulting), Country (United States), and State/Province (New York). At the bottom, there is a checkbox labeled "* I have read and agree to the [terms and conditions](#).
1". A note states: "Salesforce.com Inc. is not the provider of this application but has conducted a limited security review. Please [click here](#) for detailed information on what is and is not included in this review." There is also a checkbox for "Allow the provider to contact me by email, phone, or SMS about other products or services I might like". The "Confirm and Install" button is highlighted with a red box and a red circle containing the number 2.

Figure 15.7: Terms and conditions for installing an app

3. After agreeing to the terms and conditions (1), click on **Confirm and Install** (2).

This brings us to the following screen, where we can choose whom to install the application for. I chose **Install for All Users** (1) and clicked **Install** (2):

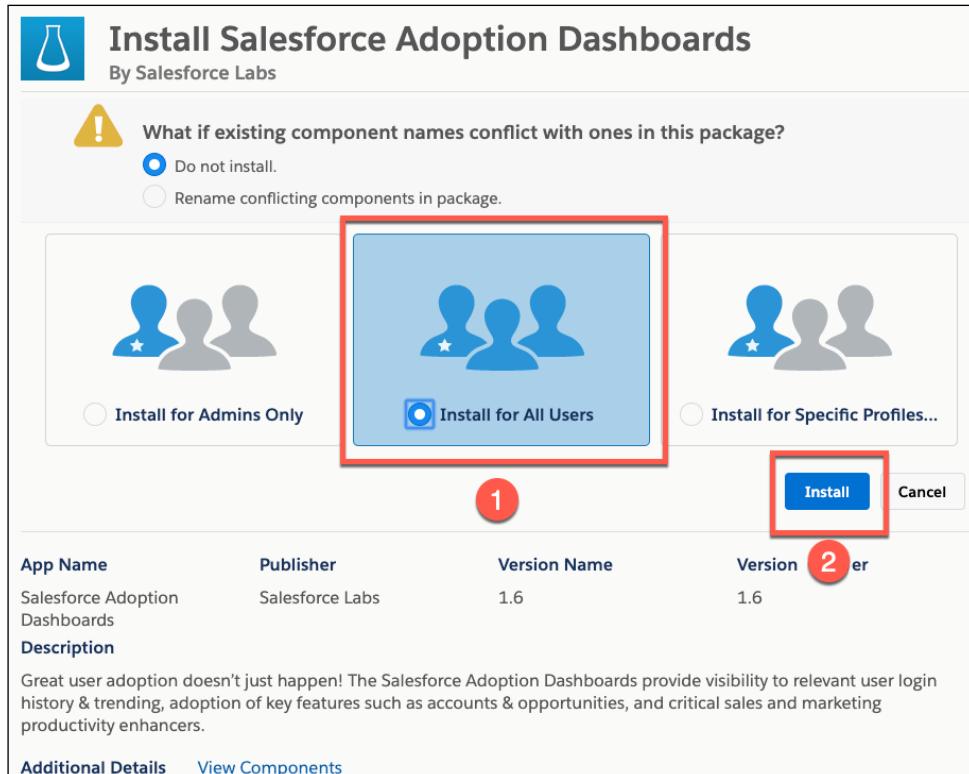


Figure 15.8: Selecting the users we will install the app for

Installing it will bring up the following screen, which will last a few minutes at most:

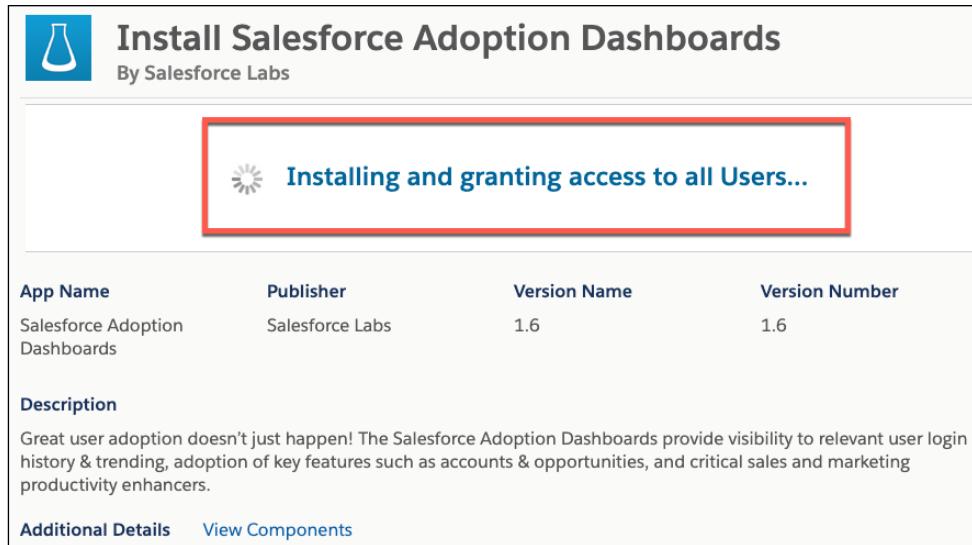


Figure 15.9: Loading screen for app installation

Sometimes it will time out and give you a message that you will be emailed when the installation is complete, if it is a big package.

- Once the installation is complete, you will see the following screen:

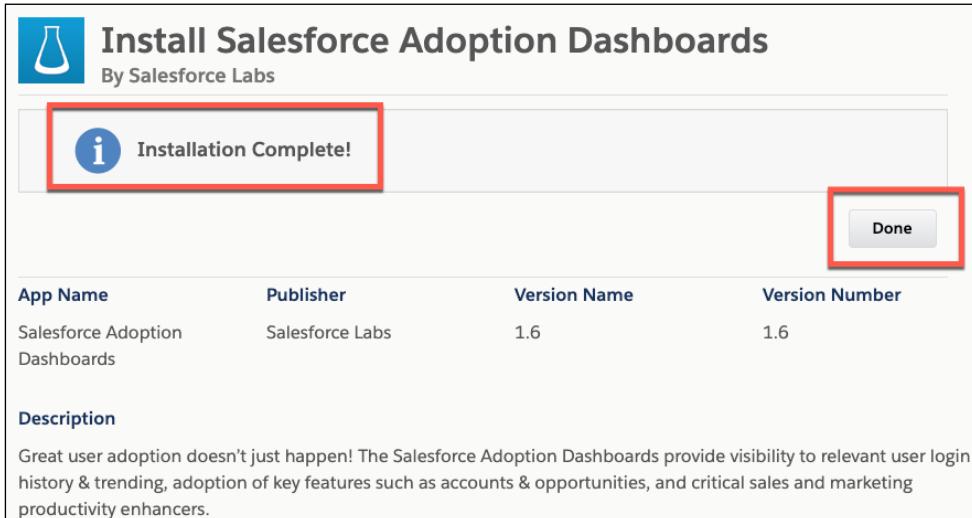


Figure 15.10: Finishing installation of an app

Now that the package is installed, clicking on **Done** will bring you to the following screen:

The screenshot shows the Salesforce Setup interface. The left sidebar includes links for Setup Home, Lightning Experience Transition Assistant, New Salesforce Mobile App QuickStart, Lightning Usage, ADMINISTRATION (with sub-links for Users, Data, Email), PLATFORM TOOLS, and Apps (with sub-links for App Manager, AppExchange Marketplace, and Connected Apps). The main content area is titled "SETUP" and "Installed Packages". It contains a section titled "Installed Packages" with a sub-section for "Salesforce Adoption Dashboards" by "Salesforce". A red box highlights the "Salesforce Adoption Dashboards" link. Below this, there is a section titled "Uninstalled Packages" with the message "No uninstalled package data archives".

Figure 15.11: List of installed packages

The package has now been installed under the **Installed Packages** section. Clicking on the package name will allow you to see the package components such as **Tabs**, **Custom Fields**, **Custom Page Layouts**, **Apex Classes**, or any other components that are included in the installed package.

Let's take a look at the installed dashboard:

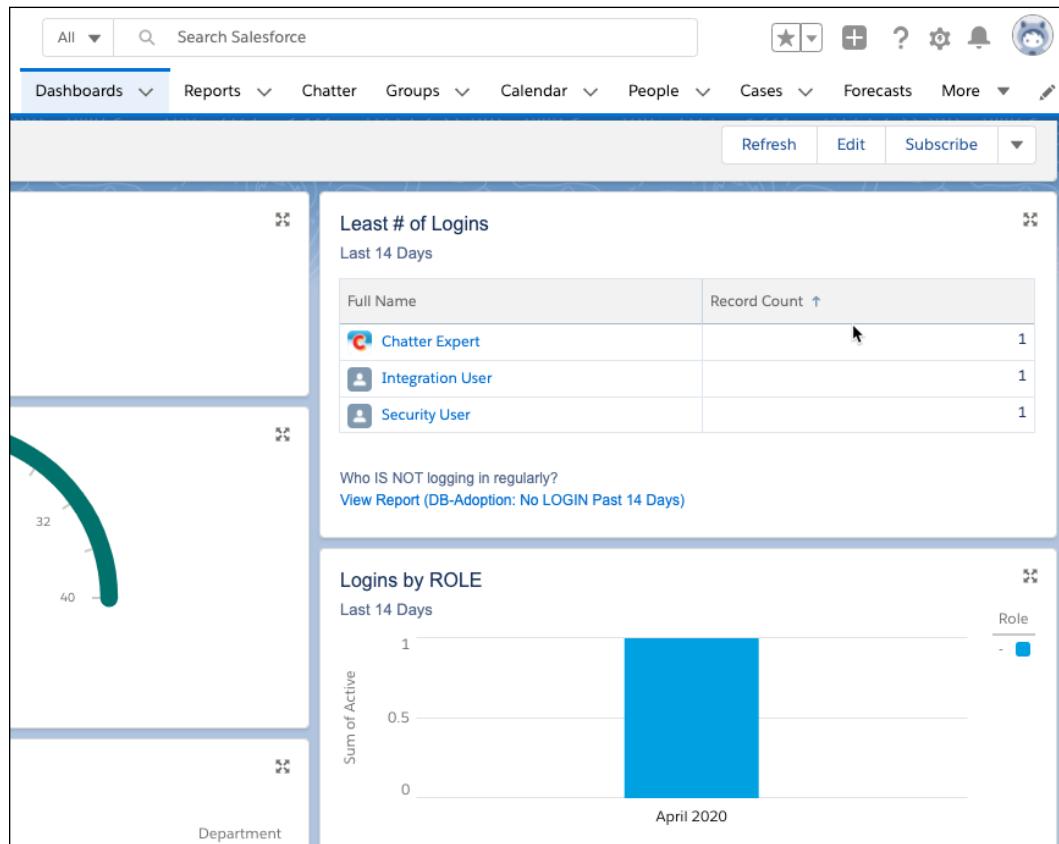


Figure 15.12: Installed package for a dashboard appearing under the Dashboards tab

The user adoption dashboard now shows up for all users. Now, let's take a look at how to uninstall the package if you ever need to do so.

Uninstalling third-party applications

To uninstall an application, navigate to the **Setup** section. Then follow these steps:

1. In the following screenshot, you can see I typed **Installed** in the **Setup** search bar to bring up the **Installed Packages** section (1):

The screenshot shows the Salesforce Setup interface. In the top left, there's a search bar with 'ins' typed into it. Below the search bar, the 'Setup' tab is selected. On the left, a sidebar menu is open, showing categories like Apps, Feature Settings, Einstein, etc. Under the 'Apps' category, the 'Packaging' section is expanded, and the 'Installed Packages' item is highlighted with a red box (labeled 1). The main content area is titled 'SETUP' and 'Installed Packages'. It contains a sub-section titled 'Installed Packages' with a brief description: 'On AppExchange you can browse, test drive, download, and install pre-built apps and components. Apps and components are installed in packages. Any custom apps, tabs, and custom objects are the other features in setup or as a group by clicking Deploy.' Below this, there's a table titled 'Installed Packages' with one row. The table has columns for 'Action', 'Package Name', and 'Publisher'. The first row shows 'Salesforce Adoption Dashboards' by 'Salesforce'. The 'Action' column for this row is also highlighted with a red box (labeled 2). At the bottom, there's another section titled 'Uninstalled Packages' with the message 'No uninstalled package data archives'.

Action	Package Name	Publisher
Uninstall	Salesforce Adoption Dashboards	Salesforce

Figure 15.13: Returning to the *Installed Packages* page for uninstallation

2. Once you are on the **Installed Packages** page, click **Uninstall** (2).

This will bring you to the following screen where all of the components that are to be uninstalled will appear:

The screenshot shows the Salesforce Setup interface. On the left, there is a sidebar with a search bar at the top containing 'ins'. Below it, the navigation tree is expanded to show 'Installed Packages' under 'Packaging' in the 'Apps' section. Other sections like 'Feature Settings', 'Einstein', and 'User Interface' are also visible. On the right, a large list titled 'Installed Packages' displays a long list of packages, many of which are underlined, suggesting they are links. At the bottom of this list, there are three checkboxes:

- Save a copy of this package's data for 48 hours after uninstall
- Do not save a copy of this package's data after uninstall
- Yes, I want to uninstall this package and permanently delete all associated components

A red box highlights the 'Uninstall' button at the bottom of the list.

DB-Adoption: OPPTYS w/o Fields Populated	
DB-Adoption: Count of OPPTYS	
DB-Adoption: Count of OPPTYS last 365	
DB-Adoption: Count of ALL CONTACTS	
DB-Adoption: LEAD Funnel Load Rate	
DB-Adoption: CAMPAIGNS Last 30 Days	
DB-Adoption: CAMPAIGNS by Status	
DB-Adoption: Count of ALL ACCOUNTS	
DB-Adoption: Count of LEADS	
DB-Adoption: New CONTACTS Trend	
DB-Adoption: New LEADS Last 30 Days	
DB-Adoption: New LEADS Trend	
DB-Adoption: New OPPORTUNITIES last 30	
DB-Adoption: New ACTIVITIES Trend	
DB-Adoption: New ACTIVITIES last 30 Days	
DB-Adoption: New ACCOUNTS Last 30 Days	
DB-Adoption: New ACCOUNTS Trend	
DB Lead Age	Lead
DB Competitor	Opportunity
DB Region	User
DB-Adoption: OPPORTUNITIES Trend	
DB Created Date without Time	Lead
DB-Adoption: Neglected OPPTYS	
DB-Adoption: Neglected PROSPECTS	
DB Activity Type	Activity
DB Campaign Tactic	Campaign

Figure 15.14: Full list of apps in the package about to be uninstalled

3. I chose not to save a copy of the package and clicked on **Uninstall**, which brings us to the following screen:

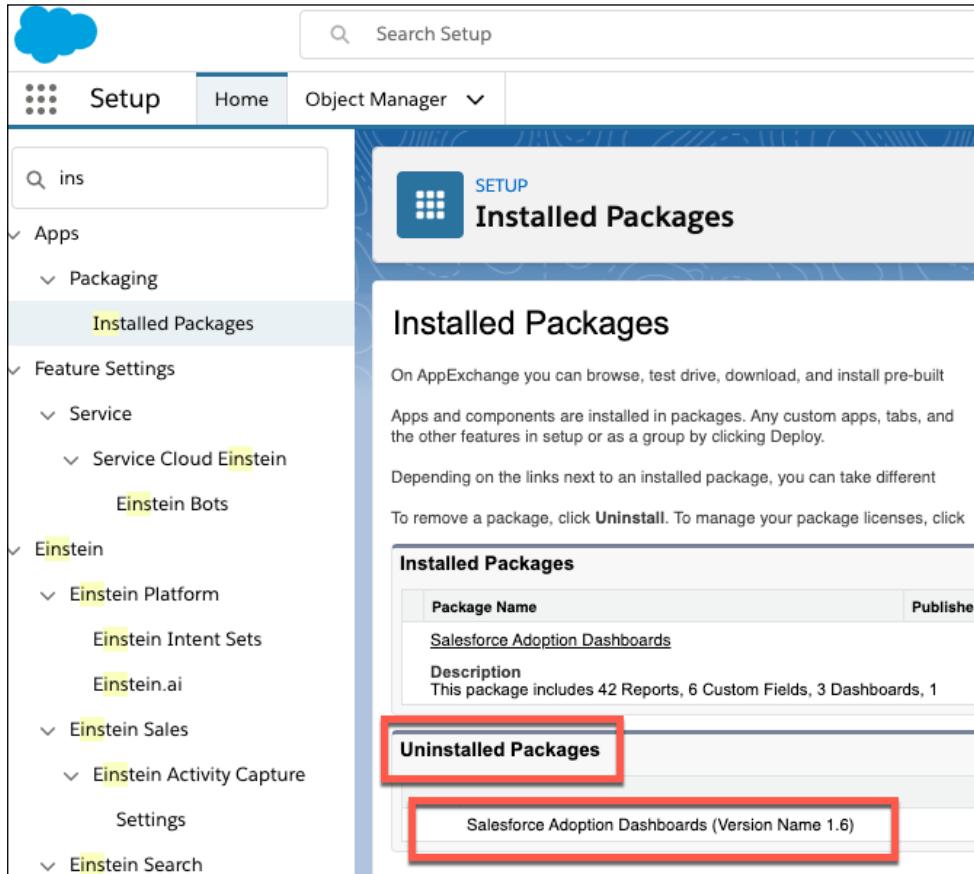


Figure 15.15: Package appearing in the Uninstalled Packages section

As you can see in the preceding screenshot, the package is now uninstalled and shows up in the **Uninstalled Packages** section of the **Installed Packages** page.

Now that you have learned how to find, install, and uninstall a package, let's look at how you would set up Salesforce Mobile for your organization.

Configuring Salesforce Mobile using a QuickStart

In further extending functionality, Salesforce provides a 'QuickStart' to help you set up the mobile app for your users. QuickStart includes a few intuitive configuration sections. So, let's take a look at how to navigate to these sections.

Business use case

As the admin for XYZ Widgets, your users have requested the ability to use Salesforce on their mobile devices. You need to get this up and running quickly for a quick win. This should be very straightforward since Salesforce provides a mobile app out of the box. You go to the mobile app QuickStart to set this up.

Mobile app QuickStart

First, we navigate to the **Setup** section of Salesforce, as shown in the following screenshot:

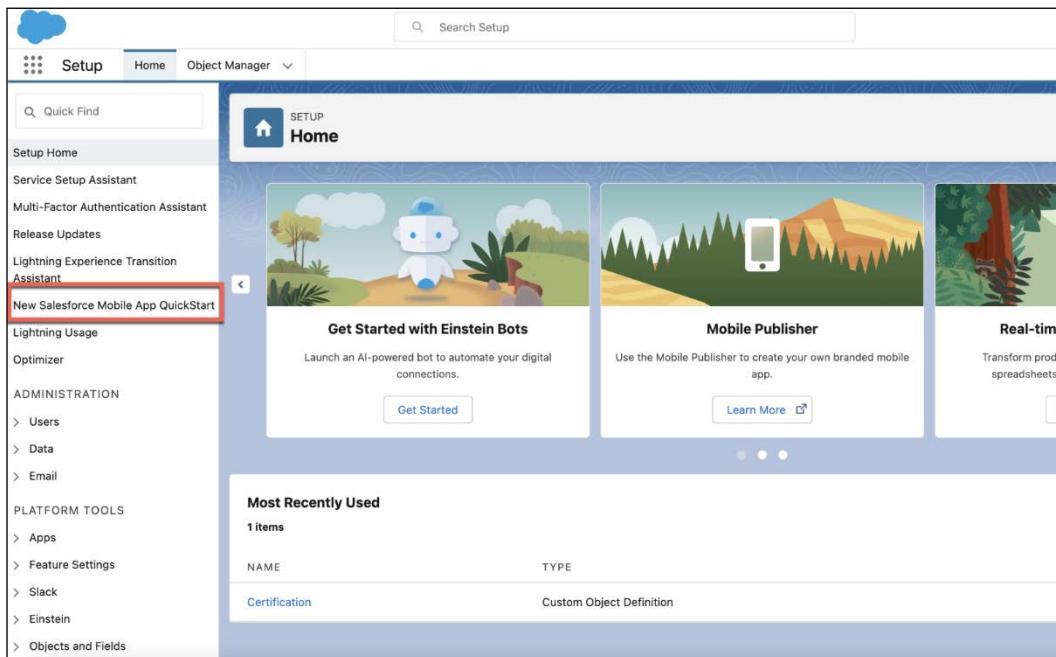


Figure 15.16: Finding the QuickStart on the Setup page

Once in the **Setup** section, click on **New Salesforce Mobile App QuickStart**, as you can see in the preceding screenshot.

There are five sections available in the mobile app QuickStart:

1. The first section shown below gives you an overview of the path to the new Salesforce mobile app:

The Path to the New Salesforce Mobile App

With the new Salesforce mobile app, your users can have a truly seamless experience across desktop and mobile devices. Users will have access to their favorite Lightning apps, improved navigation, and deeper functionality on every page.

With the new Salesforce mobile app, you can:

- **Build Fast:** Build Lightning apps, pages, and components once, then make them available on desktop, mobile, or both!
- **Build Custom:** Use Lightning tools to tailor experiences for your mobile users, whether you create a mobile-only experience or simply hide components that don't make sense for mobile.
- **Empower Users:** Put users in control of their workflows with desktop navigation personalizations that sync with mobile.

To get started with the new Salesforce mobile app, follow the steps on this page.

Figure 15.17: Getting started page on QuickStart for the mobile app

2. The second section shown below provides a video and recommended Trailhead module before getting started:

Learn About the New Salesforce Mobile App

Find out how the switch will benefit your users. You can also visit a new Trailhead module for an overview of the new experience: [Lightning Experience for Salesforce Mobile App](#)

Figure 15.18: Introductory video and link to a module for Salesforce Mobile

3. The third section provides two options:

Enable Your Customizations for Mobile

Update Your Lightning Apps for Mobile

Add the phone form factor to your apps using our transition tool.

This tool updates all your Lightning apps at once. Or you can update apps individually in the App Manager. [Go to the App Manager](#)

Update Your Pages for Mobile

After you update your apps, use this tool to add the phone form factor to your desktop-assigned pages.

This tool updates all your desktop-assigned pages at once. Or you can update pages individually in the Lightning App Builder. [Go to the Lightning App Builder](#)

1 [Launch the Tool](#)

2 [Launch the Tool](#)

Figure 15.19: Customization options for mobile

Let's look at each of these options:

- **Update Your Lightning Apps for Mobile (1).** This tool updates all your lightning apps at once, or you can update apps individually in the App Manager. This is done to ensure that the apps are mobile-compatible.
- **Update Your Pages for Mobile (2).** This tool will add the phone form factor to your desktop-assigned pages. This tool updates all your desktop-assigned pages at once or you can update pages individually in the Lightning App Builder. We covered Lightning pages in more detail in *Chapter 14, Lightning Experience Customization*.

4. The fourth section below allows you to set the recommended tablet app experience:

Tablet App Experience

The tablet app experience you select applies to all users in your organization when they are using the downloadable Salesforce Mobile App on an iPad or Android tablet. We recommend using the Lightning on tablet experience as it is optimized and tailored to run Lightning apps on a tablet form-factor.

For more details on each experience, please read [Salesforce Mobile App Considerations for Tablets](#) and [Legacy Tablet Experiences Retirement](#).

Select a tablet app experience

Lightning on tablet (Recommended)

Lightning on tablet: single-column (Retiring Soon)

Legacy Salesforce1 (Retiring Soon)

[Save](#)

If you change the tablet app experience and you are already logged in, restart the app twice from a cold state and the new experience will take effect.

Figure 15.20: Display options for Salesforce Lightning on tablet

5. The final section below includes the three final options for setting up your mobile app:



Figure 15.21: Additional tools and info for Salesforce Mobile

There are three areas of note in this section:

- **Navigation Menu (1):** This allows you to control the default navigation for the new Salesforce mobile app
- **Additional Customization and Setup Tools (2):** This section allows you to configure **Branding** and **Notification Options**
- **Learn More in Salesforce Help (3):** This section has more Salesforce resources to use as needed

After going through these sections, you will have what you need to launch Salesforce Mobile for your users! Let's take a look at what the mobile app looks like. The following screenshot shows the mobile login screen:

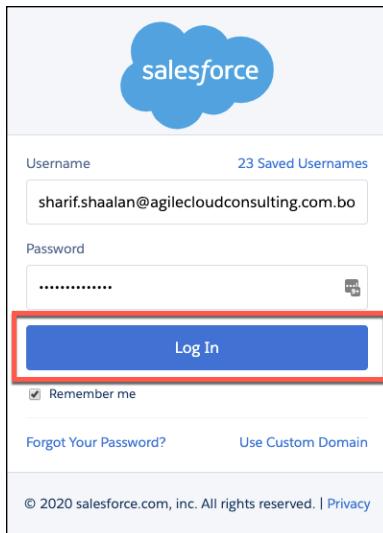


Figure 15.22: Launching the mobile app

After logging in, I have been taken to the following screen:

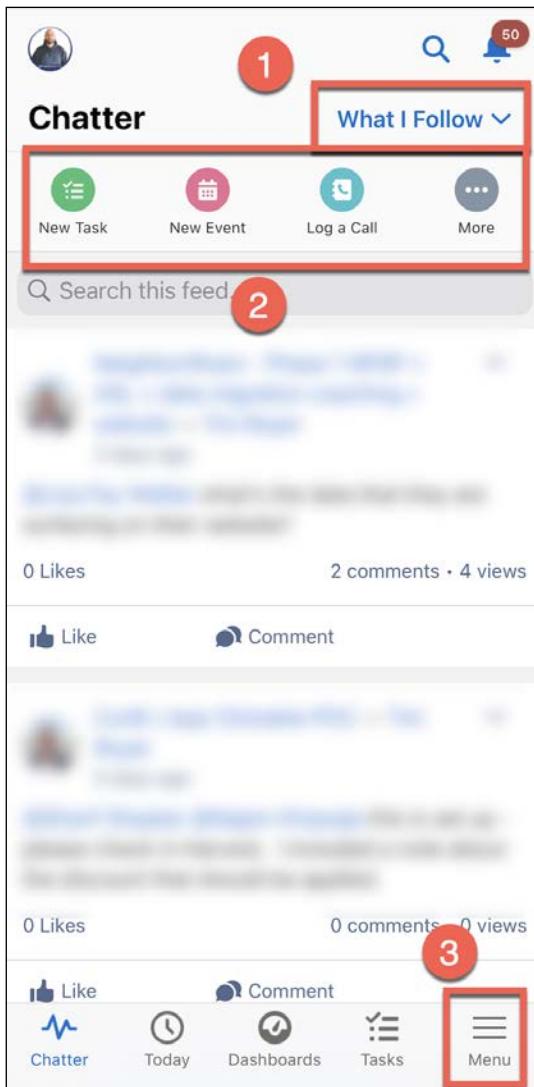


Figure 15.23: Landing page of the mobile app

There are several sections on the mobile app landing page:

- **What I Follow (1):** This section shows the latest activity on records you follow in Salesforce through Chatter.
- The actions at the top (2) allow you to take the same actions you would when using Salesforce Desktop.

- Clicking on the **Menu** icon (3) on the bottom-right takes you to the following screen:

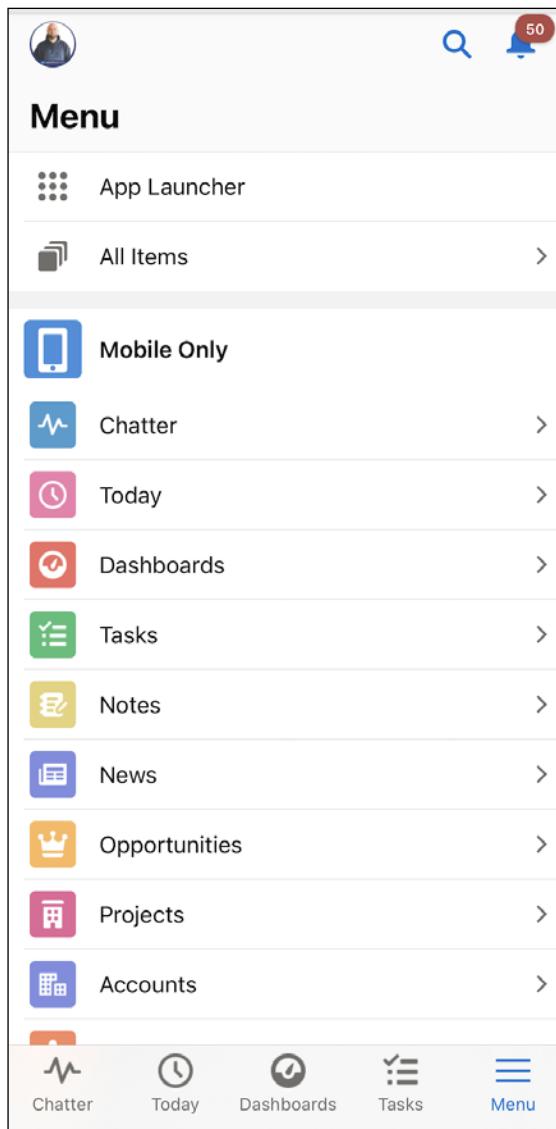


Figure 15.24: Opening the app navigation pane

This section allows you to navigate to any of the objects you have access to in Salesforce, and to the records on those objects.

Now that we have set up Salesforce Mobile and seen how the screens look, let's summarize what we have learned in this chapter.

Summary

In this chapter, we learned how we can expand the functionality of Salesforce with third-party applications. We learned that there are two types of applications, managed and unmanaged, and we covered the use cases for using each of these. We gained the skills needed to find an application and install it, and we learned how to uninstall the application if needed.

We also learned how to extend the usability of Salesforce with the mobile app QuickStart. We learned how to get to the QuickStart and then explored the different sections included in the QuickStart to configure the mobile experience.

This concludes the administration section of this book. Our final section will cover how we can use Salesforce for automation, starting with workflows in the next chapter!

Questions

You can now answer the following questions:

1. What is a use case for an unmanaged package?
2. What is the benefit of using a managed package?
3. What is the name of the Salesforce marketplace where you can find apps?
4. What are some of the access options you can grant when installing a package?
5. What option do you have when uninstalling a package?
6. What is the best way to set up Salesforce Mobile for your users?

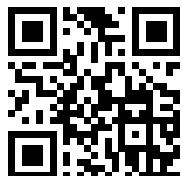
Further reading

- Understanding packages: https://help.salesforce.com/articleView?id=sharing_apps.htm&type=5
- Salesforce AppExchange: <https://AppExchange.salesforce.com/>
- Getting started with the mobile app: https://trailhead.salesforce.com/en/content/learn/modules/salesforce1_mobile_app/salesforce1_mobile_app_intro

Join our community on Discord

Join our community's Discord space for discussions with the authors and other readers:

<https://packt.link/rLptF>



16

Salesforce Flow

Salesforce Flow is a powerful tool that allows administrators to create automations and guided business processes without having to write code. You can build these powerful automations using a canvas called **Flow Builder**.

In this chapter we will cover:

- Introducing flow types
- Understanding Flow Builder elements
- Testing a flow
- An example of a screen flow
- An example of a record-triggered flow
- Basic best practices

We are just scratching the surface of what is possible with this tool. Flows are the future of admin-built automation, and while Salesforce previously had two other automation tools, called **Workflows** and **Process Builder**, they will be phased out over the coming years.



Salesforce Flow is an important and powerful tool for any Salesforce administrator, so you can expect this chapter to take some more time to complete. Have patience and take breaks as you work through it.

Technical requirements

For this chapter, log in to your development org and follow along with the screenshots provided. When we reach the two example flows in this chapter, it is important that you follow along and build your own flow; this will significantly help familiarize yourself with the process.

What is a flow?

Flows are automations that can be built without having to write code. They consist of series of steps, with branching decision logic, where you can define *when* and *what* you want a system to do. Below, you can see an example of a flow that we will build later in this chapter:



Figure 16.1: Example of a flow

As you can see from *Figure 16.1*, this flow contains steps for an input screen, a decision that splits down two pathways, and an action that is performed before completing. We can also see that the flow consists of various elements, such as **Decision**, **Assignment**, and **Create Records**. These are categories from which we pick the steps a flow will follow – see more about this in *Understanding Flow Builder elements*.

There are several different **flow types** that can be used for different requirements. Salesforce will ask you to pick a flow type before you begin building a flow, so let's go through these now.

Introducing flow types

To begin creating a flow, navigate to **Flows** on the **Setup** page, and click **New Flow**. When you go to create a new flow, you will be prompted to select from several types, as shown in the following screenshot:

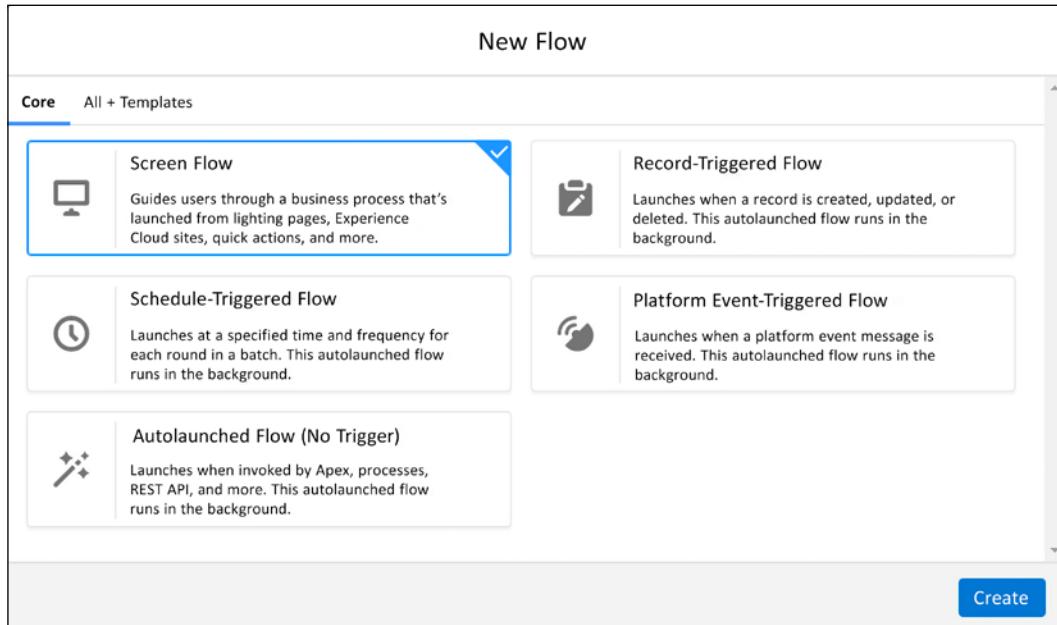


Figure 16.2: New Flow screen displaying several flow types

Each type has its own purpose and may fit different business processes or use cases better. In this chapter, we will show an example of a screen flow and a record-triggered flow, which are the two simplest types that have immediate applicability.

Screen flow

This flow type allows you to display screens to an end user to collect or show information. You can incorporate automations and database modifications within this type of flow. This flow type can be placed on Lightning pages, Experience Cloud pages, or launched from a button. An example would be if you want to quickly allow a user to enter a new account and opportunity on one screen from the Lightning utility bar. We will walk through this example later in this chapter.

Record-triggered flow

This flow type is “triggered” when a record changes. This could be on insert, update, or delete and can occur before or after an insertion or update. In contrast to the previous flow type, you cannot display screens to users in a record-triggered flow. An example of when you would use this flow type would be if you wanted to automatically generate a task for an intro call assigned to the account owner whenever a new account is created. We will walk through this example later in this chapter.



This type of flow is what you would use to replace any processes built with Process Builder and can be a substitute for Apex triggers in the right situations.

When you choose to have a record-triggered flow fire on the creation or update of a record, you can optimize the flow for **Fast Field Updates** or **Actions and Related Records**. **Fast Field Updates** is going to make the modification to the record *before* an insertion or update, whereas **Actions and Related Records** is going to fire *after* an insertion or update. Use **Fast Field Updates** if you are only updating the record that triggered the flow. Use **Actions and Related Records** if you need to do other actions or update other records in the system.

Schedule-triggered flow

A schedule-triggered flow runs on a predefined schedule (once, daily, or weekly) and is useful for when you want to run some sort of operation against a set of records on a regular basis.

Platform event-triggered flow

This is a more advanced flow type that fires based on platform events being published. This flow type is outside the scope of this book and won’t be covered here.

Autolaunched flow (no trigger)

An autolaunched flow can be called by Apex, the REST API, and other flows. It does not have any user-interface elements. This is a more advanced flow type that will not be covered in this book.

Now that we have covered the various flow types to choose from, let's talk about the elements you will see once you reach the Flow Builder. If you remember from earlier, these elements contain all the steps we will need to build a flow.

Understanding Flow Builder elements

After you select your flow type, you will be taken to the Flow Builder canvas where you can add elements by clicking the “+” symbol. Flow elements are all the items you can place within a flow that have different purposes. They represent the “steps” of a flow. As you can see in the following screenshot, they are organized into three main categories:

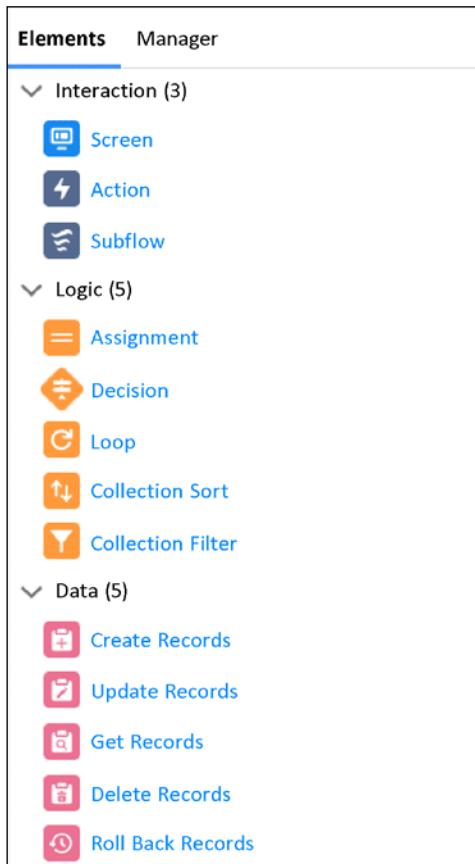


Figure 16.3: Elements pane on the Flow Builder page

In this section, we will go through each of these categories in turn:

- **Interaction** elements are ways that a flow can interact with users or other automations in Salesforce, including Apex classes and other flows.
- **Logic** elements are used to design the path of your flow. These elements are where you will have your business logic to determine what screens users see and what data gets updated.
- **Data** elements are what we use to make changes to Salesforce data.

We will also cover flow resources, which are a separate but related concept to elements. First, let's begin with **interaction** elements.

Interaction

Interaction elements are how flows interact with users (via screens) or other automations within Salesforce. These interactions can be broken down into three elements:

- **Screen:** Flows can present a screen to the user. You can place display text, user inputs, and much more on each screen. These are referred to as **input** or **display** components. Note that this element is only available in screen flows.
- **Action:** These are quick actions, custom Apex actions, and standard actions that can perform more complex tasks. One example is the ability to automatically send an email from a flow using the standard **Send Email** action.
- **Subflow:** You can use this element to call another flow. This is very helpful if you have a lot of complex logic and want to break it into smaller compartmentalized pieces. Utilization of subflows is a more advanced design technique that, while being the best practice for complicated flows, is beyond the scope of this chapter.

