

# PingCentral



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# Release Notes

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## Release Notes

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For the best possible experience, review the release notes regarding new features, resolved issues, and known issues before using PingCentral.

- [PingCentral 1.8](#)
- [PingCentral 1.7](#)
- [PingCentral 1.6](#)
- [PingCentral 1.5](#)
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- [PingCentral 1.0 known issues and limitations](#)

## PingCentral 1.8

For the best possible experience, review the following information about new features, resolved issues, and known issues before using PingCentral.

### New features

Ticket ID	Description
PASS-3465	Administrators can add, edit, and delete trusted certificate authority (CA) certificates directly in PingCentral instead of managing them in an external trust store. Certificates that exist in this trust store in previous versions are imported to the PingCentral database during the upgrade to PingCentral 1.8.
PASS-5313	When promoting SAML applications to PingFederate environments, application owners can upload their own signing certificates and select a signing certificate from a list of certificates available for the PingFederate environment.

### Known issues

Ticket ID	Description
PASS-2526	If PostgreSQL is set up without a database, PingCentral fails to start. To prevent this from happening, add the database to the server before starting PingCentral.
PASS-3543	If a certificate is added to a SAML application and a SAML metadata file is subsequently provided that contains a certificate, additional changes to the application cannot be saved. If this occurs, exit the edit page and then access it again.

Ticket ID	Description
PASS-3613	<p>PingCentral promotes access token mappings and authentication policy contracts (APCs) with OIDC applications, but the APC mappings that link the APCs to the access token managers are not currently promoted with them. If the APC mappings do not already exist in the target PingFederate environments, applications do not function as expected.</p> <p>When new APCs are promoted in PingCentral, access token mapping referencing the APC is created, but persistent grant mapping is not established so the configurations are invalid.</p> <p>To resolve these issues, configure the APC mappings within PingFederate.</p>
PASS-3634	<p>When application owners use SSO to access PingCentral, administrators cannot assign applications to them prior to the application owners ever accessing PingCentral.</p> <p>However, after they sign on to PingCentral, administrators can access their account information and assign applications to them.</p>
PASS-4633	<p>When using templates to add Web + API applications to PingCentral, you can drag rules between Web and API policies, which might cause the page to go blank. If this occurs, refresh the browser window.</p>
PASS-4893	<p>When an environment is deleted, applications that were promoted to that environment retain the promotion details from the deleted environment. PingCentral does not remove this information from applications when an environment is no longer available.</p>
PASS-4948	<p>Customized authentication challenge responses, which support single-page applications, are also available in PingAccess 6.2 or later. Applications with this type of policy can be added to PingCentral, but cannot be promoted to another environment unless the authentication challenge policy, with the same UUID, also exists in the target environment.</p>
PASS-4956	<p>When using PingCentral, you might occasionally receive a reflective access warning message. You can safely ignore this message.</p>
PASS-5001	<p>When creating, updating, or validating an environment through the API, you receive a server error message if the environment <b>Name</b> or <b>Password</b> fields are null or missing. API requests cannot be processed without this information, so ensure that these fields contain valid values.</p>
PASS-5002	<p>When creating or validating an environment through the API, you receive a misleading error message if the PingAccess <b>Password</b> field is null. Rather than informing you that the information in this field is invalid, it informs you that you are unable to connect to the PingFederate admin console, which is misleading. Requests to connect PingAccess to a PingCentral environment cannot be processed without this information, so ensure that this field contains a valid value.</p>

Ticket ID	Description
PASS-5009	If you attempt to add a SAML application to PingCentral from an existing application through the API, and the connection JSON contains identity attribute names and placeholders, you receive an error message advising you to nullify the <b>Names</b> field. However, even if you nullify this field you still receive an error message because the JSON contains placeholders. Remove these placeholders before you proceed.
PASS-5630	When application owners add and update their applications, they can provide metadata exported from service provider (SP) connections, which might include entity IDs, ACS URLs, and certificates, but they cannot provide metadata exported from identity provider (IdP) connections.
PASS-5663	When promoting SAML applications, PingFederate does not allow you to use the same certificate as both an SP certificate and an assertion encryption certificate. Instead of preventing the promotion to continue, you receive a message similar to the following.  Environment 'staging': PingFederate. This certificate either has the same ID or the same content as the certificate with index 0.  To continue the promotion, ensure that the SP certificate and the assertion encryption certificate are different.
PASS-5667	If you delete several trusted CA certificates less than a minute apart, PingCentral correctly revokes trust for the first certificate, but does not revoke trust for the other certificates subsequently deleted.

## PingCentral 1.7

For the best possible experience, review the following information about new features, resolved issues, and known issues before using PingCentral.

### New features

Ticket ID	Description
PASS-4729	If you have user groups defined in your data store, administrators can add the groups to PingCentral so that application owners can associate them with PingCentral applications and provide application access to many users at once.

### Resolved issues

Ticket ID	Description
PASS-2122	Previously, when modifying an environment, if an identity provider certificate was added or updated, and then the PingFederate admin password was updated, the cursor jumped down to the <b>IDP Certificate Password</b> field each time a key was pressed. This issue has been resolved.
PASS-2824	If you update a SAML application with an invalid application name, you now receive a message that explains why your updates cannot be saved.

Ticket ID	Description
PASS-4249	Previously, if you added an application to PingCentral from the <b>Applications</b> page, unmanaged applications occasionally displayed that you could not manage. This issue has been resolved.
PASS-4280	Previously, if you filtered for PingAccess applications, added a PingAccess application by using the <b>Add to PingCentral</b> button, and returned to the <b>Applications</b> page, you might not have been able to view the details of other unmanaged PingAccess applications. This issue has been resolved.
PASS-4994	Previously, if you added users through the API and the <b>password</b> and <b>confirmpassword</b> fields were unavailable, the users were created anyway. Now you will receive error messages if this information is missing, or if the information entered in these fields does not match.
PASS-5004	<p>Previously, when creating or updating OAuth applications through the API, you received server error messages if the <b>Type</b> attribute or the client JSON was null or missing, or if the <b>redirectUri</b> attribute contained an environment ID but the array of associated URIs was null or missing.</p> <p>Now, if the <b>Type</b> attribute or client JSON is null or missing, you will receive an error message that more accurately describe the issue. And if the <b>redirectUri</b> attribute contains an environment ID but the associated URIs are null or missing, a null array is now added for that environment.</p>

## Known issues

Ticket ID	Description
PASS-2093	When single sign-on (SSO) is enabled, custom session settings are modifiable, but are not honored.
PASS-2097	When SSO is enabled, administrators can add and update users in PingCentral through the <b>User Management</b> page, even though it has no effect.
PASS-2526	If PostgreSQL is set up without a database, PingCentral fails to start. To prevent this from happening, add the database to the server before starting PingCentral.
PASS-3543	If a certificate is added to a SAML application and a SAML metadata file is subsequently provided that contains a certificate, additional changes to the application cannot be saved. If this occurs, exit the edit page and then access it again.
PASS-3613	<p>PingCentral promotes access token mappings and authentication policy contracts (APCs) with OIDC applications, but the APC mappings that link the APCs to the access token managers are not currently promoted with them. If the APC mappings do not already exist in the target PingFederate environments, applications do not function as expected.</p> <p>When new APCs are promoted in PingCentral, access token mapping referencing the APC is created, but persistent grant mapping is not established so the configurations are invalid.</p> <p>To resolve these issues, configure the APC mappings within PingFederate.</p>

Ticket ID	Description
PASS-3634	<p>When application owners use SSO to access PingCentral, administrators cannot assign applications to them prior to the application owners ever accessing PingCentral.</p> <p>However, after they sign on to PingCentral, administrators can access their account information and assign applications to them.</p>
PASS-3830	<p>If you update SAML attributes while updating other application information, the attribute information is not saved. To prevent this from happening, update the attributes and save your changes. Then, you can update additional application information.</p>
PASS-4633	<p>When using templates to add Web + API applications to PingCentral, you can drag rules between Web and API policies, which might cause the page to go blank. If this occurs, refresh the browser window.</p>
PASS-4807	<p>Virtual resources are available in PingAccess 6.2 or higher later, but are not yet available in PingCentral.</p>
PASS-4893	<p>When an environment is deleted, applications that were promoted to that environment retain the promotion details from the deleted environment. PingCentral does not remove this information from applications when an environment is no longer available.</p>
PASS-4948	<p>Customized authentication challenge responses, which support single-page applications, are also available in PingAccess 6.2 or later. Applications with this type of policy can be added to PingCentral, but cannot be promoted to another environment unless the authentication challenge policy, with the same UUID, also exists in the target environment.</p>
PASS-4956	<p>When using PingCentral 1.7, you might occasionally receive a reflective access warning message. You can safely ignore this message.</p>
PASS-5001	<p>When creating, updating, or validating an environment through the API, you receive a server error message if the environment <b>Name</b> or <b>Password</b> fields are null or missing. API requests cannot be processed without this information, so ensure that these fields contain valid values.</p>
PASS-5002	<p>When creating or validating an environment through the API, you receive a misleading error message if the PingAccess <b>Password</b> field is null. Rather than informing you that the information in this field is invalid, it informs you that you are unable to connect to the PingFederate admin console, which is misleading. Requests to connect PingAccess to a PingCentral environment cannot be processed without this information, so ensure that this field contains a valid value.</p>
PASS-5009	<p>If you attempt to add a SAML application to PingCentral from an existing application through the API, and the connection JSON contains identity attribute names and placeholders, you receive an error message advising you to nullify the <b>Names</b> field. However, even if you nullify this field you still receive an error message because the JSON contains placeholders. Remove these placeholders before you proceed.</p>



## PingCentral 1.6

For the best possible experience, review the following information about new features, resolved issues, and known issues before using PingCentral.

### New features

Ticket ID	Description
PASS-2840	PingCentral APIs are fully supported and documented.
PASS-4708	Spring Boot Actuator and Spring Metrics are available in PingCentral and are enabled by default. These powerful tools collect a wide variety of information that help you monitor and manage PingCentral in production environments and can be connected to your time series database in a few simple steps.

### Resolved issues

Ticket ID	Description
PASS-2468	Previously, administrators could not update user information if PingCentral did not contain any environments. This issue has been resolved.
PASS-2819	If an OAuth application is added from an environment that does not use a client secret to authenticate, the <b>Client Secret</b> field is no longer displayed during the promotion process.
PASS-3617	If you promote a SAML application with an assertion encryption certificate and then attempt to edit the application, the <b>Save</b> and <b>Discard Changes</b> buttons no longer display before changes are made.
PASS-3643	If the <b>Promote</b> button is clicked more than once when a SAML application is promoted to an environment, the application can no longer be unintentionally promoted multiple times.
PASS-3645	Previously, when adding or updating SAML applications, you might have received an error message if you provided a service provider metadata file that did not contain certificate information. This issue has been resolved and the error message no longer displays.
PASS-4174	Previously, if owner or promotion configuration information was updated for a PingAccess application, or a PingAccess application was promoted, the modified timestamp did not update. This issue has been resolved and the modified timestamp behaves as expected.
PASS-4300	The command line upgrade script supports softlinks as a reference to the existing installation directory. Previously, the upgrade would produce a false success message if a softlink was used.
PASS-4304	Previously, if an administrator changed an environment short code to a code that already existed, only one environment status icon displayed, which might have been misleading. Now, every environment displays a status icon, even if it has the same short code as another environment.

Ticket ID	Description
PASS-4305	Previously, if PingCentral was installed as a Linux service by one user, and the upgrade was performed by another, the service might no longer start. This issue has been resolved.
PASS-4376	When you started PingCentral 1.5, you might have received a reflective access warning message that we asked you to ignore. This version of PingCentral starts without displaying that warning.
PASS-4460	Previously, if a password was entered for a PKCS12 (P12) file when updating the TLS key pair, a misleading error message displayed. This message has been updated and reminds you to ensure that the <b>Key Password</b> field contains a valid password if one is required.
PASS-4579	When editing PingAccess applications and making changes to the context root, pressing the Enter key saves the changes made.
PASS-4583	Previously, if you changed a template associated with a PingAccess application and clicked <b>Cancel</b> , the newly selected template remained on the edit page. Now, the original template displays when you click <b>Cancel</b> .
PASS-4615	If unsupported PingCentral APIs are used to update a PingAccess application and the JSON is invalid, an error message displays. Previously, if the JSON was invalid, the <b>Application</b> page became unresponsive.
PASS-4619	Previously, if an assertion encryption certificate was added to an application or used to promote it, the certificate did not display when the application was promoted again or when subsequent updates were made. This issue was resolved and the certificate displays as it should.
PASS-4660	If you enter a context root that begins with the reserved context root in PingAccess (typically <code>/pa</code> ), you receive a message that explains the issue, rather than receiving a generic <code>Save Failed</code> error message.
PASS-4668	Previously, if a template was created from a PingAccess application and that application was deleted from PingAccess, you could not use that template to add applications to PingCentral. This issue was resolved and you can use all PingAccess templates to add applications to PingCentral, regardless of whether the applications on which they were based still exist.
PASS-4685	Previously, if administrators attempted to add a PingAccess application to PingCentral while PingAccess was unavailable and they clicked the <b>Refresh Now</b> link, the <b>Application</b> page might not display any applications. This issue has been resolved and you can manage PingAccess applications in PingCentral even if PingAccess is unavailable.
PASS-4688	Previously, if you were using a Postgres database with PingCentral and you attempted to sort applications by name when filters were applied, you might have received a server error message. This issue was resolved and sorting works as it should when filters are applied.
PASS-4805	PingCentral generated self-signed TLS server certificates comply with MacOS Catalina requirements.

## Known issues

Ticket ID	Description
PASS-2093	When single sign-on (SSO) is enabled, custom session settings are modifiable, but are not honored.
PASS-2097	When SSO is enabled, administrators can add and update users in PingCentral through the <b>User Management</b> page, even though it has no effect.
PASS-2122	When modifying an environment, if an identity provider certificate is added or updated, and then the PingFederate admin password is updated, the cursor jumps down to the <b>IDP Certificate Password</b> field each time a key is pressed.
PASS-2526	If PostgreSQL is set up without a database, PingCentral fails to start. To prevent this from happening, add the database to the server before starting PingCentral.
PASS-2824	If you enter an invalid application name when updating a SAML application, you do not receive an error message.
PASS-3543	If a certificate is added to a SAML application and a SAML metadata file is subsequently provided that contains a certificate, additional changes to the application cannot be saved. If this occurs, exit the edit page and then access it again.
PASS-3613	<p>PingCentral promotes access token mappings and APCs (Authentication Policy Contracts) with OIDC applications, but the APC mappings that link the APCs to the access token managers are not currently promoted with them. If the APC mappings do not already exist in the target PF environments, applications do not function as expected.</p> <p>When new APCs are promoted in PingCentral, access token mapping referencing the APC is created, but persistent grant mapping is not established so the configurations are invalid.</p> <p>To resolve these issues, configure the APC mappings within PingFederate.</p>
PASS-3634	<p>When application owners use SSO to access PingCentral, administrators cannot assign applications to them prior to the application owners ever accessing PingCentral.</p> <p>However, after they sign on to PingCentral, administrators can access their account information and assign applications to them.</p>
PASS-3830	If you update SAML attributes while updating other application information, the attribute information is not saved. To prevent this from happening, update the attributes and save your changes. Then, you can update additional application information.
PASS-4249	If you add an application to PingCentral from the <b>Applications</b> page, unmanaged applications might display that you cannot manage.

Ticket ID	Description
PASS-4280	If you filter for PingAccess applications, add a PingAccess application by using the <b>Add to PingCentral</b> button, and return to the <b>Applications</b> page, the filter might appear to be on and you might not be able to view the details for another unmanaged PingAccess application. If this occurs, refresh your browser window.
PASS-4633	When using templates to add Web + API applications to PingCentral, you can drag rules between Web and API policies, which might cause the page to go blank. If this occurs, refresh the browser window.
PASS-4807	Virtual resources are available in PingAccess 6.2, but are not yet available in PingCentral.
PASS-4893	When an environment is deleted, applications that were promoted to that environment retain the promotion details from the deleted environment. PingCentral does not remove this information from applications when an environment is no longer available.
PASS-4948	Customized authentication challenge responses, which support single-page applications, are also available in PingAccess 6.2+. Applications with this type of policy can be added to PingCentral, but cannot be promoted to another environment unless the authentication challenge policy, with the same UUID, also exists in the target environment.
PASS-4956	When using PingCentral 1.6, you might occasionally receive a reflective access warning message. You can safely ignore this message.
PASS-4994	If administrators add users through the API and the <b>password</b> and <b>confirmpassword</b> fields are unavailable, the users are created with PingCentral's default administrator password, <b>2Federate</b> . If the users are not able to sign on using this password, administrators can modify the password through the PingCentral <b>Users</b> page or through the API.
PASS-5001	When creating, updating, or validating an environment through the API, you receive a server error message if the environment <b>Name</b> or <b>Password</b> fields are null or missing. API requests cannot be processed without this information, so ensure that these fields contain valid values.
PASS-5002	When creating or validating an environment through the API, you receive a misleading error message if the PingAccess <b>Password</b> field is null. Rather than informing you that the information in this field is invalid, it informs you that you are unable to connect to the PingFederate admin console, which is misleading. Requests to connect PingAccess to a PingCentral environment cannot be processed without this information, so ensure that this field contains a valid value.

Ticket ID	Description
PASS-5004	<p>When creating or updating an OAuth application through the API, you receive a server error message if:</p> <ul style="list-style-type: none"> <li>The <b>redirectUris</b> attribute contains an environment ID, but the array of associated URIs is null or missing.</li> <li>The <b>Type</b> attribute is null or missing.</li> <li>The client JSON is null or missing.</li> </ul> <p>API requests cannot be processed without this information, so ensure that it is accurate.</p>
PASS-5009	<p>If you attempt to add a SAML application to PingCentral from an existing application through the API, and the connection JSON contains identity attribute names and placeholders, you receive an error message advising you to nullify the <b>Names</b> field. However, even if you nullify this field you still receive an error message because the JSON contains placeholders. Remove these placeholders before you proceed.</p>

## PingCentral 1.5

For the best possible experience, review the following information about new features, resolved issues, and known issues prior to using PingCentral.

### New features

Ticket ID	Description
PASS-1396	Administrators can create templates from PingAccess applications. For more information, see <a href="#">Creating PingAccess application templates</a> .
PASS-1397	Application owners can apply PingAccess templates to their applications and promote them to PingAccess environments. For more information, see <a href="#">Using PingAccess templates</a> and <a href="#">Promoting PingAccess applications</a> .