The second element type that you can see on the Flow Builder consists of **logic** elements.

Logic

Logic elements are how you define *when* a flow should do *what*. Logic element types include:

- **Assignment:** This is the element you use to assign a value to a variable.
- **Decision:** Decision elements allow you to define the criteria for when to go down different paths of a flow.
- **Loop:** If you have a collection variable (that is, a collection of numbers, strings, or records) and need to loop through them to perform an operation on each one of them, you will use a loop. We will not be covering loops in this book.

- **Collection Sort:** If you have a collection variable and want to sort it by a field within that collection, you will use this element. We will not be covering **Collection Sort** in this book.
- **Collection Filter:** If you have a collection variable and want to filter the collection to a smaller collection based on some criteria, you will use this element. We will not be covering **Collection Filter** in this book.

Next, we will look at the third category of elements visible on the Flow Builder, which consists of **data** elements.

Data

Data elements are used to make changes to the database. Data element types include:

- **Create Records:** This will create a record or records of a specified object. You can create records using a record variable or define individual fields.
- **Update Records:** This will update a record or records of a specified object.
- **Get Records:** This will retrieve a record or records of an object based on specific criteria.
- **Delete Records:** This will delete a record or records of a specified object.
- **Roll Back Records:** This element allows you to “roll back” any data creation, updates, or deletion that have occurred earlier in your flow. This is helpful for error handling but beyond the scope of this chapter.

Now that we have gone through different element types available under the three categories in the Flow Builder, we will turn our attention to flow resources that can be used with these elements.

Flow resources

Flow resources are where you can store and define values to be used within your flow. You can use flow resources within elements. For example, you could use a variable resource in a **Create Records** element to set a field to a specific value. You can create resources on the Toolbox sidebar of the Flow Canvas or directly within Flow elements. There are a bunch of different resource types:

- **Variable:** This is a resource that allows you to store values of many different types (see resource data types in the paragraph after this list). You can set default values for variables and update variables using assignment elements. Global variables are special kinds of variable that are available by default and start with \$. These can include a representation of the record that fired a record-triggered flow, or things like the current date, or information about the user running the flow.

- **Constant:** This is a resource that does not change throughout the flow and can be used in calculations or decision criteria. There are some global constants that you can use, such as `$GlobalConstant.EmptyString`, which represents a blank value, and `$GlobalConstant.True` and `$GlobalConstant.False`, which represent true and false values in a Boolean data type.
- **Formula:** Formulas can be used in assignment and decision elements, as well as in display text on screens or as default values. They allow you to define a dynamic value based on other variable and formula calculations. We will see formulas in action in the *Building the flow* subsection of *Example 2: record-triggered flow* later in this chapter.
- **Text Template:** This is a way to have a rich text template with merge fields from variables in the flow, which can be used for display text or in the body of an email (as an example).
- **Choice:** A choice is the representation of a single choice that can be used in several input components like picklist, radio buttons, and checkbox groups.
- **Collection Choice Set:** A set of choices that represent a collection of records. This is beyond the scope of this chapter.
- **Record Choice Set:** A set of choices that represent a filtered list of records. This is beyond the scope of this chapter.
- **Picklist Choice Set:** A set of choices that is populated by a preexisting picklist or multi-select picklist field on an object.
- **Stage:** Stages can be used in screen flows to enable enhanced navigation using custom components. This is beyond the scope of this chapter.

Flow resources can be of a number of data types including text, record, number, currency, Boolean, date, date/time, picklist, multi-select picklist, and Apex-defined. Record data types represent a record of an object including all of the field values of that record. Apex-defined data types are custom-defined in Apex classes.

Now that we have explored the elements and resources available to us when building a flow, we will look at how we can test a flow before going through two examples of flows in greater depth.

Testing a flow

When building a flow you can use the **Debug** functionality on the Flow Builder to test your flow. This will show you details of how your flow is executed and if any errors are encountered:

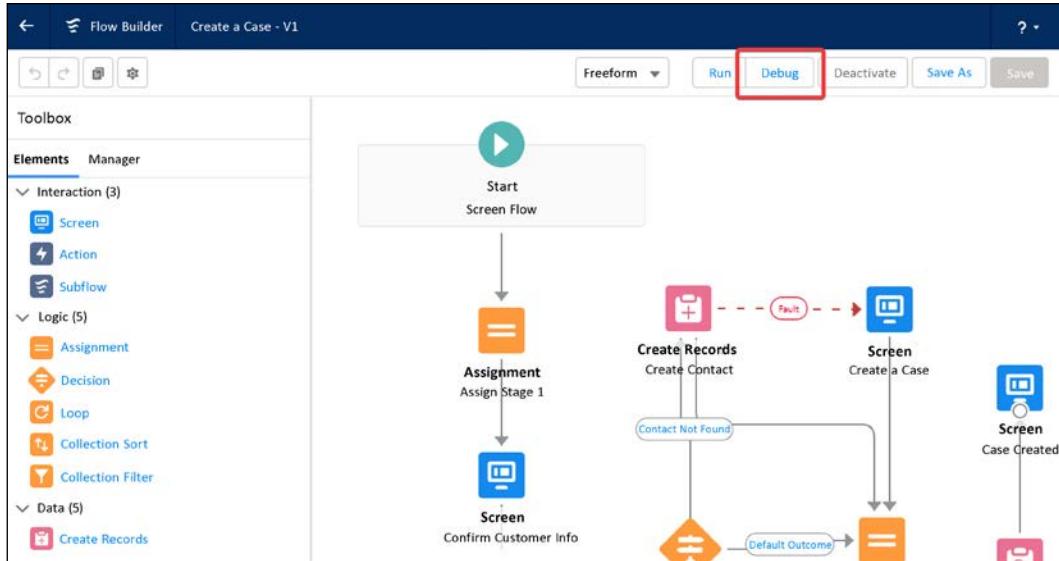


Figure 16.4: Debug button on the Flow Builder page

It will be easier to understand this when we use it on a flow that we have built together, so we will see this in action in the *Testing the flow* sections as we step through some examples.

 A quick note on flow testing: you should always build your flows in a **sandbox** or **developer org** and test them thoroughly before deploying to production. Flows are an extremely powerful tool that can wreak havoc if used incorrectly and not tested.

In the summer '22 release, Salesforce announced **Flow Tests** (in beta), which are point-and-click tests that you can construct in order to test flows in a similar way to developers testing Apex code. This will likely become the best practice over time.

Now that we have covered the basics on flow types, elements, and resources, let's build some flows!

Example 1: screen flow

For both examples, log in to your developer org.

We will build a screen flow that allows a user to quickly enter a basic account and opportunity from one screen.

Business use case

Sales users have been complaining that it takes them too many clicks to enter a new account and associated opportunity. They want to be able to search for an existing account or create a new account and opportunity on one screen, regardless of what tab they are on in the Sales app. To do this, we will create a screen flow and make it accessible from the utility bar.

Building the flow

1. In **Setup**, navigate to **Flows** and click on **New Flow**:

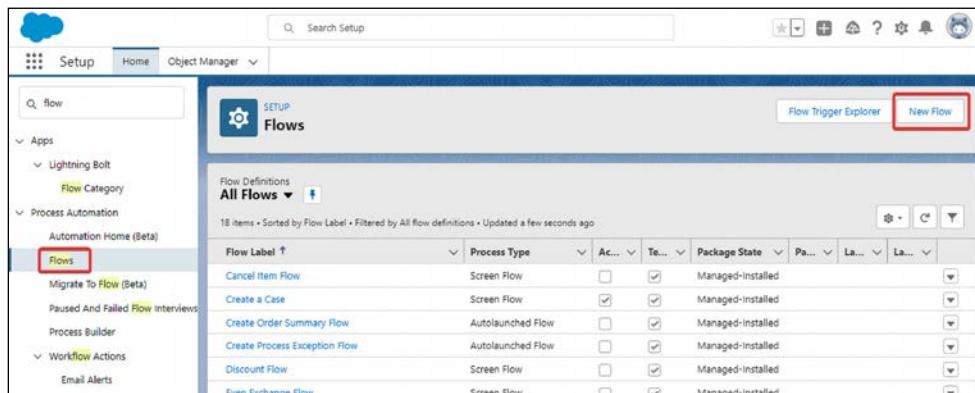


Figure 16.5: Navigating to the New Flow screen from the Setup page

2. On the next screen, select **Screen Flow** and then click **Create**:

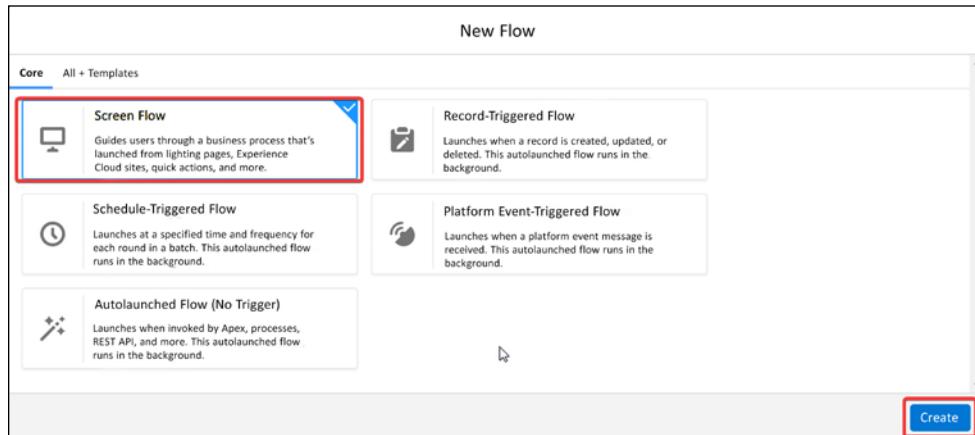


Figure 16.6: Selecting a flow type and creating the flow

We are now in the Flow Builder and ready to create our flow.

3. Click the “+” sign and select the **Screen** interaction:

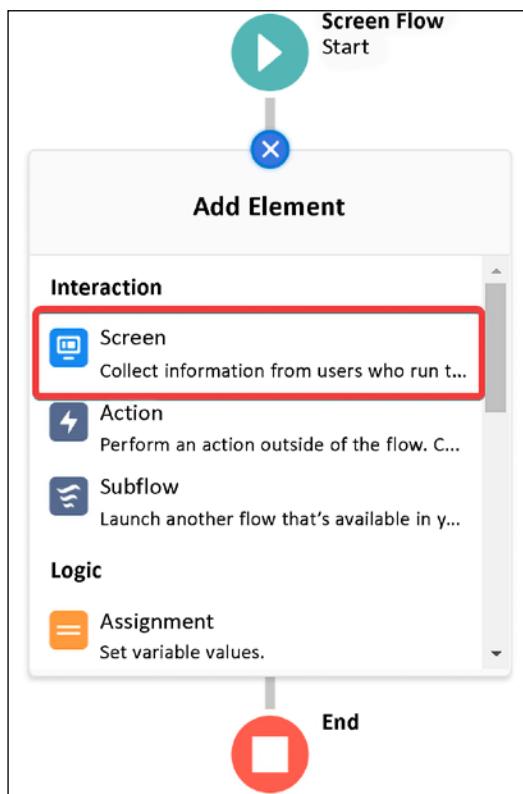


Figure 16.7: Adding the Screen interaction to the flow

4. We are now looking at our screen interaction. We will have to give the screen and each component a label and unique API name. Let's start by naming the screen **Account & Opportunity Input Screen** and letting the API name auto-generate. Then, give it a description:

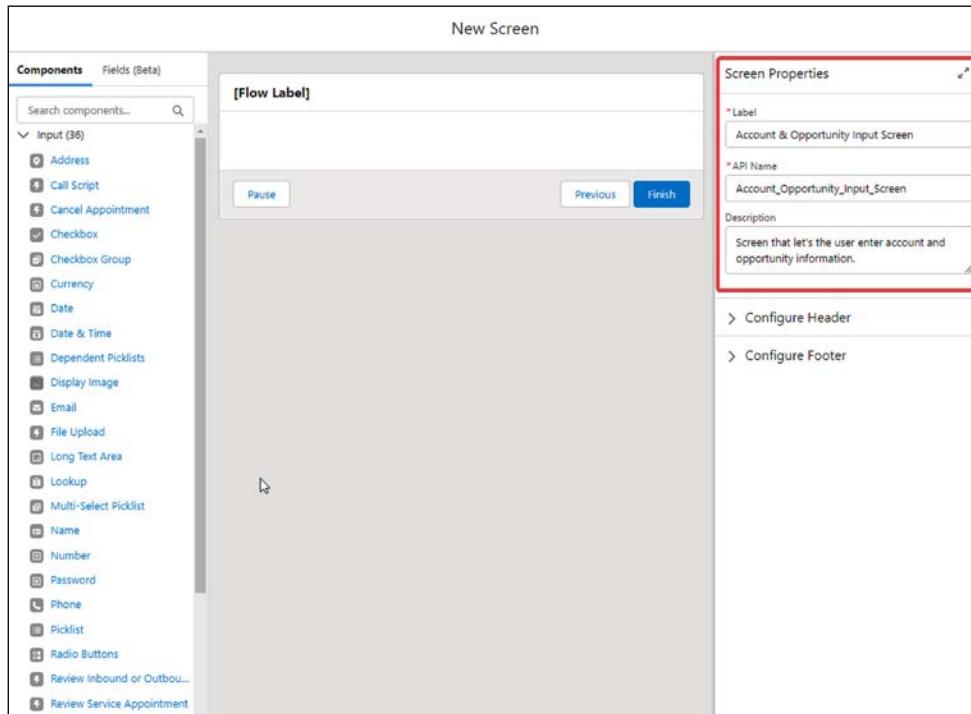


Figure 16.8: Naming and describing the screen interaction

Now let's drag some components from the left sidebar onto the screen, placing them where we want.

5. Drag the **Display Text** component from the left and place it on the screen, name it **Instructions**, and type up some instructions for your end user:

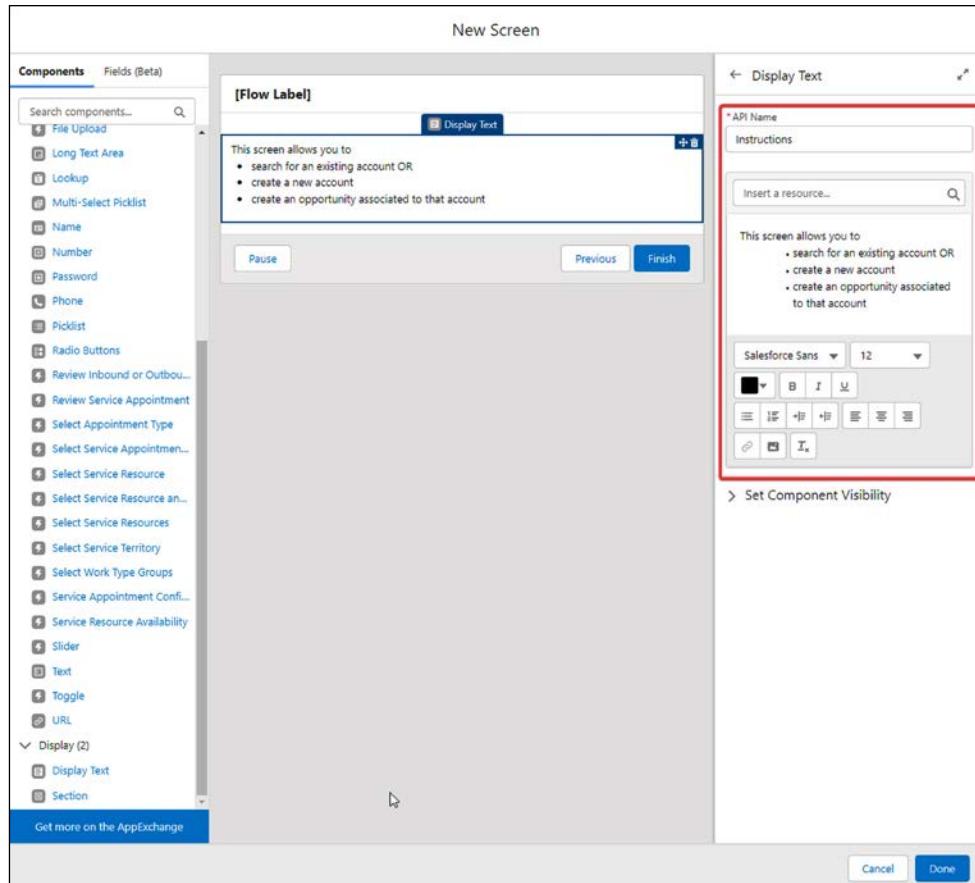


Figure 16.9: Developing the screen by adding a component

6. Next, let's add the **Section** component below the display text component to break up the inputs into two columns:

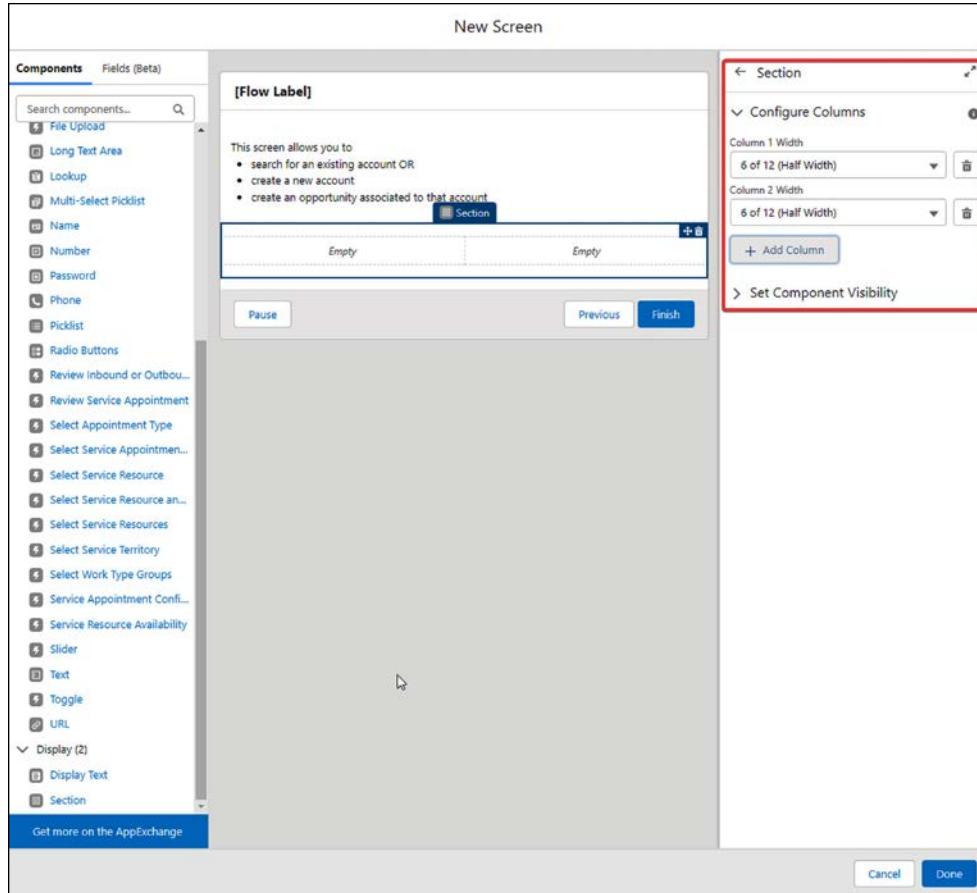


Figure 16.10: Adding another component to the screen

7. Now we are going to add a “Lookup” to allow the user to search for an existing account. Drag and drop the **Lookup** component to the first column. We are going to have to specify what field we want this lookup component to use, so define the following:
 - **API Name:** AccountLookup
 - **Field API Name:** AccountId (this is the API name of the **Account lookup** field on the **Opportunity** object)
 - **Label:** Existing Account (this is the label that you want to display on the screen)
 - **Object API Name:** Opportunity (this is the API name of the object where the lookup field you want to use is)
 - **Record Id:** Leave blank

- **Required:** Leave blank

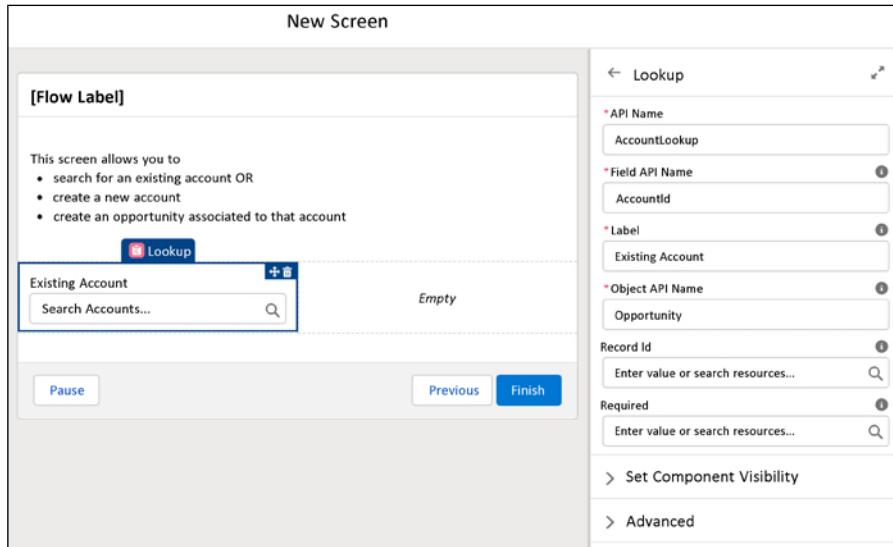


Figure 16.11: Adding a lookup component and specifying fields

If the user does not find an existing account, we want them to be able to provide the name of the new account.

8. We will add a **Text** input below the lookup. Give it the label **New Account Name** and let the **API Name** autofill.
9. Next, we are going to make this component visible only if the lookup input does not have a value. This way, if a user finds a matching existing account, they will not be asked for the name of a new account:
 - a. **Expand Set Component Visibility.**
 - b. **Change When to Display Component to All Conditions are Met.**
 - c. **Click New Condition.**
 - d. **Select Resource**, the **Account Lookup** screen component, and **Record Id**.
 - e. **Set Operator** to **Is Null**.
 - f. **Select the value of Global Constant True.**

g. Click Done:

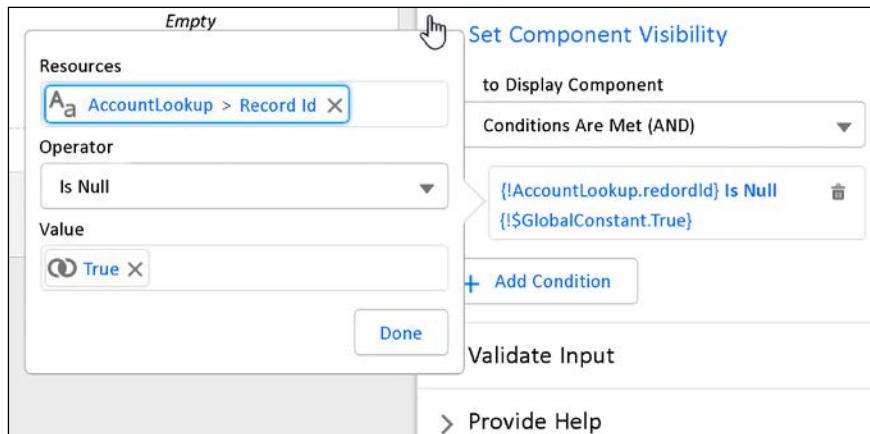


Figure 16.12: Configuring the visibility of the lookup component

This means that the **New Account Name** text input will only show up if the value of that lookup is null (which means they have not found and selected an existing account).

You could add additional fields to capture additional account information if you so choose, but we will move on to the opportunity information.

We are going to drag the following components into the second column in our section using the names and attributes below.

10. Drag the **Text** component to the second column and fill in the following details:

- **Label:** Opportunity Name
- **API Name:** Opportunity_Name
- **Require:** Checked (true)

11. Do the same for the **Currency** component:

- **Label:** Opportunity Amount
- **API Name:** Opportunity_Amount
- **Require:** Checked (true)

12. And finally, the **Date** component:

- **Label:** Close Date
- **API Name:** Close_Date
- **Require:** Checked (true)

Your screen should now look like the following screenshot:

The screenshot shows a user interface for creating a new account or opportunity. At the top, a section titled "[Flow Label]" contains descriptive text: "This screen allows you to" followed by a list: "• search for an existing account OR", "• create a new account", and "• create an opportunity associated to that account". Below this, there are two main sections: "Existing Account" and "New Account Name". In the "Existing Account" section, there is a search bar labeled "Search Accounts..." with a magnifying glass icon. In the "New Account Name" section, there is an input field with a placeholder icon. To the right of these sections, a red box highlights a group of three fields: "Opportunity Name" (with a required asterisk), "Opportunity Amount" (with a required asterisk), and "Close Date" (with a required asterisk). The "Close Date" field includes a calendar icon. At the bottom of the screen are three buttons: "Pause", "Previous", and "Finish".

Figure 16.13: Developing the screen interaction with components

Optionally, you can control whether to display the header or not, as well as some buttons that affect how users navigate the form. For this flow, let's hide the **Header**, the **Previous** button, and the **Pause** button:

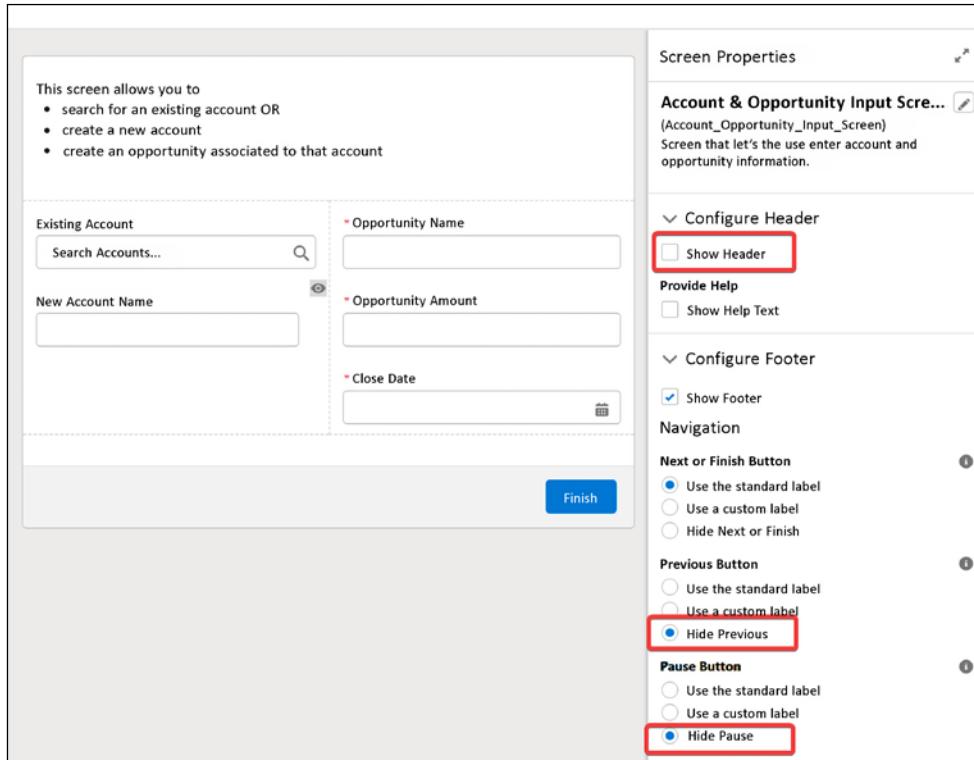


Figure 16.14: Setting the visibility options for the screen

13. Click **Done** in the bottom right. We have now created our screen! We still have to create the records, but first, let's save the flow.

14. Click **Save** in the top-right corner and name your flow Account & Opportunity Quick Create and give it a description. Click **Save**. After each change, you should save your flow as there is no auto-save feature.

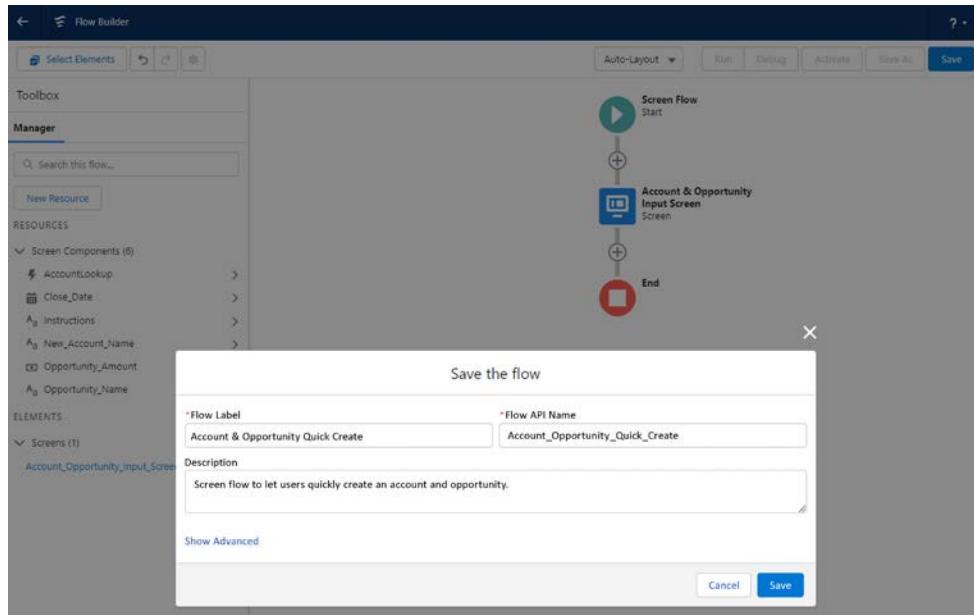


Figure 16.15: Naming the flow and its API before saving

There are now two different “paths” we can take. If the user specified an existing account, we should only create an opportunity and associate it with that selected account. If the user defined a new account name, we will create that account, then create the opportunity, and associate it to the just-created account.

To do this, we will use a decision element to determine whether an account needs to be created.

15. Click the “+” sign below the screen we just created and select **Decision**:

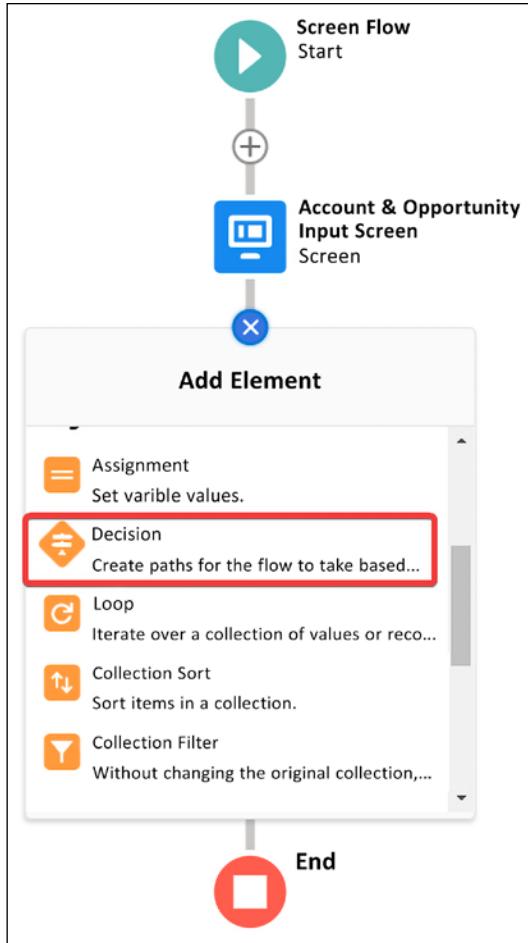


Figure 16.16: Selecting a new element for the flow

16. Give your decision a label, name, and description:

- **Label:** New or Existing Account
- **API Name:** New_or_Existing_Account
- **Description:** Determines whether the user selected an existing account or wants to create a new one.

On this decision screen, we see what are called “outcomes.” These are the different “paths” that our flow can go down. We will define two outcomes, one for where they selected an existing record in the lookup, and one for where they did not.

17. Enter the following for the first outcome:

- **Label:** Selected Existing Account
- **Outcome API Name:** Selected_Existing_Account
- **Condition Requirements to Execute Outcome:** All Conditions Are Met (AND)
- **Condition(s):**
 - **Resource:** Account Lookup > Record Id (select using your mouse)
 - **Operator:** Is Null
 - **Value:** \$GlobalConstant.False (select using your mouse)

This means that we will go down the **Selected Existing Account** outcome if they populated the lookup:

The screenshot shows the 'New Decision' configuration screen. At the top, there are fields for 'Label' (New or Existing Account) and 'API Name' (New_or_Existing_Account). Below these is a 'Description' field containing the text: 'Determines whether the user selected an existing account or wants to create a new one.' Under the 'Outcomes' section, there is a table with two rows. The first row is for the 'Selected Existing Account' outcome, which has a 'Label' of 'Selected Existing Account' and an 'API Name' of 'Selected_Existing_Account'. The 'Condition Requirements to Execute Outcome' dropdown is set to 'All Conditions Are Met (AND)'. The second row is for the 'Default Outcome', which is currently empty. At the bottom right of the form are 'Cancel' and 'Done' buttons.

Figure 16.17: Configuring a possible outcome of the Decision component

18. Next, change the label of the **Default Outcome** to be New Account. This will execute if the first outcome does not evaluate to TRUE. Then, click **Done**:

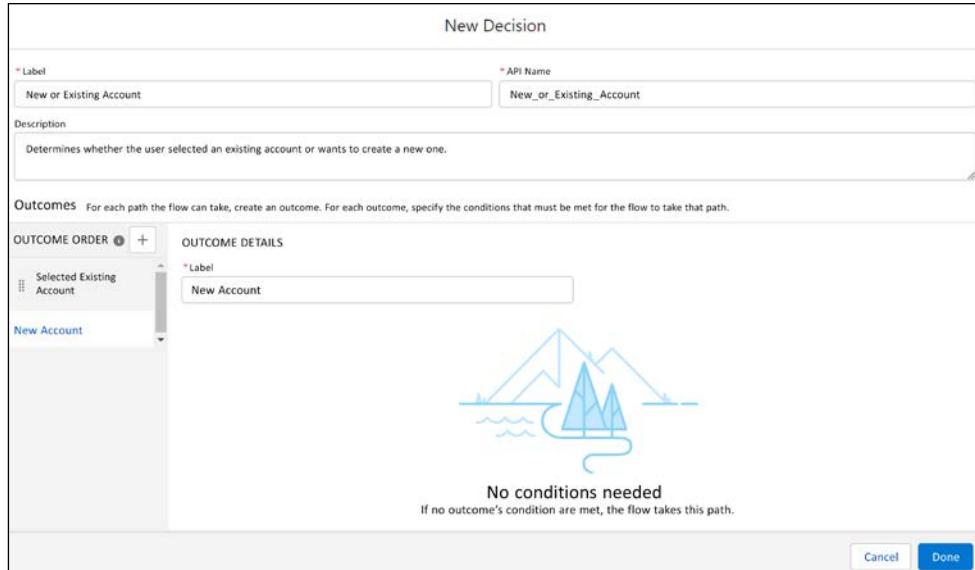


Figure 16.18: Setting the alternative outcome of the Decision element

After you do this, you will see that the flow now branches down two paths: one for where the user selected an existing account, and one for where the user wants to create a new account. (Reminder: click **Save** on your flow after each step.)

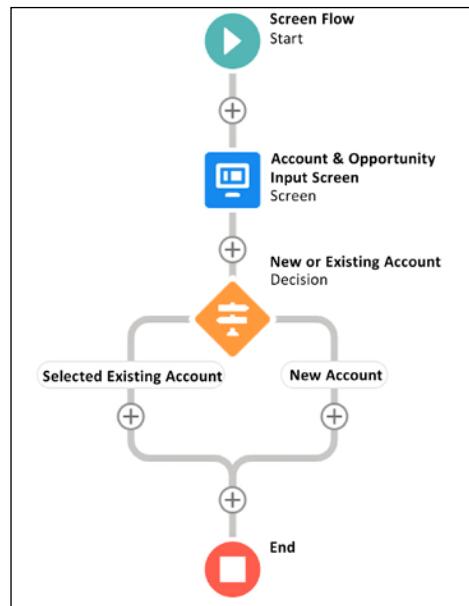


Figure 16.19: Overview of the flow showing two paths created by the Decision element

19. Let's work on the path where we need to create a new account. Click the "+" button in the New Account path and select the **Create Records** element:

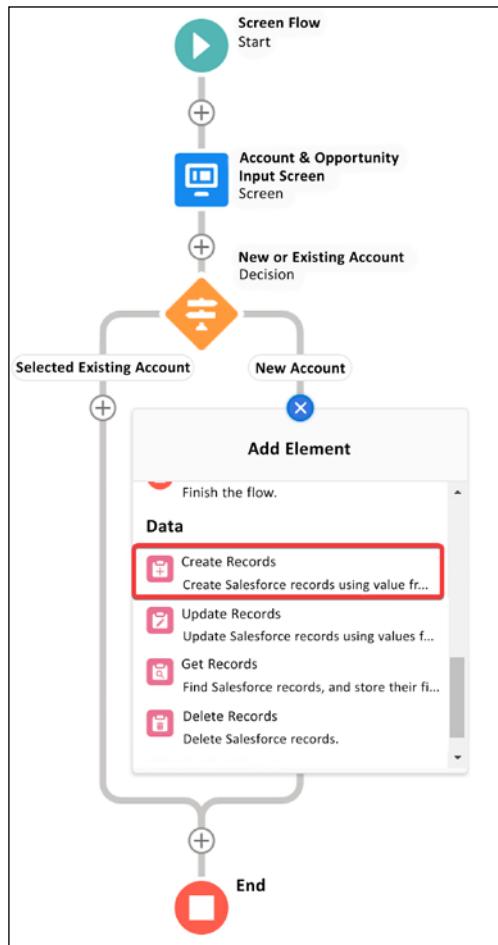


Figure 16.20: Adding a Data element to one of the Decision pathways

20. Populate the following:

- **Label:** Create New Account
- **API Name:** Create_New_Account
- **Description:** Creates a new account
- **How Many Records to Create:** One
- **How to Set the Record Fields:** Use separate resources, and literal values
- **Object:** Account

- **Set Field Values for the Account:**
 - **Field:** Name
 - **Value:** Under **Screen Components** select **New Account Name**. This is the value that the user provided in the **New Account Name** input component.

If you are collecting any additional account information you can **Add Field** and map the field value from the input component you put on the screen.

21. Then, click **Done**:

New Create Records

Create Salesforce records using values from the flow.

*Label: Create New Account *API Name: Create_New_Account

Description: Creates a new account

How Many Records to Create: One

How to Set the Record Fields: Use seperate resources, and literal values

Create a Record of This Object: Object: Account

Set Field Values for the Account

Field	Value
Name	AaNew_Account_Name

+ Add Field

Manually assign variables

Cancel Done

Figure 16.21: Filling in fields for the Create Record component

This will create an account if the user wants to add a new account.

The next thing we are going to do is assign a value to a variable. We are going to create a variable to represent the account Id. In the path where they selected an existing account, we will set the variable to that selected account. In the path where we created a new account, we are going to set the variable to the account that is being created in the flow.

22. First, let's set up the variable. Click **New Resource** in the left-side toolbar:

- a. **Resource Type:** Variable
- b. **API Name:** varAccountId
- c. **Description:** Id of account that was found or created.
- d. **Data Type:** Text

Leave everything else as is.

23. Click **Done**:

The screenshot shows the 'New Resource' dialog box. The fields filled in are:

- * Resource Type:** Variable
- * API Name:** varAccountId
- Description:** Id of account that was found or created
- * Data Type:** Text
- Default Value:** Enter value or search resources...
- Availability Outside the Flow:**
 - Available for input
 - Available for output

At the bottom right are 'Cancel' and 'Done' buttons.

Figure 16.22: Creating a variable to represent an account

Now this variable exists, and we can assign values to it.

24. In the **Selected Existing Account** path, click the “+” to add an **Assignment** element.

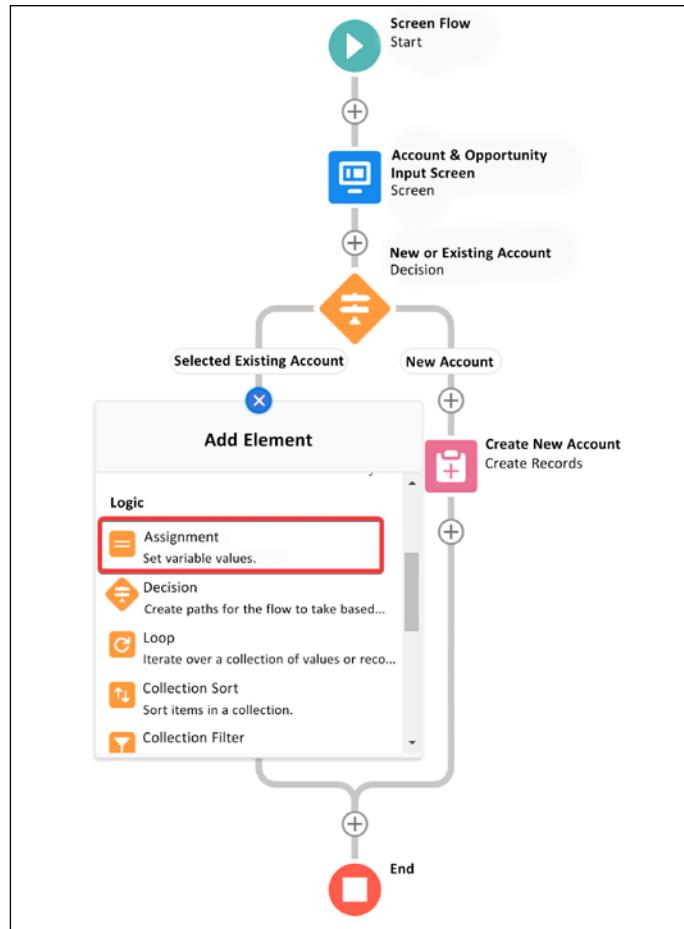


Figure 16.23: Adding the Assignment component from the Logic element

25. Set up the **Assignment** element as follows:

- **Label:** Assign Existing Account Id
- **API Name:** Assign_Existing_Account_Id
- **Description:** assigns the account id of the identified existing account to the variable
- **Set Variable Values:**

- **Variable:** varAccountId
- **Operator:** Equals
- **Value:** Account Lookup > Record Id

26. Click Done:

New Assignment

*Label: Assign Existing Account Id *API Name: Assign_Existing_Account_Id

Description:
assign the account id of the identified existing account to the variable

Set Variable Values

Each variable is modified by the operator and value combination.

Variable	Operator	Value
Aa varAccountId	Equals	Aa AccountLookUp > Record Id

+ Add Assignment

Cancel Done

Figure 16.24: Filling fields for the Assignment element

So now, if we go down the path of **Selected Existing Account**, that existing account's Id will be the value of the **varAccountId** variable.

But what if we go down the **New Account** path? In this situation, we want to set **varAccountId** to be equal to the Id of the account we just created!

27. To do this, click on **Create New Account** from the **Create Records** element that already exists and click **Edit Element**:

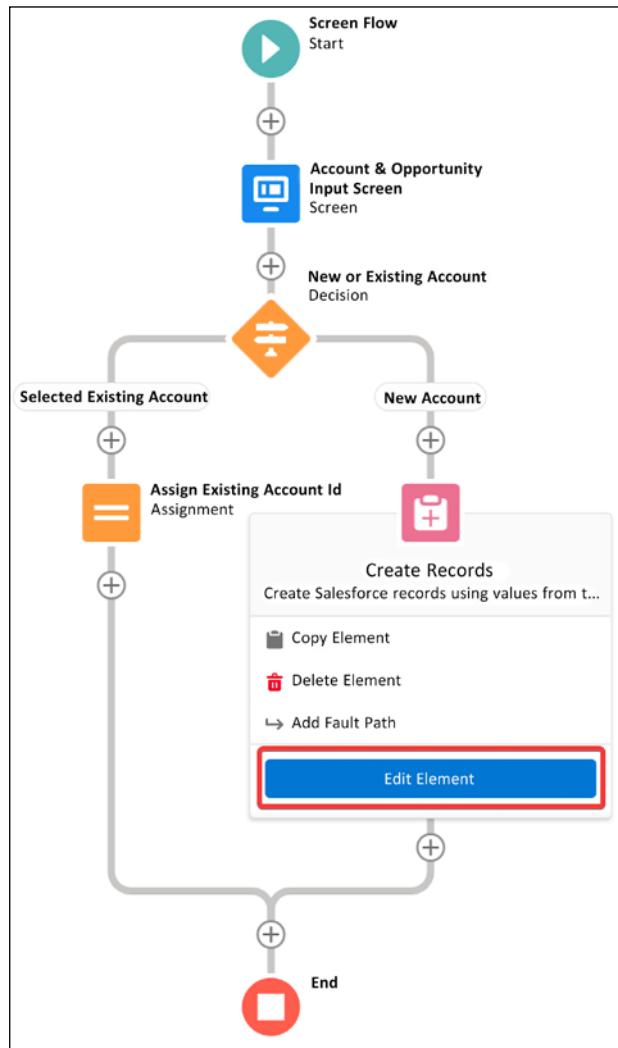


Figure 16.25: Editing the component on the other pathway of the Decision element

28. At the bottom of this page, select **Manually assign variables**, which is going to allow us to store the Id of the created record in a variable. Populate the **Variable** lookup by selecting **varAccountId**. Then click **Done**:

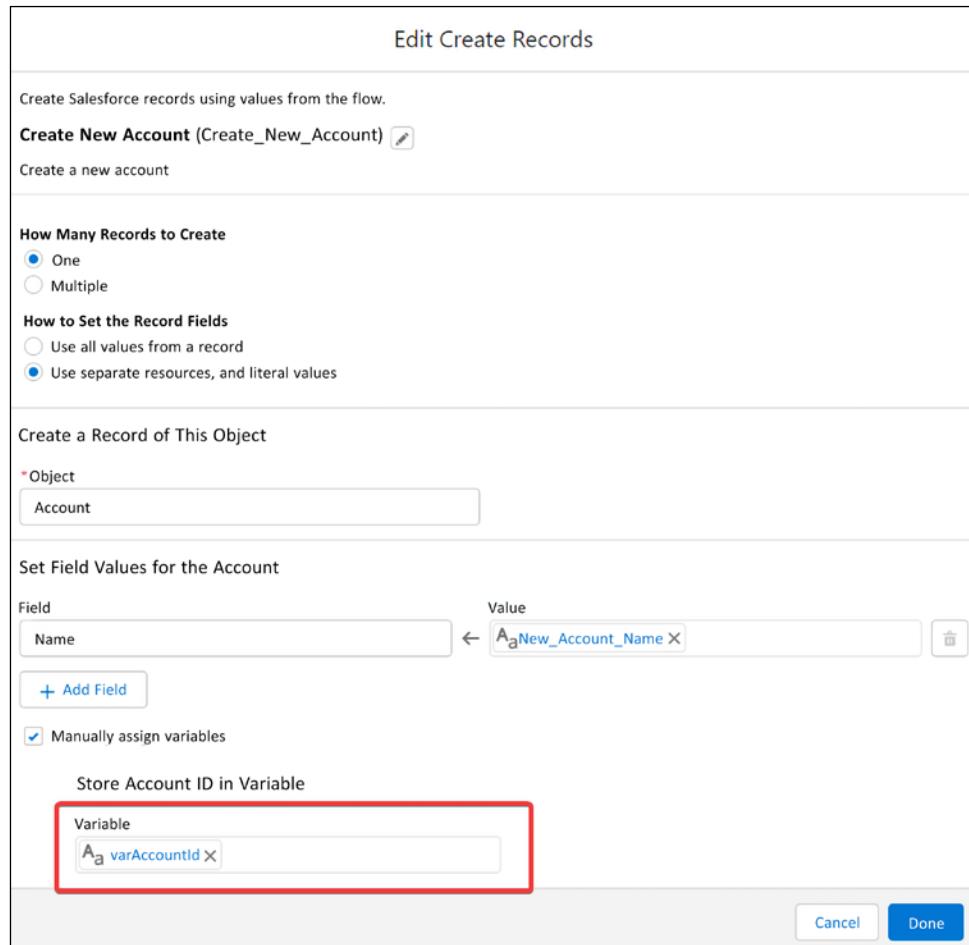


Figure 16.26: Editing the Create New Account pathway to store the account Id in the varAccountId variable

So now, regardless of whether we are selecting an existing account or creating a new account, the **varAccountId** variable has the right account Id in it!

29. The next step is to create the opportunity record. Where the two branches merge back together, select the “+” and choose the **Create Records** element:



Figure 16.27: Adding a new element after the Decision pathways

30. Populate the **Create Records** element with the following information:

- **Label:** Create Opportunity
- **API Name:** Create_Opportunity
- **Description:** Creates the opportunity
- **How Many Records to Create:** One
- **How to Set the Record Fields:** Use separate resources, and literal values
- **Object:** Opportunity
- **Set Field Values for the Opportunity:**
 - To set **Name:**
 - a. **Field:** Name
 - b. **Value:** Opportunity_Name (screen component)
 - To set **Amount:**
 - a. **Field:** Amount
 - b. **Value:** Opportunity_Amount (screen component)
 - To set **Close Date:**
 - a. **Field:** Close Date
 - b. **Value:** Close_Date (screen component)
 - To set **Account Id:**
 - a. **Field:** AccountId
 - b. **Value:** varAccountId (this is the variable we assigned a value to in the previous steps)
 - To set **Stage:**
 - a. **Field:** StageName
 - b. **Value:** Prospecting

31. Check that your screen looks like *Figure 16.28*. Then, click **Done**:

Edit Create Records

Create Salesforce records using values from the flow.

Create Opportunity (Create_Opportunity) 

Creates the opportunity

How Many Records to Create

One
 Multiple

How to Set the Record Fields

Use all values from a record
 Use separate resources, and literal values

Create a Record of This Object

*Object
Opportunity

Set Field Values for the Opportunity

Field	Value
Name	<input type="text"/> ← AaOpportunity_NameX 
Amount	<input type="text"/> ← Opportunity_AmountX 
CloseDate	<input type="text"/> ← Close_DateX 
AccountId	<input type="text"/> ← AavarAccountldX 
StageName	<input type="text"/> ← Prospecting 

+ Add Field

Manually assign variables

Cancel **Done**

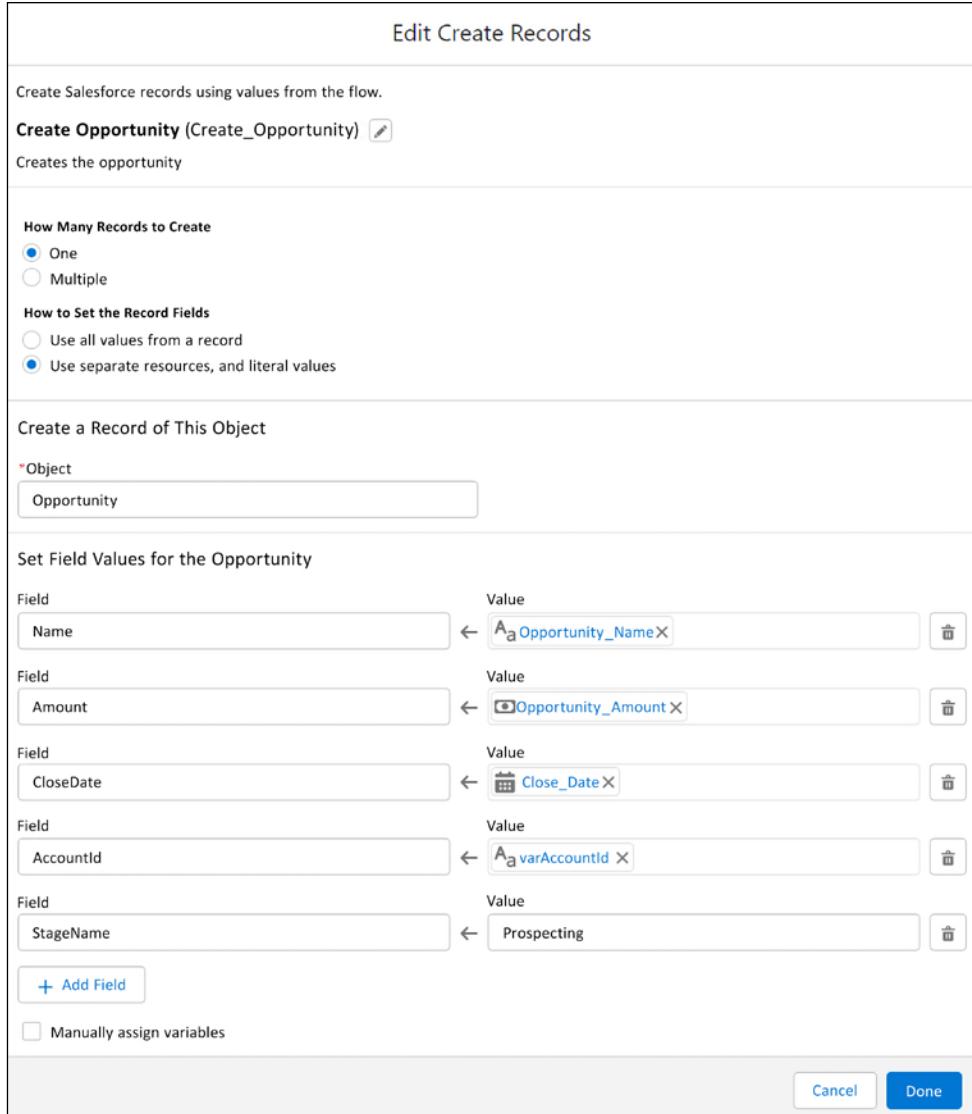


Figure 16.28: Configuring the Create Records component

This element will create our opportunity with the information provided by the user on the screen, as well as the account Id from either the selected account or the new account, and set the stage to **Prospecting**.

Make sure to **Save** your flow. And now, we have built our flow! Let's review what we have done:

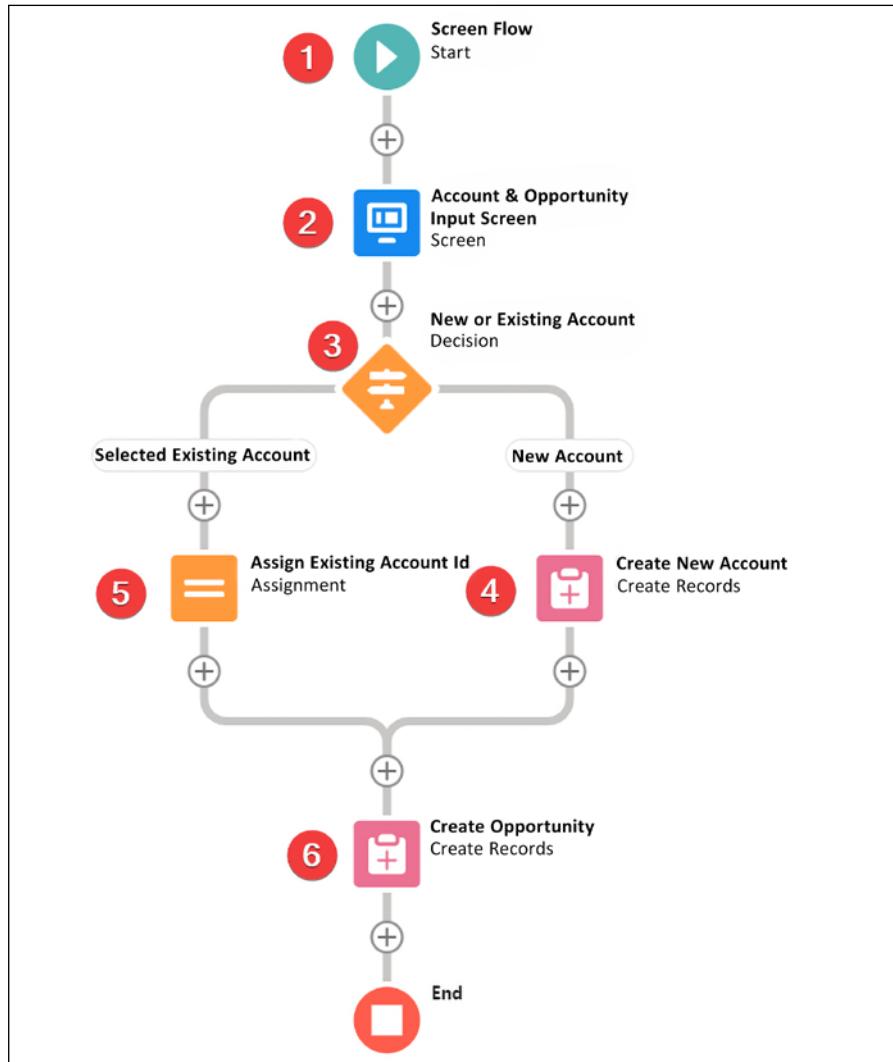


Figure 16.29: Overview of the completed flow

1. The flow starts (we will get to *how* and *where* in a future step).
2. The user is presented with a screen where they can look up an existing account or create a new one and enter some basic opportunity information.

3. The flow determines whether the user entered an existing account or wants to create a new one.
4. If the user wishes to create a new account, we create the account record and store the Id of the created account in a variable called **varAccountId**.
5. If the user selected an existing account, we assign the Id of that existing account to the **varAccountId** variable.
6. We create the opportunity with the information the user entered on the screen and with the account Id that is stored in **varAccountId**.

Now it is time to test what we have built.

Testing the flow

To test your flows, use the built-in debug tool by clicking **Debug** at the top-right:

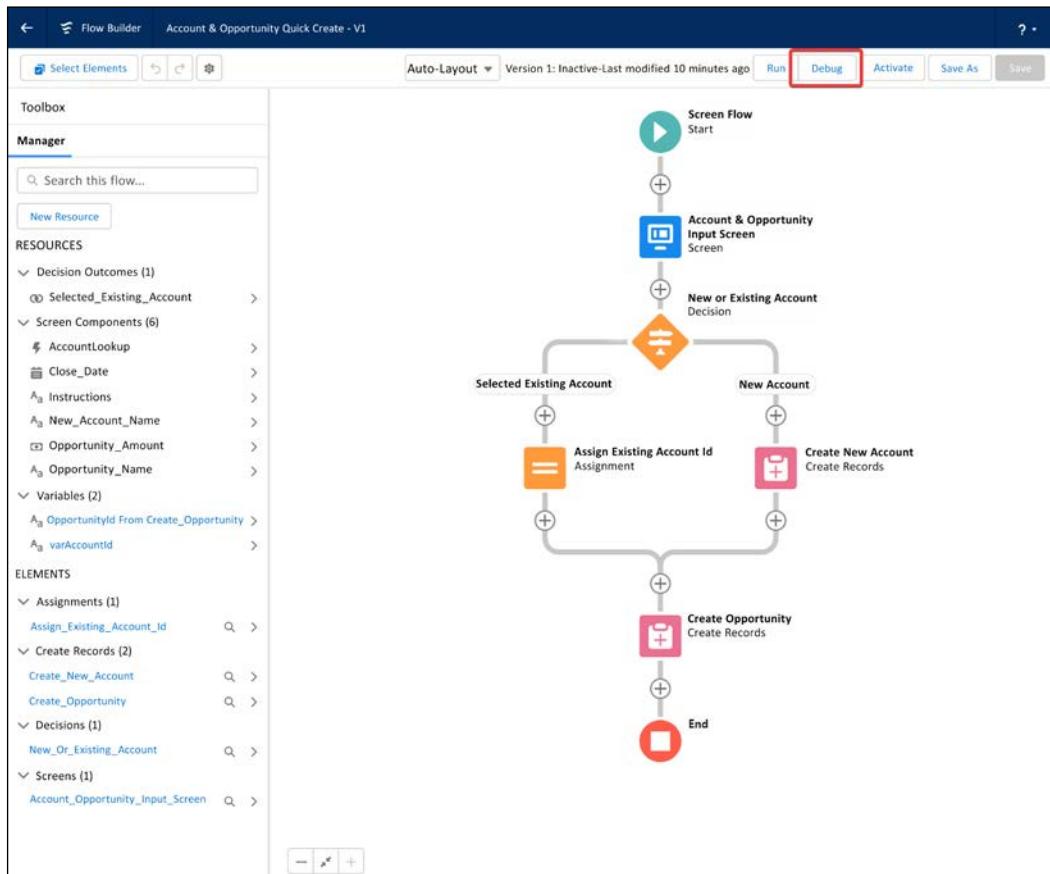


Figure 16.30: Clicking Debug on the Flow Builder page

If there are input variables you can define them in the next step; otherwise click **Run**. When testing your flow, you should try to test every path. So for our example, let's test the path where we select an existing account first:

This screenshot shows the 'Select Existing Account' pathway in the Flow Builder. On the left, there is a list of steps: 'Search Accounts...', 'Opportunity Name', 'Opportunity Amount', 'Close Date', and 'Next'. Step 1 is highlighted with a red circle. Step 5 is also highlighted with a red circle. On the right, there is a 'Debug Details' panel with sections for 'How the Interview Started' and 'Transaction Committed'.

Figure 16.31: Testing the Select Existing Account pathway

1. Find an existing account in your developer org and select it. When you do, you should see the **New Account Name** field disappear.
2. Enter an opportunity name.
3. Enter an opportunity amount.
4. Enter a close date.
5. Then click **Next**:

This screenshot shows the 'Select Existing Account' pathway after selecting an account. The 'Existing Account' field now displays 'Edge Communicatoins'. The other fields ('Opportunity Name', 'Opportunity Amount', 'Close Date') have been populated with 'Test Opportunity', '\$3,500', and 'May 21, 2022' respectively. The 'Next' button is visible at the bottom right.

Figure 16.32: Entering an existing account into the flow

On the right sidebar under **Debug Details**, you will see all of the elements of the flow that you defined and the results of each step. If there are errors, they will be reflected here.

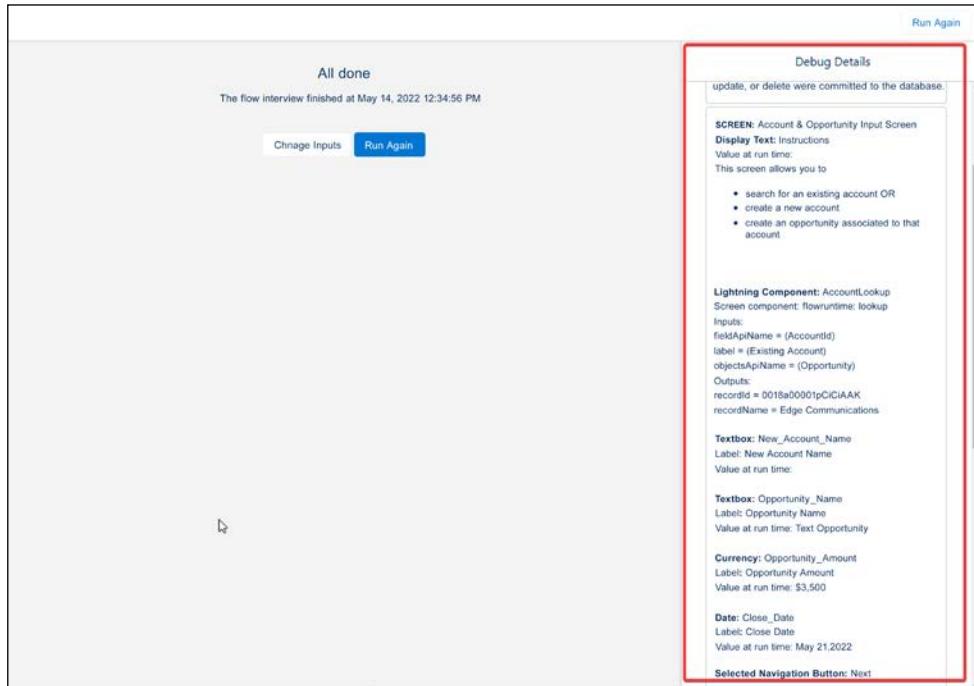


Figure 16.33: Reviewing the Debug Details pane

Let's run it again (select **Run Again** at the top-right). This time create a new account instead:

This screenshot shows the "Account & Opportunity Input Screen" with the following fields and values:

- Existing Account**: A search bar labeled "Search Accounts..." with a magnifying glass icon.
- New Account Name**: A text input field containing "Test New Account".
- Opportunity Name**: A text input field containing "Test Opportunity".
- Opportunity Amount**: A text input field containing "\$3,500".
- Close Date**: A date input field set to "May 21, 2022".

A blue "Next" button is located at the bottom right of the form.

Figure 16.34: Testing the other pathway of the flow

It should have run again without any issues, but if any were encountered, you will see them reflected in the **Debug Details** on the right-hand side.

6. Resolve any errors and save your flow.

Now that the flow has been tested, we are ready to activate it and distribute it.

Distributing the flow

Once a flow has been tested you can activate it by clicking **Activate** at the top-right of the Flow Builder. After you activate the flow, if you want to make changes, you'll have to click **Save As** and activate a new version.

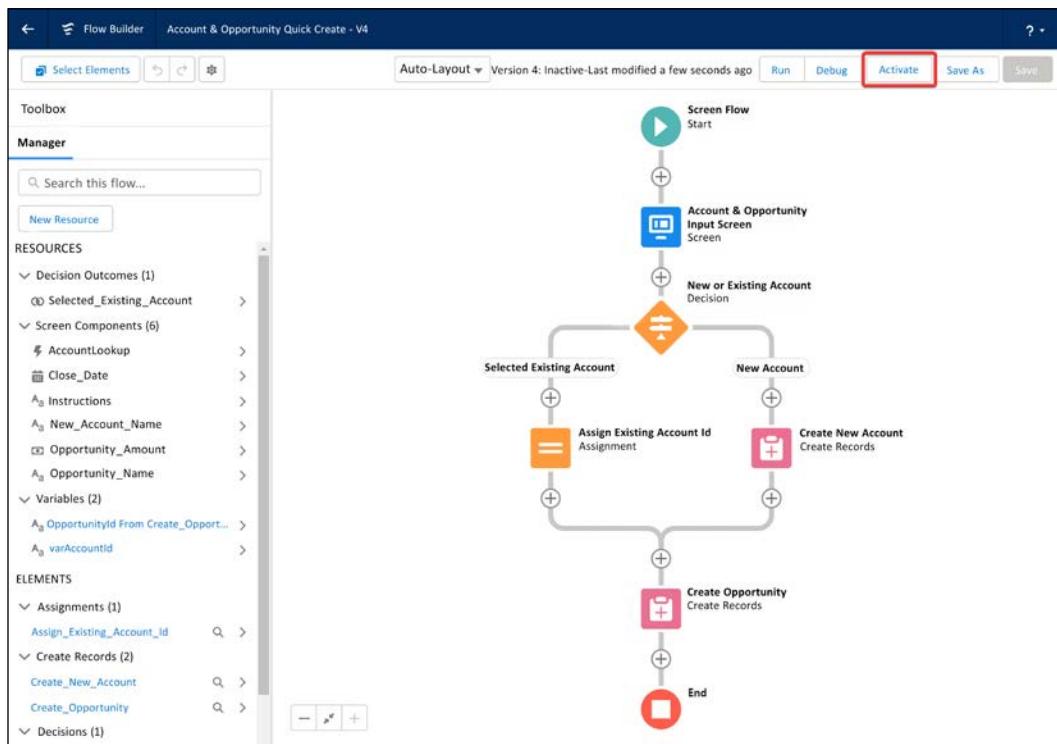


Figure 16.35: Activating the flow to use in our apps

Now that the flow is active, we can use it in our Lightning apps. Screen flows can be placed directly on a Lightning page using the Lightning App Builder, or on an Experience Cloud page. For this example, because we want the sales reps to be able to use this screen flow from anywhere in the Sales app we are going to add it to the utility bar:

1. Go back to **Setup**.
2. Go to **App Manager**.
3. Find the **Sales** (Developer name: **LightningSales**) app, click the dropdown, and select **Edit**:

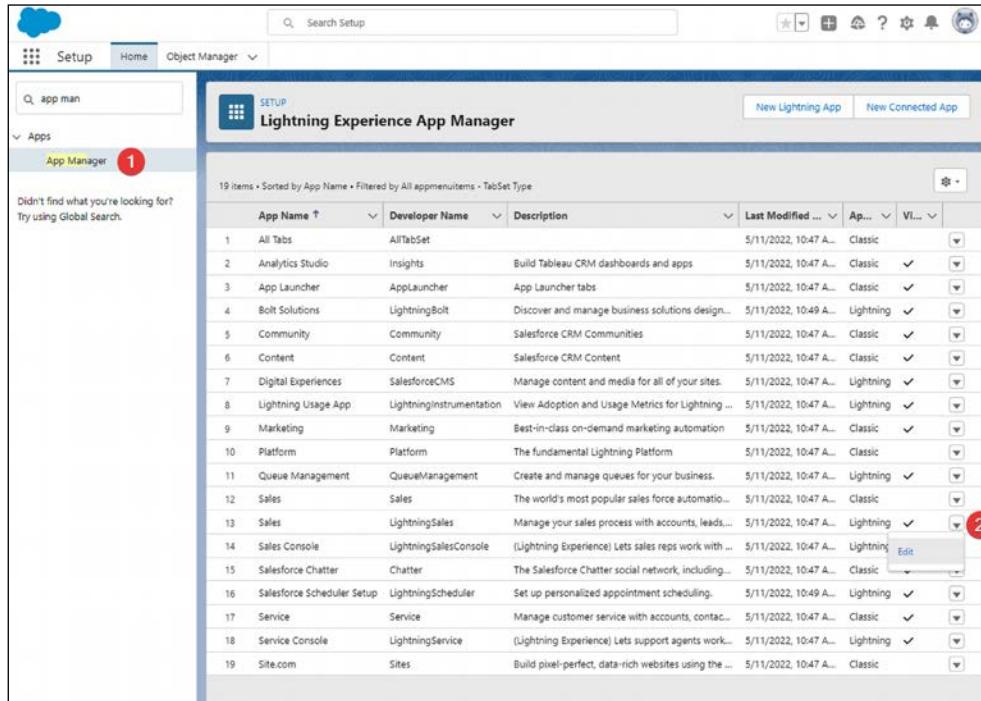


Figure 16.36: Selecting the Sales app in the App Manager for editing

4. On the left-hand side, select **Utility Items (Desktop Only)**, then click **Add Utility Item**:

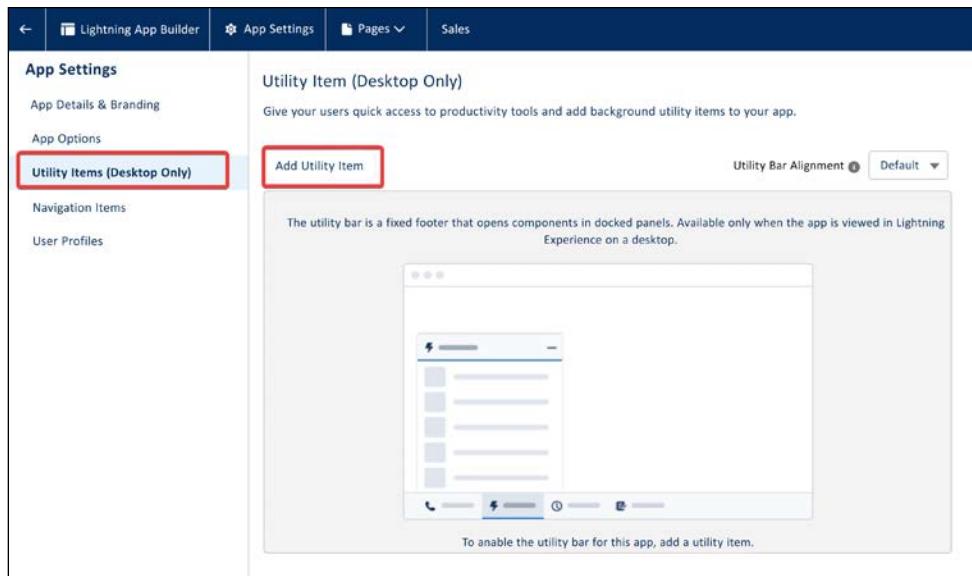


Figure 16.37: Adding an item to the utility bar for the Sales app

5. In the **Search** box, select **Flow**:
6. You can now define the properties of the **Flow** utility item:
 - **Label:** Account & Opportunity Quick Create
 - **Icon:** Select an icon
 - **Panel Width:** 480
 - **Panel Height:** 480
 - **Flow:** Account & Opportunity Quick Create (this is the flow we created)

- Layout: One Column

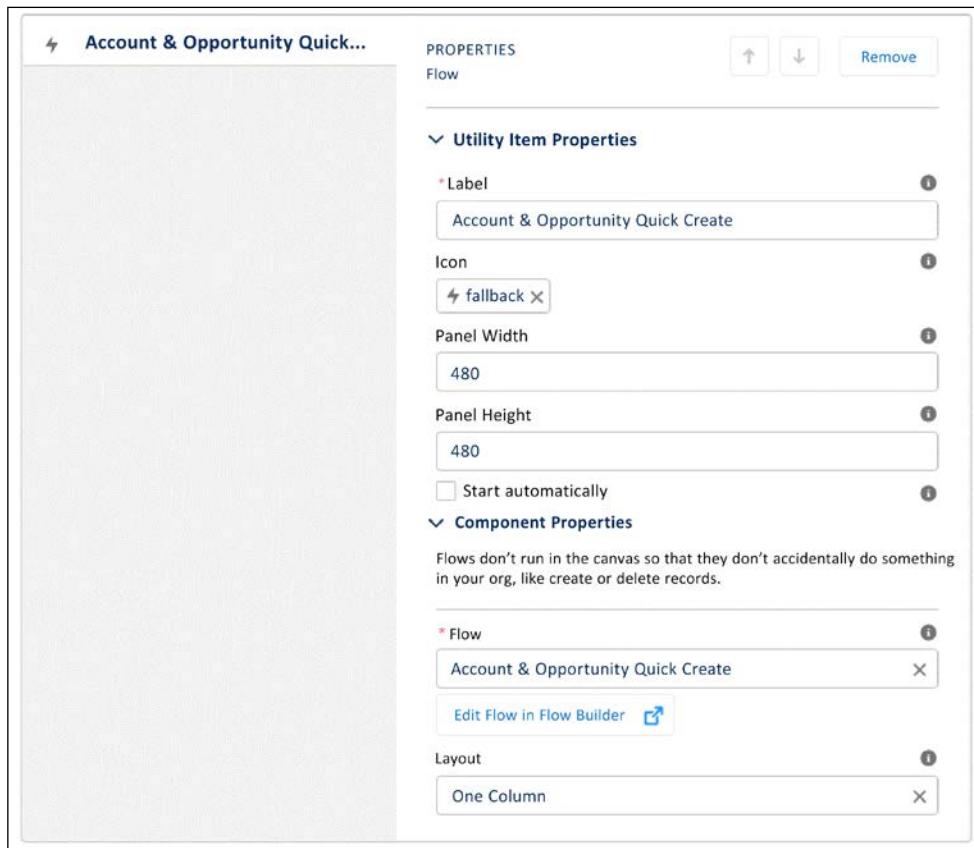


Figure 16.38: Setting properties for the flow as a utility item

7. Click **Save**. We have now added this flow to the utility bar for the Sales app!

Seeing it in action

We have now created a flow and distributed it by putting it on the utility bar in the Sales app. Let's see what it looks like for end users:

1. Navigate out of setup and go to the **Sales** app using the app launcher.

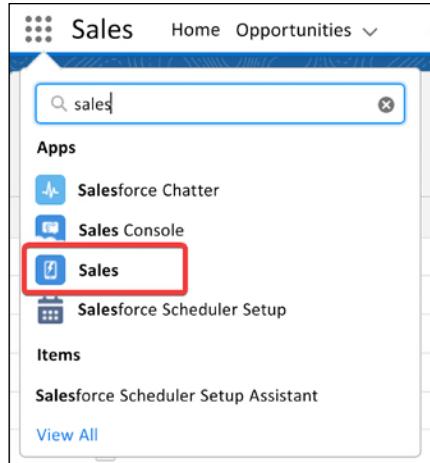


Figure 16.39: Selecting the Sales app so we can find the flow

2. Once you are in the app, you should see your utility bar at the bottom now has an **Account & Opportunity Quick Create** action. When you click on it, you will see the flow you built. Go ahead and try it out!

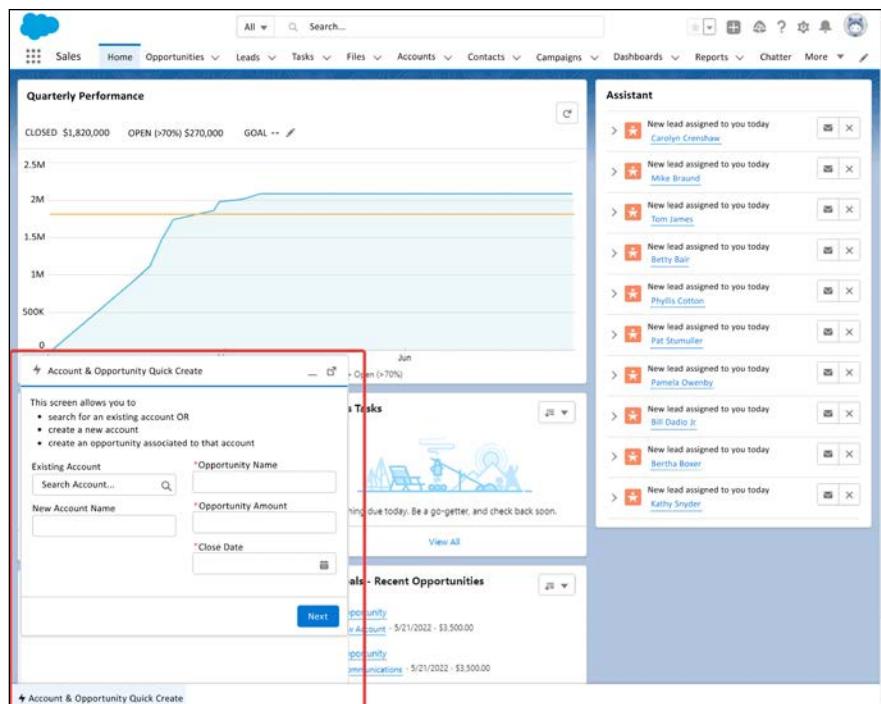


Figure 16.40: Flow appearing at the bottom left of the app screen

We just successfully built a flow that will make it easier for sales reps to quickly enter account and opportunity information from anywhere in the Sales app. You can add additional fields to the flow (on the screen element and create record elements) to collect additional information.