### Resolved issues

Ticket ID	Description
PASS-1552	When updating a user's role, the <b>Discard Changes</b> button works as expected.
PASS-2090	<p>Previously, when PingCentral was configured to authenticate users through single sign-on (SSO) and it was not able to connect to PingFederate, the token provider, PingCentral would fail to start.</p> <p>This issue has been resolved. Now, if PingCentral cannot connect to PingFederate, PingCentral starts and users receive an error message indicating that a connectivity issue is preventing them from signing in.</p>
PASS-2528	<p>If you attempt to create applications without a signing key pair, you will receive the following message: <code>Application signing settings not found. PingCentral currently only supports connections with signing settings.</code></p>

Ticket ID	Description
PASS-3259	If administrators add PingFederate environments to PingCentral that are missing dependencies, such as an authentication policy or access token management (ATM) information, they receive an error message that more accurately describes the issue.
PASS-3476	Previously, when adding SAML metadata files or URLs to applications on the edit page, you could inadvertently save applications without any attribute mappings, including the SAML_SUBJECT attribute that is required for promotion. This issue was resolved, and you cannot promote applications until the SAML_SUBJECT attribute is assigned a value.
PASS-3610	If the only environment in PingCentral is deleted, users can see the applications created from and promoted to that environment on the <b>Applications</b> page.
PASS-3615	Previously, attribute scopes within an OpenID Connect policy must already have been defined within the target environment, or the policy could not be promoted.
PASS-4293	Previously, you could not promote a PingAccess application to an environment where an application with the same name, but different destination type (site or agent), already existed. This issue is resolved.
PASS-4307	If a PingFederate application was created from a template in a PingFederate version later than the version to which it is being promoted, the promotion fails. For example, if the template was created from a PingFederate 10.1 application, and you promote it to a PingFederate 9.3 environment, the promotion fails.  Previously, when this occurred, users received an unclear error message. Now, users receive an error message stating that promotions to previous versions of Ping Identity products not currently supported.
PASS-4334	PingCentral token provider validation succeeds if the PingFederate base URL matches the PingAccess issuer URL. The default HTTPS port number 443 is no longer required to be explicitly indicated.
PASS-4451	Previously, if you promoted a PingAccess application and renamed it in PingCentral, you could not promote it again without reverting the name change. This issue is resolved.

## Known issues

Ticket ID	Description
PASS-2093	When SSO is enabled, custom session settings are modifiable, but are not honored.
PASS-2097	When SSO is enabled, administrators can add and update users in PingCentral through the User Management page, even though it has no effect.
PASS-2122	When modifying an environment, if an identity provider certificate is added or updated, and then the PingFederate admin password is updated, the cursor will jump down to the <b>IDP Certificate Password</b> field each time a key is pressed.

Ticket ID	Description
PASS-2468	Administrators cannot update user information if PingCentral does not contain any environments.
PASS-2526	If PostgreSQL is set up without a database, PingCentral will fail to start. To prevent this from happening, add the database to the server prior to starting PingCentral.
PASS-2819	If an OAuth application is added from an environment that does not use a client secret to authenticate, the <b>Client Secret</b> field displays, but is ignored. This display could cause confusion, as users can add and generate client secrets for their applications, but the secrets are not saved as expected.
PASS-2824	If you enter an invalid application name when updating a SAML application, you will not receive an error message.
PASS-3543	If a certificate is added to a SAML application and a SAML metadata file is subsequently provided that contains a certificate, additional changes to the application cannot be saved. If this occurs, exit the edit page and then access it again.
PASS-3613	<p>PingCentral promotes access token mappings and APCs (Authentication Policy Contracts) with OIDC applications, but the APC mappings that link the APCs to the access token managers are not currently promoted with them. If the APC mappings do not already exist in the target PF environments, applications will not function as expected.</p> <p>When new APCs are promoted in PingCentral, access token mapping referencing the APC is created, but persistent grant mapping is not established so the configurations are invalid.</p> <p>To resolve these issues, configure the APC mappings within PingFederate.</p>
PASS-3617	<p>If you promote a SAML applications with an assertion encryption certificate and then attempt to edit the application, the <b>Save</b> and <b>Discard Changes</b> buttons display on the edit page before you make any changes, which could be misleading.</p> <p>Ignore this irregularity and click the <b>Save</b> button, or click the <b>Discard Changes</b> button to exit the edit page.</p>
PASS-3618	<p>If applications and environments have long names, you might not be able to see the entire list of available environments when you attempt to promote applications.</p> <p>To select an environment not immediately visible from the list, continue scrolling. The entire list will eventually display, but environment names toward the bottom of the list might appear distorted.</p>
PASS-3634	<p>When application owners use SSO to access PingCentral, administrators cannot assign applications to them prior to the application owners ever accessing PingCentral.</p> <p>However, after they sign on to PingCentral, administrators can access their account information and assign applications to them.</p>

Ticket ID	Description
PASS-3643	If the <b>Promote</b> button is clicked more than once when a SAML application is promoted, the application could be unintentionally promoted to an environment multiple times. To prevent this from happening, press the Enter key during the promotion process.
PASS-3645	When adding and updating SAML applications, you receive an error message if you provide a service provider metadata file that does not contain certificate information. If this occurs, ignore the message and continue to add or update the application.
PASS-3830	If you update SAML attributes while updating other application information, the attribute information will not be saved. To prevent this from happening, update the attributes and save your changes. Then, you can update additional application information.
PASS-4174	If owner or promotion configuration information is updated for a PingAccess application, or a PingAccess application is promoted, the modified timestamp does not update as it should, which could be deceiving if the list of applications is sorted by modified date. However, if you update the name, description, context root, resources, or policy, the timestamp is also updated.
PASS-4249	If you add an application to PingCentral from the <b>Applications</b> page, unmanaged applications might display that you cannot manage.
PASS-4280	If you filter for PingAccess applications, add a PingAccess application by using the <b>Add to PingCentral</b> button, and return to the <b>Applications</b> page, the filter might appear to be on and you might not be able to view the details for another unmanaged PingAccess application. If this occurs, refresh your browser window.
PASS-4300	If PingCentral is installed as a service, installation files are stored in a local directory, such as <code>/usr/local/pingcentral-1-1.4.0/</code> . When using the command line to upgrade to 1.5.0, ensure that the existing parameter points to the direct path of the previous installation, and not to the softlink path, which appears first. Selecting the softlink path results in the installation failing even though a success message displays.
PASS-4304	Administrators can change environment short codes to codes that already exist. If this occurs, and users promote an application to two different environments with the same short code, only one environment status icon displays, which could be misleading. To prevent this from happening, ensure each environment short code is unique.
PASS-4305	<p>If PingCentral was installed as a Linux service by one user, and the upgrade is performed by another, the service might no longer start. To resolve this issue, run the following command to update the installation files to match the existing ownership:</p> <pre>chown -R [user]:[group] [INSTALL_DIR]</pre> <p>Where the user and group match the existing installation. For example:</p> <pre>chown -R pingcentral:pingcentral /usr/local/pingcentral-1</pre>



Ticket ID	Description
PASS-4376	When you start PingCentral 1.5, you might see warning messages related to illegal reflective access by <code>org.springframework.util.ReflectionUtils</code> . These messages can be safely ignored.
PASS-4460	If a password is entered for a PKCS12 (P12) file when updating the TLS key pair, you might receive a misleading error indicating that the alias is not found. To prevent this from happening, leave the key password blank for PKCS12 key pair files.
PASS-4579	When editing PingAccess applications, pressing the Enter key after making changes to the context root does not always save the changes to the context root. When these applications are promoted, they contain an incorrect context root. To prevent this from happening, click <b>Save</b> rather than pressing <b>Enter</b> .
PASS-4583	If you change a template associated with a PingAccess application and click <b>Cancel</b> , the newly selected template displays on the edit page. If this occurs, refresh the page to see that the original template is still associated with the application.
PASS-4615	If unsupported PingCentral APIs are used to update a PingAccess application and the JSON is saved incorrectly, the <b>Application</b> page might become unresponsive. If this occurs, ensure the application JSON is valid and reload the page.
PASS-4619	When an assertion encryption certificate has been used to promote an application, or when a certificate is added to an application, the certificate does not display when the application is promoted or when subsequent updates are made. To ensure that the correct certificate is applied, reselect the certificate when you promote the application.
PASS-4633	When using templates to add Web + API applications to PingCentral, you can drag rules between Web and API policies, which might cause the page to go blank. If this occurs, refresh the browser window.
PASS-4660	Entering a context root that begins with the reserved context root in PingAccess (typically <code>/pa</code> ) displays generic "Save Failed" error message, instead of a more descriptive one.  For example, if <code>/pa</code> is a reserved context root in PingAccess and you enter <code>/papapizza</code> as a context root, you receive this message.
PASS-4668	If a template was created from a PingAccess application, and that application is deleted from PingAccess, you can no longer add applications to PingCentral using that template.
PASS-4685	If administrators attempt to add a PingAccess application to PingCentral while PingAccess is unavailable and they click the <b>Refresh Now</b> link, the <b>Application</b> page might not display any applications. To prevent this from happening, they should select the <code>Skip Verification</code> option for the PingAccess environment to skip the validation process until it becomes available.

Ticket ID	Description
PASS-4688	If you are using a Postgres database with PingCentral and you attempt to sort applications by name when filters are applied, you might receive a server error message. To work around this issue, either remove the filters to sort all applications by name, or retain the filters with applications sorted by modification date.

## PingCentral 1.4

New features, resolved issues, and known issues are listed and described here. For the best possible experience, review this information prior to using PingCentral.

### New features

Ticket ID	Description
PASS-2429	During the PingCentral upgrade process, the upgrade utility merges the new version of the <code>application.properties</code> file with the older version, preserving property values previously customized.
PASS-2827	You can upgrade to PingCentral version 1.4.0 directly from either version 1.2.0 or 1.3.0. Files that were not modified since they were initially installed are overwritten with new versions during the upgrade process. Note the following: <ul style="list-style-type: none"> <li>If the <code>application.properties</code> file was modified, the new version of the file will be merged with the latest version, preserving customizations.</li> <li>If the <code>conf/log4j2.xml</code>, <code>bin/run.sh</code>, and <code>bin.run.bat</code> files were modified, the new versions are installed and the old versions are renamed. Manually update the new files with customizations, as necessary.</li> </ul>
PASS-3189	Administrators can add existing PingAccess applications to PingCentral. For more information, see <a href="#">Adding PingAccess applications</a> .
PASS-3191	Application owners can promote PingAccess applications to other PingAccess environment tiers and apply environment configuration dependencies, such as web sessions, identity mapping, virtual hosts, sites, and agents.
PASS-3563	Administrators can add PingAccess environment instances to PingCentral. For more information, see <a href="#">Environment Management</a> .

### Resolved issues

Ticket ID	Description
PASS-2119	Protected environment text on the <b>Environments</b> page no longer incorrectly refers to "production" if the protected environment is not a production environment.
PASS-3556	The <b>Restore</b> button is now hidden for applications promoted in version 1.2.0.
PASS-3586	Previously, if the combination of an application's Redirect URIs exceeded 255 characters, users could not add the application to PingCentral. This character limitation was removed for this release, which resolved the issue.
PASS-3644	If a PingFederate environment is added to PingCentral and becomes unavailable for any reason, the <b>Applications</b> page is no longer empty.
PASS-3646	Scope names cannot contain spaces, so users are now prevented from adding scopes with spaces in the name to their applications.

Ticket ID	Description
PASS-3648	When updating SAML applications, users can provide a new metadata file to replace an older version. If the new file contains a certificate, the correct certificate now displays.
PASS-3659	When promoting SAML applications with multiple authentication policy contracts that were directly imported into PingCentral, the first contract on the list is used, as intended, and promotion failures no longer occur.
PASS-3663	When creating templates or adding existing OAuth or OIDC applications to PingCentral and scopes are not restricted, the <b>Scopes</b> field correctly displays the following message: <code>This application uses all common scopes provided by the target environment.</code>
PASS-3714	When searching for a scope that does not exist, the <b>Add</b> button no longer incorrectly displays.
PASS-3809	Users can no longer add a partial scope name to the <b>Scopes</b> field.
PASS-3825	When searching for or adding scopes, users will now receive an appropriate error message when they enter invalid characters.

## Known issues

Ticket ID	Description
PASS-1552	When updating a user's role, the <b>Discard Changes</b> button does not currently work.
PASS-2090	If SSO is configured for PingCentral and PingFederate is unavailable, PingCentral will fail to start. If this occurs, determine why PingFederate is unavailable, resolve the issue, and restart PingCentral.
PASS-2093	When SSO is enabled, custom session settings are modifiable, but are not honored.
PASS-2097	When SSO is enabled, an administrator is able to update and add users to PingCentral via the User Management page, even though it has no effect.
PASS-2122	When modifying an environment, if an identity provider certificate is added or updated, and then the PingFederate admin password is updated, the cursor will jump down to the <b>IDP Certificate Password</b> field each time a key is pressed.
PASS-2468	Administrators cannot update user information if PingCentral does not contain any environments.
PASS-2526	If PostgreSQL is set up without a database, PingCentral will fail to start. To prevent this from happening, add the database to the server prior to starting PingCentral.
PASS-2528	Users who attempt to create a SAML application without a signing key pair might receive a server error.
PASS-2819	If an OAuth application is added from an environment that does not use a client secret to authenticate, the <b>Client Secret</b> field displays, but is ignored. This display could cause confusion, as users can add and generate client secrets for their applications, but the secrets are not saved as expected.
PASS-2824	Users who enter invalid application names when updating their SAML applications do not receive an error message.

Ticket ID	Description
PASS-3259	<p>If an administrator adds a PingFederate environment to PingCentral that is missing a dependency, such as authentication policy or access token management (ATM) information, they will receive the following error message: Environment &lt;pf_environment&gt; Resource not found &lt;missing_dependency&gt;</p> <p>To resolve this issue, either add the missing dependency to the environment in PingFederate, or remove the environment from PingCentral. Otherwise, PingCentral might become unusable.</p>
PASS-3476	<p>When adding SAML metadata files or URLs to applications in the edit screen, you can inadvertently save applications without any attribute mappings, including the SAML_SUBJECT attribute that is required for promotion. If you attempt to promote those applications, you will receive an error message informing you that the SAML_SUBJECT attribute is missing from the attribute contract fulfillment.</p> <p>To resolve this issue, access the edit screen for the application, assign the SAML_SUBJECT attribute a value, and attempt to promote the application again.</p>
PASS-3543	<p>If an SP certificate is added to a SAML application and a SAML metadata file is subsequently provided that contains a certificate, additional changes to the application cannot be saved. If this occurs, exit the edit screen and then access it again.</p>
PASS-3610	<p>If only one environment exists when you create a SAML application, and that environment is deleted, the <b>Applications</b> page will crash. If this occurs, add an environment directly to /pass/main/environments.</p>
PASS-3613	<p>PingCentral promotes access token mappings and APCs (Authentication Policy Contracts) with OIDC applications, but the APC mappings that link the APCs to the access token managers are not currently promoted with them. If the APC mappings do not already exist in the target PF environments, applications will not function as expected.</p> <p>When new APCs are promoted in PingCentral, access token mapping referencing the APC is created, but persistent grant mapping is not established so the configurations are invalid.</p> <p>To resolve these issues, configure the APC mappings within PingFederate.</p>
PASS-3615	<p>The attribute scopes within an OIDC policy must already be defined within the target environment, or the policy cannot be promoted.</p>
PASS-3617	<p>If you promote a SAML application with an assertion encryption certificate and then attempt to edit the application, the <b>Save</b> and <b>Discard Changes</b> buttons display on the edit screen before you make any changes, which could be misleading.</p> <p>Ignore this irregularity and click the <b>Save</b> button, or click the <b>Discard Changes</b> button to exit the edit screen.</p>

Ticket ID	Description
PASS-3618	<p>If applications and environments have long names, you might not be able to see the entire list of available environments when you attempt to promote applications.</p> <p>To select an environment not immediately visible from the list, continue scrolling. The entire list will eventually display, but environment names toward the bottom of the list might appear distorted.</p>
PASS-3634	<p>When application owners use SSO to access PingCentral, administrators cannot assign applications to them prior to the application owners ever accessing PingCentral.</p> <p>However, after they sign on to PingCentral, administrators can access their account information and assign applications to them.</p>
PASS-3643	<p>If the <b>Promote</b> button is clicked more than once when a SAML application is promoted, the application could be unintentionally promoted to an environment multiple times. To prevent this from happening, press the Enter key during the promotion process.</p>
PASS-3645	<p>When adding and updating SAML applications, users receive error messages if they provide a service provider metadata file that does not contain certificate information. If this occurs, ignore the message and continue to add or update the application.</p>
PASS-3830	<p>If you update SAML attributes while updating other application information, the attribute information will not be saved. To prevent this from happening, update the attributes and save your changes. Then you can update additional application information.</p>
PASS-4174	<p>If owner or promotion configuration information is updated for a PingAccess application, or a PingAccess application is promoted, the modified timestamp does not update as it should, which could be deceiving if the list of applications is sorted by modified date. However, if a PingAccess application name or description is updated, the modified timestamp behaves as expected.</p>
PASS-4249	<p>If you add an application to PingCentral from the <b>Applications</b> page, unmanaged applications might display that you cannot manage.</p>
PASS-4259	<p>When adding PingFederate and PingAccess environments, you might receive an inaccurate messages stating that you successfully connected to PingFederate when you opted to skip the verification. Likewise, you might not receive a message stating that you have successfully connected to PingAccess when you have. To determine the status of the environments, access the Environments page and review the status of the environments to determine which are connected.</p>
PASS-4280	<p>If you filter for PingAccess applications, add a PingAccess application by using the <b>Add to PingCentral</b> button, and return to the Applications page, the filter might appear to be on and you might not be able to view the details for another unmanaged PingAccess application. If this occurs, refresh your browser window.</p>

Ticket ID	Description
PASS-4293	Users cannot promote a PingAccess application to an environment where an application with the same name is already present, but has a different destination type (agent or site). The promotion will fail and an error message displays stating that an ID for the existing destination type is required. If this occurs, administrators can manually update the destination within PingAccess to match the application defined in PingCentral.
PASS-4300	If PingCentral is installed as a service, installation files are stored in a local directory, such as <code>/usr/local/pingcentral-1-1.3.0/</code> . When using the command line to upgrade to version 1.4.0, ensure that the <i>existing</i> parameter points to the direct path of the previous installation, and not to the softlink path, which appears first. Selecting the softlink path results in the installation failing even though a success message displays.
PASS-4305	If PingCentral was installed as a Linux service by one user, and the upgrade is performed by another, the service might no longer start. To resolve this issue, run the following command to update the installation files to match the existing ownership:  <pre>chown -R [user]:[group] [INSTALL_DIR]</pre> Where the user and group match the existing installation.  For example: <code>chown -R pingcentral:pingcentral /usr/local/pingcentral-1</code>
PASS-4307	If a PingFederate application was created from a template in a PingFederate version higher than the version to which it is being promoted, the promotion will fail. For example, if the template was created from a PingFederate version 10.1 application, and you promote it to a PingFederate 9.2.3 environment, the promotion will fail.

## PingCentral 1.3

New features, resolved issues, and new known issues are listed and described here. For the best possible experience, review this information prior to using PingCentral.

### New features

Ticket ID	Description
PASS-933	Access token mapping information is now stored when applications are added to PingCentral and transferred into the target PingFederate instances when applications are promoted.
PASS-1128	Application owners can now revert applications to previously promoted versions. The reverted version of the application will not exist outside of PingCentral until it is promoted again, at which point it will also be available in PingFederate.
PASS-1528	PingCentral now supports the PostgreSQL open source relational database system.
PASS-2015	When using SAML templates, application owners can now provide an <code>.xml</code> file that could contain an Entity ID, ACS URL, certificates, attribute information, or all of this information, from a similar SAML application. Or, they can continue providing the Entity ID, ACS URL and certificates during the promotion process.