Example 2: record-triggered flow

We will build a record-triggered flow to create different tasks for a user based on account type.

Business use case

Account managers are very busy. They would like to automatically have tasks generated for them when a new account is created. This task should be for them to onboard customers and partners.

Customer accounts should have an onboarding process that includes the user who created the account doing the following actions:

1. Sending a “welcome” email, due one week after account entry
2. Following up with a phone call, one week after the welcome email

Meanwhile, partner accounts should have an onboarding process that includes the user sending a “partner agreement” email within one week of account entry.

For now, we will just generate tasks for the user who entered the account, but if we wanted to enhance the process even further, we could send those emails out automatically using flows.

Building the flow

1. Go to **Setup > Flows** and click **New Flow**.

2. Select Record-Triggered Flow and click Create:

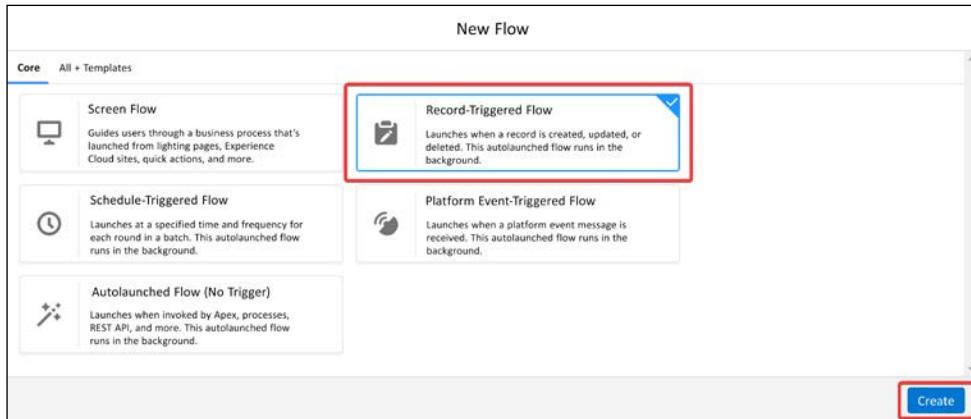


Figure 16.41: Selecting a flow type from the New Flow page

You will notice that we now see something different than when we were creating a screen flow. When we created the screen flow it took us directly to the Flow Builder canvas. For a record-triggered flow we are going to have to configure the start element first.

3. Here, we define what is going to trigger our flow, as in, what update/insert/deletion to which object should cause the flow to fire? For our purposes, we want this flow to fire any time an account is created where the **Type** field value equals **partner** or **customer**. So set the configuration of the start element as follows:
- **Object:** Account
 - **Configure Trigger:** A record is created
 - **Set Entry Conditions:**
 - **Condition Requirements:** Any Condition Is Met (OR)
 - **Conditions:**
 - a. Type Equals Customer – Direct
 - b. Type Equals Customer – Channel
 - c. Type Equals Channel Partner / Reseller
 - d. Type Equals Installation Partner
 - e. Type Equals Technology Partner
 - f. **Optimize the Flow for:** Actions and Related Records

Your screen should look like the following screenshot:

The screenshot shows the 'Configure Start' page of a Salesforce Flow. The first section, 'Select Object', has 'Object' set to 'Account'. The second section, 'Configure Trigger', has 'Trigger the Flow When:' set to 'A record is created'. The third section, 'Set Entry Conditions', contains a table with five rows of OR conditions based on the 'Type' field. The conditions are: Type Equals Customer - Direct, Type Equals Customer - Channel, Type Equals Channel Partner / Reseller, Type Equals Installation Partner, and Type Equals Technology Partner. Below this is a '+ Add Condition' button. The final section, 'Optimize the Flow for:', includes 'Fast Field Updates' (disabled) and 'Actions and Related Records' (selected). A tooltip for 'Actions and Related Records' explains: 'Update any record and perform actions, like send an email. This more flexible flow runs after the record is saved to the database.' At the bottom right are 'Cancel' and 'Done' buttons.

Figure 16.42: Defining the trigger for the flow

What we have done here is set up this flow to run when an account is created if it has a type of one of those five values (if you have modified the **Type** picklist on the **Account** you might have different values).



We are optimizing the flow for **Actions and Related Records** because we are going to create other records as part of this flow. **Fast Field Updates** would be used if we were just updating fields on the **Account** itself.

4. Click **Done**, and that will bring you to the Flow Builder canvas.
5. Save your flow with the name **Account: Create Onboarding Tasks** and give it a description. Remember to save your flow after each step.
6. The first thing we are going to want to do is to determine whether this account is a partner or a customer so that we can create the right tasks.
7. Click the “+” and create a **Decision** element:

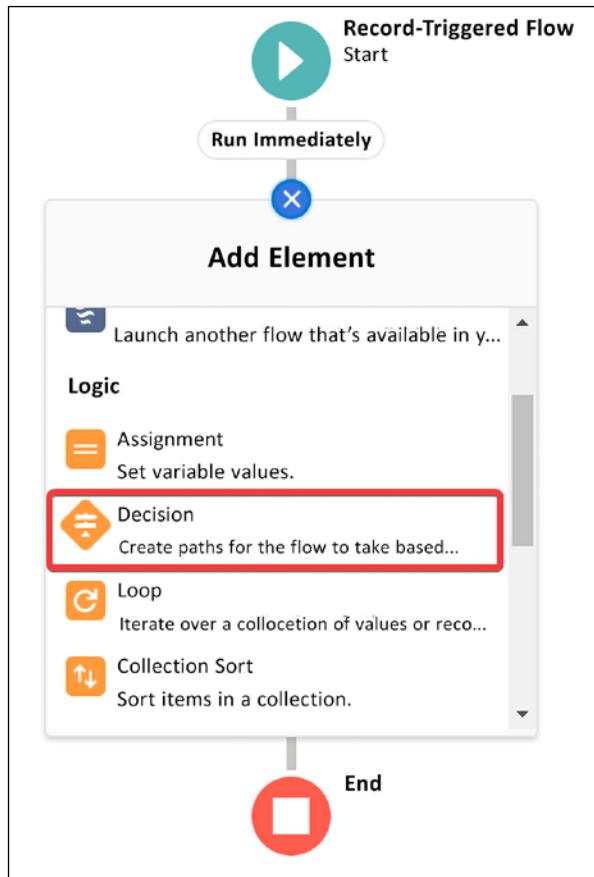


Figure 16.43: Adding a Decision element to the flow

8. Set up the decision as follows:
 - **Label:** Customer or Partner
 - **API Name:** Customer_or_Partner
 - **Description:** Is this a customer account or a partner account?

- **First Outcome:**
 - **Label:** Partner Account
 - **API Name:** Partner_Account
 - **Condition Requirements to Execute Outcome:** All Conditions Are Met (AND):
 - a. **Resource:** \$Record > Type (This type of variable with a \$ in front of it is called a **global variable**. In this case, we are selecting the record that triggered the flow.)
 - b. **Operator:** Contains
 - c. **Value:** Partner
- **Second Outcome (Default):**
 - **Label:** Customer Account

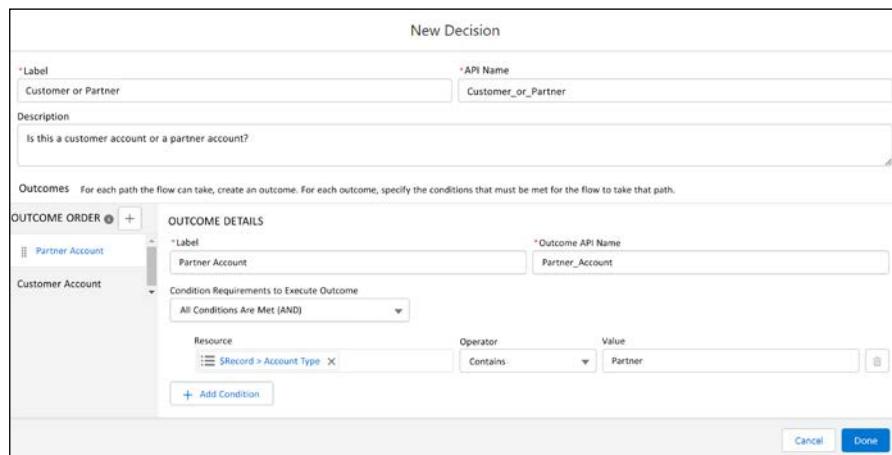
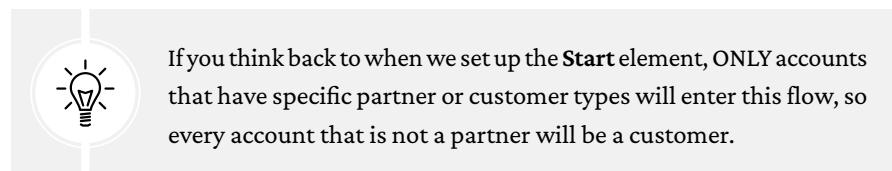


Figure 16.44: Setting the two outcomes of the Decision element

- The first outcome will execute if the account type contains the text Partner, and the second outcome will execute in all other cases.



9. Click Done.

Now we have two branches, one for partner accounts and one for customer accounts. Let's set up the partner account branch first. Thinking back to our business requirements, when a new partner account is created, the system should automatically generate one task for the user who entered the account to remind them to send the partner agreement with a due date one week after the account is entered.

Before we move on to the generation of the tasks, let's create the formulas we will use for due dates. We need one formula to give us the date one week from now and another formula to give us the date two weeks from now:

1. On the left-hand side click New Resource:

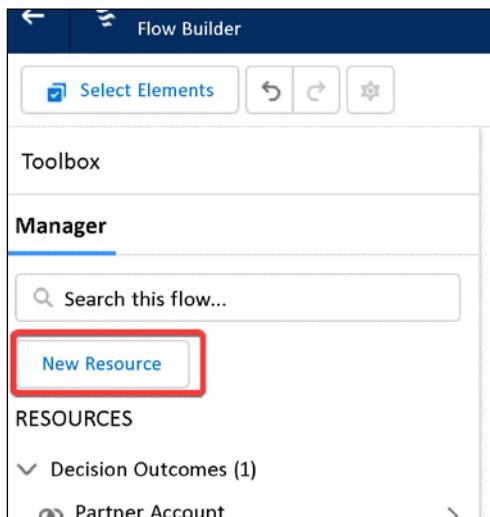


Figure 16.45: Adding a resource to the flow from the Flow Builder

2. Select a **Formula** resource type and configure it as follows:

- **API Name:** fxTodayPlusSeven
- **Description:** Today's date plus seven days
- **Data Type:** Date
- **Formula:**
 - a. Click **Insert a resource** and select **\$Flow > Current Date**
 - b. In the formula builder type + 7 after the inserted variable.
 - c. The formula should look like: { !\$Flow.CurrentDate } + 7

3. Click Done:

The screenshot shows the 'Edit Formula' configuration interface. It includes fields for API Name (fxTodayPlusSeven), Description (Today's date plus seven days), Data Type (Date), and a Formula field containing the expression `{!$Flow.CurrentDate} + 7`. The interface also features 'Cancel' and 'Done' buttons at the bottom right.

Figure 16.46: Configuring the added resource for the flow

4. Repeat step 12 but create a formula resource called fxTodayPlusFourteen and change the formula to add 14 days instead of 7 days:

The screenshot shows the 'New Resource' creation interface for a formula resource. It includes fields for Resource Type (Formula selected), API Name (fxTodayPlusFourteen), Description (Today's date plus fourteen days), Data Type (Date), and a Formula field containing the expression `{!$Flow.CurrentDate} + 14`. The interface also features 'Cancel' and 'Done' buttons at the bottom right.

Figure 16.47: Creating a second formula resource

5. We will use these two formula resources in our task creation to set due dates. Let's move on to the task creation.
6. Click the “+” in the Partner Account path and select **Create Records**:

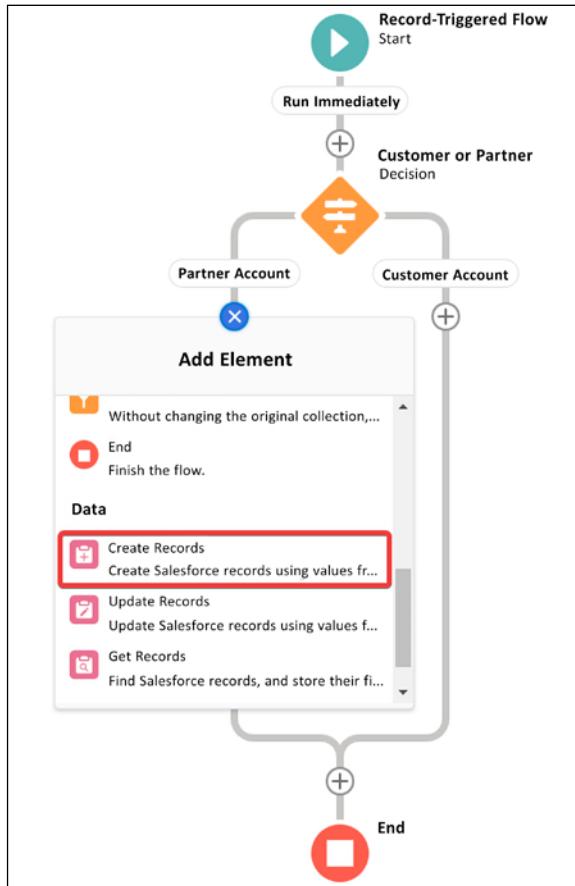


Figure 16.48: Adding a Data element to the flow

7. Configure the **Create Records** element as follows:
 - **Label:** Create Partner Onboarding Task
 - **API Name:** Create_Partner_Onboarding_Task
 - **Description:** Creates a task for the account owner to send the partner agreement with a due date of one week from today
 - **How Many Records to Create:** One
 - **How to Set the Record Fields:** Use separate resources, and literal values

- **Create a Record of This Object: Task**

New Create Records

Create Salesforce records using values from the flow.

*Label: Create Partner Onboarding Task *API Name: Create_Partner_Onboarding_Task

Description:
Creates a task for the account owner to send the partner agreement with a due date of one week from today.

How Many Records to Create
 One
 Multiple

How to Set the Record Fields
 Use all values from a record
 Use separate resources, and literal values

Create a Record of This Object

*Object: Task

Set Field Values for the Task

Field	Value
Search fields...	Enter value or search resources... <input type="button" value="X"/> <input type="button" value="Delete"/>

+ Add Field

Manually assign variables

Figure 16.49: Configuring the Create Records component

8. Now we are going to assign the field values for the task we are creating:

- To set **Subject**:
 - **Field**: Subject
 - **Value**: Send Partner Agreement
- To set **Owner / Assigned To**:
 - **Field**: OwnerId
 - **Value**: \$User > Id (this will be set to the Id of the user who triggered the flow)
- To set **WhatId** (this is the record the task is associated with):
 - **Field**: WhatId
 - **Value**: \$Record > Id (this will set it to the Id of the record that triggered the flow, the account in our case)
- To set the due date (**ActivityDate**):
 - **Field**: ActivityDate
 - **Value**: fxTodayPlusSeven

- You can optionally set other task field values.

Edit Create Records

Create Salesforce records using values from the flow.

Create Partner Onboarding Task (Create_Partner_Onboarding_Task)

Creates a task for the account owner to send the partner agreement with a due date on one week from today.

How Many Records to Create

One
 Multiple

How to Set the Record Fields

Use all values from a record
 Use separate resources, and literal values

Create a Record of This Object

*Object
Task

Set Field Values for the Task

Field	Value
Subject	Send Partner Agreement
OwnerId	A_a \$User.Id
WhatId	A_a \$Record > Account ID
ActivityDate	fxTodayPlusSeven

Add Field

Manually assign variables

Cancel **Done**

Figure 16.50: Filling the field values for the added component

9. Click **Done**. Now let's deal with the tasks that should be created for a new customer account.
10. Click “+” under the **Customer Account** path and select **Create Records**:

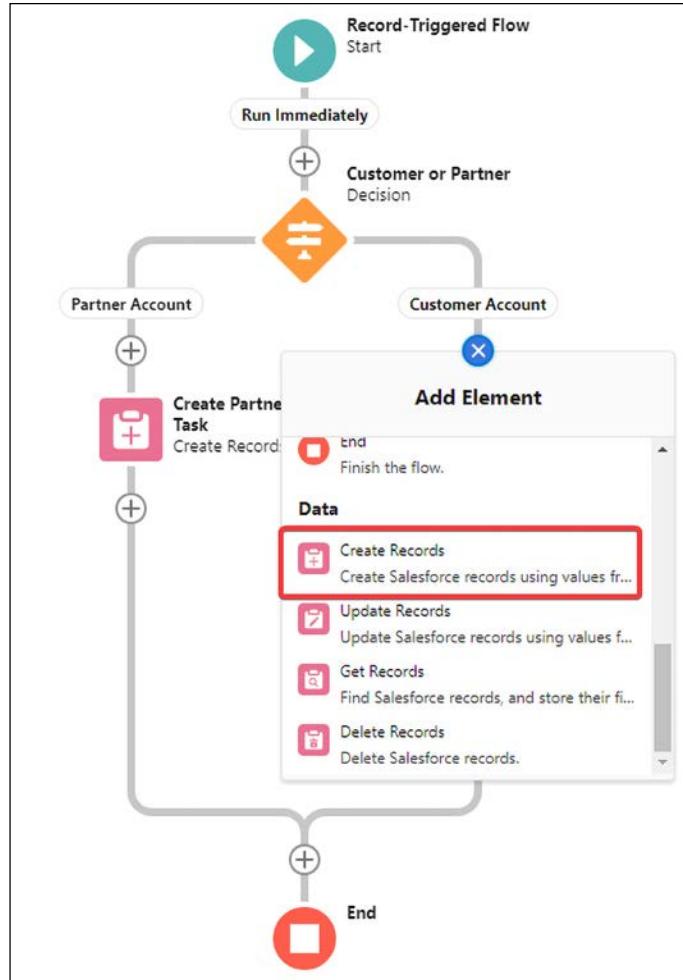


Figure 16.51: Adding a Data element to the Customer Account pathway

11. Configure the **Create Records** element as follows:
 - **Label:** Create Welcome Email Task
 - **API Name:** Create_Welcome_Email_Task
 - **Description:** Creates a task for user to send welcome email due one week from now
 - **How Many Records to Create:** One
 - **How to Set the Record Fields:** Use separate resources, and literal values

- **Create a Record of This Object: Task**

New Create Records

Create Salesforce records using values from the flow.

* Label: Create Welcome Email Task * API Name: Create_Welcome_Email_Task

Description: Creates a task for user to send welcome email due one week from now

How Many Records to Create
 One
 Multiple

How to Set the Record Fields
 Use all values from a record
 Use separate resources, and literal values

Create a Record of This Object
* Object: Task

Set Field Values for the Task

Field	Value
Search fields...	Enter value or search resources...

Manually assign variables

Cancel Done

Figure 16.52: Configuring the element added to the flow

12. Now we are going to assign the field values for the task we are creating:

- To set **Subject**:
 - **Field:** Subject
 - **Value:** Send Welcome Email
- To set **Owner / Assigned To**:
 - **Field:** OwnerId
 - **Value:** \$User > Id (this will be set to the Id of the user who triggered the flow)
- To set **WhatId** (this is the record the task is associated with):

- **Field:** WhatId
- **Value:** \$Record > Id (this will set it to the Id of the record that triggered the flow, the account in our case)
- To set the due date (**ActivityDate**):
 - **Field:** ActivityDate
 - **Value:** fxTodayPlusSeven
- You can optionally set other task field values.

New Create Records

Create Salesforce records using values from the flow.

* Label: Create Welcome Email Task * API Name: Create_Welcome_Email_Task

Description: Creates a task for user to send welcome email due one week from now

How Many Records to Create:
 One
 Multiple

How to Set the Record Fields:
 Use all values from a record
 Use separate resources, and literal values

Create a Record of This Object:
* Object: Task

Set Field Values for the Task

Field	Value
Subject	Send Welcome Email
OwnerId	Aa \$User > Id
WhatId	Aa \$Record > Account ID
ActivityDate	fxTodayPlusSeven

+ Add Field

Manually assign variables

Cancel Done

Figure 16.53: Configuring fields for the Create Records component on the Customer account pathway

13. Click Done.
14. Now we want to create another task due 2 weeks from today to remind the user to follow up with a phone call. Select the “+” below the element we just created and select a new Create Records element:

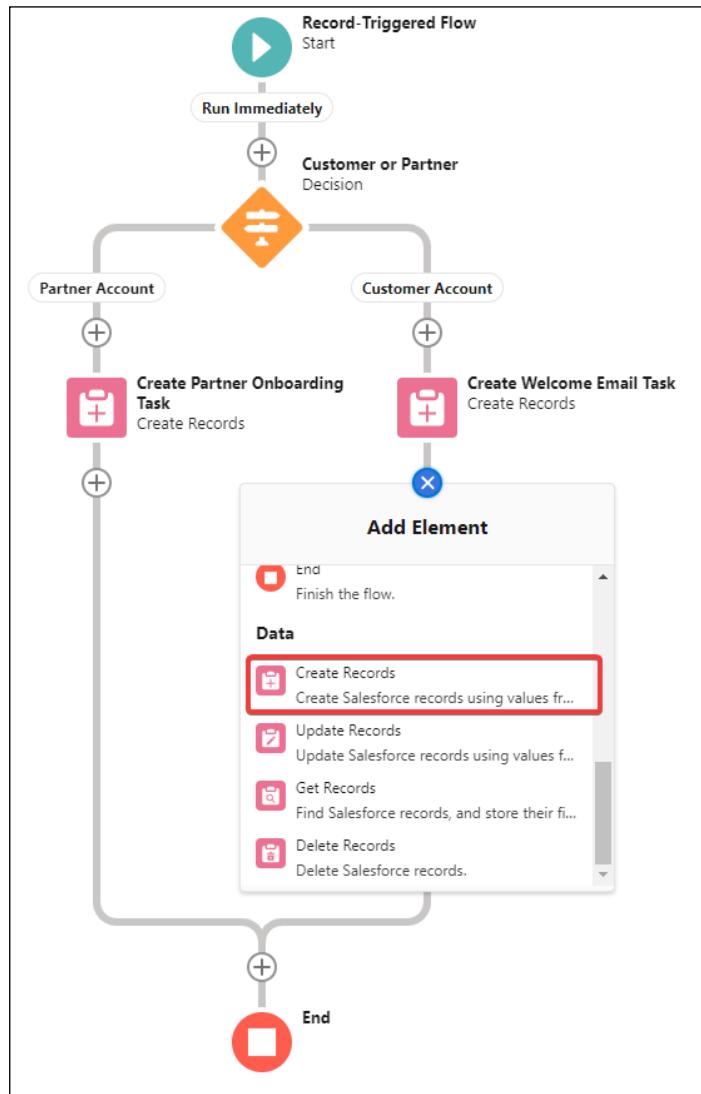


Figure 16.54: Adding a second Create Records component to issue a reminder to the user

15. Configure the **Create Records** element as follows:

- **Label:** Create Followup Phone Call Task
- **API Name:** Create_Followup_Phone_Call_Task
- **Description:** Creates a task for user to make a follow-up phone call
- **How Many Records to Create:** One
- **How to Set the Record Fields:** Use separate resources, and literal values
- **Create a Record of This Object:** Task

New Create Records

Create Salesforce records using values from the flow.

* Label: Create Followup Phone Call Task * API Name: Create_Followup_Phone_Call_Task

Description: Creates a task for user to make a follow-up phone call

How Many Records to Create:
 One
 Multiple

How to Set the Record Fields:
 Use all values from a record
 Use separate resources, and literal values

Create a Record of This Object:
* Object: Task

Set Field Values for the Task

Field: Search fields... Value: Enter value or search resources...

+ Add Field
 Manually assign variables

Figure 16.55: Configuring the new Create Records component

16. Now we are going to assign the field values for the task we are creating:

- To set **Subject**:
 - **Field**: Subject
 - **Value**: Follow-up Phone Call
- To set **Owner / Assigned To**:
 - **Field**: OwnerId
 - **Value**: \$User > Id (this will be set to the Id of the user who triggered the flow)
- To set **WhatId** (this is the record the task is associated with):
 - **Field**: WhatId
 - **Value**: \$Record > Id (this will set it to the Id of the record that triggered the flow, the account in our case)
- To set the due date (**ActivityDate**):
 - **Field**: ActivityDate
 - **Value**: fxTodayPlusFourteen
- You can optionally set other task field values.

New Create Records

Create Salesforce records using values from the flow.

*Label: Create Followup Phone Call Task *API Name: Create_Followup_Phone_Call_Task

Description:
Creates a task for user to make a follow-up phone call

How Many Records to Create
 One
 Multiple

How to Set the Record Fields
 Use all values from a record
 Use separate resources, and literal values

Create a Record of This Object
*Object: Task

Set Field Values for the Task

Field	Value
Subject	Follow-up Phone Call
OwnerId	A \$User > Id
WhatId	A \$Record > Account ID
ActivityDate	fxTodayPlusFourteen

+ Add Field

Manually assign variables

Cancel Done

Figure 16.56: Configuring fields for the new Create Records component

17. Click Done.

Save your flow again. We have built the flow and now it's time to test and distribute. But first, let's recap:

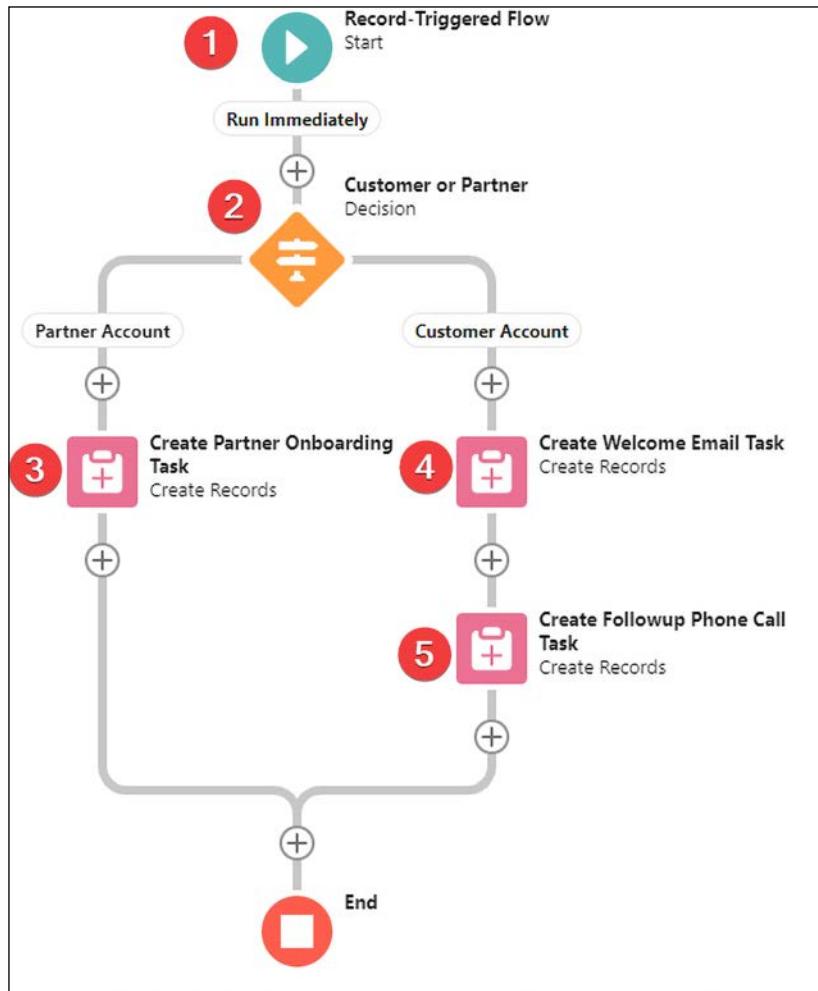


Figure 16.57: Overview of the completed flow

1. This is a record-triggered flow that fires on account creation if the account type is partner or customer.
2. We determine whether this is a partner or customer account.
3. If it's a partner account, we create a task to send the partner agreement.
4. If it's a customer account, we create a task to send the welcome email.
5. Then we create a task for a follow-up phone call (again just for the customer account).



There are several ways we could have done this, and as your flow skills evolve you will realize that what we just did was not the most efficient way. We could have used formulas to determine task subjects and eliminate one of the **Create Records** elements.

Once you are advanced enough in your learning to be able to use record collection variables, you will want to do inserts or updates of the same object using one **Create Records** element (rather than the two we used down the customer account path).

Testing the flow

Now we will test the flow using the debug feature. Click **Debug** in the top-right corner:

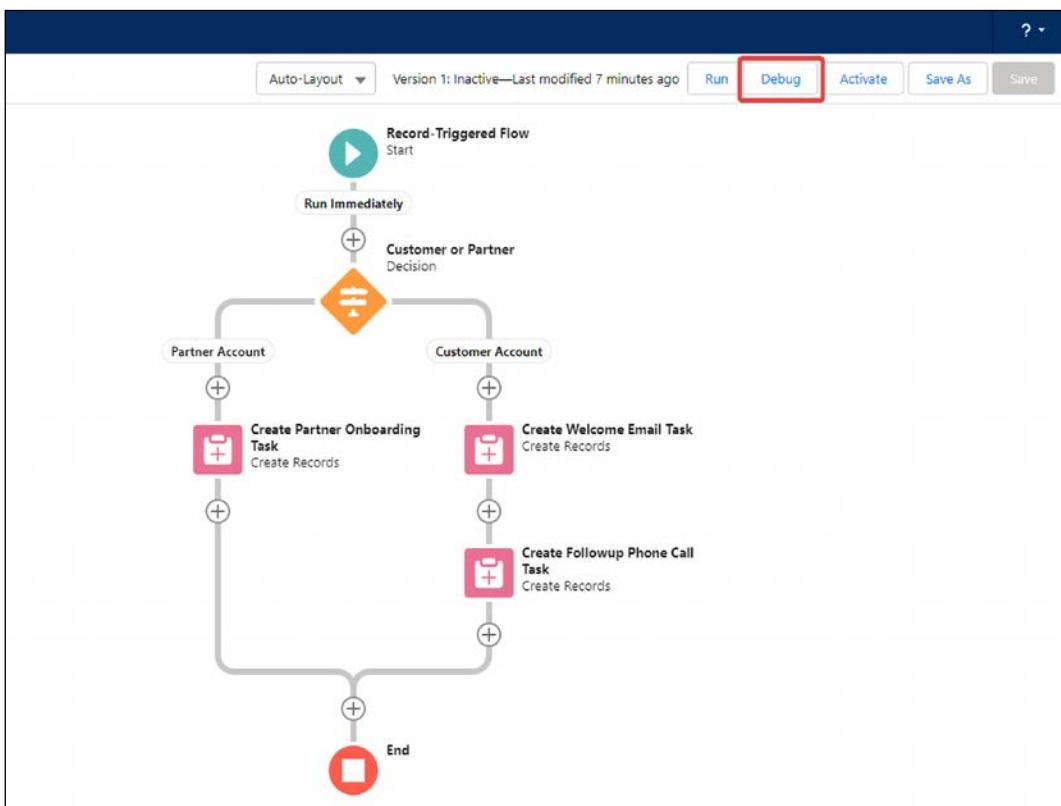


Figure 16.58: Selecting Debug from the Flow Builder

Select an existing customer account and see how the debug tool highlights the path the flow went down:

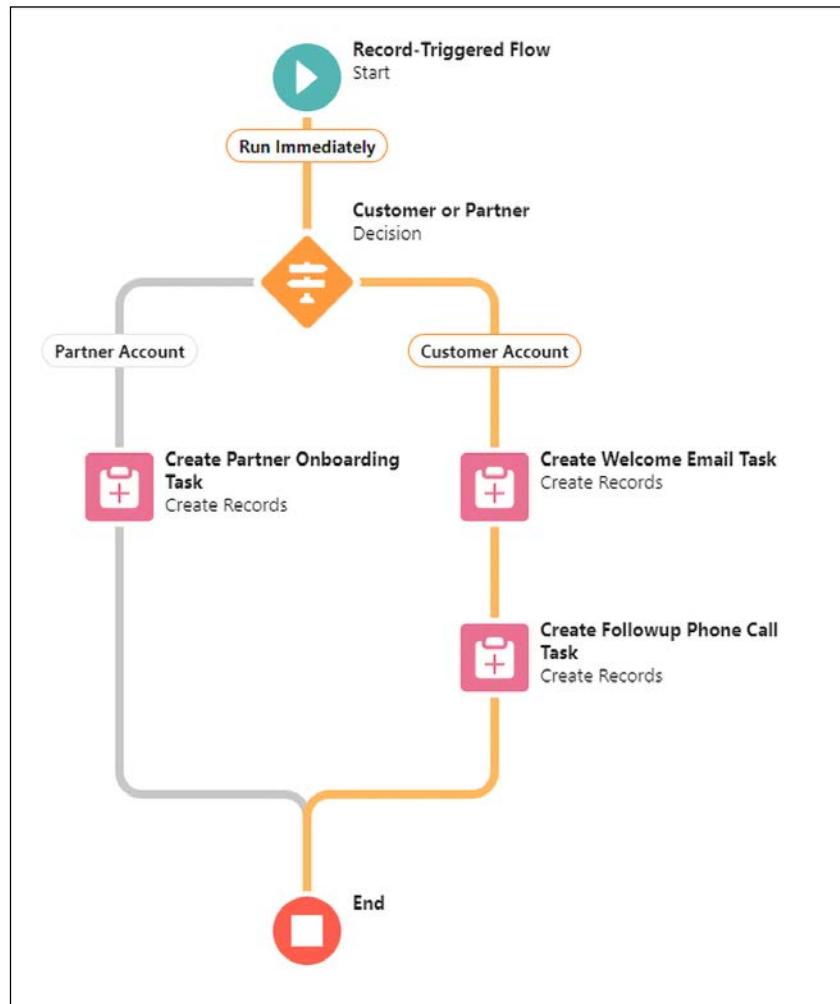


Figure 16.59: Debugging one pathway of the flow

Then debug the flow again with a partner account (you may have to create or update an existing account's type in your org to do this).

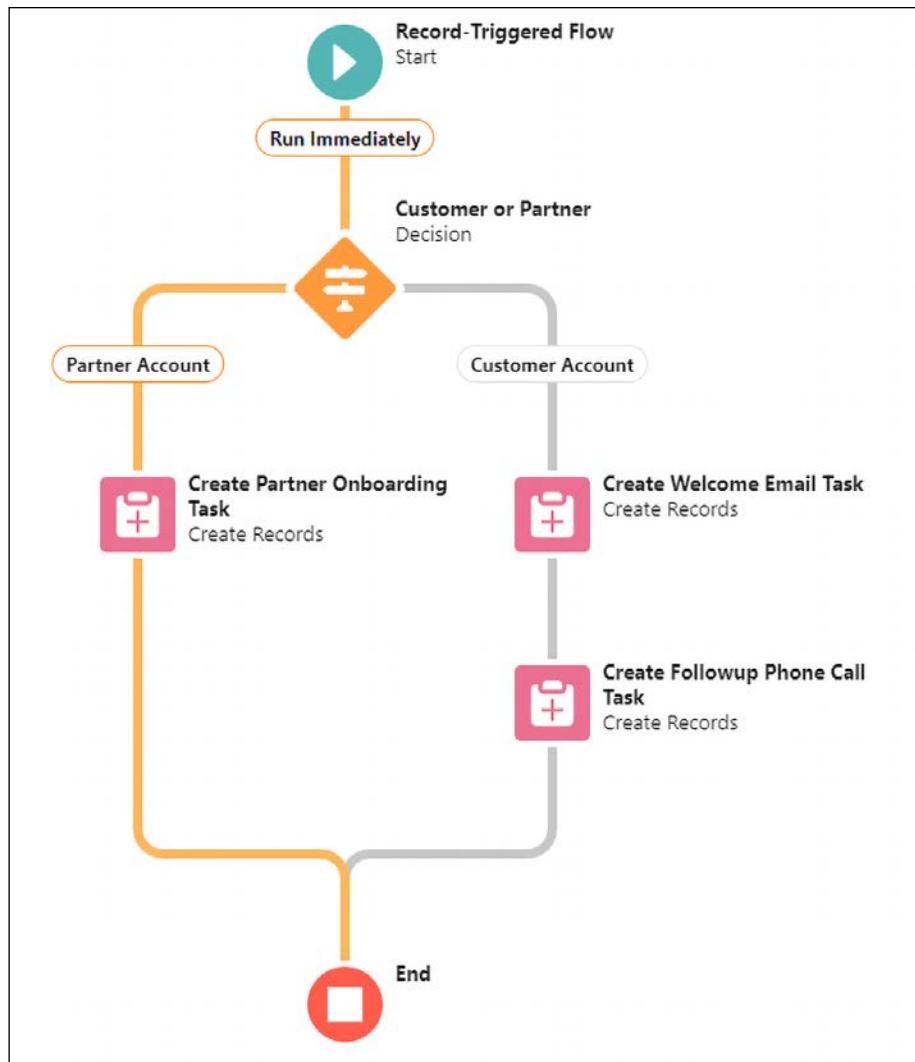


Figure 16.60: Debugging the Partner Account pathway of the flow

Resolve any errors you find when running the debug. Once everything looks good, we are ready to distribute.

Distributing the flow

Record-triggered flows are different from screen flows. Screen flows generally need to be placed somewhere in the UI (record page, utility bar, button, etc.) to be usable. A record-triggered flow fires automatically based on record updates, inserts, and deletes depending on how it is configured. So all we have to do is **Activate** the flow:

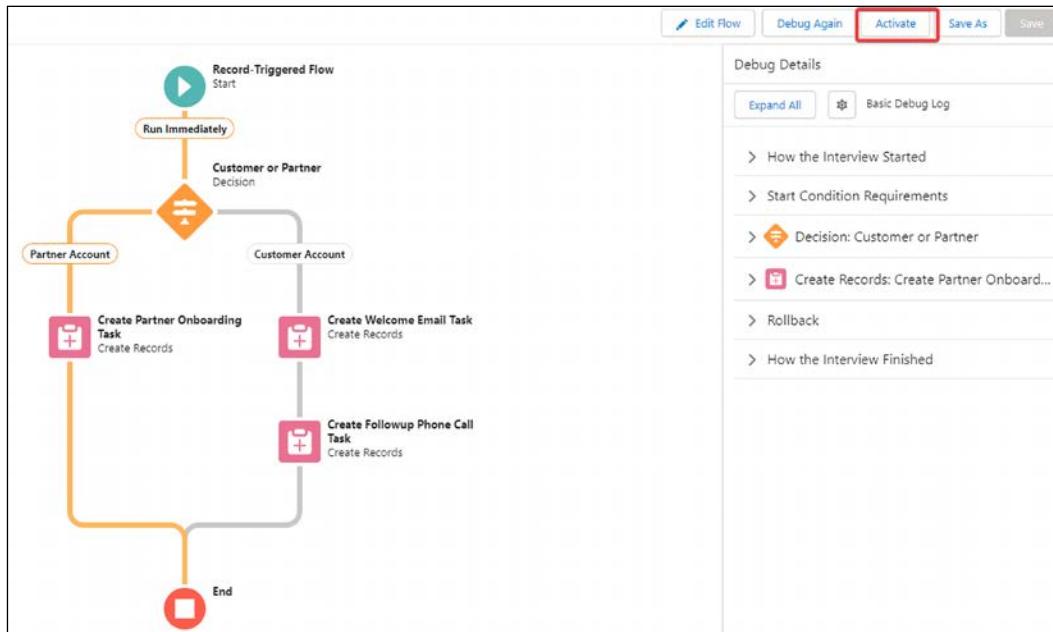


Figure 16.61: Activating the flow without having to place it in a Lightning app's UI

Seeing it in action

Now that the flow is active, go ahead and see it in action. Get out of **Setup** and go create a couple of accounts, making sure that you are selecting relevant account types on creation. You should see tasks get automatically generated related to these accounts.