Ticket ID	Description
PASS-2202	After a SAML application has been promoted to an environment, the connection metadata is exported and stored as part of that application. This metadata is now available to download as an <code>.xml</code> file, which you can use to promote other SAML applications.
PASS-2414	You can now use Docker to deploy PingCentral. Preconfigured Docker images are available in Docker containers, which provide complete working instances of applications that are immediately available to use after they are deployed.
PASS-2839	PingCentral now promotes the first Authentication Policy Contract (APC) configured for service provider connections. In prior releases, the APC, with the same ID, was expected to already exist in the target environment for the connection promotion to succeed.
PASS-3177	Application owners can now encrypt a SAML assertion if encryption is enabled for the connection.
PASS-3262	Application owners can now customize the scopes they apply to their OAuth and OIDC applications.

## Resolved issues

Ticket ID	Description
PASS-2119	Protected environment text on the Environments page no longer incorrectly refers to "production" if the protected environment is not a production environment.
PASS-2740	Unverified environments no longer display when templates and applications are added to PingCentral, and when applications are promoted.
PASS-2766	Using special characters when searching on the <b>Environments</b> , <b>Templates</b> , and <b>Users</b> pages no longer results in a server error.
PASS-2783	The sorting feature is no longer case sensitive for applications managed within PingCentral.
PASS-2872	When updating SAML applications, PingCentral now correctly indicates whether certificates are optional.
PASS-2879	Administrators who have been deleted or demoted to an Application Owner role can no longer perform administrative tasks during an open session.
PASS-2888	After creating an environment, the user wizard can now be accessed without errors.
PASS-2925	When adding environments, users who select the <b>Skip Verification</b> option and enter passwords with more than 32 characters no longer receive data integrity violation errors.

## Known issues

Ticket ID	Description
PASS-1552	When updating a user's role, the <b>Discard Changes</b> button does not currently work.

Ticket ID	Description
PASS-2090	If SSO is configured for PingCentral and PingFederate is unavailable, PingCentral will fail to start. If this occurs, determine why PingFederate is unavailable, resolve the issue, and restart PingCentral.
PASS-2093	When SSO is enabled, custom session settings are modifiable, but are not honored.
PASS-2097	When SSO is enabled, an administrator is able to update and add users to PingCentral via the User Management page, even though it has no effect.
PASS-2122	When modifying an environment, if an identity provider certificate is added or updated, and then the PingFederate admin password is updated, the cursor will jump down to the <b>IDP Certificate Password</b> field each time a key is pressed.
PASS-2468	Administrators cannot update user information if PingCentral does not contain any environments.
PASS-2526	If PostgreSQL is set up without a database, PingCentral will fail to start. To prevent this from happening, add the database to the server prior to starting PingCentral.
PASS-2528	Users who attempt to create a SAML application without a signing key pair might receive a server error.
PASS-2819	If an OAuth application is added from an environment that does not use a client secret to authenticate, the <b>Client Secret</b> field displays, but is ignored. This display could cause confusion, as users can add and generate client secrets for their applications, but the secrets are not saved as expected.
PASS-2824	Users who enter invalid application names when updating their SAML applications do not receive an error message.
PASS-3259	<p>If an administrator adds a PingFederate environment to PingCentral that is missing a dependency, such as authentication policy or access token management (ATM) information, they will receive the following error message: <code>Environment &lt;pf_environment&gt; Resource not found &lt;missing_dependency&gt;</code></p> <p>To resolve this issue, either add the missing dependency to the environment in PingFederate, or remove the environment from PingCentral. Otherwise, PingCentral might become unusable.</p>
PASS-3476	<p>When adding SAML metadata files or URLs to applications in the edit screen, you can inadvertently save applications without any attribute mappings, including the SAML_SUBJECT attribute that is required for promotion. If you attempt to promote those applications, you will receive an error message informing you that the SAML_SUBJECT attribute is missing from the attribute contract fulfillment.</p> <p>To resolve this issue, access the edit screen for the application, assign the SAML_SUBJECT attribute a value, and attempt to promote the application again.</p>
PASS-3543	If an SP certificate is added to a SAML application and a SAML metadata file is subsequently provided that contains a certificate, additional changes to the application cannot be saved. If this occurs, exit the edit screen and then access it again.



Ticket ID	Description
PASS-3556	The <b>Restore</b> button incorrectly displays for applications promoted in version 1.2.0, as these applications cannot be restored to previous versions.
PASS-3586	If the combination of an application's Redirect URIs exceeds 255 characters, users cannot add the application to PingCentral.
PASS-3613	<p>PingCentral now promotes access token mappings and APCs (Authentication Policy Contracts) with OIDC applications, but the APC mappings that link the APCs to the access token managers are not currently promoted with them. If the APC mappings do not already exist in the target PF environments, applications will not function as expected.</p> <p>When new APCs are promoted in PingCentral, access token mapping referencing the APC is created, but persistent grant mapping is not established so the configurations are invalid.</p> <p>To resolve these issues, configure the APC mappings within PingFederate.</p>
PASS-3615	The attribute scopes within an OIDC policy must already be defined within the target environment, or the policy cannot be promoted.
PASS-3617	<p>If you promote a SAML application with an assertion encryption certificate and then attempt to edit the application, the <b>Save</b> and <b>Discard Changes</b> buttons display on the edit screen before you make any changes, which could be misleading.</p> <p>Ignore this irregularity and click the <b>Save</b> button, or click the <b>Discard Changes</b> button to exit the edit screen.</p>
PASS-3618	<p>If applications and environments have long names, you might not be able to see the entire list of available environments when you attempt to promote applications.</p> <p>To select an environment not immediately visible from the list, continue scrolling. The entire list will eventually display, but environment names toward the bottom of the list might appear distorted.</p>
PASS-3634	<p>When application owners use SSO to access PingCentral, administrators cannot assign applications to them prior to the application owners ever accessing PingCentral.</p> <p>However, after they sign on to PingCentral, administrators can access their account information and assign applications to them.</p>
PASS-3643	<p>If the <b>Promote</b> button is clicked more than once when a SAML application is promoted, the application could be unintentionally promoted to an environment multiple times.</p> <p>To prevent this from happening, press the <b>Enter</b> key during the promotion process.</p>
PASS-3644	<p>If a PingFederate environment is added to PingCentral and becomes unavailable for any reason, no applications will display on the Applications page.</p> <p>To resolve this issue, an administrator can remove the environment from PingCentral, set PingCentral to skip verification on the environment, or resolve the issues making the environment unavailable.</p>

Ticket ID	Description
PASS-3645	When adding and updating SAML applications, users receive error messages if they provide a service provider metadata file that does not contain certificate information. If this occurs, ignore the message and continue to add or update the application.
PASS-3646	The names of scopes added to applications cannot contain spaces, nor can the <b>Scopes</b> field contain spaces before or after the scope name. If spaces exist, applications cannot be successfully promoted.
PASS-3648	When updating SAML applications, users can provide a new metadata file to replace an older version. If the new file does not contain a certificate, the certificate associated with the older version might still display.  If this occurs, click <b>Cancel</b> and select the .xml file again. The page will reflect the absence of a certificate after it is refreshed.
PASS-3659	When promoting SAML applications with multiple authentication policy contracts that were directly imported into PingCentral, the first contract on the list should be used. However, all contracts in the list are currently being used, which results in promotions failing if the destination environments do not contain authentication policy contracts with matching IDs.
PASS-3663	When creating templates or adding existing OAuth or OIDC applications to PingCentral, information regarding the client displays. When scopes are not restricted, the <b>Scopes</b> field displays <code>None</code> , when it should display the following message: <code>This application uses all common scopes provided by the target environment.</code>
PASS-3714	When searching for a scope that does not exist, the <b>Add</b> button incorrectly displays.
PASS-3809	Users can currently add partial scope names to the <b>Scopes</b> field.
PASS-3825	When searching for or adding scopes, users who enter invalid characters receive invalid scope error message instead of a message that describes the issue.

## PingCentral 1.2

New features, resolved issues, and new known issues are listed and described here. For the best possible experience, review this information prior to using PingCentral.

### New features

Ticket ID	Description
PASS-939	In addition to seeing the list of applications managed within PingCentral, administrators can see all of the applications that exist in connected PingFederate environments. This enhanced view makes it easy for administrators to review application configurations, and quickly save the configurations as templates or add them directly to PingCentral without going through the Add Application wizard.
PASS-1115	Administrators can filter their application lists by environment, template, application owner, integration type (OAuth and OIDC or SAML), management type (managed or unmanaged), or by using any combination of these filters.

Ticket ID	Description
PASS-1318	Administrators can restrict application owners from promoting their applications to specific environments. Protected environments display shield icons next to their names within PingCentral.
PASS-1469	Administrators and application owners can change the templates associated with SAML applications, rather than creating new applications using different SAML templates. Attribute mappings will likely need to be recreated before the application is promoted.
PASS-1525	Administrators can run PingCentral as a Linux systemv service, a Linux systemd service, or a Windows service.
PASS-1826	Administrators can configure PingCentral to use the MySQL relational database management system instead of using the default H2 database.
PASS-1832	The ACS URL is used to promote SAML applications instead of the base URL.
PASS-2016	Certificates are no longer required to promote SAML applications that do not require SP certificates.
PASS-2158	Administrators and application owners can sort their application lists by modified date or application name.
PASS-2203	After application owners promote their SAML applications, the SSO endpoint URL displays on the Promotion Details window and is available for them to give to their service providers.
PASS-2424 PASS-2425	Administrators can use the Linux or Windows upgrade utility to upgrade from PingCentral version 1.0.1 to version 1.2.0. PingCentral cannot be upgraded directly from version 1.0.0 to 1.2.0.
PASS-2925	When adding environments, users who select the <code>Skip Verification</code> option and enter passwords with more than 32 characters receive data integrity violation errors.

## Resolved issues

Ticket ID	Description
PASS-2496	Administrators can now update logging files directly through the <code>log4j2.xml</code> file instead of accessing the <code>application.properties</code> file.

## Known issues

Ticket ID	Description
PASS-1552	When updating a user's role, the <b>Discard Changes</b> button does not currently work.
PASS-1998	When an OAuth/OIDC application is promoted from PingCentral to PingFederate, the secret is captured and saved. If this application is removed from PingCentral and a new application is created with the same name, promotions to PingFederate will use the client secret provided for the original application instead of the new secret that was provided in the new application. There is currently no way to retrieve the secret that was provided for the original promotion.

Ticket ID	Description
PASS-2090	If SSO is configured for PingCentral and PingFederate is unavailable, PingCentral will fail to start. If this occurs, determine why PingFederate is unavailable, resolve the issue, and restart PingCentral.
PASS-2093	When SSO is enabled, custom session settings are modifiable, but are not honored.
PASS-2097	When SSO is enabled, an administrator is able to update and add users to PingCentral via the User Management page, even though it has no effect.
PASS-2119	Protected environment text on the Environments page refers to “production,” even if the protected environment is not a production environment.
PASS-2122	When modifying an environment, if an identity provider certificate is added or updated, and then the PingFederate admin password is updated, the cursor will jump down to the <b>IDP Certificate Password</b> field each time a key is pressed.
PASS-2468	Administrators cannot update user information if PingCentral does not contain any environments.
PASS-2526	If PostgreSQL is set up without a database, PingCentral will fail to start. To prevent this from happening, add the database to the server prior to starting PingCentral.
PASS-2528	Users who attempt to create a SAML application without a signing key pair might receive a server error.
PASS-2740	Unverified environments should not display when templates and applications are added to PingCentral, and when applications are promoted. If selected, users receive an error message.
PASS-2766	Using special characters when searching on the Environments, Templates, and Users pages results in a server error.
PASS-2783	The sorting feature is case sensitive for applications managed within PingCentral.
PASS-2819	If an OAuth application is added from an environment that does not use a client secret to authenticate, the <b>Client Secret</b> field displays, but is ignored. This display could cause confusion, as users can add and generate client secrets for their applications, but the secrets are not saved as expected.
PASS-2824	Users who enter invalid application names when updating their SAML applications do not receive an error message.
PASS-2872	Administrators who are deleted or demoted to an Application Owner role can still perform administrative tasks during an open session.
PASS-2879	When updating SAML applications, PingCentral does not indicate whether certificates are optional.
PASS-2888	After an environment is created in PingCentral, the administrator must refresh the page before they can add a user.
PASS-2925	When adding environments, users who select the <b>Skip Verification</b> option and enter passwords with more than 32 characters receive data integrity violation errors.

## PingCentral 1.0

PingCentral 1.0.1 is a maintenance release for PingCentral 1.0. For the best possible experience, review this information prior to using PingCentral.

### Resolved issues

Ticket ID	Description
PASS-909	If you have only one person with an Administrator role, you can no longer change that person's role to Application Owner.
PASS-1620	Previously, a blank white screen would occasionally display instead of the intended details when the <b>View Client Details</b> link in the Promotion History section of the page was clicked. This issue has been resolved.
PASS-2296	The PingCentral download location in the Red Hat Enterprise Linux installer is now correct.
PASS-2131 PASS-2276	Having the <b>Username</b> field empty during the login process no longer results in a server error.

### Known issues

Ticket ID	Description
PASS-1552	When updating a user's role, the <b>Discard Changes</b> button does not currently work.
PASS-1998	When an OAuth/OIDC application is promoted from PingCentral to PingFederate, the secret is captured and saved. If this application is removed from PingCentral and a new application is created with the same name, promotions to PingFederate will use the client secret provided for the original application instead of the new secret that was provided in the new application. There is currently no way to retrieve the secret that was provided for the original promotion.
PASS-2090	If SSO is configured for PingCentral and PingFederate is unavailable, PingCentral will fail to start. If this occurs, determine why PingFederate is unavailable, resolve the issue, and restart PingCentral.
PASS-2097	When SSO is enabled, an administrator is able to update and add users to PingCentral via the User Management page, even though it has no effect.
PASS-2122	When modifying an environment, if an identity provider certificate is added or updated, and then the PingFederate admin password is updated, the cursor will jump down to the <b>IDP Certificate Password</b> field each time a key is pressed.
PASS-2496	Updating the <code>log4j2.xml</code> file has no effect. As a workaround, update logging levels through the <code>application.properties</code> file.

## PingCentral 1.0 known issues and limitations

Known issues and limitations for this release are listed and described here. For the best possible experience, review this information prior to using PingCentral.

### Known issues

Ticket ID	Description
PASS-909	If you have only one person with an Administrator role and change that person's role to Application Owner, PingCentral will become impossible to administer.
PASS-1552	When updating a user's role, the <b>Discard Changes</b> button does not currently work.
PASS-1620	Clicking on the <b>View Client Details</b> link that displays in the Promotion History section of the page occasionally causes a blank white screen to display instead of the intended details. If this occurs, select another page within PingCentral and return to the Applications page.
PASS-1998	When an OAuth/OIDC application is promoted from PingCentral to PingFederate, the secret is captured and saved. If this application is removed from PingCentral and a new application is created with the same name, promotions to PingFederate will use the client secret provided for the original application instead of the new secret that was provided in the new application. There is currently no way to retrieve the secret that was provided for the original promotion.
PASS-2090	If SSO is configured for PingCentral and PingFederate is unavailable, PingCentral will fail to start. If this occurs, determine why PingFederate is unavailable, resolve the issue, and restart PingCentral.
PASS-2097	When SSO is enabled, an administrator is able to update and add users to PingCentral via the User Management page, even though it has no effect.
PASS-2122	When modifying an environment, if an identity provider certificate is added or updated, and then the PingFederate admin password is updated, the cursor will jump down to the <b>IDP Certificate Password</b> field each time a key is pressed.
PASS-2276 PASS-2131	Having the <b>Username</b> field empty during the login process results in a server error.
PASS-2296	The PingCentral download location in the Red Hat Enterprise Linux installer is incorrect.

### Known limitations

Limitation	Workaround
There is no PingCentral installer for Microsoft Windows.	Install PingCentral by unzipping the ping-central-1.0.0.zip file. Then, run.bat script, which is located in the bin folder. Or, run PingCentral as a service using the provided method, which is located in the sbin folder.
You cannot promote applications created in more recent versions of PingFederate to older versions of PingFederate. For example, you cannot promote an application created in PingFederate v9.3 to PingFederate v9.2.	

<b>SSO limitation</b>	<b>Workaround</b>
Rather than maintain a JWT within a cookie, the authentication state is maintained on the server side within PingCentral. The HTTP session is identified via the <code>PINGCENTRAL_SESSION_ID</code> cookie. Restarting PingCentral will reset this state, as it is not persistent.	
PingCentral session settings are ignored when SSO is enabled. The HTTP session cookie, <code>PINGCENTRAL_SESSION_ID</code> , is fixed at this time. The token obtained from the provider is only subject to the expiration defined by the provider. Likewise, key rolling is defined by the provider and it is responsible for maintaining the appropriate keys within its JWKS endpoint.	
When SSO is enabled, local PingCentral user access is not possible. This includes the default Administrator user. HTTP basic authentication is not available for PingCentral API access. OAuth 2 bearer tokens must be used.	

<b>OAuth/OIDC limitation</b>	<b>Workaround</b>
When using OAuth and OIDC, access token mappings are not automatically promoted with the application.	Ensure access token mapping are available on the target instance of PingFederate.
When using OAuth and OIDC, authentication policy contracts and the associated mappings are not automatically promoted with the application.	Ensure authentication policy contracts and the associated mappings are available on the PingFederate target instance.

<b>SAML limitation</b>	<b>Workaround</b>
SP connections require authentication policy contract mappings. Adapter mappings are not supported.	
Artifact and SOAP bindings are not supported for SP connections.	
Dependent entities, including authentication policy contracts, data stores, etc., are not automatically promoted with the application.	Ensure dependent entities are available on the PingFederate target instance.
All connections must specify a primary certificate for signature validation. Multiple connections are not supported.	
Assertion encryption is not supported.	

# PingCentral for IAM Administrators

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## Introduction to PingCentral

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PingCentral allows you to delegate common application configuration and deployment tasks to application owners, streamlining processes and saving time.

PingCentral:

- Removes many tasks from your list of responsibilities, which lowers operational costs and reduces bottlenecks.
- Provides a central monitoring location for greater visibility into applications across deployment life cycles.
- Minimizes the risk of promoting applications with vulnerable security policies and makes it easier to standardize policies across the applications within your organization.

Using PingCentral does not require extensive training. However, for the best possible experience, review how the platform works before getting started.