Great work! You have just made your users' lives easier.

Best practices and more

We just covered the very basics of Salesforce Flow. It is an incredibly powerful tool and should be used carefully. There are tons of great blogs, Trailheads, and learning materials out there for you to develop your skills further. Here are some basic best practices (there are more best practices once you become familiar with loops, record collections, and other advanced topics):

- **Be descriptive:** Put descriptions in all your flow elements. It will help you and others when you have to go back to make updates or troubleshoot. Just as a developer should put comments in their code, a flow builder should use robust descriptions.
- **Naming conventions:** Use naming conventions for your flow resources. It makes it easier to navigate a flow and understand what is happening. The conventions used do not matter much, as long as you are consistent. Here is an example of a naming convention for flow resources:
 - Variable: var[name] (varAccountId was an example we used earlier)
 - Constant: c[name]
 - Formula: fx[name] (see the formulas in *Example 2: record-triggered flow*, such as fxTodayPlusSeven)
 - Text Template: tt[name]
 - Stage: st[name]
- **Test, test, then test again:** You should build flows in sandboxes and test them thoroughly before deploying. Test them using the debug tool. Test them with actual records and by walking through the business processes (in a sandbox). Have others test them too; it is easy to break stuff with a tool like this.
- **Think like a developer:** If you want to become great at building flows, you need to think like a developer. Flow is a development tool, just one that does not require you to know (much) syntax. To use it effectively, you should get comfortable with the basic coding concepts of variables, loops, and logic statements. Going further and understanding how triggers, classes, and methods work will allow you to build flows that do incredible things.

With these best practices in mind, it is also worth noting that there is a considerable amount more to learn. Here are some things that we did not cover:

- Other flow types besides screen flows and record-triggered flows
- How to do proper error handling in your flow
- Collections
- Asynchronous (not real-time) processing using:
 - Scheduled paths
 - Asynchronous paths

- How to break up flows into subflows and utilize input and output variables
- System limits and how to efficiently build flows so you do not run into them
- Using actions and invocable methods to do more complex processing or call out to external systems

There is so much to this tool that an entire book could be written about it, and we just scratched the surface. The goal of this chapter was to introduce you to Flow Builder and get you interested in learning more.

Summary

In this chapter we have uncovered one of the most exciting concepts in Salesforce, Salesforce flows. Beginning with an introduction to flows, we have progressed into learning the different flow types in Salesforce, and then the elements used in the Flow Builder. After introducing the Debug tool, we have dived deep into two examples: screen flows and record-triggered flows. For each use case, we have learned how to build, test, and distribute the flow. Finally, we have covered the best practices when building flows, as well as pointing to the vast amount of advanced concepts beyond this book.

In the next chapter, we will continue learning how to automate in Salesforce by turning our attention to approval processes.

Questions

1. What are the different types of flows and what do they do?
2. What are flow elements? What are the three categories of flow elements?
3. When would you want to use a screen flow versus a record-triggered flow?
4. After you build a screen flow, where can you surface it to users?
5. Why is it important to build flows in a sandbox or developer environment, and not production?
6. What are the different ways you can test a flow?
7. Why is it important to include descriptions in your flow elements?

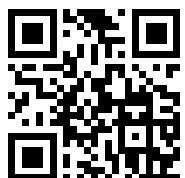
Further reading

- Salesforce help: <https://help.salesforce.com/s/articleView?id=sf.flow.htm&type=5>
- Building flows with Flow Builder: <https://trailhead.salesforce.com/en/content/learn/trails/build-flows-with-flow-builder>

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17

Approval Processes

Approval processes are a type of automation that allows users to submit Salesforce records so that they can be approved in order to continue a specific business process. The approval process has the option of sending the record to one or multiple approvers (in a round-robin fashion), as well as the ability to add submission, approval, rejection, and recall actions. Having these checks and balances on business processes allows for a more streamlined and efficient workflow. Creating and maintaining approvals is a vital part of a Salesforce admin's day-to-day work.

In this chapter, we will cover the following topics in detail:

- Creating an approval process
- Adding entry criteria and approver selection
- Adding actions and viewing the approval steps
- Enabling email approvals
- Business use case

With the help of these topics, you will understand when and how to create an approval process. You will understand how to create an approval process, add entry criteria, select approver(s), add actions, and add approval steps. These skills will help you automate business processes for your organization, leading to higher efficiency and fewer errors being made by your users.

Technical requirements

For this chapter, log into your development organization and follow along as we create an approval process from start to finish.

Creating an approval process

An approval process is a great tool that's used to execute business logic automatically based on a Salesforce record being submitted for approval, and then approved or rejected by another user. Knowing the capabilities of approval processes will help you come up with efficient workflows that lead to fewer clicks and cleaner data. Let's see how this is done.

Business use case

You are the Salesforce Admin for XYZ Widgets. The sales manager has a use case where all closed sales that are \$200,000 or higher and are in the negotiation/review stage need to be submitted to them for final approval. Once the deal is approved, the opportunity stage should automatically update to **Closed Won**. Let's build this approval!

Approval process in action

To create the approval process, perform the following steps:

1. Navigate to the **Setup** page | the **Home** tab (1) | **Approval Processes** (2):

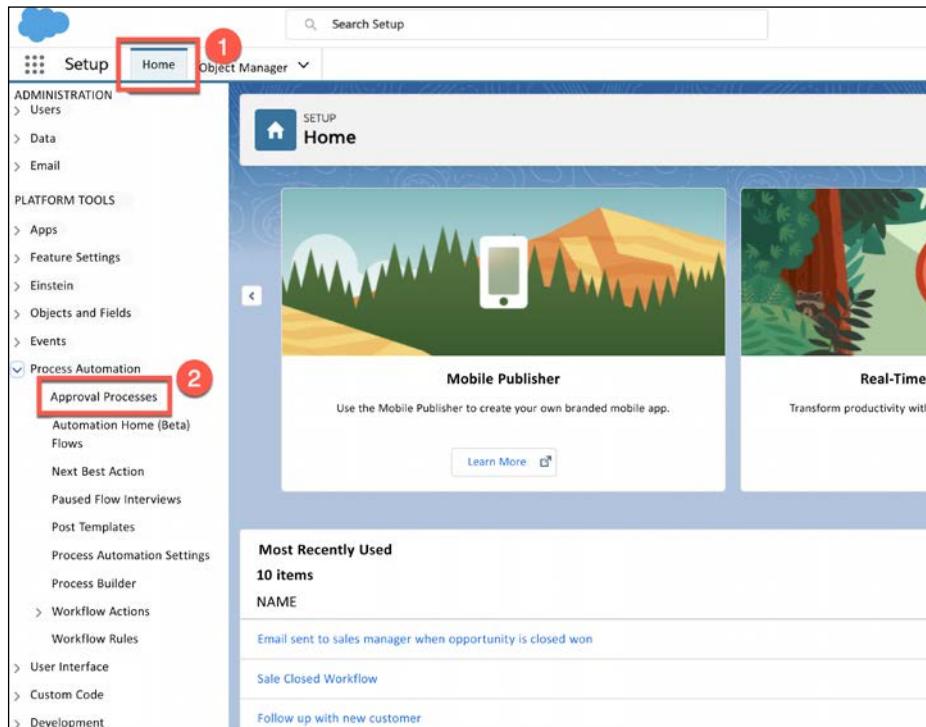


Figure 17.1: Navigating to Approval Processes from the Home tab

2. This will take you to the next step of creating the approval process, as shown in the following screenshot:

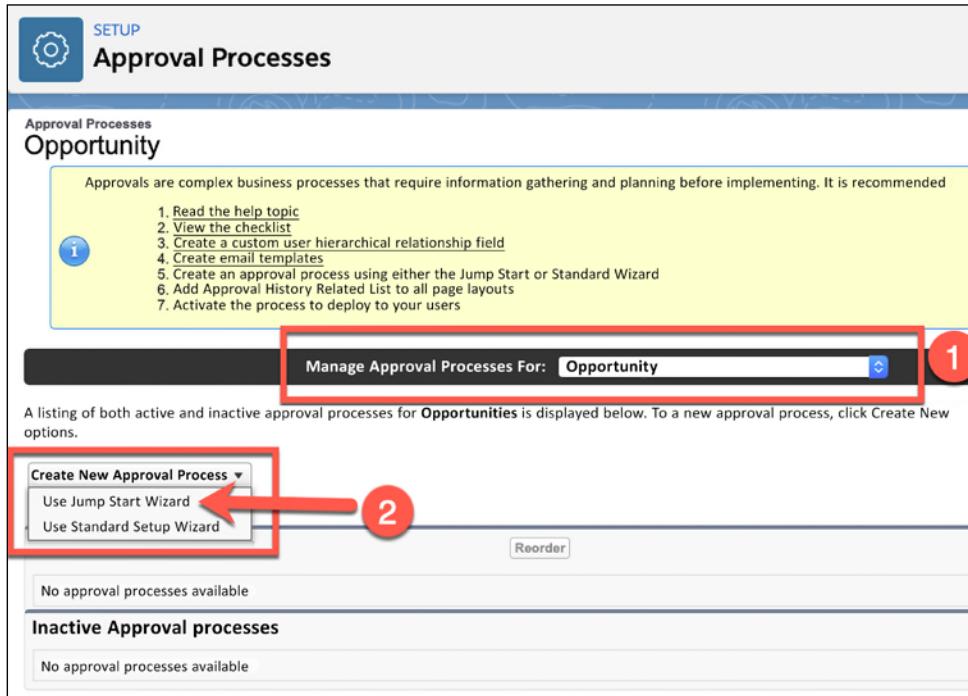


Figure 17.2: Navigating to the Jump Start Wizard for an approval process

There are two steps you need to follow in order to start creating the approval process, as shown in the preceding screenshot:

- a. Choose the object that the approval process will be applied to (1). In our case, this is the **Opportunity** object since we are approving sales greater than \$200,000.
- b. Start the approval process creation by either choosing **Use Jump Start Wizard** or **Use Standard Setup Wizard** (2). We will use the Jump Start Wizard as it condenses the steps into two pages as opposed to six pages for the initial creation of the approval process.

The next page we will be taken to is the Jump Start Wizard. Now, let's take a look at the Wizard and see how we can add entry criteria and approver selection.

Adding entry criteria and approver selection

Now, we need to add the basic approval process information, specify the entry criteria for the approval, and select the approver(s) for the approval process. Refer to the following screenshot for more details:

1 Approval Process Information

The Jump Start wizard creates a one-step approval process for you in just a few Minutes.

Enter a name for your process in the box below and then select an email templates to notify the approver (optional).

Name	Big Deal Approval
Unique Name	Big_Deal_Approval
Approval Assignment Email Template	<input type="text"/>
Add the submit for Approval button and Approval History related list to all opportunity page layouts	

2 Specify Entry Criteria

Use this approval process if the following criteria are met :

Field	Operator	Value
Opportunity: Amount	greater or equal	200000
Opportunity: Stage	equals	Negotiation/Review
--None--	--None--	
--None--	--None--	
--None--	--None--	

3 Select Approver

Using the options below, specify the user to whom the approval request should be assigned.

- Let the submitter choose the approver manually.
- Automatically assign an approver using a standard or custom hierarchy field:
- Automatically assign to approver(s).

4 When multiple approvers are selected:

- Approve or reject based on the FIRST response.
- Require UNANIMOUS approval from all selected approvers.

Figure 17.3: Important areas for adding basic approval process information

From the preceding screenshot, you can see there are four main sections, each of which has specific settings for the approval process. Let's look at these settings in detail:

1. **Approval Process Information:** This section allows you to add the following:
 - A **Name** for the process. This is a label that shows up when you look at the list of all approval processes.
 - A **Unique Name**. This is used if we need to call this process through programming code.
 - An optional **Email Template** for when you request approval from a user. This will let you word the email as needed.
 - A **Submit for Approval** button and a list related to **Approval History**. This applies to all the page layouts of the object that the approval is being built on.
2. **Specify Entry Criteria:** This section, similar to workflow rules, allows you to enter the criteria that allow the record to enter into this approval process. For our business use case, we have two criteria:
 - **Opportunity Amount is greater or equal to \$200,000**
 - **Opportunity Stage equals Negotiation/Review**
3. **Select Approver** options: There are three options for selecting an approver:
 - **Let the submitter choose the approver manually:** This allows the submitter to choose from all Salesforce users.
 - **Automatically assign an approver using a standard or custom hierarchy field:** This can be the **Manager** field on the user record or a custom hierarchy field on the user record.
 - **Automatically assign to approver(s):** This option allows you to assign the approval to one or more specific users. This is the option we will use for our use case since it is a specific manager to whom we need to assign the approval.
4. **Choosing the approver:** Since we chose to automatically assign the approver in the preceding step, in this step, we will add one or multiple approvers. If multiple approvers are selected, there is an option to **Approve or reject based on the FIRST response** or **Require UNANIMOUS approval from all selected approvers**. For our business use case, we will add one approver.

After saving, we will see the following screen:

The screenshot shows the 'Approval Processes' setup page. At the top left is a 'SETUP' button with a gear icon. Below it is a section titled 'Approval Processes'. A message box says: 'You have just created a one-step approval process for Opportunities using the Jump Start Wizard. Although not required, it is recommended that you add the following actions to your approval process.' A numbered list follows:

- ① Create additional steps if a record requires more than one level of approval.
Example:
 - Discounts of more than 15% require an additional manager's approval
- ② Add Initial Submission workflow actions. These actions will take place when a record is submitted for approval.
Example:
 - A Field Update action that changes the value of the Status field to "Pending"
- ③ Add Final Approval workflow actions. These actions will take place when a record has received all necessary approvals.
Example:
 - A Field Update action that changes the value of the Status field to "Approved"
 - An Email Alert action that notifies the owner their record has been approved
- ④ Add Final Rejection workflow actions. These actions will take place when a record has been completely rejected by an approver.
Example:
 - A Field Update action that changes the value of the Status field to "Rejected"
 - An Email Alert action that notifies the owner their record has been rejected
- ⑤ Add Recall workflow actions. These actions will take place when a submitted approval request is recalled.
Example:
 - A Field Update action that changes the value of the Status field from "In Progress" to "Not Submitted"

A red box highlights the 'View Approval Process Detail Page' button at the bottom right.

Figure 17.4: Setup page listing actions to add to an approval process

As you can see, the preceding screenshot suggests that we finish setting up this approval by adding additional actions. Let's click on **View Approval Process Detail Page** to proceed.

Now, we can start adding actions and viewing the approval steps.

Adding actions and viewing the approval steps

Now that we have created the approval process, let's look at how to add actions and view the approval steps based on our business use case. The following screenshot shows where we land after clicking on **View Approval Process Detail Page**:

Initial Submission Actions

Action Type	Description
Record Lock	Lock the record from being edited

Approval Steps

Action	Step Number	Name	Description	Criteria
Show Actions Edit Del	1	Step 1		

Final Approval Actions

Action Type	Description
Edit Record Lock	Lock the record from being edited

Final Rejection Actions

Action Type	Description
Edit Record Lock	Unlock the record for editing

Recall Actions

Action Type	Description
Record Lock	Unlock the record for editing

Figure 17.5: Highlighted areas of the Approval Process Detail Page

As shown in the preceding screenshot, there are multiple sections to consider:

1. **Initial Submission Actions:** The default action when a user submits a record for approval is to lock the record from being edited. In addition to this, you can add one of the four additional actions, that is, create a task, create an email alert, update a field, or send an outbound message. For our business use case, there are no additional actions to create upon submitting an approval.

2. **Approval Steps:** This section shows the steps needed to complete this approval. Had we added multiple approvers and the need for unanimous approval, we would see each approver here as a step. Since our business use case only has one approver, you can see this as **Step 1** under **Approval Steps**.

Now, let's look at **Final Approval Actions**:

The screenshot shows the 'Approval Processes' setup page. At the top, there are configuration details: Entry Criteria (Opportunity: Amount GREATER OR EQUAL 200000), Record Editability (Administrator ONLY), Approval Assignment Email Template, Initial Submitters (Opportunity Owner), and Created By (Sharif Shaalan, 5/7/2020 6:20 AM). Below these are sections for 'Initial Submission Actions', 'Approval Steps', and 'Final Approval Actions'. The 'Final Approval Actions' section is highlighted with a red box. A dropdown menu is open over the 'Action' column, showing options: Task, Email Alert, Field Update (which is highlighted with a red arrow), and Outbound Message.

Action	Type	Description
Edit	Record Lock	Lock the record from being edited

Action	Step Number	Name	Description	Criteria
Show Actions Edit Del	1	Step 1		

Action	Type	Description
Edit	Record Lock	Lock the record from being edited

Action	Type	Description
Edit	Record Lock	Unlock the record for editing

Action	Type	Description
Record Lock		Unlock the record for editing

Figure 17.6: Dropdown options for Final Approval Actions

For **Final Approval Actions**, we need to add one action. Since our business use case says we want the opportunity stage to automatically update to **Closed Won** when the record is approved, we will need to add a field update. From the **Add New** dropdown, select **Field Update**, which will take us to the following screen:

The screenshot shows the 'Field Update Edit' screen in the Salesforce Setup interface. The title bar includes the 'SETUP' icon and the 'Field Updates' page name. Below the title, the section 'Edit Field Update' is titled 'Update Stage to Closed Won'. A descriptive note states: 'Define the field update, including the object associated with the workflow rule, approval process, or entitlement process, the field to update, and the new value.' The main configuration area is titled 'Field Update Edit' and contains the following fields:

Identification	
Name	Update Stage to Closed
Unique Name	Update_Stage_to_Closed i
Description	Update Stage to Closed Won
Object	Opportunity
Field to update	Stage i
Field Data Type	Picklist
Re-evaluate Workflow Rules after Field Change i	

Below this, the 'Specify New Field Value' section includes 'Picklist Options' with three radio button choices: 'The value above the current one', 'The value above the current one', and 'A specific value' (which is selected and set to 'Closed Won'). At the bottom right of the form are three buttons: 'Save' (highlighted with a red box), 'Save & New', and 'Cancel'.

Figure 17.7: Screen for editing a field update

After adding the required information here for the field update, save it. This has been set up so that when the approver approves the record, this field update will occur and the opportunity stage will automatically change to **Closed Won**. After doing this, we will be sent back to the following screen:

SETUP

Approval Processes

Record Editability	Administrator ONLY			
Approval Assignment Email Template				
Initial Submitters	Opportunity Owner			
Created By	Sharif Shaalan, 5/7/2020 6:20 AM			
Initial Submission Actions i Add Existing Add New ▾				
Action	Type	Description		
Record Lock		Lock the record from being edited		
Approval Steps i New Approval Step				
Action	Step Number	Name	Description	Criteria
Show Actions Edit Del	1	Step 1		
Final Approval Actions i Add Existing Add New ▾				
Action	Type	Description		
Edit	Record Lock	Lock the record from being edited		
Edit Remove	Field Update	Update Stage to Closed Won		
Final Rejection Actions i Add Existing Add New ▾				
Action	Type	Description		
Edit	Record Lock	Unlock the record for editing		
Recall Actions i Add Existing Add New ▾				
Action	Type	Description		
Record Lock		Unlock the Record for editing		

Figure 17.8: Returning to the screen for adding actions to an approval process

As shown in the preceding screenshot, there are two more sections to cover on this page:

1. **Final Rejection Actions:** The default rejection action is to unlock the record for editing. Along with unlocking the record, you can optionally add one of the four previously mentioned actions (**Create a Task**, **Email Alert**, **Field Update**, or **Outbound Message**).

For our business use case, there are no additional actions needed for a rejection, so we will leave this as is.

2. **Recall Actions:** This section defines what happens if the user that submitted the record for approval decides to recall the submission. The default action is to unlock the record for editing, thus allowing the user to make changes as needed and resubmit the record for approval. Along with unlocking the record, you can optionally add one of the four previously mentioned actions (**Create a Task**, **Email Alert**, **Field Update**, or **Outbound Message**). For our business use case, there are no additional actions needed for recalling a record, so we will leave this as is.

Now that we have added the actions needed for this approval process, we need to activate the approval by clicking **Activate**:

The screenshot shows the 'Approval Processes' page in Salesforce. At the top, there's a 'SETUP' icon and a 'Gears' icon. The main title is 'Approval Processes' with a sub-section 'Opportunity: Big Deal Approval'. Below the title, there are several tabs: 'Process Definition Detail', 'Initial Submission Actions', 'Approval Steps', and 'Final Approval Actions'. The 'Process Definition Detail' tab is active, displaying details like Process Name ('Big Deal Approval'), Unique Name ('Big_Deal_Approval'), Description (''), Entry Criteria ('Opportunity: Amount GREATER OR EQUAL 200000'), Record Editability ('Administrator ONLY'), Approval Assignment Email Template (''), Initial Submitters ('Opportunity Owner'), and Created By ('Sharif Shaalan, 5/7/2020 6:20 AM'). To the right of these details are buttons for 'Edit', 'Clone', 'Delete', and 'Activate'. The 'Activate' button is highlighted with a red box. Below the 'Process Definition Detail' section, there's a table for 'Initial Submission Actions' with a single row: 'Action' (Record Lock) and 'Type' (Description: Lock the record from being edited). Under 'Approval Steps', there's a table with one step: 'Action' (Show Actions | Edit | Del), 'Step Number' (1), 'Name' (Step 1), 'Description' (Lock the record from being edited), 'Criteria' (User: Sharif Shaalan), and 'Assigned Approver' (User: Sharif Shaalan). The 'Final Approval Actions' section contains two rows: 'Edit' (Action) with 'Type' (Record Lock, Description: Lock the record from being edited) and 'Edit | Remove' (Action) with 'Type' (Field Update, Description: Update stage to Closed Won).

Figure 17.9: Button for activating an approval process at the top right of the screen

Enabling email approvals

Although the approver(s) will get a notification and can approve the record right from inside Salesforce, we want to add an extra option to make it a little easier for our executives on the move. This option is to allow the approver to approve a record by replying to the approval request email with APPROVE or REJECT.

In the following screenshot, I navigated to **Process Automation Settings** to enable this feature:

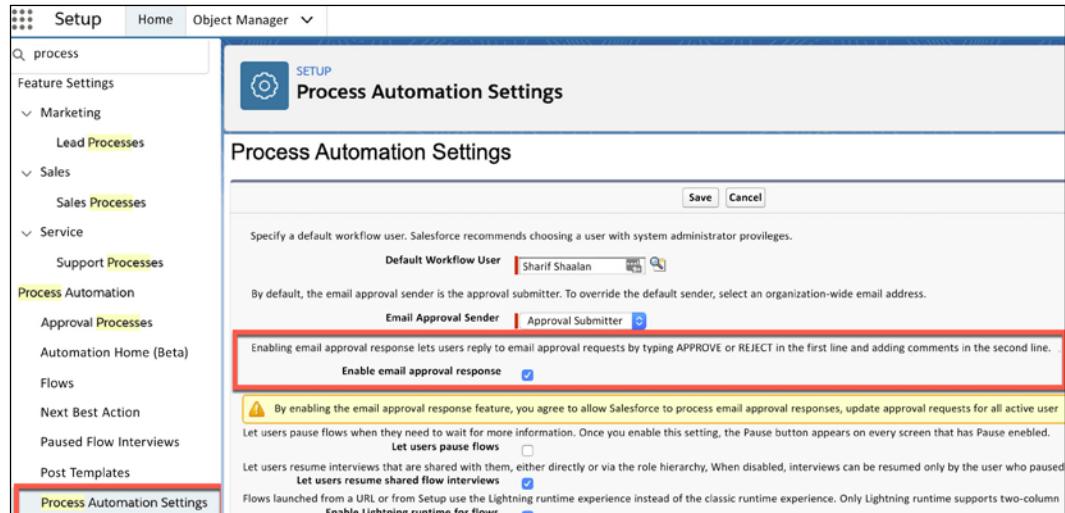


Figure 17.10: Navigating to Process Automation Settings from the Home tab

As you can see, I ticked the **Enable email approval response** checkbox. This will now give our approver(s) another option to approve the record:

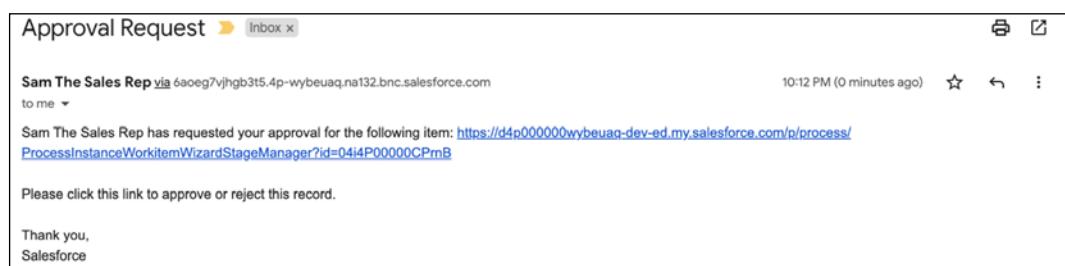


Figure 17.11: Example of an approval response email

Now that we have set up the approval process and enabled the option for an approver to approve via email, let's test it out!

Business use case

Now that we have built the approval process, let's test it out to see if it meets our business requirements. As a recap, the sales manager wants all closed sales that are \$200,000 or higher and are in the negotiation/review stage to be submitted to them for final approval. Once the deal has been approved, the opportunity stage should automatically update to **Closed Won**. Let's see how this works:

1. Navigate to the **Burlington Textiles Weaving Plant Generator** opportunity:

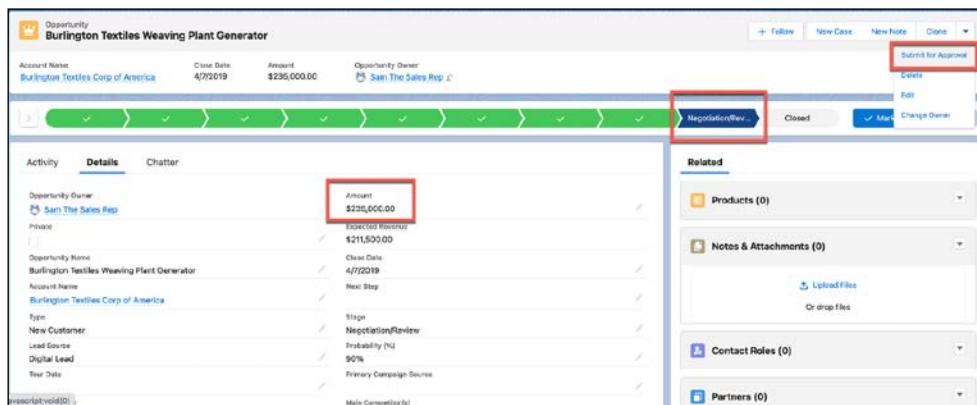


Figure 17.12: Opportunity with the amount and stage sections highlighted

Here, we can see that this opportunity has an amount that is greater than \$200,000 and is in the **Negotiation/Review** stage, so it meets the criteria for being submitted for approval.

2. From the dropdown arrow in the upper-right corner, we can access and click on the **Submit for Approval** button. The following popup will appear:

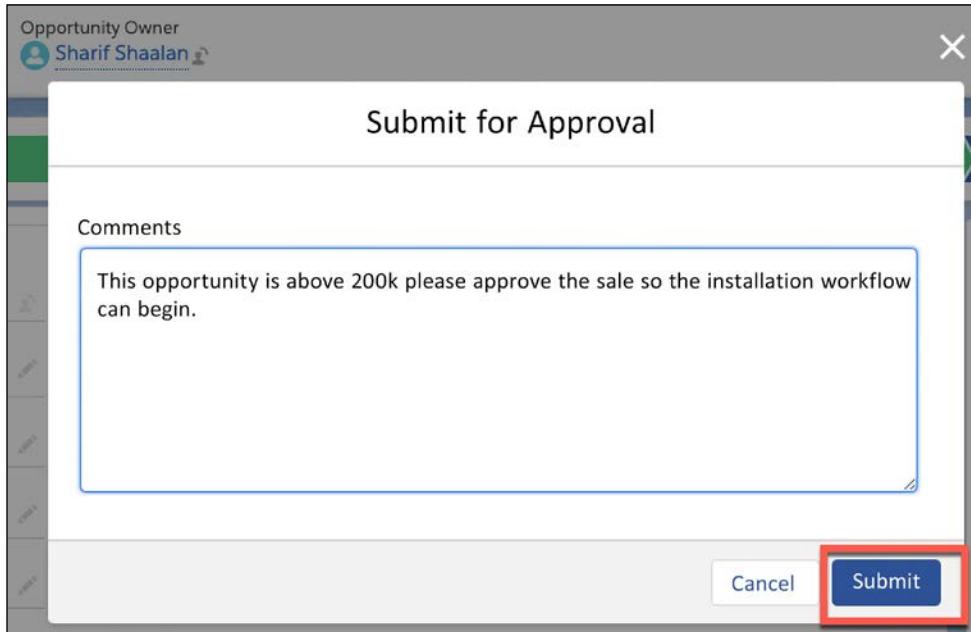


Figure 17.13: Popup when submitting an approval above a certain amount

3. The popup in the preceding screenshot allows the submitter to add a comment for the approver to see. Add a comment and click on **Submit**.

The opportunity has now been submitted. The following screenshot shows the list related to the **Approval History** of the opportunity:

The screenshot shows the Salesforce Opportunities page. At the top, there's a navigation bar with links like Contacts, Campaigns, Dashboards, Reports, Chatter, Groups, Calendar, People, Cases, Forecasts, and More. Below the navigation is a search bar and a toolbar with buttons for Follow, New Case, New Note, and Clone.

The main content area displays an opportunity record. On the left, there's a large blue sidebar. On the right, there are several sections: a summary section with details like Amount (\$235,000.00), Probability (90%), and Close Date (4/7/2019); a Quotes section (0); and an Approval History section.

The Approval History section contains two entries:

- Step 1** (highlighted with a red box and circled with a red number 2):
 - Date: 5/7/2020 6:27 AM
 - Status: Pending
 - Assigned To: Sharif Shaalan
 - Actual Approver: Sharif Shaalan
- Approval Request Submitted** (highlighted with a red box and circled with a red number 1):
 - Date: 5/7/2020 6:27 AM
 - Status: Submitted
 - Assigned To: Sharif Shaalan
 - Actual Approver: Sharif Shaalan
 - Comments: This opportunity is above 200k please approve the sale so the installation workflow can begin.

At the bottom of the Approval History section, there's a "View All" link.

Figure 17.14: Highlighted entries in the Approval History section

4. As you can see, there are now two entries in the **Approval History** section:
 - a. **Approval Request Submitted** (1): This is an audit trail of the submission that shows when this record was submitted for approval.
 - b. **Step 1** (2): This shows the pending step for the approval and to who the approval is assigned.

5. Next, let's take a look at what the approver will see:

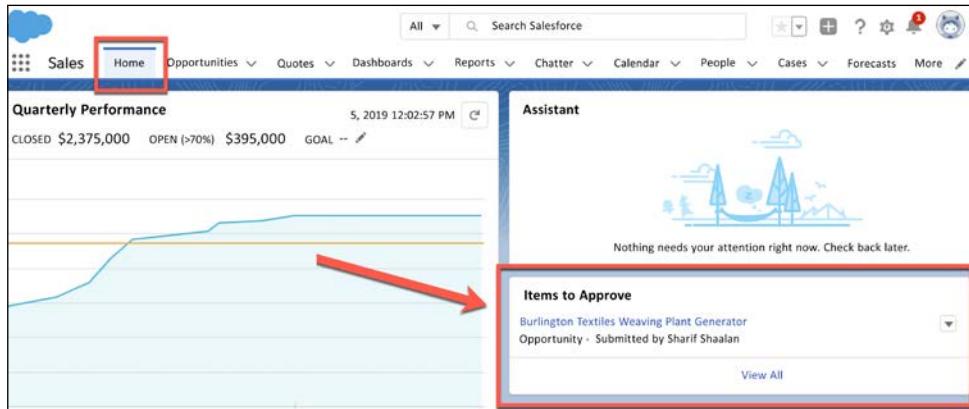


Figure 17.15: Items to Approve section on the approver's home screen

As you can see, the sales manager would have to log into Salesforce.

6. On the home page, there is an **Items to Approve** section. The following screenshot shows the screen that comes up when the sales manager clicks on the record to approve it:

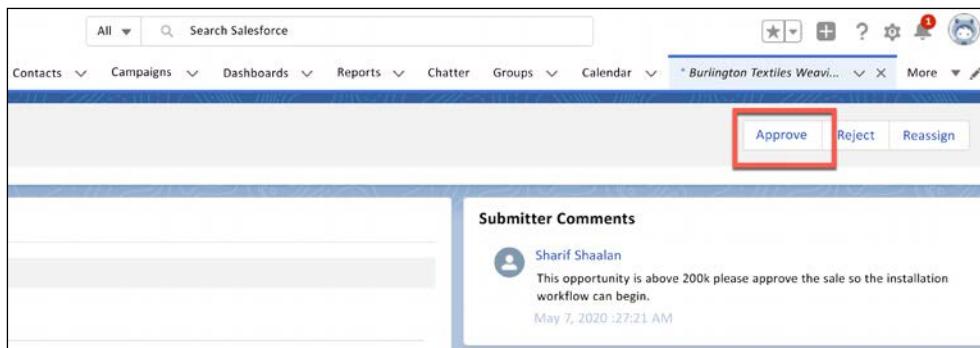


Figure 17.16: Approve button found on the sales manager's screen for a record

In the preceding screenshot, you can see all of the approval details. The sales manager has the option to **Approve**, **Reject**, or **Reassign** the record for approval.

7. When the sales manager clicks on **Approve**, the following popup will appear:

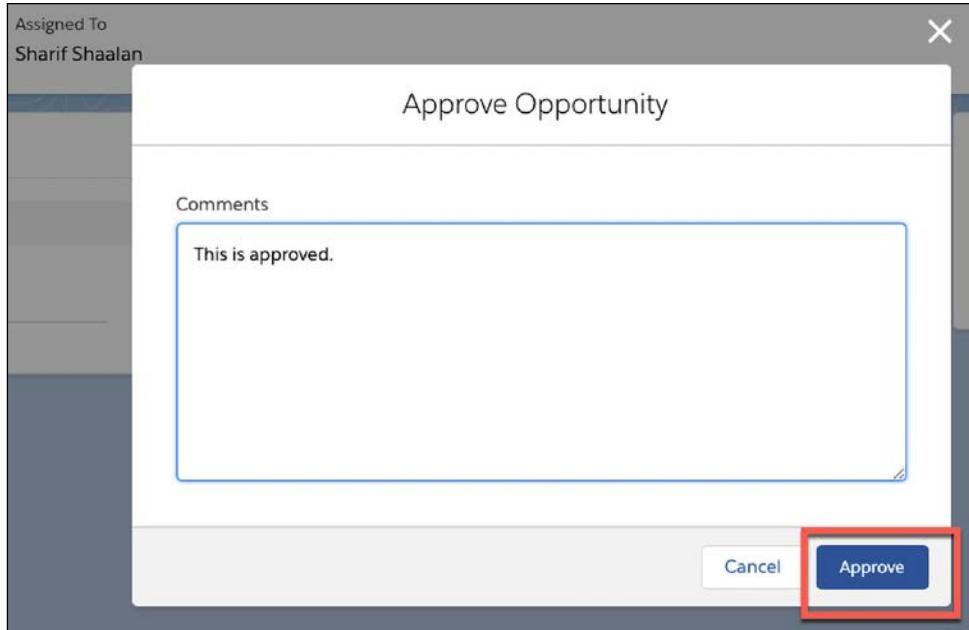


Figure 17.17: Popup when clicking on Approve

This popup allows the approver to add any comments to the approval. The sales manager will click on **Approve** and be brought to the following screen:

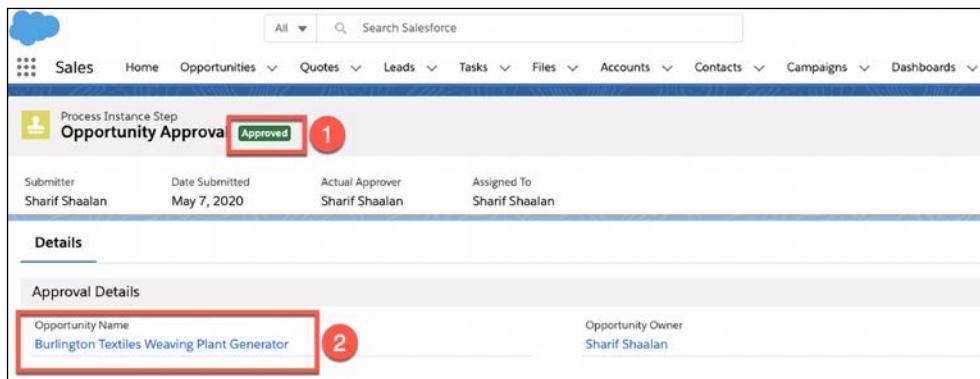


Figure 17.18: Opportunity with approval status highlighted

From the preceding screenshot, we can see that the opportunity has been approved (1).

8. Let's click on **Opportunity Name (2)** to see if the field update has worked. As we can see, we have been navigated back to the opportunity:

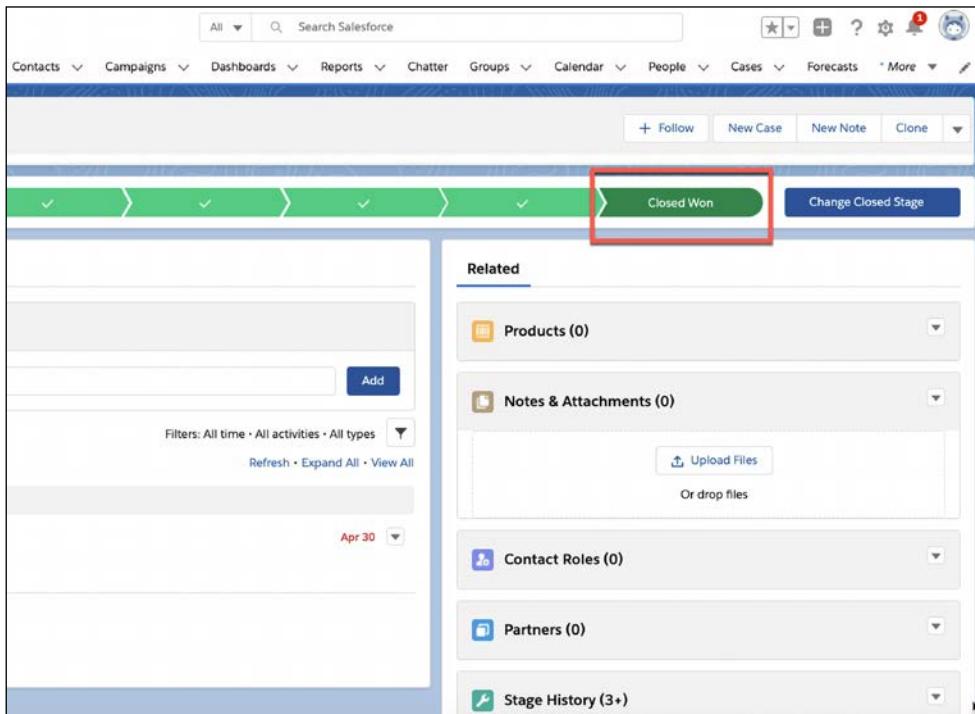


Figure 17.19: Opportunity stage after an opportunity is approved

The opportunity automatically changed to **Closed Won** when it was approved by the sales manager.

9. Finally, let's scroll down to see the **Approval History** one more time:

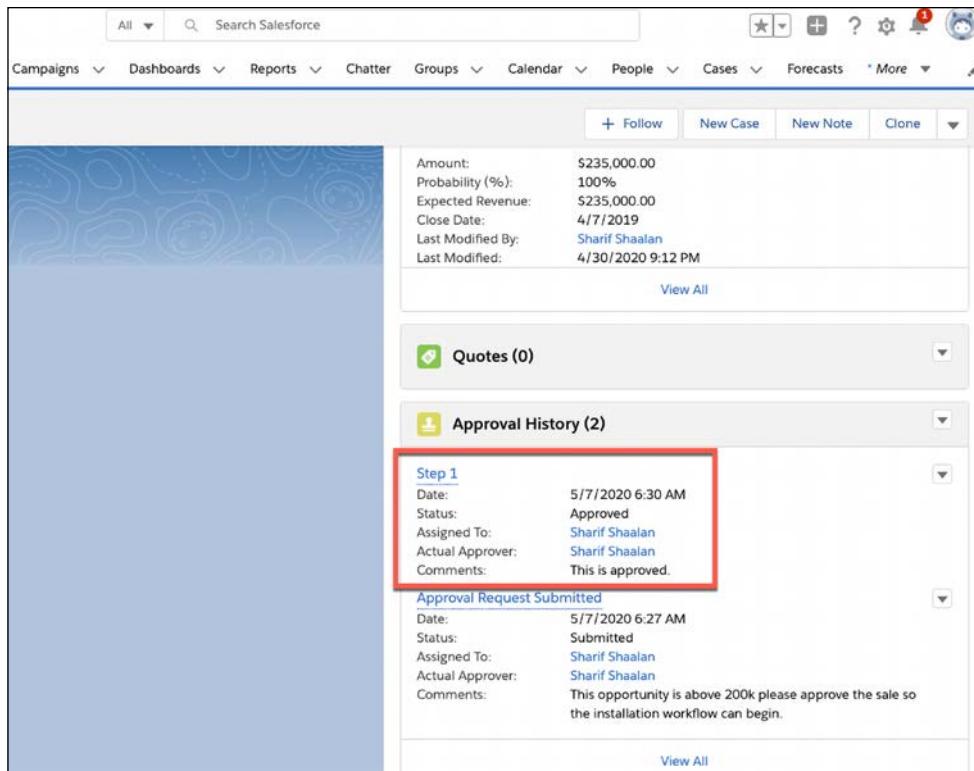


Figure 17.20: Approval status displayed in the Approval History section

As you can see, **Step 1** has now changed from **Pending** to **Approved**.

Now that we have tested the business use case successfully, let's go over what we have learned in this chapter.

Summary

In this chapter, we learned what approval processes are and the use cases for building approvals into our business processes. We learned how to create an approval process and define the entry criteria and select an approver. We also learned how to view approval steps, as well as add various actions based on submitting, approving, rejecting, and recalling the record.

With the use of these skills, you should be able to come up with checks and balances that control various aspects of the business process flow, as well as apply technical solutions for the approval-related requirements that come from your users. In the next chapter, we will look at a different automation tool available in Salesforce, **assignment rules**.

Questions

1. What is the difference between the Jump Start Wizard and the Standard Setup Wizard?
2. Are you able to have more than one approver on an approval process?
3. Why does the record lock for editing when a user submits it for approval?
4. How are the approval process and workflow rule actions similar?
5. What happens to the editability of a record if a user recalls it from an approval?
6. What is the last step needed for an approval process to be live and working?
7. Where can an approver see all items needing approval that have been assigned to them?

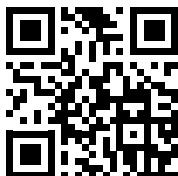
Further reading

- Setting up an Approval Process:
https://help.salesforce.com/articleView?id=approvals_getting_started.htm&type=5
- Submitting a Record for Approval from a Process: https://help.salesforce.com/articleView?id=process_action_submit.htm&type=5

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18

Assignment Rules

The final automation feature we want to highlight is **assignment rules**. Assignment rules allow you to automate your lead generation and support processes by helping you control the record's assignment. Typically, in Salesforce, a lead or case record will be assigned to the person creating the record or to a default user if the lead or case is being created through something such as Web-to-Lead or Web-to-Case. The assignment of records is important since the owner of the record is the person that will work on the specific lead or case to move it along in the process. Assignment rules allow you to set rules that will assign a new lead or case to a specific user or queue based on criteria.

In this chapter, we will cover the following topics in detail:

- Creating lead assignment rules
- Creating a queue
- Creating case assignment rules
- Assignment rules in action

With the help of these topics, you will be able to understand when to use assignment rules, as well as how to create an assignment rule and the rule entries for a *specific* assignment rule. You will also learn how to create a queue, which will allow us to assign a record to a queue rather than a user. These skills will help you automate business processes for your organization, leading to higher efficiency and fewer errors being made by your users.

Technical requirements

For this chapter, log into your development organization and follow along as we create lead and case assignment rules.

Creating lead assignment rules

Lead assignment rules are a great tool for assigning lead records automatically. Knowing the capabilities of lead assignment rules will lead to fewer clicks for your users and quicker business process execution when working with leads. Lead assignment rules are created in the **Setup** section of Salesforce. Let's learn how to create a lead assignment rule.

Business use case

You are the Salesforce admin for XYZ Widgets. The sales manager has a use case where any new lead created in Salesforce needs to be assigned to a specific user based on the **State/Province** field of the lead. Leads with a state/province of **New York** will be assigned to one user, while leads with a state/province of **New Jersey** will be assigned to another. Let's learn how to build this.

Lead assignment rules in action

To create a lead assignment rule, we need to perform a few steps:

1. Navigate to the **Setup** page | the **Home** tab | **Feature Settings** | **Lead Assignment Rules**, as shown in the following screenshot:

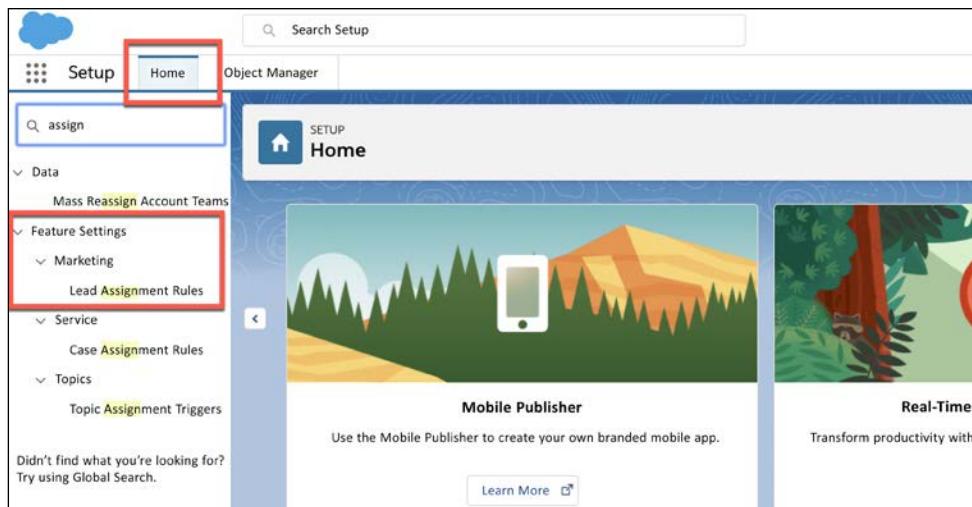


Figure 18.1: Navigating to Lead Assignment Rules from the Home tab

2. This will take you to the next step in creating the lead assignment rule. Click on **New**:

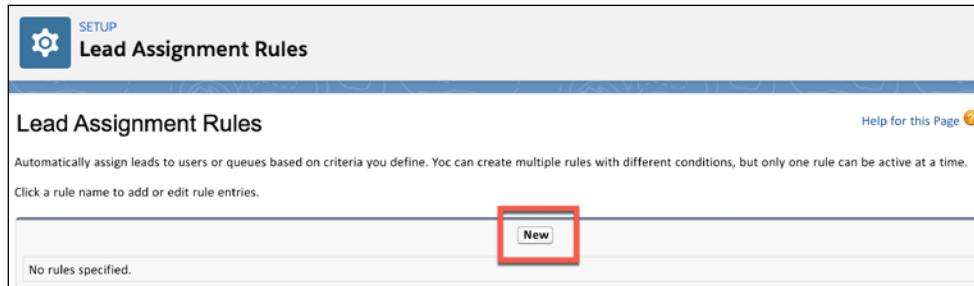


Figure 18.2: Button for creating a new lead assignment rule

3. This takes us to the following page, where we check the **Active** checkbox (1) to mark this rule as **Active**, enter the **Rule Name** (2), and click on **Save** (3):

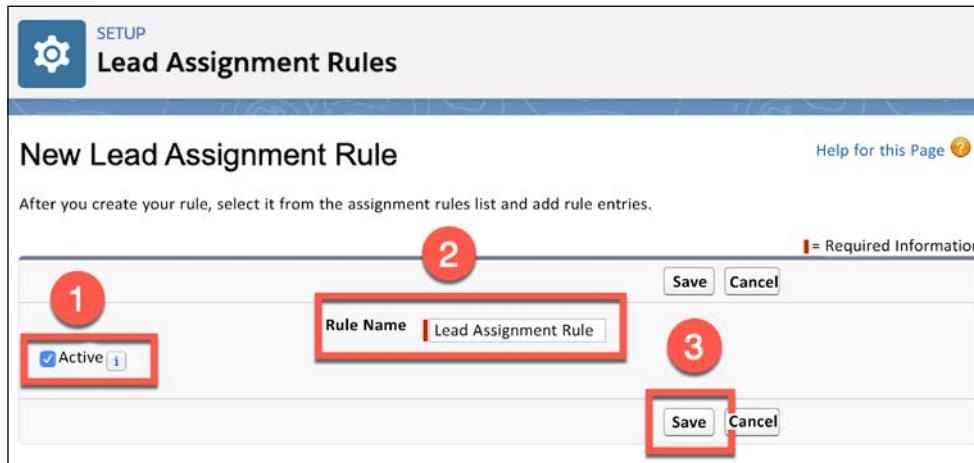


Figure 18.3: Naming and saving the new lead assignment rule

After doing this, we will be sent to the following page:

Lead Assignment Rule

Add rule entries that specify the criteria used to route leads. You can reorder rule entries on this page after you create them.

Rule Detail

Rule Name	Lead Assignment Rule	Active	<input checked="" type="checkbox"/>
Created By	Sharif Shaalan, 5/8/2020 8:26 PM	Modified By	Sharif Shaalan, 5/8/2020 8:26 PM

Rule Entries

No rule entries specified.

We recommend you create multiple rule entries under this rule. It is typically not necessary to create more than one rule. However, you may need to create an

Figure 18.4: Rule details and button to add new entries

Here, you can see that our **Lead Assignment Rule** has been created.

- The next step is to add two rule entries so that we can assign the New York and New Jersey leads. Clicking on **New** takes us to the following screen:

Lead Assignment Rules

Enter the rule entry

Step 1: Set the order in which this rule entry will be processed

Sort Order 1

Step 2: Select the criteria for this rule entry

Rule this rule if the criteria are met :

Field	Operator	Value	AND
Lead: State/Province	equals	New York	AND
--None--			

Step 3: Select the user or queue to assign the Lead to

User Queue Sharif Shaalan Do Not Reassign Owner

Email Template

Save **Save & New** Cancel 5

Figure 18.5: Steps taken on the enter rule entry screen

There are a few steps in the preceding rule entry screen to discuss:

- a. **Sort Order (1):** Salesforce evaluates all of the entries on an assignment rule in this sort order. Once a match is found, the lead is assigned and the evaluation process stops. This field allows you to determine the order the rule entries are evaluated in.
- b. **Select the criteria for this rule entry (2):** For our business use case, the criteria for this rule is any lead where **State/Province** is **New York**. Any lead that meets this criteria will trigger this assignment rule.
- c. **User/Queue selection (3):** Here, we have the option to assign this lead to a user or a queue. For our business use case, we will assign it to a user. Creating a queue will be covered in the following section of this chapter.
- d. **Email Template (4):** Here, you can choose to include a custom email template for the email that goes out to the user when a lead is assigned to them. If no template is chosen, a default lead assignment email will go out. I will leave this blank for our use case and allow the default template to be used.
- e. Clicking on **Save & New (5)** allows us to add the second rule entry for our business use case, as shown in the following screenshot:

The screenshot shows the 'Lead Assignment Rules' page in Salesforce. At the top, there's a 'SETUP' icon and the title 'Lead Assignment Rules'. Below that, a sub-header says 'Rule Entry Edit' and 'Lead Assignment Rule'. The main area has three sections: 'Step 1: Set the order in which this rule entry will be processed' (with a 'Sort Order' of 2), 'Step 2: Select the criteria for this rule entry' (with a table showing a single filter: 'Lead: State/Province' equals 'New Jersey' AND), and 'Step 3: Select the user or queue to assign the Lead to' (with a user selected as 'Sharif Shaalan' and the 'Do Not Reassign Owner' checkbox checked). At the bottom are 'Save', 'Save & New', and 'Cancel' buttons. A red box highlights the filter criteria table, and a circled '1' is over it. Another red box highlights the 'Save' button, and a circled '2' is over it.

Figure 18.6: Rule Entry Edit screen for a second rule entry

5. This rule entry has a sort order of 2 since it is the second entry on this assignment rule. For the criteria, I set **State/Province** to **New Jersey** (1). Clicking on **Save** (2) takes us to the following screen:

The screenshot shows the 'Lead Assignment Rule' details page in Salesforce. At the top, there's a 'SETUP' icon and a 'Help for this Page' link. The main section is titled 'Lead Assignment Rule'. It displays a summary of the rule: 'Rule Name: Lead Assignment Rule', 'Active: checked', 'Created By: Sharif Shaalan, 5/8/2020 8:26 PM', and 'Modified By: Sharif Shaalan, 5/8/2020 8:31 PM'. Below this is a 'Rule Entries' table with two rows. The first row, 'Lead: State/Province EQUALS New York', has an 'Order' value of 1 and is assigned to 'Sharif Shaalan'. The second row, 'Lead: State/Province EQUALS New Jersey', has an 'Order' value of 2 and is also assigned to 'Sharif Shaalan'. A red box highlights the second row.

Action	Order	Criteria	Assign To
Edit Del	1	Lead: State/Province EQUALS New York	Sharif Shaalan
Edit Del	2	Lead: State/Province EQUALS New Jersey	Sharif Shaalan

Figure 18.7: Created rule entries shown on the details page of a lead assignment rule

As you can see, the assignment rule has been created and is now active. It also has two rule entries to assign any new leads that come in with a New York or New Jersey state to the appropriate user. Our business use case has two entries, but you can add many more entries based on the complexity of your use case.

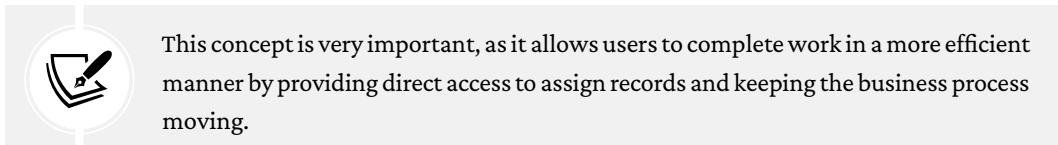
Now that we have created a lead assignment rule, let's take a look at how to create a queue. A queue will help us organize who can own records, which will help us demonstrate case assignment rules later in this chapter.

Creating a queue

In Salesforce, every record has to be owned by a user or a queue. A *queue* is a group of users who can own records.

From a business perspective, one example is where new leads are placed in a lead queue. Users who are assigned to it can go into the lead queue list view and reassign leads to themselves that they wish to pursue.

Another use case could be when a group of support users is assigned to a case queue. From there these support users can actively go into the case queue list view to reassign cases to themselves. They will then be the owners of any reassigned cases and are responsible for working on these cases.



This concept is very important, as it allows users to complete work in a more efficient manner by providing direct access to assign records and keeping the business process moving.

Business use case

You are the Salesforce admin for XYZ Widgets. The support manager has a use case where a New York Cases queue needs to be created for the New York region support representatives. This queue will be used in the next section as part of our case assignment rules use case. Let's learn how to create a case queue.

Queues in action

To create a queue, we need to perform a few steps:

1. First, we need to navigate to the **Setup** page | the **Home** tab (1) | **Queues** (2) | **New** (3) to create a new queue, as shown in the following screenshot:

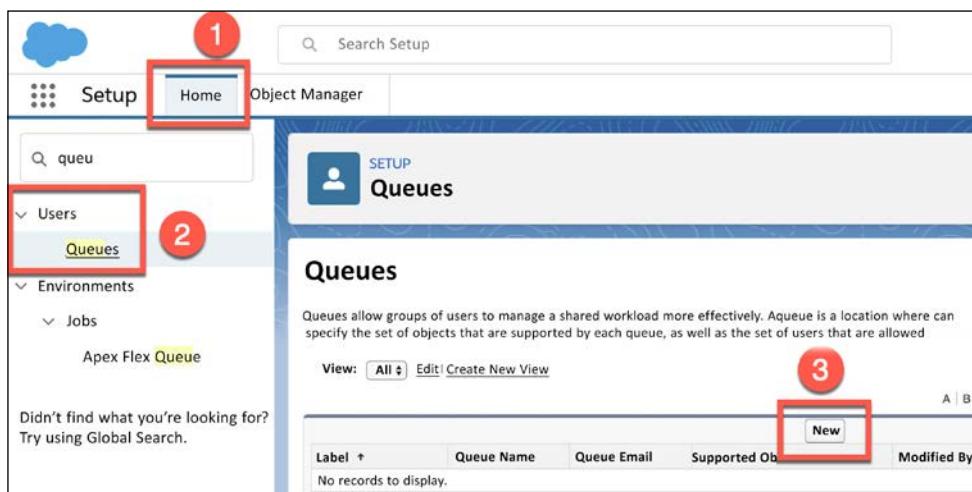


Figure 18.8: Navigating to Queues from the Home tab

This brings us to the following screen:

The screenshot shows the 'New Queue' configuration page. The 'Queue Name and Email Address' section is highlighted with a red box and labeled '1'. It contains fields for 'Label' (set to 'New York Cases'), 'Queue Name' (set to 'New_York_Cases'), and 'Queue Email' (unchecked). The 'Save' button is also highlighted with a red box and labeled '4'. The 'Supported Objects' section shows a list of available objects on the left and selected objects on the right ('Case') with an 'Add' button between them, labeled '2'. The 'Queue Members' section shows a search bar and a list of available members ('User: Integration User', 'User: Security User') with a selected member ('User: Sharif Shaalan') highlighted in a red box and labeled '3'.

Figure 18.9: Naming and selecting objects and members for a new queue

2. From the preceding screenshot, we can see that we carried out the following steps:
 - a. **Queue Name and Queue Email (1):** Here, I entered New_York_Cases as the queue label and the queue API name (used to reference the queue throughout the code). Optionally, you can add a queue email address, which will send the assignment email to this address rather than sending individual emails to everyone in the queue when a record is assigned to the queue. Finally, you can check the **Send Email to Members** checkbox, which allows you to send individual emails to everyone in the queue when a record is assigned. This checkbox is typically checked if you don't add a queued email.

- b. **Selected Objects (2):** Here, we add the case object since this will be a case queue.
- c. **Selected Members (3):** Here, we can add all of the users that will be part of this queue.
- d. **Save (4):** Finally, save the queue.

Saving the queue brings us to the following page:

The screenshot shows the 'Queues' page in the Salesforce Setup. At the top, there's a header with a user icon, 'SETUP', and 'Queues'. Below the header, the title 'Queues' is displayed. A descriptive text states: 'Queues allow groups of users to manage a shared workload more effectively. A queue is a location where records can be routed to await supported by each queue, as well as the set of users that are allowed to retrieve records from the queue.' Underneath this, there are navigation links for 'View: All' and 'Create New View', and a letter-based navigation bar (A|B|C|D|E|F|G|H|I|J|K|L|M|N|O|P|Q|R|S|T|U|V|W|X|Y|Z|Other|All). A red box highlights the main data table. The table has columns: Action, Label †, Queue Name, Queue Email, Supported Objects, Modified By, and Last Modified Date. One row is visible, showing 'Edit | Del' for 'New York Cases', 'New York Cases' for both Queue Name and Queue Email, 'Case' for Supported Objects, 'Shaan, Sharif' for Modified By, and '5/8/2020 8:34 PM' for Last Modified Date.

Action	Label †	Queue Name	Queue Email	Supported Objects	Modified By	Last Modified Date
Edit Del	New York Cases	New York Cases		Case	Shaan, Sharif	5/8/2020 8:34 PM

Figure 18.10: Queue details shown on the Queues page

As you can see, the **New York Cases** queue has now been created. Let's move on to creating case assignment rules, where we will use this case queue as part of our business use case.

Creating case assignment rules

Case assignment rules are a great tool for assigning case records automatically. Knowing the capabilities of case assignment rules will lead to fewer clicks for your users and quicker business process execution when working with cases. Case assignment rules are created in the **Setup** section of Salesforce. Let's learn how to create a case assignment rule and apply it either to a user or to a queue.

Business use case

You are the Salesforce admin for XYZ Widgets. The support manager has the following use cases for you:

- Any new case with a **State/Province** of New York will be assigned to the **New York Cases** queue
- Any new case with a **State/Province** of New Jersey will be assigned to a user

Let's learn how to build these.

Case assignment rules in action

To create a case assignment rule, we need to perform the following steps:

- First, we need to navigate to the **Setup** page | the **Home** tab | **Service** | **Case Assignment Rules**, as shown in the following screenshot:

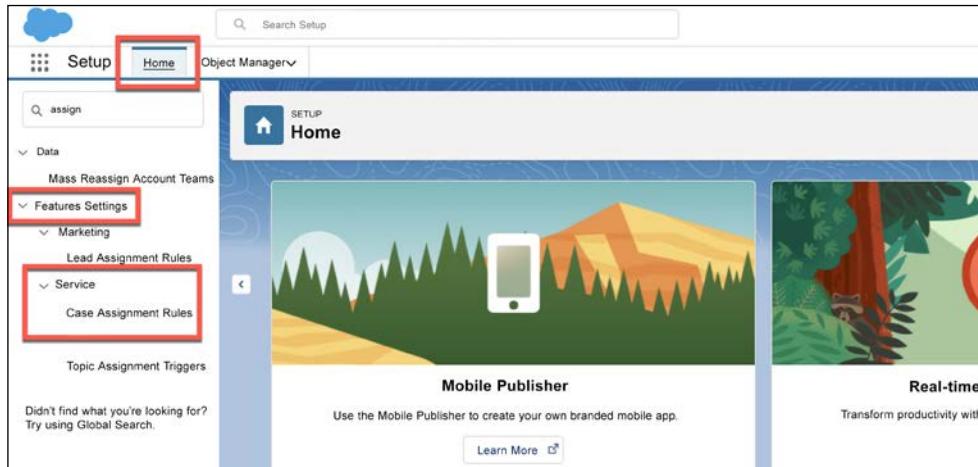


Figure 18.11: Navigating to Case Assignment Rules from the Home tab

- This will take you to the next step in creating the case assignment rule, where we click on **New**:



Figure 18.12: Button for creating a new case assignment rule

On creating a new assignment, we land on the following screen:

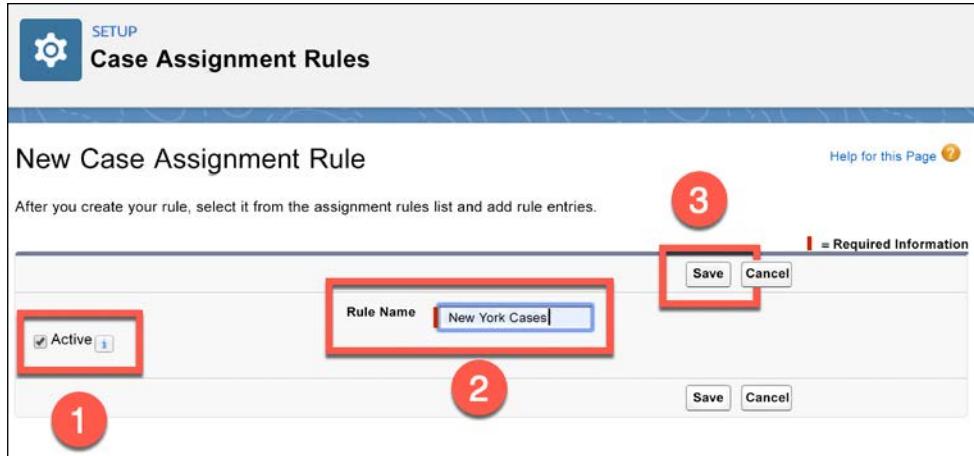


Figure 18.13: Naming and saving a case assignment rule

3. Here, we check the **Active** checkbox (1) to mark this rule as active, enter the **Rule Name** (2), and click on **Save** (3), which takes us to the following screen:

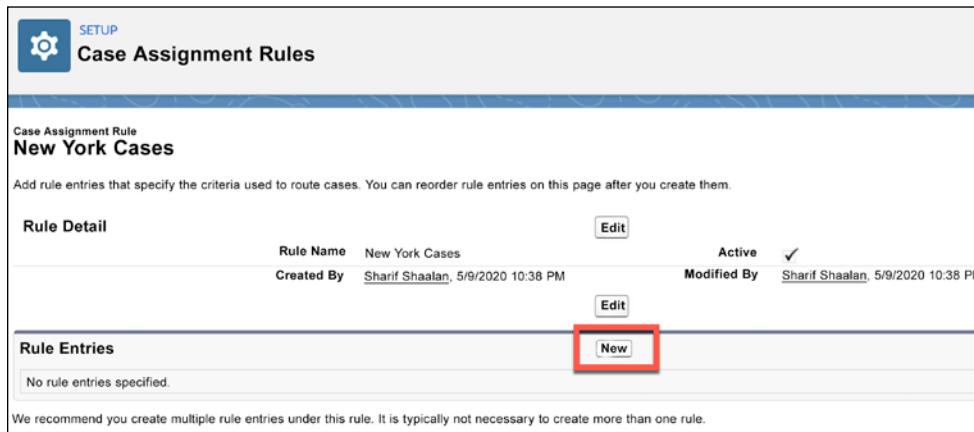


Figure 18.14: Button to add a rule entry to a case assignment rule

Here, you can see that the case assignment rule has been created.

4. The next step is to add two rule entries for our two business use cases so that we can assign New York and New Jersey cases. Clicking on **New** takes us to the following screen:

Step 1: Set the order in which this

Sort Order	1
------------	---

Step 2: Select the criteria for this rule entry

Run this rule if the [criteria are met] :	Field: Contact: Mailing State/Province	Operator: equals	Value: New York	AND
	--None--	--None--		AND
	--None--	--None--		AND
	--None--	--None--		AND
	--None--	--None--		AND

Step 3: Select the user or queue to as

Queue	New York Cases	<input type="checkbox"/> Do Not Reassign Owner
-------	----------------	--

Step 4: Optionally, select predefined case teams to add to the case

Predefined Case Teams	Add Row
-----------------------	---------

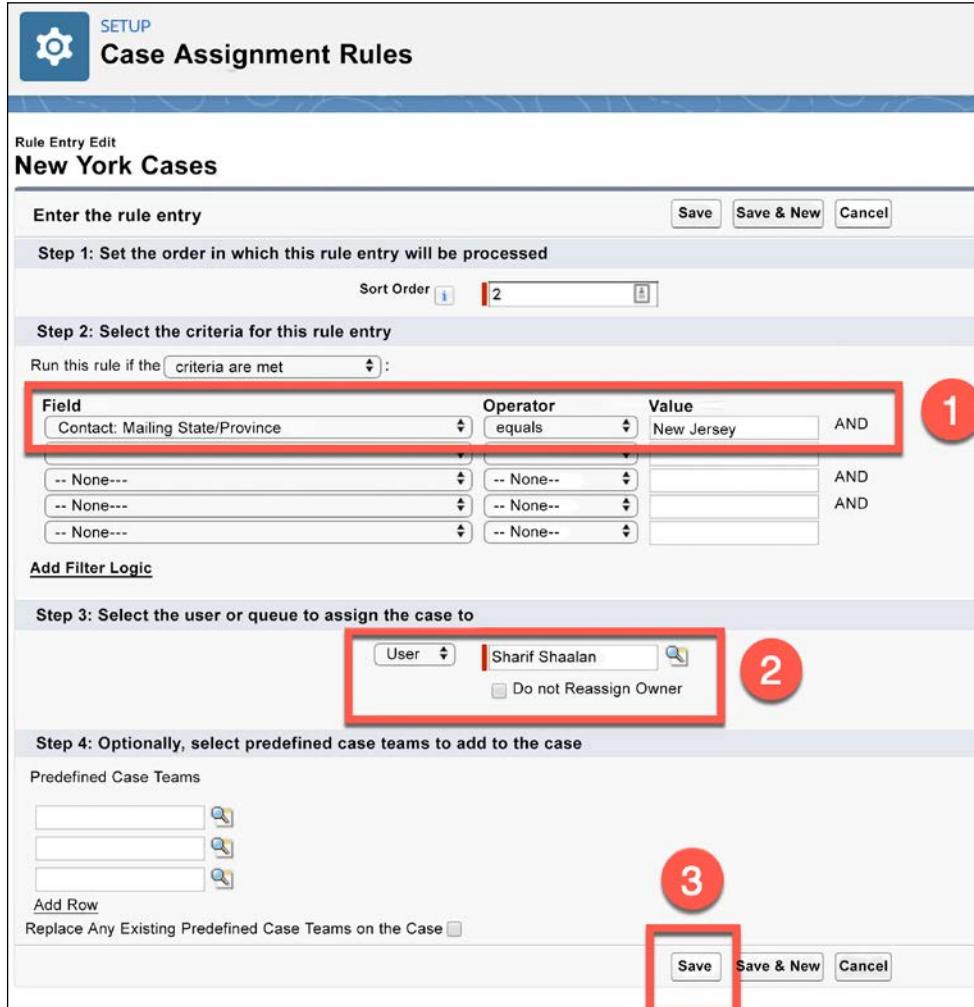
Save **Save & New** **Cancel**

Figure 18.15: Steps taken on the Rule Entry Edit page for a case assignment rule

There are a few steps we need to discuss regarding the **Case Assignment Rules** screen:

- a. **Sort Order** (1): Salesforce evaluates all of the entries on an assignment rule in this sort order. Once a match is found, the case is assigned and the evaluation stops. This field allows you to determine the order the rule entries are evaluated in.
- b. **Select the criteria for this rule entry** (2): For our business use case, the criteria for this rule is any case where **State/Province** is **New York**. Any case that meets this criteria will trigger this assignment rule.
- c. **User/Queue** selection (3): Here, we have the option to assign this case to a user or a queue. For our business use case, we will assign it to the queue we created previously, that is, the **New York Cases** queue.

- d. **Email Template (4):** Here, you can choose to include a custom email template for the email that goes out to the queue or queue members when a case is assigned to the queue. If no template is chosen, a default case assignment email will go out. I will leave this blank for our use case and allow the default template to be used.
 - e. **Case Teams (5):** Optionally, you can add predefined case teams to this case. We will leave this blank for our use case.
 - f. **Save (6):** This will allow us to save this rule entry.
5. Next, we will add the second rule, as follows:



The screenshot shows the 'Case Assignment Rules' setup screen for 'New York Cases'. It displays three main steps:

- Step 1: Set the order in which this rule entry will be processed**
Sort Order: 2
- Step 2: Select the criteria for this rule entry**
Run this rule if the criteria are met:

Field	Operator	Value	Logic
Contact: Mailing State/Province	equals	New Jersey	AND
-- None---	-- None--		AND
-- None---	-- None--		AND
-- None---	-- None--		
- Step 3: Select the user or queue to assign the case to**
User: Sharif Shaalan
 Do not Reassign Owner

At the bottom, there are buttons for Save, Save & New, and Cancel.

Figure 18.16: Steps taken to create a second rule entry

As you can see, this rule entry has a sort order of 2 since it is the second entry on this assignment rule. For the criteria, I entered **State/Province** as New Jersey (1). I chose the user that will be assigned the New Jersey leads (2) and clicked on **Save** (3). Clicking on **Save** takes us to the following screen:

The screenshot shows the 'Case Assignment Rule' details page for 'New York Cases'. At the top, there's a 'SETUP' button and a 'Help for this page' link. Below that, the rule name is 'New York Cases', and it's marked as 'Active'. The 'Rule Entries' section is highlighted with a red border and contains two entries:

Action	Order	Criteria	Assign To	Email
Edit Del	1	Contact: Mailing State/Province EQYALS New York	New York Cases	<input type="checkbox"/>
Edit Del	2	Contact: Mailing State/Province EQYALS New Jersey	Sharif Shaalan	<input type="checkbox"/>

Figure 18.17: Created rule entries shown on the details page of a case assignment rule

As you can see, the assignment rule has been created and is now active. It also has two rule entries that we can assign to any new leads that come in from New York or New Jersey to the appropriate queue and user. Our business use case has two entries, but you can add many more entries based on the complexity of your use case.

Now that we have created a lead assignment rule, a queue, and a case assignment rule, let's see these assignment rules in action.

Assignment rules in action

Now that we have created a lead and a case assignment rule, let's see how this looks in action. The assignment functionality works the same way for leads and cases, but we will use cases for our example since the case assignment rule allows us to assign to both a user and a queue. Any case that is created automatically through Web-to-Case or Email-to-Case will trigger the assignment rules. In our examples, we will create the cases directly in Salesforce.

The following screenshot shows the account record we will be using for our test:

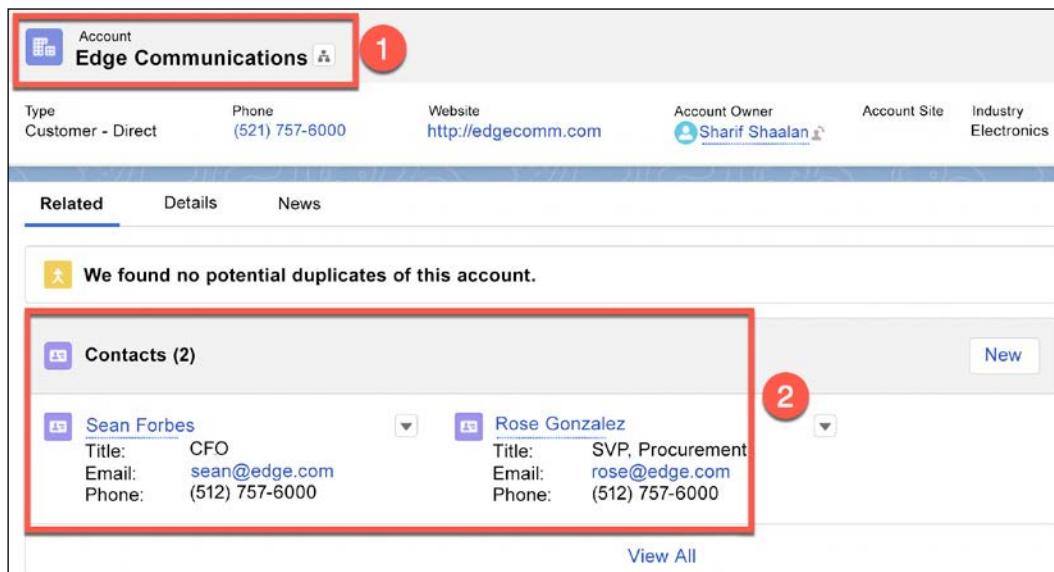


Figure 18.18: Highlighted areas of an account record

As you can see, we will use the **Edge Communications** account (1). We will create cases using the two existing contacts, **Sean Forbes** and **Rose Gonzalez** (2). I made sure to update **Mailing State/Province** for **Sean Forbes** to New Jersey and **Mailing State/Province** for **Rose Gonzalez** to New York. These are the criteria the assignment rules will check so that it can assign them to the correct user or queue.

Next, navigate to the **Cases** tab and click on **New**. This brings us to the following screen:

The screenshot shows the 'New Case' creation form. A red box highlights the 'Contact Name' and 'Account Name' fields, which are populated with 'Sean Forbes' and 'Edge Communications' respectively. A red circle with the number '1' is positioned next to the 'Case Origin' field, which is set to 'Phone'. A red box also highlights the 'Assign using active assignment rule' checkbox at the bottom left, which is checked. A red circle with the number '2' is positioned next to the 'Description' field, which contains the text 'Sean Forbes Case'. The form includes sections for 'Web Information', 'Additional Information', and 'Description Information'. Buttons for 'Cancel', 'Save & New', and 'Save' are located at the bottom right.

Contact Name
Sean Forbes

Account Name
Edge Communications

*Case Origin
Phone

Type
Mechanical

Case Reason
Installation

Web Information

Web Email

Web Company

Web Name

Web Phone

Additional Information

Product
-- None--

Engineering Req Number

Potential Liability
-- None--

SLA Violation
-- None--

Description Information

Subject
Sean Forbes Case

Description

Assign using active assignment rule

Send notification email to contact

Cancel Save & New Save

Figure 18.19: Creating a case for a contact

In the preceding screenshot, I filled out the information for a new case, as follows:

1. I added **Sean Forbes** as the contact and **Edge Communications** as the account.
2. I checked the **Assign using active assignment rule** checkbox. This is what makes sure that this new case will be evaluated and assigned appropriately. If I didn't check this box, the case would automatically be assigned to the person creating it.