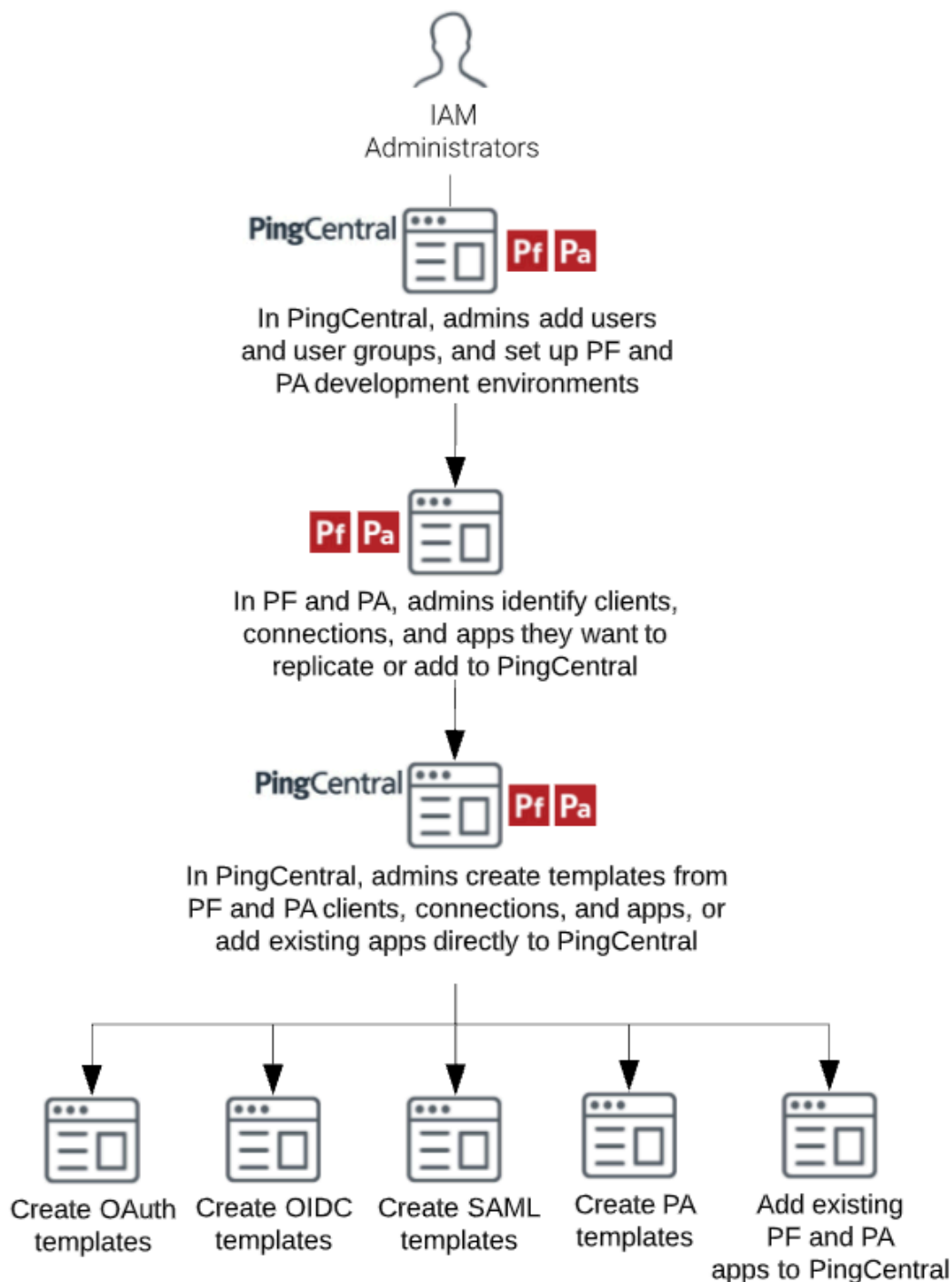
How PingCentral works

This flowchart illustrates the tasks that IAM Administrators perform when using PingCentral.

- In PingCentral, you set up users and define PingFederate and PingAccess development, test, and production environments.
- In PingFederate and PingAccess, you locate clients, connections, and application security configurations worthy of replicating.

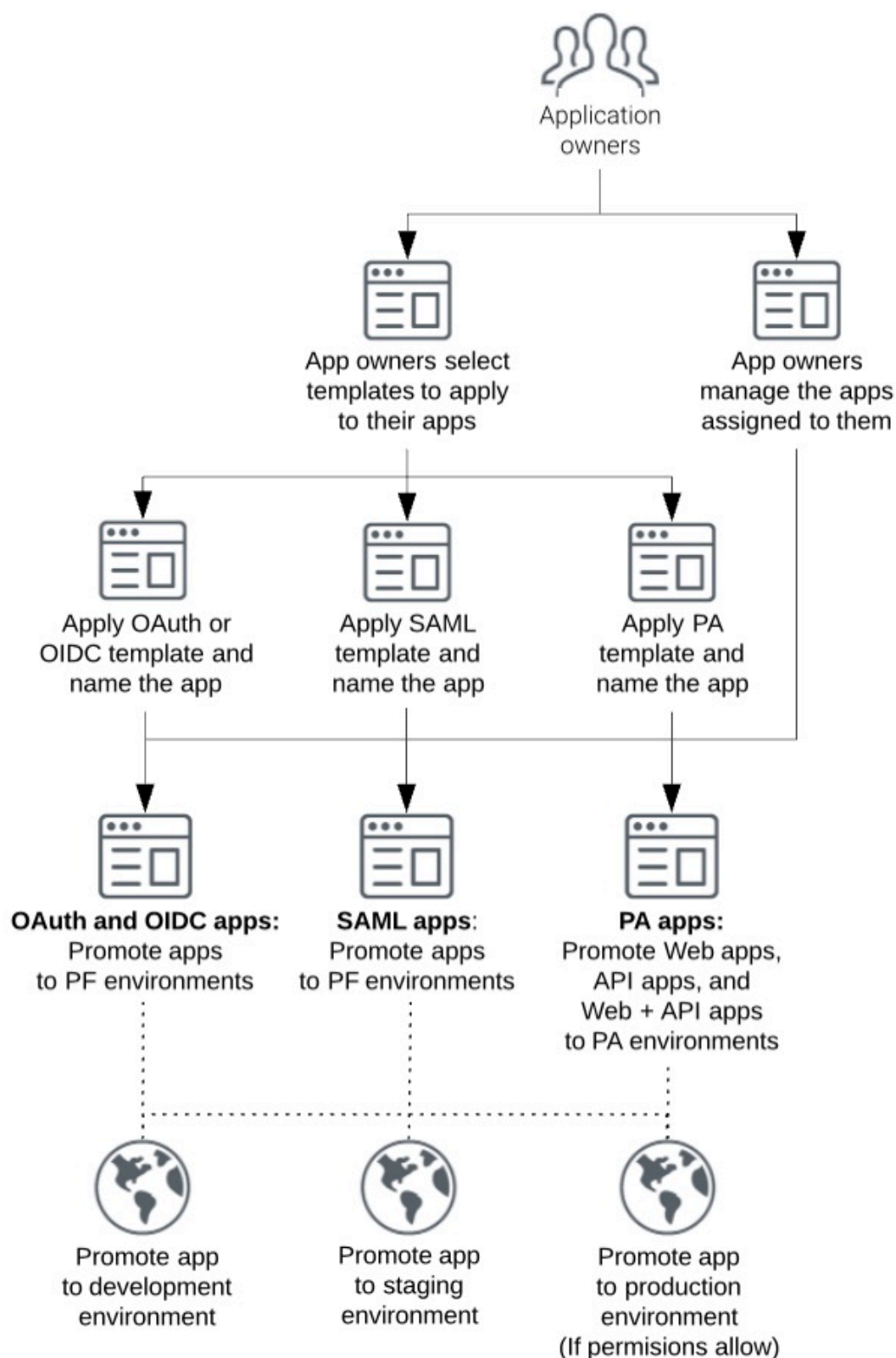


- In PingCentral, you create PingFederate OAuth, OpenID Connect (OIDC), SAML, and PingAccess application templates based on these clients, connections, and applications by using the template wizard, by saving them as templates, or by adding them directly to PingCentral.



This flowchart illustrates the tasks that application owners perform when using PingCentral.

In PingCentral, application owners manage the applications assigned to them and use your templates to apply OAuth, OIDC, SAML SP, and PingAccess security configurations to them. A wizard guides them through the process of providing a name and description for each application they create as well as environment-specific information that makes it possible to run the application on the target environment.



To see which PingFederate components are used to authenticate clients and connections in PingCentral, see [OIDC connection orchestration](#) and [SAML connection orchestration](#).

For a deeper understanding of how PingAccess applications work, see [PingAccess application deployments and configurations](#).

## System requirements and supported configurations

For the best possible experience, ensure your computer meets or exceeds the minimum system requirements and become familiar with the configurations supported for this release.

PingFederate:

- PingFederate 10.3
- PingFederate 10.2.3
- PingFederate 10.2
- PingFederate 10.1.3
- PingFederate 10.1
- PingFederate 10.0
- PingFederate 9.3
- PingFederate 9.2

PingAccess:

- PingAccess 6.2.1
- PingAccess 6.2
- PingAccess 6.1.4
- PingAccess 6.1
- PingAccess 5.3.2

Platforms:

- Microsoft Windows Server 2019
- Microsoft Windows Server 2016
- Red Hat Enterprise Linux ES 8.0
- Red Hat Enterprise Linux ES 7.6

Browsers:

- Chrome
- Firefox

Databases:

- MySQL 5.7+
- PostgreSQL 11.5+
- RDS (MySQL)

Java runtime environments:

- Oracle Java 11 LTS
- OpenJDK 11

Docker:

- Version: Docker 19.03.13. Base image operating system: Alpine Linux 3.11.
- Version: Docker 18.09.0. Host operating system: Ubuntu 18.04 LTS, Kernel: 4.4.0-1052-aws 7.3.

### **Note:**

Ping Identity accepts no responsibility for the performance of any specific virtualization software and in no way guarantees the performance or interoperability of any virtualization software with its products.