Upon clicking **Save**, the case should be assigned to the user **Sharif Shaalan**, as per our assignment rule, since **Sean Forbes** has a **Mailing State/Province** of New Jersey on his contact record. In the following screenshot, I navigated back to the **Cases** tab to check on the assignment:

The screenshot shows the Salesforce interface with the 'Cases' tab selected. A red box labeled '1' highlights the 'Recently Viewed' button. A red box labeled '2' highlights the 'Subject' column for the first case, which shows 'Sean Forbes Case'. A red box labeled '3' highlights the 'Case Owner Alias' column for the same case, which shows 'SShaa'. The table also includes columns for Case Number, Status, Date/Time Opened, and Case Owner Alias.

Case Number	Subject	Status	Date/Time Opened	Case Owner Alias
00001028	Sean Forbes Case	New	5/14/2020 9:43 PM	SShaa
00001027	Widget Installation	New	4/30/2020 9:12 PM	SShaa

Figure 18.20: Checking that the assignment rule has assigned the case to a certain case owner

As shown in the preceding screenshot, I took several steps to check this:

1. I went to the **Recently Viewed** view.
2. I searched for the subject of my recently created **Case**.
3. Here, I could see that the case owner alias is **SShaa**, which is the alias for **Sharif Shaalan**. This shows that the test passed.

Next, I want to test the assignment of cases into the New York queue. From the Cases tab, I clicked on New, which brought me to the following screen:

The screenshot shows the 'Create Case' form. A red box highlights the 'Contact' and 'Account' fields. A red circle with the number '1' points to the 'Contact' field, which contains 'Rose Gonzalez'. A red box highlights the 'Account' field, which contains 'Edge Communications'. A red circle with the number '2' points to the bottom-left corner of the form, where two checkboxes are located: 'Assign using active assignment rule' (checked) and 'Send notification email to contact'. The 'Save' button is highlighted with a blue box.

Rose Gonzalez

Edge Communications

1

2

Assign using active assignment rule

Save

Figure 18.21: Creating a case and setting it to be assigned by a rule

In the preceding screenshot, I filled out the information for a new case, as follows:

1. I added **Rose Gonzalez** as the contact and **Edge Communications** as the account.
2. I checked the **Assign using active assignment rule** checkbox.

Upon clicking **Save**, the case should be assigned to the **New York Cases** queue, as per our assignment rule, since **Rose Gonzalez** has a **Mailing State/Province** of New York on her contact record. In the following screenshot, you can see that I navigated back to the **Cases** tab to check on the assignment:

The screenshot shows the Salesforce Cases page. At the top, there's a navigation bar with tabs like Service, Home, Chatter, Accounts, Contacts, Cases, Reports, Dashboards, and Certifications. Below the navigation bar, a header bar includes a search field 'Search Cases and more...', a star icon, a plus sign, a question mark, a gear icon, and a bell icon. The main area is titled 'Cases' and has a sub-header 'New York Cases'. A red box labeled '1' highlights this sub-header. Below it, a table lists one item: Case Number 00001029, Contact Name Rose Gonzalez, Subject Rose Gonzalez Case, Status New, Priority Medium, Date/TIME OPENED 5/14/2020 9:47 PM, and Case Owner Alias New York Cases. Red boxes labeled '2' and '3' highlight the Subject and Case Owner Alias columns respectively. The bottom of the page shows a footer with links like New, Accept, Change Owner, and Printable View.

Figure 18.22: Checking that a case has been automatically assigned to New York Cases

As you can see, I took several steps to check this:

1. I went to the **New York Cases** view. This view was automatically created when we created our queue earlier in this chapter.
2. I searched for the subject of my recently created **Case**.
3. Here, I could see the case owner alias is **New York Cases**, which is the queue that we created. This shows that the test passed.

Now that we have created assignment rules, created a queue, and tested the case assignment rule, let's go over what we have learned in this chapter.

Summary

In this chapter, we learned what an assignment rule is and how to create a lead and a case assignment rule. We learned what queues are and how to assign records to queues using assignment rules. We also understood what rule entries are and how to create multiple rule entries for a single assignment rule. Then, we applied these skills to real-life use cases to help you understand how assignment rules are used within the context of a business.

In the next chapter we will cover **advanced data types**.

Questions

1. Besides a user, what else can a case or lead record be assigned to?
2. How is the sort order used on an assignment rule?
3. What happens if you don't choose an email template for a rule entry?

4. When creating a queue, what is the **Queue Email** field used for?
5. If you leave the **Queue Email** field blank, who gets notified when a record is assigned to a queue?

Further reading

- Assignment rules: https://help.salesforce.com/articleView?id=customize_leadrules.htm&type=5
- Setting up queues: https://help.salesforce.com/articleView?id=setting_up_queues.htm&type=5

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19

Data Integrity with Formulas and Validations

Salesforce offers several features to ensure data integrity. Two of the most common features are **formulas** and **validation rules**. These tools help keep data trusted in two ways: formula fields eliminate the need for manual entry, and validation rules allow you to place rules around what data may be entered on a field or record.

In this chapter, we will cover the following data integrity features in detail:

- Overview of formulas
- Creating a formula field
- Understanding validation rules
- Creating a validation rule

With the help of these topics, you will be able to understand and create formulas and validation rules.

Technical requirements

For this chapter, make sure you log in to your development org and follow along as we walk through how to create formulas and validation rules.

Overview of formulas

Formulas are used to calculate **custom fields** and add logic to features such as validation rules and flows. Formulas calculate based on **operators** and **functions**.

The following operators and functions are available in Salesforce formulas. Using a combination of these results in a very powerful data integrity engine.

Below, we have provided screenshots of the different operators and functions categorized into different areas. First, we will see math, logic, and text operators; next, we will see date and time, logic, math, text, summary, and advanced functions. Have a brief look through the information below to get an idea of the tools you have available to you:



Note that you can view these operators and functions, and their relevant descriptions, at any time on Salesforce Help (see *Further reading*).

- Math operators:

OPERATOR	DESCRIPTION
+ (Add)	Calculates the sum of two values.
- (Subtract)	Calculates the difference of two values.
* (Multiply)	Multiplies its values.
/ (Divide)	Divides its values.
^ (Exponentiation)	Raises a number to the power of a specified number.
() (Open Parenthesis and Closed Parenthesis)	Specifies that the expressions within the open parenthesis and close parenthesis are evaluated first. All other expressions are evaluated using standard operator precedence.

Figure 19.1: List of math operators available in Salesforce formulas

- Logic operators:

OPERATOR	DESCRIPTION
= and == (Equal)	Evaluates if two values are equivalent. The = and == operators are interchangeable.
<> and != (Not Equal)	Evaluates if two values aren't equivalent.
< (Less Than)	Evaluates if a value is less than the value that follows this symbol.
> (Greater Than)	Evaluates if a value is greater than the value that follows this symbol.
<= (Less Than or Equal)	Evaluates if a value is less than or equal to the value that follows this symbol.
>= (Greater Than or Equal)	Evaluates if a value is greater than or equal to the value that follows this symbol.
&& (And)	Evaluates if two values or expressions are both true. Use this operator as an alternative to the logical function AND.
(Or)	Evaluates if at least one of multiple values or expressions is true. Use this operator as an alternative to the logical function OR.

Figure 19.2: List of logic operators available in Salesforce formulas

- Text operators:

OPERATOR	DESCRIPTION
& and + (Concatenate)	Connects two or more strings.

Figure 19.3: List of text operators available in Salesforce formulas

- Date and time functions:

FUNCTION	DESCRIPTION
ADDMONTHS	Returns the date that is the indicated number of months before or after a specified date. If the specified date is the last day of the month, the resulting date is the last day of the resulting month. Otherwise, the result has the same date component as the specified date.
DATE	Returns a date value from year, month, and day values you enter. Salesforce displays an error on the detail page if the value of the DATE function in a formula field is an invalid date, such as February 29 in a non-leap year.
DATEVALUE	Returns a date value for a date/time or text expression.
DATETIMEVALUE	Returns a year, month, day, and GMT time value.
DAY	Returns a day of the month in the form of a number from 1 through 31.
DAYOFYEAR	Returns the day of the calendar year (from 1 through 366).
FORMATDURATION	Formats the number of seconds with optional days, or the difference between times or dateTimes as HH:MI:SS.
HOUR	Returns the local time hour value without the date in the form of a number from 1 through 24.
ISOWEEK	Returns the ISO 8601-week number (from 1 through 53) for the given date, ensuring that the first week starts on a Monday.
ISOYEAR	Returns the ISO 8601 week-numbering year (in 4 digits) for the given date, ensuring that the first day is a Monday.

Figure 19.4: List of date and time functions available in Salesforce formulas

FUNCTION	DESCRIPTION
ADDMONTHS	Returns the date that is the indicated number of months before or after a specified date. If the specified date is the last day of the month, the resulting date is the last day of the resulting month. Otherwise, the result has the same date component as the specified date.
DATE	Returns a date value from year, month, and day values you enter. Salesforce displays an error on the detail page if the value of the DATE function in a formula field is an invalid date, such as February 29 in a non-leap year.
DATEVALUE	Returns a date value for a date/time or text expression.
DATETIMEVALUE	Returns a year, month, day, and GMT time value.
DAY	Returns a day of the month in the form of a number from 1 through 31.
DAYOFYEAR	Returns the day of the calendar year (from 1 through 366).
FORMATDURATION	Formats the number of seconds with optional days, or the difference between times or dateTimes as HH:MI:SS.
HOUR	Returns the local time hour value without the date in the form of a number from 1 through 24.
ISOWEEK	Returns the ISO 8601-week number (from 1 through 53) for the given date, ensuring that the first week starts on a Monday.
ISOYEAR	Returns the ISO 8601 week-numbering year (in 4 digits) for the given date, ensuring that the first day is a Monday.

Figure 19.5: Continued list of date and time operators available in Salesforce formulas

- Logic functions:

FUNCTION	DESCRIPTION
AND	Returns a TRUE response if all values are true; returns a FALSE response if one or more values are false.
BLANKVALUE	Determines if an expression has a value and returns a substitute expression if it doesn't. If the expression has a value, returns the value of the expression.
CASE	Checks a given expression against a series of values. If the expression is equal to a value, returns the corresponding result. If it isn't equal to any values, it returns the else_result.
IF	Determines if expressions are true or false. Returns a given value if true and another value if false.
ISBLANK	Determines if an expression has a value and returns TRUE if it doesn't. If it contains a value, this function returns FALSE.
ISCLONE	Checks if the record is a clone of another record and returns TRUE if one item is a clone. Otherwise, returns FALSE.
ISNEW	Checks if the formula is running during the creation of a new record and returns TRUE if it is. If an existing record is being updated, this function returns FALSE.

Figure 19.6: List of logic functions available in Salesforce formulas

ISNULL	Determines if an expression is null (blank) and returns TRUE if it is. If it contains a value, this function returns FALSE.
	<p>IMPORTANT Use ISBLANK instead of ISNULL in new formulas. ISBLANK has the same functionality as ISNULL, but also supports text fields. Salesforce continues to support ISNULL, so you don't need to change any existing formulas.</p>
ISNUMBER	Determines if a text value is a number and returns TRUE if it is. Otherwise, it returns FALSE.
NOT	Returns FALSE for TRUE and TRUE for FALSE.
NULLVALUE	Determines if an expression is null (blank) and returns a substitute expression if it is. If the expression isn't blank, returns the value of the expression.
	<p>IMPORTANT Use BLANKVALUE instead of NULLVALUE in new formulas. BLANKVALUE has the same functionality as NULLVALUE, but also supports text fields. Salesforce continues to support NULLVALUE, so you don't need to change existing formulas.</p>
OR	Determines if expressions are true or false. Returns TRUE if any expression is true. Returns FALSE if all expressions are false.
PRIORVALUE	Returns the previous value of a field.

Figure 19.7: Continued list of logic functions available in Salesforce formulas

- Math functions:

FUNCTION	DESCRIPTION
ABS	Calculates the absolute value of a number. The absolute value of a number is the number without its positive or negative sign.
ACOS	Returns the arc cosign of the number in radians, if the given number is between -1 and 1. Otherwise returns NULL.
ASIN	Returns the arc sine of the number in radians, if the given number is between -1 and 1. Otherwise returns NULL.
ATAN	Returns the arc tangent of the number in radians.
ATAN2	Returns the arc tangent of the quotient of y and x in radians.
CEILING	Rounds a number up to the nearest integer, away from zero if negative.
CHR	Returns a string with the first character's code point as the given number.
COS	Returns the cosine of the number in radians, if the given number is between -1 and 1. Otherwise returns NULL.
DISTANCE	Calculates the distance between two locations in miles or kilometers.
EXP	Returns a value for e raised to the power of a number you specify.
FLOOR	Returns a number rounded down to the nearest integer, towards zero if negative.

Figure 19.8: List of math functions available in Salesforce formulas

FROMUNIXTIME	Returns the datetime that represents the given number as the seconds elapsed since 1 Jan 1970.
GEOLOCATION	Returns a geolocation based on the provided latitude and longitude. Must be used with the DISTANCE function.
LN	Returns the natural logarithm of a specified number. Natural logarithms are based on the constant e value of 2.71828182845904.
LOG	Returns the base 10 logarithm of a number.
MAX	Returns the highest number from a list of numbers.
MCEILING	Rounds a number up to the nearest integer, towards zero if negative.
MFLOOR	Rounds a number down to the nearest integer, away from zero if negative.
MIN	Returns the lowest number from a list of numbers.
MOD	Returns a remainder after a number is divided by a specified divisor.
PI	Returns pi.
PICKLISTCOUNT	Returns the number of selected values in a multi-select picklist.
ROUND	Returns the nearest number to a number you specify, constraining the new number by a specified number of digits.
SIN	Returns the sine of the number, where the number is given in radians.

Figure 19.9: Continued list of math functions available in Salesforce formulas

SQRT	Returns the positive square root of a given number.
TAN	Returns the tangent of the number, where the number is given in radians.
TRUNC	Truncates a number to a specified number of digits.

Figure 19.10: End of listed math functions available in Salesforce formulas

- Text functions:

FUNCTION	DESCRIPTION
ASCII	Returns the first character's code point from the given string as a number.
BEGINS	Determines if text begins with specific characters and returns TRUE if it does. Returns FALSE if it doesn't.
BR	Inserts a line break in a string of text.
CASESAFEID	Converts a 15-character ID to a case-insensitive 18-character ID.
CONTAINS	Compares two arguments of text and returns TRUE if the first argument contains the second argument. If not, returns FALSE.
FIND	Returns the position of a string within a string of text represented as a number.
GETSESSIONID	Returns the user's session ID.
HTMLENCODE	Encodes text and merge field values for use in HTML by replacing characters that are reserved in HTML, such as the greater-than sign (>), with HTML entity equivalents, such as >.
HYPERLINK	Creates a link to a URL specified that is linkable from the text specified.
IMAGE	Inserts an image with alternate text and height and width specifications.
INCLUDES	Determines if any value selected in a multi-select picklist field equals a text literal you specify.
INITCAP	Returns the text as lowercase with the first character of each word in uppercase.

Figure 19.11: List of text functions available in Salesforce formulas

ISPICKVAL	Determines if the value of a picklist field is equal to a text literal you specify.
JSENCODE	Encodes text and merge field values for use in JavaScript by inserting escape characters, such as a backslash (\), before unsafe JavaScript characters, such as the apostrophe (').
JSINHTMLENCOD	Encodes text and merge field values for use in JavaScript inside HTML tags by replacing characters that are reserved in HTML with HTML entity equivalents and inserting escape characters before unsafe JavaScript characters. JSINHTMLENCODE(someValue) is a convenience function that is equivalent to JSENCODE(HTMLENCODE((someValue))). That is, JSINHTMLENCODE first encodes someValue with HTMLENCODE, and then encodes the result with JSENCODE.
LEFT	Returns the specified number of characters from the beginning of a text string.
LEN	Returns the number of characters in a specified text string.
LOWER	Converts all letters in the specified text string to lowercase. Any characters that aren't letters are unaffected by this function. Locale rules are applied if a locale is provided.
LPAD	Inserts characters you specify to the left-side of a text string.
MID	Returns the specified number of characters from the middle of a text string given the starting position.
RIGHT	Returns the specified number of characters from the end of a text string.
RPAD	Inserts characters that you specify to the right-side of a text string.

Figure 19.12: Continued list of text functions available in Salesforce formulas

SUBSTITUTE	Substitutes new text for old text in a text string.
TEXT	Converts a percent, number, date, date/time, or currency type field into text anywhere formulas are used. Also, converts picklist values to text in approval rules, approval step rules, workflow rules, escalation rules, assignment rules, auto-response rules, validation rules, formula fields, field updates, and custom buttons and links.
TRIM	Removes the spaces and tabs from the beginning and end of a text string.
UPPER	Converts all letters in the specified text string to uppercase. Any characters that aren't letters are unaffected by this function. Locale rules are applied if a locale is provided.
URLENCODE	Encodes text and merge field values for use in URLs by replacing characters that are illegal in URLs, such as blank spaces, with the code that represent those characters as defined in <i>RFC 3986, Uniform Resource Identifier (URI): Generic Syntax</i> . For example, blank spaces are replaced with %20, and exclamation points are replaced with %21.
VALUE	Converts a text string to a number.

Figure 19.13: End of listed text functions available in Salesforce formulas

- Summary functions:

FUNCTION	DESCRIPTION
PARENTGROUPVAL	This function returns the value of a specified parent grouping. A "parent" grouping is any level above the one containing the formula. You can use this function only in custom summary formulas and at grouping levels for reports, but not at summary levels.
PREVGROUPVAL	This function returns the value of a specified previous grouping. A "previous" grouping is one that comes before the current grouping in the report. Choose the grouping level and increment. The increment is the number of columns or rows before the current summary. The default is 1; the maximum is 12. You can use this function only in custom summary formulas and at grouping levels for reports, but not at summary levels.

Figure 19.14: List of summary functions available in Salesforce formulas

- Advanced functions:

FUNCTION	DESCRIPTION
CURRENCYRATE	Returns the conversion rate to the corporate currency for the given currency ISO code. If the currency is invalid, returns 1.0.
GETRECORDIDS	Returns an array of strings in the form of record IDs for the selected records in a list, such as a list view or related list.
IMAGEPROXYURL	Securely retrieves external images and prevents unauthorized requests for user credentials.
INCLUDE	Returns content from an s-control snippet. Use this function to reuse common code in many s-controls.
ISCHANGED	Compares the value of a field to the previous value and returns TRUE if the values are different. If the values are the same, this function returns FALSE.
JUNCTIONIDLIST	Returns a JunctionIDList based on the provided IDs.
LINKTO	Returns a relative URL in the form of a link (href and anchor tags) for a custom s-control or Salesforce page.
PREDICT	Returns an Einstein Discovery prediction for a record based on the specified record ID or for a list of fields and their values.
REGEX	Compares a text field to a regular expression and returns TRUE if there's a match. Otherwise, it returns FALSE. A regular expression is a string used to describe a format of a string according to certain syntax rules.

Figure 19.15: List of advanced functions available in Salesforce formulas

REQUIRESCRIPT	Returns a script tag with source for a URL you specify. Use this function when referencing the Lightning Platform AJAX Toolkit or other JavaScript toolkits.
URLFOR	Returns a relative URL for an action, s-control, Visualforce page, or a file in a static resource archive in a Visualforce page.
VLOOKUP	Returns a value by looking up a related value on a custom object similar to the VLOOKUP() Excel function.

Figure 19.16: Continued list of advanced functions available in Salesforce formulas

From this overview, you can get a sense of what you can do with the different formulas and operators available to you. To review these screenshots in more detail, follow the Salesforce Help link found in the *Further reading* section at the end of this chapter.

While documentation is helpful, we should now look at a business use case and build an example formula so that we know how to use this information in practice.

Business use case

You are the Salesforce admin for XYZ Widgets. You have a requirement to build a custom formula field on the Account object to determine if an account is an enterprise account or mid-market. The rule the business provided are as follows:

- If the annual revenue is equal to or above \$20,000,000 and the number of employees is equal to or above 200, then the account will be an enterprise account; otherwise, it is labeled as a mid-market account.

Creating a formula field

To create a formula field that meets this requirement, we will follow the steps in *Figure 19.17*:

The screenshot shows the Salesforce Setup interface. Step 1 highlights the 'Setup' button in the top right corner. Step 2 highlights the 'Object Manager' link in the top navigation bar. Step 3 highlights the 'Account' object in the list. Step 4 highlights the 'Fields & Relationships' tab. Step 5 highlights the 'New' button in the top right of the list view.

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Account Name	Name	Name		✓
Account Number	AccountNumber	Text(40)		
Account Owner	OwnerId	Lookup(User)		✓
Account Site	Site	Text(80)		
Account Source	AccountSource	Picklist		
Active	Active__c	Picklist		
Annual Revenue	AnnualRevenue	Currency(18, 0)		
Billing Address	BillingAddress	Address		
Clean Status	CleanStatus	Picklist		
Created By	CreatedBy	Lookup(User)		
Customer Priority	CustomerPriority__c	Picklist		
D&B Company	DandbCompanyId	Lookup(D&B Company)		✓
D-U-N-S Number	DunsNumber	Text(9)		

Figure 19.17: Creating a formula field step 1

On this page we will take the following steps:

- Click on **Setup**.
- Click on **Object Manager**.
- Choose the **Account** object.
- Click on **Fields & Relationships**.
- Click **New**.

Next, we will follow the steps in *Figure 19.18*:

Account
New Custom Field

Step 1. Choose the field type

Specify the type of information that the custom field will contain.

Data Type

- None Selected
- Auto Number
- Formula 1
- Roll-Up Summary
- Lookup Relationship
- External Lookup Relationship
- Checkbox
- Currency
- Date
- Date/Time
- Email

Help for this Page

Step 1
Next Cancel

Figure 19.18: Creating a formula field step 2

Here, we will take the following steps:

1. Choose the **Formula** radio button.
2. Click **Next**.

This will take us to the following screen shown in *Figure 19.19*:

Step 2. Choose output type

Field Label 1

Auto add to custom report type Add this field to existing custom report types that contain this entry 1

Field Name 2

Step 2 of 5
Previous Next Cancel

Formula Return Type

- None Selected
- Checkbox
- Currency
- Date
- Date/Time
- Number
- Percent
- Text 3
- Time

Select one of the data types below.

- Calculate a boolean value
Example: `TODAY() > CloseDate`
- Calculate a dollar or other currency amount and automatically format the field as a currency amount.
Example: `Gross Margin = Amount - Cost__c`
- Calculate a date, for example, by adding or subtracting days to other dates.
Example: `Reminder Date = CloseDate - 7`
- Calculate a date/time, for example, by adding a number of hours or days to another date/time.
Example: `Next = NOW() + 1`
- Calculate a numeric value.
Example: `Fahrenheit = 1.8 * Celsius__c + 32`
- Calculate a percent and automatically add the percent sign to the number.
Example: `Discount = (Amount - Discounted_Amount__c) / Amount`
- Create a text string, for example, by concatenating other text fields.
Example: `Full Name = LastName__c + ", " + FirstName`
- Calculate a time, for example, by adding a number of hours to another time.
Example: `Next = TIMEVALUE(NOW()) + 1`

Figure 19.19: Creating a formula field step 3

On this page we will take the following steps:

1. Type in the name of the field.
2. The API name will be automatically populated.
3. Choose **Text** for the formula return type.
4. Click **Next**.

Note: There are several return types here:

- Checkbox
- Currency
- Date
- Date/Time
- Number
- Percent
- Text
- Time



For our requirement, we chose the **Text** option, since we will return either “Enterprise” or “Mid-Market” in this field.

This brings us to the formula editor, where all the magic happens, as displayed in *Figure 19.20*:

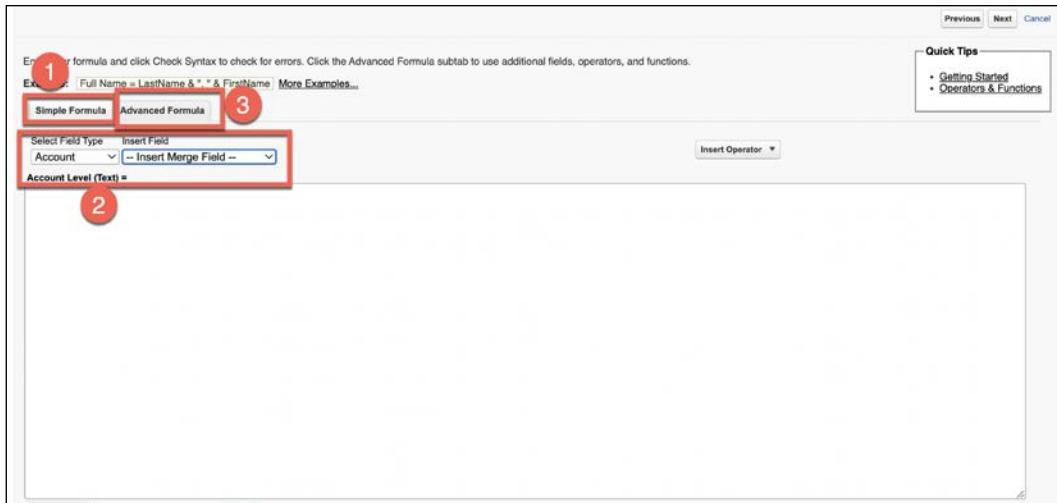


Figure 19.20: Creating a formula – Simple Formula

Let's take a look at some important sections on this page:

1. Notice that this defaults to **Simple Formula**.
2. The **Simple Formula** option allows you to choose an object and copy any field on the object to this field.
3. For our requirements, and to demonstrate the use of operators and functions, we will choose the **Advanced Formula** option (see *Figure 19.21*):

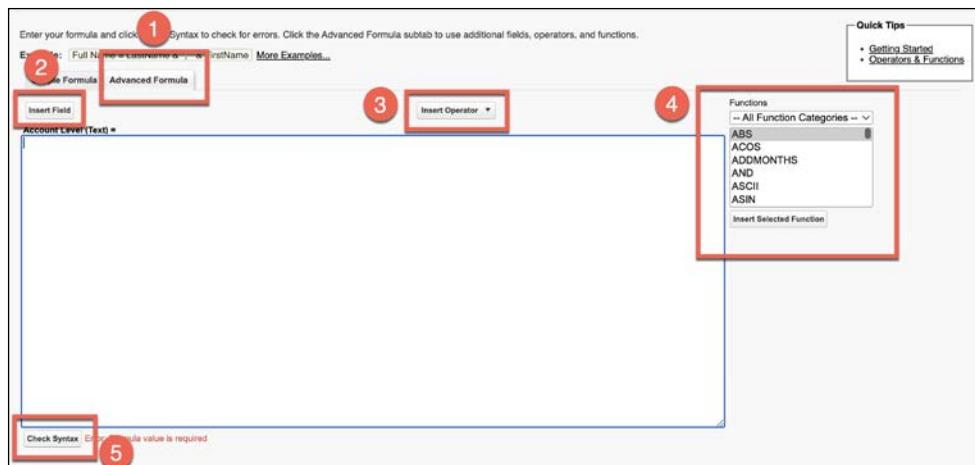


Figure 19.21: Creating a formula – Advanced Formula

1. Clicking on the **Advanced Formula** tab in *Figure 19.21* brings us to the **Advanced Formula** options. Sections 2-5 in *Figure 19.21* will be covered in detail below.
2. **Insert Field** allows you to choose a field to insert into the formula, as displayed in *Figure 19.22*:

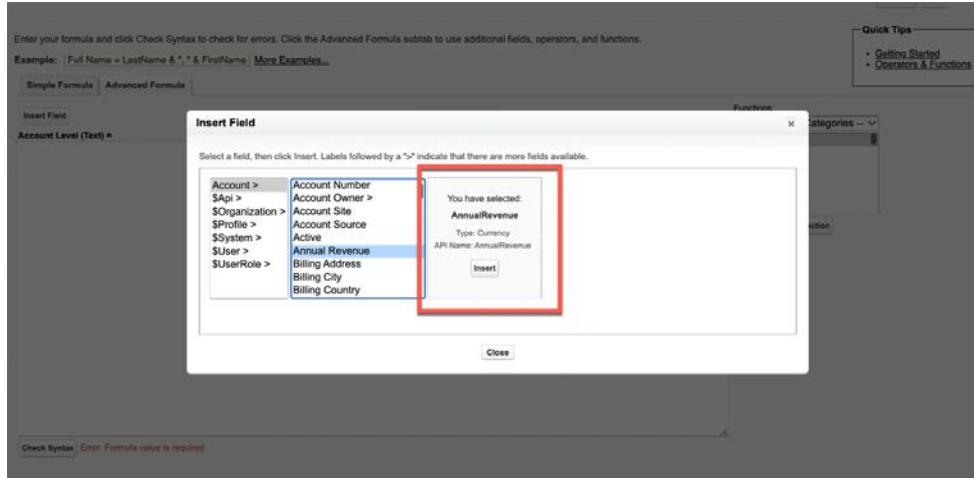


Figure 19.22: Creating a formula – Insert Field detail

3. **Insert Operator** gives you operator options to include in the formula, as displayed in *Figure 19.23*:

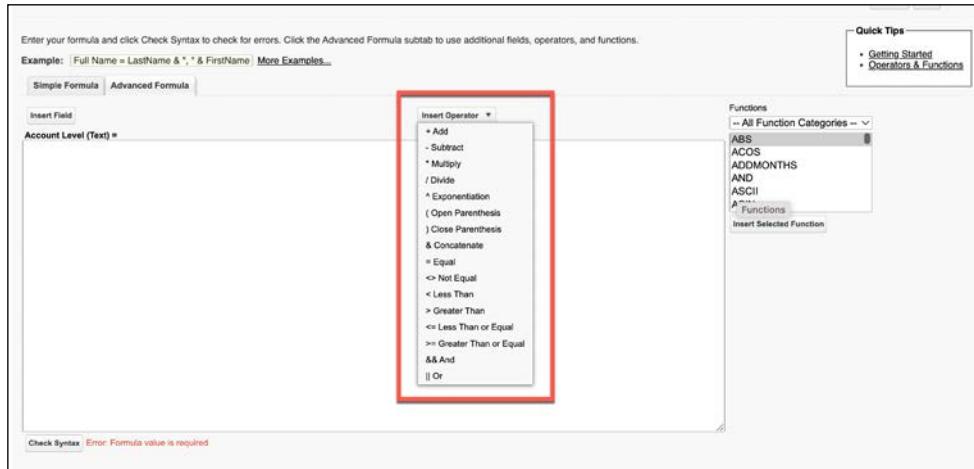


Figure 19.23: Creating a formula – Insert Operator detail

4. The **Functions** section allows you to choose functions to insert into the formula.

- The **Check Syntax** button should be clicked to evaluate the formula. If it turns green, then the formula syntax is correct; if it turns red, you must adjust the errors in the formula for it to work.

Next, let's create the formula to meet the business requirement.

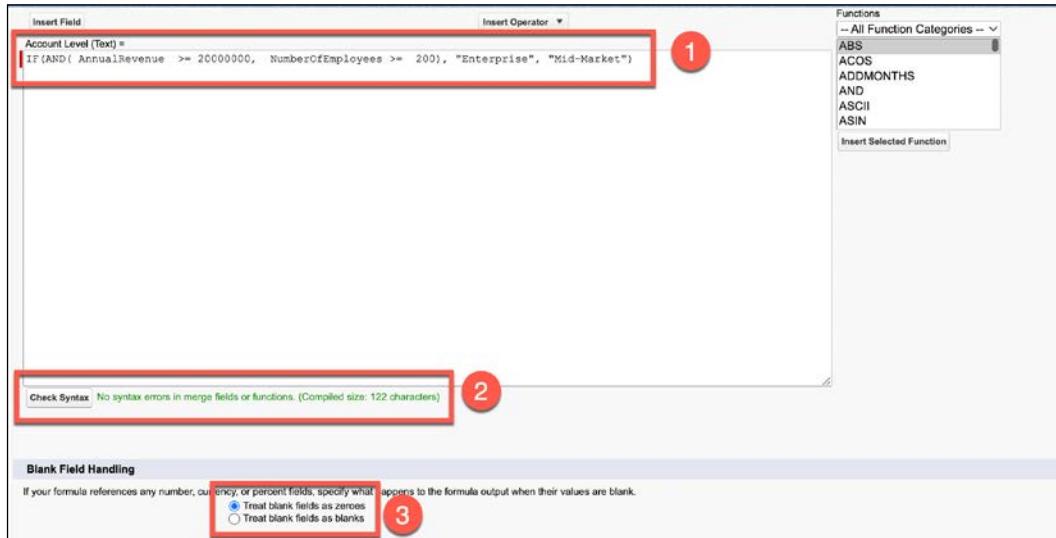


Figure 19.24: Creating a formula

- This formula will meet the business requirement; let's look at it in more detail:


```
IF(AND( AnnualRevenue >= 20000000, NumberofEmployees >= 200),
      "Enterprise", "Mid-Market")
```

 - This formula reads: IF the AnnualRevenue field is greater or equal to \$20,000,000 AND the NumberofEmployees field is greater or equal to 200, then display Enterprise, otherwise display Mid-Market.
 - We used the IF and AND functions for this formula.
 - We used the **greater or equal (\geq) operator** for this formula.
 - We inserted the AnnualRevenue and NumberofEmployees fields for this formula.
- When we check the syntax, we see there are no errors.
- In this example, we have selected **Treat blank fields as zeroes**. This is how blank fields will be treated by the formula. The other option is to treat blank fields as blanks. We have chosen zeroes since we are evaluating numbers.

Now that we have the formula in place, we will finish creating the field. The next step is to establish field-level security, as shown in *Figure 19.25*:

Profile	Visible	Read-Only
Analytics Cloud Integration User	<input checked="" type="checkbox"/>	✓
Analytics Cloud Security User	<input checked="" type="checkbox"/>	✓
Authenticated Website	<input checked="" type="checkbox"/>	✓
Authenticated Website	<input checked="" type="checkbox"/>	✓
Contract Manager	<input checked="" type="checkbox"/>	✓
Cross Org Data Proxy User	<input checked="" type="checkbox"/>	✓
Custom: Marketing Profile	<input checked="" type="checkbox"/>	✓
Custom: Sales Profile	<input checked="" type="checkbox"/>	✓
Custom: Support Profile	<input checked="" type="checkbox"/>	✓
Customer Community Login User	<input checked="" type="checkbox"/>	✓
Customer Community Plus Login User	<input checked="" type="checkbox"/>	✓
Customer Community Plus User	<input checked="" type="checkbox"/>	✓
Customer Community User	<input checked="" type="checkbox"/>	✓

Figure 19.25: Creating a formula – field-level security

On this page we will take the following steps:

1. Choose the profiles that should have access to this field.
2. Click **Next**.

This will take us to the final step, adding the field to page layouts, as shown in *Figure 19.26*:

Select the page layouts that should include this field. This field will be added as the last field in the first 2-column section of these page layouts. The field will not appear on any pages if you do not select a layout.

Add Field Page Layout Name

- Account (Marketing) Layout
- Account (Sales) Layout
- Account (Support) Layout
- Account Layout

Figure 19.26: Creating a formula – field-level security continued

On this page we will take the following steps:

1. Choose the page layouts where this field should be visible.
2. Click Save.

Our field is now created! Next, let's test it to see if it works.

Figure 19.27: Creating a formula – testing the field

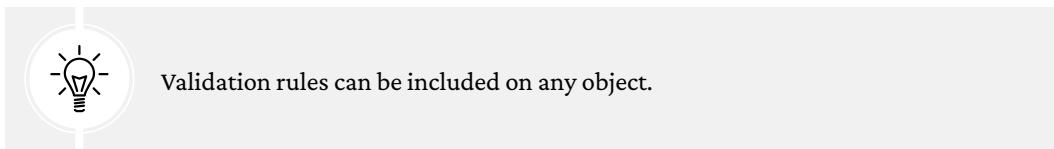
Let's look at the following:

1. We will bring up the **GenePoint** Account.
2. The **Annual Revenue** is **\$30,000,000**.
3. The number of **Employees** is **265**.
4. This meets our requirements for an “Enterprise” Account. Notice the **Account Level** is automatically set to **Enterprise** based on these two fields.

Now that we have understood formulas and successfully created a formula field, let's take a look at another important data integrity feature, validation rules.

Understanding validation rules

Validation rules are an essential part of ensuring data integrity in Salesforce. They do this by verifying that the data your users enter into a record meets specific standards before the user can save a record. A validation rule can contain a formula or expression that evaluates the data in one or more fields and returns a value of True or False.



Business use case

As the Salesforce admin for XYZ Widgets, you have successfully created the **Account Level** formula field. Since this field depends on the **Annual Revenue** and **Employees** fields being populated, you want to make sure users enter data into these fields when creating an account. To do this you will need to create a validation rule on the Account object.

Let's take a look at how we can create this validation rule.

Creating a validation rule

To create the validation rule to meet this requirement we will follow the steps in *Figure 19.28*:

The screenshot shows the Salesforce Setup interface with the following steps highlighted:

- Setup** button (top right) - Step 1
- Object Manager** dropdown (top left) - Step 2
- Account** object (list item) - Step 3
- Validation Rules** (button in the bottom-left corner) - Step 4

The main view displays the **Fields & Relationships** section for the Account object, listing various fields like Account Name, Account Number, and Annual Revenue, along with their field labels, data types, and validation settings.

Figure 19.28: Creating a validation rule

1. Click on **Setup**.
2. Click on **Object Manager**.
3. Choose the **Account** object.
4. Click on **Validation Rules**.

This will take us to the validation rules page shown in *Figure 19.29*:

The screenshot shows the 'Validation Rules' section within the 'Object Manager' for the 'Account' object. On the left, a sidebar lists various configuration options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Hierarchy Columns, and Triggers. The main area is titled 'Validation Rules' and displays a table with one row: 'No items, Sorted by Rule Name'. The table has columns for 'RULE NAME', 'ERROR LOCATION', 'ERROR MESSAGE', 'ACTIVE', and 'MODIFIED BY'. A red box highlights the 'New' button in the top right corner of the table header.

Figure 19.29: Validation rule – creation page

On this page we will click **New**, which will bring us to the validation rules creation page shown in *Figure 19.30*:

Account Validation Rule

Define a validation rule by specifying an error condition and a corresponding error message. The error condition is written as a Boolean formula expression. If the save will be aborted and the error message will be displayed. The user can correct the error and try again.

The screenshot shows the 'Validation Rule Edit' interface. Step 1 highlights the 'Rule Name' field containing 'Revenue_and_Employees_Cannot_be_Bank'. Step 2 highlights the 'Active' checkbox which is checked. Step 3 highlights the 'Description' field containing 'The Annual Revenue and Employees fields cannot be blank.' Step 4 highlights the formula entry field containing 'OR(ISNULL(AnnualRevenue),ISNULL(NumberOfEmployees))'. Step 5 highlights the 'Check Syntax' button with the message 'No errors found'.

Validation Rule Edit

Save Save & New Cancel

Rule Name: Revenue_and_Employees_Cannot_be_Bank 1

Active: 2

Description: The Annual Revenue and Employees fields cannot be blank. 3

Error Condition Formula

Example: Discount_Percent_c>0.30 [More Examples...](#)

Display an error if Discount is more than 30%

If this formula expression is true, display the text defined in the Error Message area

Insert Field Insert Operator ▾

OR(ISNULL(AnnualRevenue),ISNULL (NumberOfEmployees)) 4

Check Syntax No errors found 5

Functions

-- All Function Categories --

- ABS
- ACOS
- ADDMONTHS
- AND
- ASCII
- ASIN

[Insert Selected Function](#)

ABS(number)
Returns the absolute value of a number, a number without its sign

[Help on this function](#)

Figure 19.30: Creating a validation rule – detail page

On this page we will take the following steps:

1. Enter a name for the validation rule.
2. Check the **Active** checkbox.
3. Add a description.
4. Add this formula to meet the requirements:

```
OR(ISNULL( AnnualRevenue ),ISNULL ( NumberOfEmployees ))
```

- a. This reads: If the **Annual Revenue** field OR the **Employees** field is NULL, then it will return a True value and stop the record from being saved.
 - b. We used the OR and ISNULL functions in this validation rule formula.
5. Click the **Check Syntax** button, which shows there are no errors.

Scrolling down on this page you will see the following in *Figure 19.31*:

The screenshot shows two stacked configuration panels:

- Error Condition Formula:**
 - Example:** Discount_Percent_c>0.30 | [More Examples...](#)
 - Display an error if Discount is more than 30%
 - If this formula expression is true, display the text defined in the Error Message area
 - Buttons: **Insert Field**, **Insert Operator** (with a dropdown arrow), **Check Syntax** (button), **No errors found** (text).
 - A code editor contains the formula: `OR(ISNULL(AnnualRevenue), ISNULL (NumberOfEmployees))`.
 - A sidebar lists **Functions** with **ABS** selected.
 - Description for **ABS**: `ABS(number)` Returns the absolute value of a number, a number without its sign.
 - [Help on this function](#)
- Error Message:**
 - Example:** Discount percent cannot exceed 30%
 - This message will appear when Error Condition formula is true
 - Error Message:** Annual Revenue and Employees must be filled in to save this record! (highlighted with a red box and circled with a red number 1).
 - Error Location:** Top of Page | Field (highlighted with a red box and circled with a red number 2).
 - Buttons:** Save (highlighted with a red box and circled with a red number 3), Save & New, Cancel.

Figure 19.31: Creating a validation rule – error message

In this section we will take the final steps:

1. Here you can set the error message that comes up for the user if the validation rule is triggered.
2. You can choose the location of the error. Since this validation rule involves two fields, we will choose **Top of Page**.
3. Click **Save** to complete the validation rule creation.

Now that we have created the rule let's test it by creating a new account with both the **Annual Revenue** and **Employees** fields blank, as displayed in *Figure 19.32*:

New Account

Account Information

Account Owner Sam The Sales Rep	Rating --None--
* Account Name Test Account	Phone
Parent Account Search Accounts...	Fax
Account Number	Website
Account Site	Ticker Symbol
Type --None--	Ownership --None--
Industry --None--	Employees
Annual Revenue	C Code

We hit a snag.

Review the errors on this page.

- Annual Revenue and Employees must be filled in to save this record.

Address Information

Cancel Save & New Save

The screenshot shows a 'New Account' form with various input fields. The 'Annual Revenue' field is highlighted with a yellow background and a red arrow pointing to it from the left. A red box surrounds the error message 'We hit a snag.' and the 'Annual Revenue' field. Another red arrow points to the 'Employees' field, which is also part of the validation error. The error message itself says: 'Review the errors on this page.' followed by a bulleted list: '• Annual Revenue and Employees must be filled in to save this record.'

Figure 19.32: Testing your validation rule – scenario 1

We see the error message comes up when trying to save the new account with neither field populated. Let's try another scenario where we populate only one of the fields, as displayed in *Figure 19.33*:

New Account

Account Information

Account Owner Sam The Sales Rep	Rating --None--
* Account Name Test Account	Phone
Parent Account Search Accounts...	Fax
Account Number	Website
Account Site	Ticker Symbol
Type --None--	Ownership --None--
Industry --None--	Employees
Annual Revenue \$20,000,000	C Code

Ø We hit a snag.

Review the errors on this page.

- Annual Revenue and Employees must be filled in to save this record.

Address Info
Billing Address
Shipping Address

Save & New Save

The screenshot shows a 'New Account' form with various fields for account information. The 'Annual Revenue' field contains '\$20,000,000' and the 'Employees' field is empty. A red box highlights both of these fields. A central error message box is displayed, stating 'Ø We hit a snag.' and 'Review the errors on this page.' with a bullet point: '• Annual Revenue and Employees must be filled in to save this record.' Red arrows point from the 'Annual Revenue' and 'Employees' fields towards this error message box.

Figure 19.33: Testing your validation rule – scenario 2

Here we see that when **Annual Revenue** is populated but **Employees** is not populated, we still get the error. Let's test this when both fields are populated.

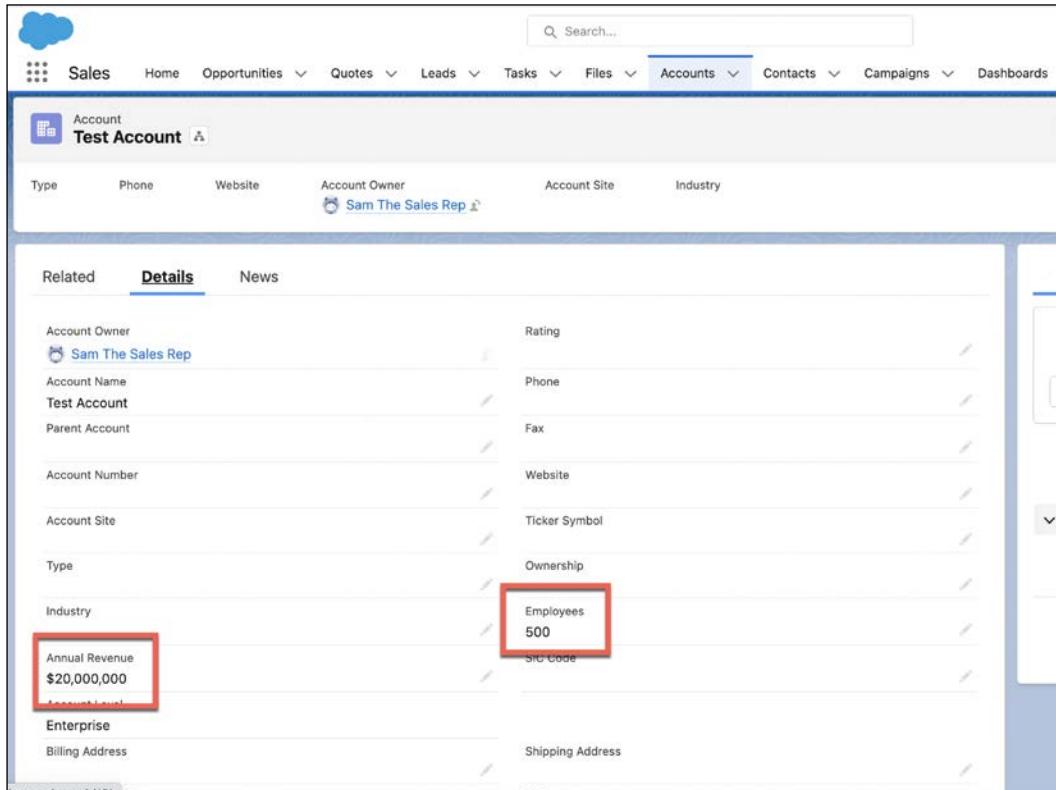


Figure 19.34: Testing your validation rule – scenario 3

This scenario allows us to save the record only when both fields are populated. The validation rule works!

Let's summarize what we have learned in this chapter.

Summary

In this chapter, we learned how formulas and validation rules help drive data integrity. We looked at available functions and operators and built a formula field to demonstrate a business use case for data integrity on the Account object. We then discovered what validation rules are and how they contribute to records having complete data. Finally, we built a validation rule that included a formula and met the requirements of our business use case.

In the following chapter, we will cover **user management and data security**.

Questions

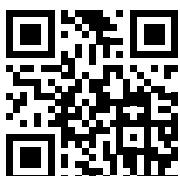
1. Where are three places where formulas can be used?
2. What are the three components used when building a formula?
3. What does a simple formula allow you to do?
4. When do you treat blanks as zeroes?
5. What results do validation rule formulas always return?
6. When do you show the error on the top of the page versus on the field?

Further reading

- Formula operators and functions by context: https://help.salesforce.com/s/articleView?id=sf.customize_functions.htm&type=5
- Use formula fields: https://trailhead.salesforce.com/content/learn/modules/point_click_business_logic/formula_fields
- Create validation rules: https://trailhead.salesforce.com/content/learn/modules/point_click_business_logic/validation_rules

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20

Testing and Debugging

Some of the most important activities as a Salesforce professional will be testing and debugging. Setting up your testing plan will depend on the types of environments you set up for the **path to production**. These environments will be a combination of one or more sandboxes and your final production Salesforce instance. Once the path to production is defined, there are several stages of testing.

In this chapter, we will cover the following topics in detail:

- Understanding the path to production
- Setting up the path to production
- Understanding testing types
- Using debug logs

With the help of these topics, you will be able to set up your Salesforce sandbox strategy and create a testing plan for your deployments.



This chapter starts to broach more advanced topics related to code development. If you're new to Salesforce administration, some of these areas may be daunting to you right now. For the scope of this book, we will only cover basic testing and debugging concepts.

Technical requirements

For this chapter, make sure you log in to your development org and follow along as we work through the different testing and debugging features available to a system administrator.

Understanding the path to production

The path to production is the strategy for how new features and bug fixes are delivered to your live production Salesforce org. There are different scenarios that require different strategies, including:

- New Salesforce implementations
- Smaller enhancement projects
- Bug fixes

In this chapter, we will cover the new Salesforce implementation scenario.

Business use case

You are the Salesforce admin for XYZ Widgets. XYZ Widgets has been using a legacy system and has decided to move to Salesforce. You are tasked with setting up the environment strategy.

Setting up the path to production

As a best practice, you will set up the following strategy for your implementation. This strategy includes different types of sandboxes and how to use each one in the process of getting code and functionality to production:

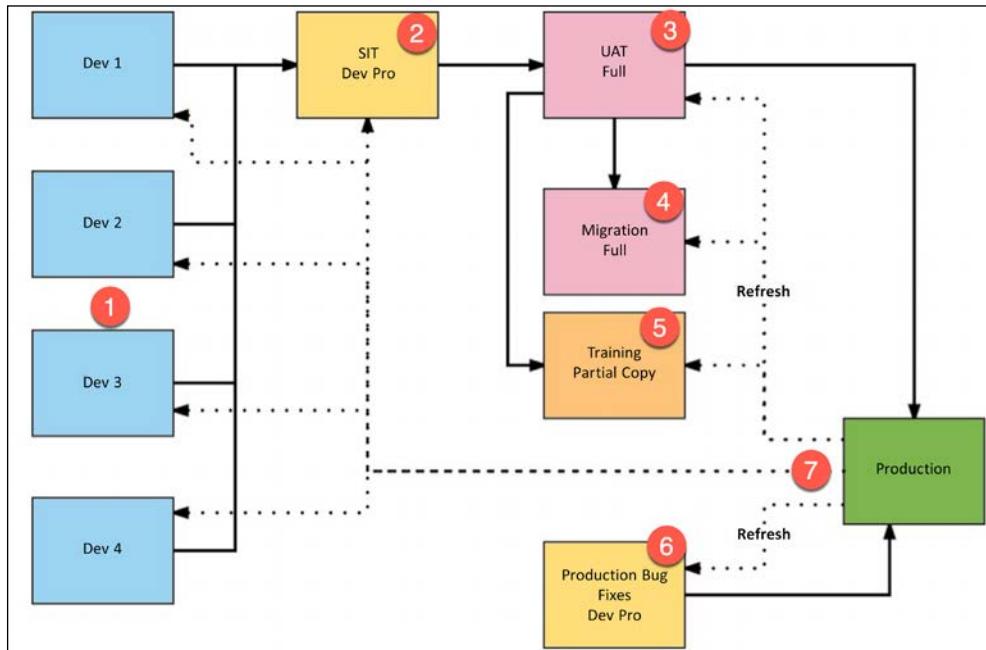


Figure 20.1: The path to production

1. The developer sandboxes are used for building separate functionality for your implementation. The number of these sandboxes depends on how many development teams are working on the project. Each team should have its own sandbox to work in.
2. The **SIT or System Integration Testing** sandbox is where all the code from the developer sandboxes is merged and tested. This is typically a dev pro sandbox that has more storage than developer sandboxes. Each developer would push their code to the SIT sandbox and test to make sure there are no conflicts with other code.
3. The **UAT or User Acceptance Testing** sandbox is where the users will test the functionality. This is preferably a full sandbox so that users can test with data.
4. In this scenario, we are looking at a new Salesforce implementation, so we will need a migration sandbox. This is typically a full sandbox where the data is loaded for validation prior to loading data into production.
5. The training sandbox, typically a partial copy sandbox so that users can see data, is used for user training before go-live.
6. The production fixes sandbox is used after go-live. This is for “hot fixes” that need to be made immediately. These are typically bugs that need to be resolved. A developer pro sandbox is recommended.
7. Here you see that all sandboxes refresh from production. You will need to define the interval of refreshes based on sandbox type and implementation requirements.

This example is for a new Salesforce implementation. Different scenarios will require a different mix of the stages shown in the diagram in *Figure 20.1*. For example, if you are doing a smaller project in an existing Salesforce org, you will need one developer sandbox and one testing sandbox, and then you can push to production. For bug fixes, you would need only the one bug fix sandbox.

Understanding testing types

Now that we have a defined path to production, let’s look at the different types of testing. There are generally five types of testing that will be conducted:

- Unit testing
- System testing
- UAT testing
- Production testing
- Regression testing

Unit testing

Unit tests verify whether a particular piece of code is working properly. This type of testing is done by developers as they build code. Salesforce requires 75% **code coverage**. Code coverage indicates how many executable lines of code in your classes and triggers have been exercised by test methods. This is important in that code can be developed in sandboxes and tested by users without unit tests. To push that code to production, the unit tests must be written and covered.

Not all implementations include code, and this type of testing is needed only when there is code being written.

System testing

This testing takes place in the SIT sandbox. This is where your team manually tests the functionality that was added from the developer sandboxes. This testing is technical and requires manual test scripts to test the functionality end to end. In addition to testing the new functionality, all existing functionalities should be tested as well to make sure the new feature did not affect existing features in the SIT sandbox.

UAT testing

UAT is where the users test the functionality that has been developed. This is the final gate before pushing to production. This is typically a functional manual test where each functionality is tested and marked as a pass or fail. If it fails, it is sent back to the team to remediate; if it passes, it is ready to push to production. This testing requires test scripts that are written for the users to follow in order to completely test the developed functionality.

Production testing

Once the functionality is pushed to production, another set of manual tests is done. This testing follows the same scripts as UAT testing. During this testing, each functionality is tested to make sure it still works after being pushed from the UAT environment.

Regression testing

Once all code has been pushed to production, the final round of testing is called regression testing. Regression testing is done to ensure the newly deployed code did not affect any existing functionality. This includes testing ALL processes that previously existed in the system. Note that regression testing should also be done during system testing. It is then done again as a final test when all code is in production.

Using debug logs

As an admin, when a user reports an issue, you try to recreate it and resolve it. At times, you are unable to figure out why the issue has occurred, so you need to take a look under the hood. Salesforce offers a feature to view debug logs. The debug log contains information about each transaction, such as whether it was successful and how long it took. Depending on the filters set by your trace flags, the log can contain varying levels of detail about the transaction.

Business use case

Sam, the sales rep, has reported an issue when creating an account. When you, as the administrator, try to recreate the issue, you are unsuccessful. You will set up a debug log to get a deeper understanding of what is happening.

Creating a debug log

Let's create a debug log for Sam. We will start on the **Setup** page as shown in *Figure 20.2*:

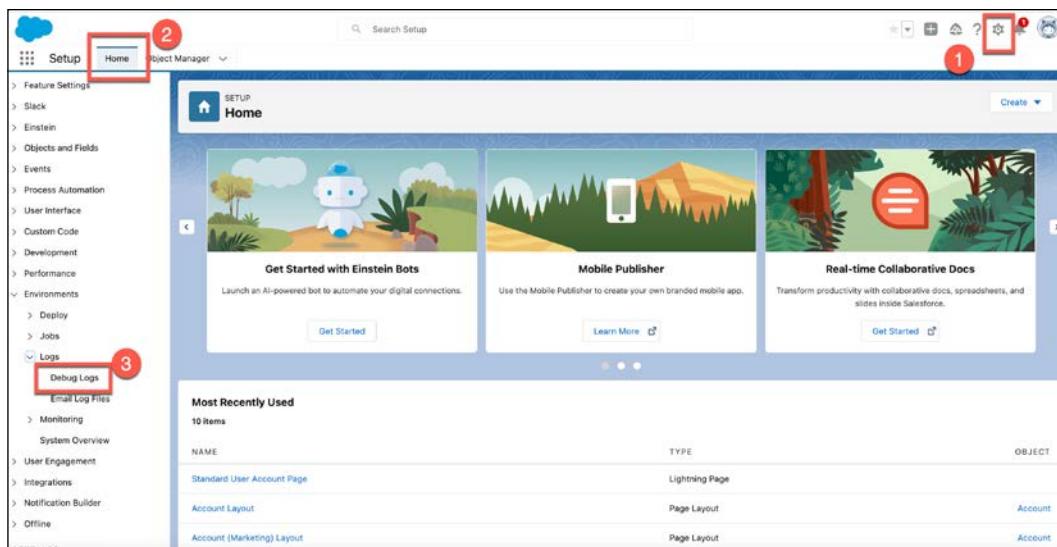


Figure 20.2: Navigating to debug logs

On this page, we will take the following steps:

1. Click on **Setup**.
2. Click on **Home**.
3. Click on **Debug Logs**.

This will bring us to the **Debug Logs** page, as shown in *Figure 20.3*:

Figure 20.3: Create new debug log

On this page, we will click on **New**, which brings us to the creation page for debug logs, as shown in *Figure 20.4*:

Figure 20.4: Create debug log creation page

On this page, we will take the following steps:

1. Enter the **Entity Type**; in our case, it will be **User**.
2. Choose the user.
3. Enter the **Start and Expiration** dates.
4. Enter the **Debug Level**: To specify the level of information that gets included in debug logs, set up trace flags and debug levels. The debug levels assigned to your trace flags control the type and amount of information that is logged for different events. After logging has occurred, inspect debug events in your debug logs.
5. Click **Save**.

This brings us back to the **Debug Logs** page shown in *Figure 20.5*:

The screenshot shows the 'Debug Logs' page in the Salesforce setup. At the top, there's a 'SETUP' button and a 'Debug Logs' section. Below that is a 'Debug Logs' section with a 'Help for this Page' link. The main area has two tables: 'User Trace Flags' and 'Debug Logs'.

User Trace Flags Table:

Action	Name	LogType	Requested By	Start Date	Expiration Date	Debug Level Name
Delete Edit Filter	The_Sales_Rep_Sam	USER_DEBUG	Sam.The_Sales.Rep	9/20/2022 5:45 AM	9/20/2022 6:15 AM	SFDC_DevConsole

Debug Logs Table:

User	Request Type	Application	Operation	Status	Duration (ms)	Log Size (bytes)	Start Time
Delete All							

Figure 20.5: Debug log created

Sam is now included under the **User Trace Flags**. This means any action he takes in the system will be captured as long as it is before the expiration date. You ask Sam to create an account. When he does, you check the debug logs in *Figure 20.6*:

The screenshot shows the 'Debug Logs' page in the Salesforce setup. At the top, there's a 'User Trace Flags' section with a table:

Action	Name	LogType	Requested By	Start Date	Expiration Date	Debug Level Name
Delete Edit Filters	The_Sales_Rep_Sam	USER_DEBUG	Sam_The_Sales_Rep	9/20/2022 5:45 AM	9/20/2022 6:15 AM	Sfdc_DevConsole

Below this is the 'Debug Logs' section with a table:

User	Request Type	Application	Operation	Status	Duration (ms)	Log Size (bytes)	Start Time
View Download Delete Sam_The_Sales_Rep	Application	Browser	/aura	Success	611	2,379	09/20/2022 05:48:10
View Download Delete Sam_The_Sales_Rep	Application	Browser	/aura	Success	104	795	09/20/2022 05:47:52
View Download Delete Sam_The_Sales_Rep	Application	Browser	/aura	Success	84	1,044	09/20/2022 05:47:52

A red box highlights the 'View' link in the first row.

Figure 20.6: Debug logs created

There are several logs for the actions Sam has performed; click on **View** to see the details of the log, as shown in *Figure 20.7*:

The screenshot shows the 'Apex Debug Log Detail' page for user Sam_The_Sales_Rep. It displays a single log entry with the following details:

Date	Application	Operation	Log Size (bytes)
09/20/2022 05:48:10	Standard Account	DmlType:INSERT	0

The log entry itself is a large block of text:

```

09:48:10.0 (331364) [USER_INFO] (EXTERNAL) |0554p00009yruisharif.shalan@agilecloudconsulting.com.book|(GMT-07:00) Pacific Daylight Time (America/Los_Angeles)|(GMT-07:00)
09:48:10.0 (475152) EXECUTION_STARTED
09:48:10.0 (491826) [CODE_UNIT_STARTED] (EXTERNAL) ValidationAccountnew
09:48:10.0 (525350) [VALIDATION_ERROR] (EXTERNAL) ValidationAccountnew: Cannot be blank
09:48:10.0 (925550) [VALIDATION_FORMAT] (EXTERNAL) AnnualRevenue : ISNULL(AnnualRevenue )||ISNULL( NumberofEmployees )||NumberofEmployees=50000 , AnnualRevenue=50000000
09:48:10.0 (994409) [VALIDATION_PASS]
09:48:10.0 (1007761) [CODE_UNIT_FINISHED] ValidationAccountnew
09:48:10.0 (1007761) [CODE_UNIT_STARTED] ValidationAccountnew
09:48:10.0 (1392649) [USER_INFO] (EXTERNAL) |0554p00009yruisharif.shalan@agilecloudconsulting.com.book|(GMT-07:00) Pacific Daylight Time (America/Los_Angeles)|(GMT-07:00)
09:48:10.0 (1616448) EXECUTION_STARTED
09:48:10.0 (1616448) [DUPLICATE_DETECTION] (EXTERNAL) DuplicateDetector
09:48:10.0 (165164) [DUPLICATE_DETECTION_BEGIN]
09:48:10.0 (17558842) [DUPLICATE_DETECTION_RULE_INVOCATION] DuplicateRuleId:0Ne4p000001Sp4|DuplicateRuleName:Standard Account Duplicate Rule|DmlType:INSERT
09:48:10.0 (195207797) [DUPLICATE_DETECTION_MATCH_INVOCATION_DETAILS] EntityTypeName:Account|ActionTaken:Allow_Alert_Report|DuplicateRecordIds:
09:48:10.0 (205330764) [DUPLICATE_DETECTION_RULE_INVOCATION_SUMMARY] EntityTypeName:Account|NumRecordsToDelete:1|NumRecordsToSave:0|NumDuplicateRecordsFound:0
09:48:10.0 (55330764) [DUPLICATE_DETECTION_END]
09:48:10.0 (55341580) [CODE_UNIT_FINISHED] DuplicateDetector
09:48:10.0 (55341580) [CODE_UNIT_STARTED] ValidationAccountnew
09:48:10.0 (542631349) [USER_INFO] (EXTERNAL) |0554p00009yruisharif.shalan@agilecloudconsulting.com.book|(GMT-07:00) Pacific Daylight Time (America/Los_Angeles)|(GMT-07:00)
09:48:10.0 (54267346) EXECUTION_STARTED
09:48:10.0 (542680795) [CODE_UNIT_STARTED] (EXTERNAL) |DuplicateDetector
09:48:10.0 (542680795) [DUPLICATE_DETECTION] (EXTERNAL) DuplicateDetector
09:48:10.0 (542786884) [DUPLICATE_DETECTION_RULE_INVOCATION] DuplicateRuleId:0Ne4p00001Sp4|DuplicateRuleName:Standard Account Duplicate Rule|DmlType:INSERT
09:48:10.0 (542786884) [DUPLICATE_DETECTION_RULE_INVOCATION] DuplicateRuleId:0Ne4p00001Sp4|DuplicateRuleName:Standard Account Duplicate Rule|DmlType:INSERT
09:48:10.0 (542786884) [DUPLICATE_DETECTION_END]
09:48:10.0 (542786884) [CODE_UNIT_FINISHED] DuplicateDetector
09:48:10.0 (542786884) EXECUTION_FINISHED

```

Figure 20.7: Debug log detail

Now you have more details to analyze and get to the bottom of the issue! Note that at times, the debug log may show **Success**, but show an issue in the details, such as governor limit errors for managed packages. To identify issues, you have to read through all line items.

Let's summarize what we have learned in this chapter.

Summary

In this chapter, we understood what the path to production is and how to set it up for different scenarios. We explored the different types of testing and how they relate to the path to production and various sandbox types. Finally, we discovered how debug logs can help us further investigate issues reported by users.

With this final chapter, we have completed this book and tried to cover as many use cases and examples as possible. I hope that this encourages you to continue your journey with Salesforce, and experiment with more use cases using your development organization and Trailhead.

Questions

1. What does SIT stand for?
2. What does UAT stand for?
3. What type of sandbox works well for data migration?
4. What type of testing is done in the SIT sandbox?
5. What type of testing is done by developers?
6. How does a debug log help troubleshoot?

Further reading

- Debug logs: https://help.salesforce.com/s/articleView?id=sf.code_viewing_log_details.htm&type=5
- Get started with testing: <https://trailhead.salesforce.com/content/learn/modules/test-lightning-web-components/get-started-with-testing>

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Assessment

Chapter 1

1. What is the Salesforce economy?

The Salesforce economy is a prediction of the jobs that will be created due to the Salesforce ecosystem. It's been projected that Salesforce will have created 9.3 million jobs by 2026.

2. What does CRM stand for?

Customer Relationship Management

3. What are the two advantages of using Salesforce Lightning?

It has a modern user interface and utilizes the Lightning Component framework.

4. Are all tabs objects?

No, there can be tabs for things such as reports and dashboards.

5. What is an app in Salesforce?

An app is a collection of tabs that can be customized.

6. What does a global search return?

Any records where the term you searched for has appeared.

7. What is the default list view that appears when you go to a tab for the first time, and can the default view be changed?

Recently Viewed. You can change the default view by using the pinning option.

8. Which personal setting allows you to grant login access to Salesforce customer service?

Grant Account Login Access

Chapter 2

1. What type of activity should be used to set up a reminder to research an account?
A task
2. Which activity type should be used to set up an onsite meeting with a client?
An event
3. Is it possible to send an email to a client and copy someone not in the system as a contact?
Yes
4. Do tasks appear on your Salesforce Calendar?
No, only events
5. Which tab shows all of your open tasks?
The Tasks tab
6. If you use Gmail but spend most of your time in Salesforce, which integration option should you use?
Send through Gmail
7. Can we log activities regarding Opportunities?

Yes, we can log activities regarding Opportunities that you work on, as well as any other standard object or custom object with activities enabled.

Chapter 3

1. What are some ways that leads can be captured?
Conferences, websites, and purchased lists, to name a few
2. What determines whether a lead should be converted into an Opportunity?
If the prospect is interested in the product and wants to continue discussing it with you
3. What happens to a **Closed-Not Converted (Unqualified)** lead?
You can filter it out of list views but it stays in the system for reporting purposes.
4. What happens to a converted lead? Where does it go?
It becomes an Account, Contact, and, optionally, an Opportunity.

5. Where does the company information go when a lead is converted?
To the account
6. What is Web-to-Lead used for?
For capturing leads via the company website
7. Once you have generated the HTML code, what do you do with it?
Give it to your web team so they can add it to the website.
8. What does the **Org-Wide Merge and Delete** lead setting allow you to do?
If your organization-wide default sharing option is set to Public Read/Write/Transfer for leads, checking this box allows users to also merge and delete leads.

Chapter 4

1. What are some use cases for the types of accounts an organization may want to keep track of in Salesforce?
Customers, partners, and vendors
2. Why would you want to create contacts related to accounts you are doing business with?
These are the people you will be contacting and speaking with in the organization.
3. When would you create a relationship from a contact to an account that the contact does not directly work for?
This can be an influencer in the organization, such as a board member.
4. How can you enable the **Relationships** feature?
You will need to enable **Contacts to Multiple Accounts**.
5. How do you remove a relationship?
Click on **Remove Relationship** in the related contacts list.

Chapter 5

1. How many opportunities can you have on an account?
There is no limit.

2. What is the difference between opportunity stages and the sales path?
The sales path is a visual representation of the opportunity stages.
3. How many **Contact Role** instances can be added to an opportunity?
As many as needed
4. What happens to the **Amount** field on the opportunity when you add products?
It is overridden by the price of the products added.
5. Who do you send quotes to in an opportunity?
The contact role or the client on the opportunity
6. What are the two types of **Closed** stages on an opportunity?
Closed Won and Closed Lost
7. What is included in the **Best Case** forecast category?
Amounts you are likely to close, **Closed Won** opportunities, and opportunities in the **Commit** category.

Chapter 6

1. What are the two types of campaign members that can be added to a campaign?
Leads and Contacts
2. Why would you want to add a parent campaign to your campaign?
To group campaigns together. For instance, all of your webinars might be under the Webinar 2020 campaign, thus allowing you to report on all of the child webinars together.
3. What is the name of the section where you can see campaigns related to leads and contacts?
Campaign History
4. What field lets us know if a campaign is **Active**?
The **Active** checkbox
5. Why would you want to use a third-party app with campaigns?
To automate some of the manual work of dealing with campaigns, such as updating the campaign member status

6. What are three examples of types of campaigns?

Direct mail, Events, and Email, to name a few

Chapter 7

1. What is the main use case for Salesforce cases?

Cases are used for customer service purposes.

2. Why is case status so important?

The case status field drives the case's life cycle. This field allows you to see where the case is at any point in time.

3. What is an example of when a case may be escalated?

An example would be when a technical issue arises that needs to be escalated to a more skilled technician.

4. Why is there an **Order** field on case escalation rule entries?

This is needed so that we can specify the order in which the entries will execute within the rule.

5. Why do you need to generate HTML code for **Web-to-Case**?

So you can add the case capture form to a web page

6. What is a use case for using **Email-to-Case**?

Email-to-Case allows you to set up a specific email address that converts any email sent to that email address into a case.

7. What happens if you don't set up **On-Demand Service**?

You would need to download and install the Email-to-Case agent behind your firewall.

8. Why is it important to verify your email address when setting up **Email-to-Case**?

This is the final step to activate Email-to-Case.

Chapter 8

1. What type of report has no grouping?
A tabular report
2. What type of report has only a row grouping?
A summary report
3. What type of report has both a row and a column grouping?
A matrix report
4. How do you add a chart to a report?
Click on the **Add Chart** button.
5. How does a report relate to a dashboard?
A dashboard contains multiple components, and each component pulls from an underlying report.
6. How many components can you add to a dashboard?
20
7. What does **KPI** stand for?
Key Performance Indicator

Chapter 9

1. Which tab is used for non-object settings?
The **Home** tab, under setup and configuration
2. Which tab is used for managing object settings?
Object Manager
3. In the **ADMINISTRATION** section, which subsection allows you to mass delete records?
The **Data** subsection
4. In the **ADMINISTRATION** section, which subsection allows you to create users?
The **Users** subsection

5. In the **PLATFORM TOOLS** section, which subsection allows you to access Process Builder?
The **Process Automation** subsection
6. In the **SETTINGS** section, which subsection allows you to see your organization ID?
The **Company Settings** subsection
7. On the **Object Manager** tab, which setting allows you to edit the Lightning page layout?
Lightning Record Pages

Chapter 10

1. What is the first decision that should be made when looking at org-wide settings?
The first decision that needs to be made is whether you want to have an open organization where all the data is visible and can be edited by everyone or whether any data needs to be restricted from being viewed or edited.

2. What does the **Grant Access Using Hierarchies** checkbox do?

It allows someone higher up in the hierarchy to inherit the visibility of someone lower in the hierarchy.

3. What are the two types of sharing rules?

Owner-based and criteria-based sharing rules

4. Who can add team members to the account and sales teams?

The account owner and the opportunity owner

5. Does the **Modify All** data setting on a profile work if the org-wide setting for an object is private?

Yes

6. When would you use permission sets?

The use case for permission sets is when you have a group of users that all have the same profile but there is one person that may need extra access for a business reason. It wouldn't make sense to create another profile for just one permission. Permission sets allow you to add the one permission to the user record, which lets you bypass creating a whole new profile for one additional setting.

7. Where is a permission set added after it is created?

To the user record

Chapter 11

1. What is the **Marketing User** checkbox used for when creating a user?

This checkbox allows a user access to create campaigns.

2. Where do you set the time zone for a user?

Locale Settings

3. What is the exception to every record having an owner in Salesforce?

The detail record of a master-detail relationship

4. How do organization-wide defaults help to secure data?

By setting it to private, only the record owners will have access to the records. This can then be opened up using any of the sharing features.

5. What is ownership skew?

When one user owns more than 10,000 records of any object.

Chapter 12

1. What are the four types of sandboxes?

Developer, Developer Pro, Partial Copy, and Full Copy

2. Which type of sandbox is commonly used for development?

Developer

3. Which type of sandbox is commonly used for data migration testing?

Full Copy

4. Why would you add a profile to a change set?

If you don't add any profiles, your component won't be visible and you will need to adjust the security in the target organization, so adding this here will save a lot of time.

5. Before you upload a change set, what step must you take?

Before you can deploy a change set, you have to set up a deployment connection between the source organization and the target organization.

6. Should the outbound change set be set up in the source or the target organization?

The source organization

7. What is the refresh interval for a Full Copy sandbox?

29 days

Chapter 13

1. Why would you create a master-detail relationship as opposed to a lookup relationship?

If the child record needs to be deleted when the master record is deleted, then you should create a master-detail relationship.

2. What are some of the optional features when creating a custom object?

Allow reports, allow activities, track field history, and allow in chatter groups.

3. What are the two types of internal relationship fields you can create on an object?

Master-detail and lookup relationships

4. What part of the page layout shows related items on a record?

The related lists section

5. What is a possible use case for using record types?

Record types are used when you need to show different page layouts, apply different processes, and/or need to show different picklist values based on a business use case.

Chapter 14

1. What are the three types of Lightning pages you can create?

App page, home page, record page

2. What are the three types of Lightning components?

Standard, custom, third-party

3. How do you add components to sections of the page?

Drag and drop

4. What are the three ways you can assign layouts?

Apps, record types, profiles

Chapter 15

1. What is a use case for an unmanaged package?

These applications are usually used to move functionality from one Salesforce environment to the other.

2. What is the benefit of using a managed package?

The package can be published and listed on App Exchange and the package can be upgraded.

3. What is the name of the Salesforce marketplace where you can find apps?

AppExchange

4. What are some of the access options you can grant when installing a package?

Install for **Admins Only**, Install for All Users, and Install for Specific Profiles.

5. What option do you have when uninstalling a package?

You can save a copy of the package's data for 48 hours.

6. What is the best way to set up Salesforce Mobile for your users?

By using the mobile app QuickStart.

Chapter 16

1. What are the different types of flows and what do they do?

Screen Flow: Allows you to display screens to an end user to collect or show information

Record-Triggered Flow: "Triggered" when a record changes and can perform updates to the same record or other records

Schedule-Triggered Flow: Runs on a predefined schedule and can update batches of records

Platform Event-Triggered Flow: Not covered in this chapter

Autolaunched Flow: A flow that can be called by other flows and processes

2. What are flow elements? What are the three categories of flow elements?

Flow elements are the things you can place in the Flow Builder canvas that represent the “steps” of a flow. The three categories are **Interaction**, **Logic**, and **Data**.

3. When would you want to use a screen flow versus a record-triggered flow?

You would use a screen flow instead of a record-triggered flow if you wanted to display or collect information from the end-user using screens.

4. After you build a screen flow, where can you surface it to users?

Screen flows can be called from a button, placed on a Lightning page or Experience Cloud page, or surfaced in the utility bar.

5. Why is it important to build flows in a sandbox or developer environment, and not production?

Flows are powerful automations that need to be tested. If you build in a production, you risk interfering with active user processes, sending emails during testing, or breaking other automations. Building flows in a sandbox allow you to test thoroughly before you deploy to production.

6. What are the different ways you can test a flow?

Debug tool in the Flow Builder

End-to-end testing in sandbox environment

Flow Tests (beta in Summer ‘22)

7. Why is it important to include descriptions in your flow elements?

Flows can be complicated, so including descriptions allows others (and yourself in the future) to understand why you built a flow in the way that you did.

Chapter 17

1. What is the difference between the Jump Start Wizard and the Standard Setup Wizard?

The Jump Start Wizard condenses the steps into two pages as opposed to six pages for the initial creation of the approval process.

2. Are you able to have more than one approver on an approval process?

Yes

3. Why does the record lock for editing when a user submits it for approval?

So that no changes can be made to the record that can affect its approval

4. How are the approval process and workflow rule actions similar?

They are the same actions.

5. What happens to the edit ability of a record if a user recalls it from an approval?

It is unlocked and available for editing.

6. What is the last step needed for an approval process to be live and working?

The approval process has to be activated.

7. Where can an approver see all items that have been assigned to them?

On the home page, when logging into Salesforce

Chapter 18

1. Besides a user, what else can a case or lead record be assigned to?

A queue

2. How is the sort order used on an assignment rule?

This field allows you to determine the order in which the rule entries are evaluated.

3. What happens if you don't choose an email template for a rule entry?

The default assignment template is used.

4. When creating a queue, what is the **Queue Email** field used for?

The **Queue Email** field is used when the assignment email is sent rather than to the individual emails of everyone that is a member of the queue.

5. If you leave the **Queue Email** field blank, who gets notified when a record is assigned to a queue?

Everyone that is a member of the queue

Chapter 19

1. What are three places where formulas can be used?
Formula fields, validation rules, flows
2. What are the three components used when building a formula?
Functions, operators, fields
3. What does a simple formula allow you to do?
Show fields from related objects on a record
4. When do you treat blanks as zeroes?
When dealing with numbers in your formula
5. What results do validation rule formulas always return?
True or False
6. When do you show the error on the top of the page versus on the field?
If the validation is on one field, then show the error on the field. If the validation is for multiple fields, then show it at the top of the page.

Chapter 20

1. What does SIT stand for?
System Integration Testing
2. What does UAT stand for?
User Acceptance Testing
3. What type of sandbox works well for data migration?
Full Sandbox
4. What type of testing is done in the SIT sandbox?
System Testing
5. What type of testing is done by developers?
Unit Testing

6. How does a debug log help troubleshoot?

It gives you system information that you would not get with a manual test.



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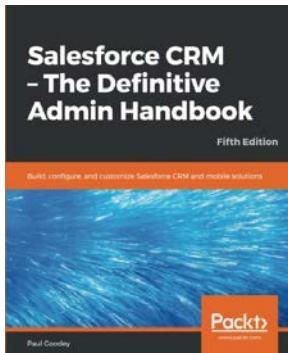


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