### Supported configurations

PingCentral is an orchestrator for PingFederate. Configurations are sourced from PingFederate to define PingCentral applications and templates. Configure each environment in advance and ensure you have

working authentication policies with persistent grants, access token mappings, and access token managers (ATMs) in place before using PingCentral to promote new applications.

Review additional information regarding supported features, protocols, and frameworks before you get started:

- [General configurations](#)
- [OAuth and OIDC configurations](#)
- [SAML configurations](#)
- [PingAccess configurations](#)

#### General configurations


Configuration	Supported	Unsupported
Single sign-on and user management	<ul style="list-style-type: none"> <li>▪ Directly managing users, which are stored in PingCentral embedded database.</li> <li>▪ Signing on with SSO using an OIDC token.</li> <li>▪ Optional feature: Group management, which allows the OIDC token used for SSO to include the groups claim.</li> <li>▪ Beta feature: Provisioning users and groups from an external store using API calls.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>i Note:</b> If you want to provision users and groups of users through the API, you must disable the groups claim functionality by setting the <b>pingcentral.sso.oidc.groups-claim-enabled</b> property to <code>false</code> in the <code>application.properties</code> file.</p> </div>	
Entitlements	<ul style="list-style-type: none"> <li>▪ Assigning one or more application owners that have already been provisioned.</li> <li>▪ Editing and promoting entitlements for an application.</li> <li>▪ After signing into PingCentral using SSO, Administrators can assign groups of users as application owners, in addition to adding users one at a time. Group membership is based on the groups claim included in the OIDC token used for SSO.</li> </ul>	Assigning groups of users entitlements based on an external attribute, such as LDAP group membership.

Configuration	Supported	Unsupported
Backup and restoration	<p>Saving the database and configuration files by copying the directories <code>h2-data/</code> and <code>config/</code> to a new instance.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Note:</b></p> <p>To ensure these files contain the most up-to-date information, do not copy them while PingCentral is running.</p> </div>	Using an API to export PingCentral configuration information.

#### OAuth and OIDC configurations

Configuration	Supported	Unsupported
Client authentication		Using a client TLS certificate, private key JWT, or symmetric keys.
Grant types	Using all OAuth and OIDC grant types.	
Scopes	All scopes and exclusive scopes referenced in the PingFederate client JSON file, which is obtained during the template creation process.	
ATMs and OIDC policies	<p>Saving ATMs or OIDC policies into templates created from client applications that have them.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Note:</b></p> <p>If ATMs or OIDC policies do not exist in an environment, PingCentral will create them during the promotion process. If an ATM or OIDC policy of the same name already exists in a target environment, it will not be modified.</p> </div>	Saving or promoting access token mapping, persistent grants, policy contracts, or authentication policies.
Selectors		Connection set selectors. Clients can only be automatically connected to authentication policies via policy contracts. If your authentication logic requires use of a selector, add it in PingFederate.

## SAML SP configurations

Configuration	Supported	Unsupported
Bindings	Using POST bindings.	Using artifact, redirect, or SOAP bindings.
Profiles	<ul style="list-style-type: none"> <li>IdP-initiated SSO</li> <li>SP-initiated SSO</li> <li>IdP-initiated SLO</li> <li>SP-initiated SLO</li> </ul>	
Attribute mapping	Mapping attributes, provided by a single authentication policy contract, in an unspecified format. You can also map attributes to static text.	<ul style="list-style-type: none"> <li>Mapping attributes from data sources, such as basic or URI.</li> <li>Using OGNL expressions as part of attribute mapping.</li> </ul>
Policy contracts	Referencing one policy contract per template.	Referencing more than one policy per template.   <b>Note:</b> If multiple policy contracts are referenced in a template when it is promoted, newly-created applications will only map attributes from the first policy contract referenced. If PingFederate applications are directly added to PingCentral, the mappings from each policy contract are preserved.
Adapter mappings		Use authentication policy contract mappings instead of adapter mappings.
Certificate management	<ul style="list-style-type: none"> <li>Providing a public certificate for an SP connection. PingCentral creates a self-signed certificate with an expiration date of one year from today and configures it as the PingFederate IdP certificate.</li> <li>Uploading a key pair to use as the IdP certificate for all SAML connections promoted to an environment.</li> </ul>	An SP certificate is required to promote a SAML connection, but might be optional in future releases.

## PingAccess configurations

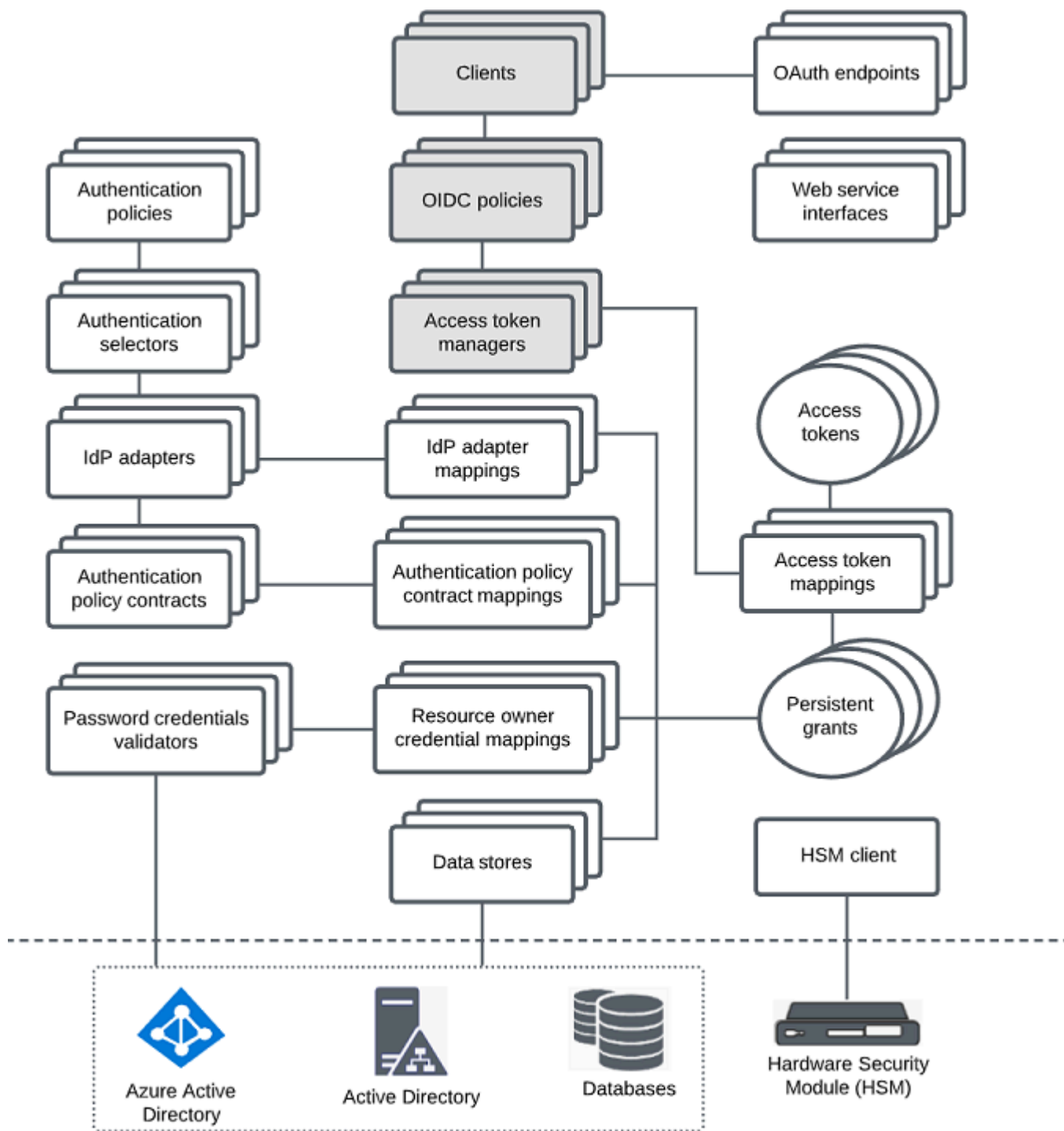
Configuration	Supported	Unsupported
Destination	Both Agent and Site are supported.	The destination is not promoted with the application but selected per environment.
PingAccess application types	All application types (Web, API and Web+API) are supported.	The application type cannot be changed in PingCentral.
Token provider	PingFederate must be the token provider.	Third-party token providers for PingAccess are not supported.
Application resources	Resources can be added and updated for each application.	You can configure resources in Web applications with specific HTTP methods in PingAccess version 6.2+, but this feature is not yet supported in PingCentral.
Resource ordering	Automated and manual resource ordering are both supported.	
Identity mappings	Identity mappings for all application types (Web, API and Web+API) are supported.	Identity mappings are not promoted with the application but selected per environment.
Virtual hosts	Virtual hosts are supported.	Virtual hosts are not promoted with the application but selected per environment.
Policy	Application and resource policies can be updated per application.	<p>New rules and rule sets cannot be created in PingCentral.</p> <p>Virtual resources are available in PingAccess version 6.2+, but are not yet supported in PingCentral.</p> <p>Customized authentication challenge responses, which support single-page applications, are also available in PingAccess version 6.2+. Applications with this type of policy can be added to PingCentral, but cannot be promoted to another environment unless the authentication challenge policy also exists in the target environment.</p>

**OIDC connection orchestration**

This diagram shows which PingFederate components are used to authenticate an OIDC client. PingCentral currently only orchestrates clients, OIDC policies, and access token managers, which are shaded in the diagram.

With PingCentral, OIDC client authentication can only occur if PingFederate is correctly configured with the appropriate data sources, password credential validators, authentication policies, policy contracts,

policy contract mappings, persistent grants, and access token mappings. In this version, you cannot create clients with direct adapter mappings to an IdP adapter.

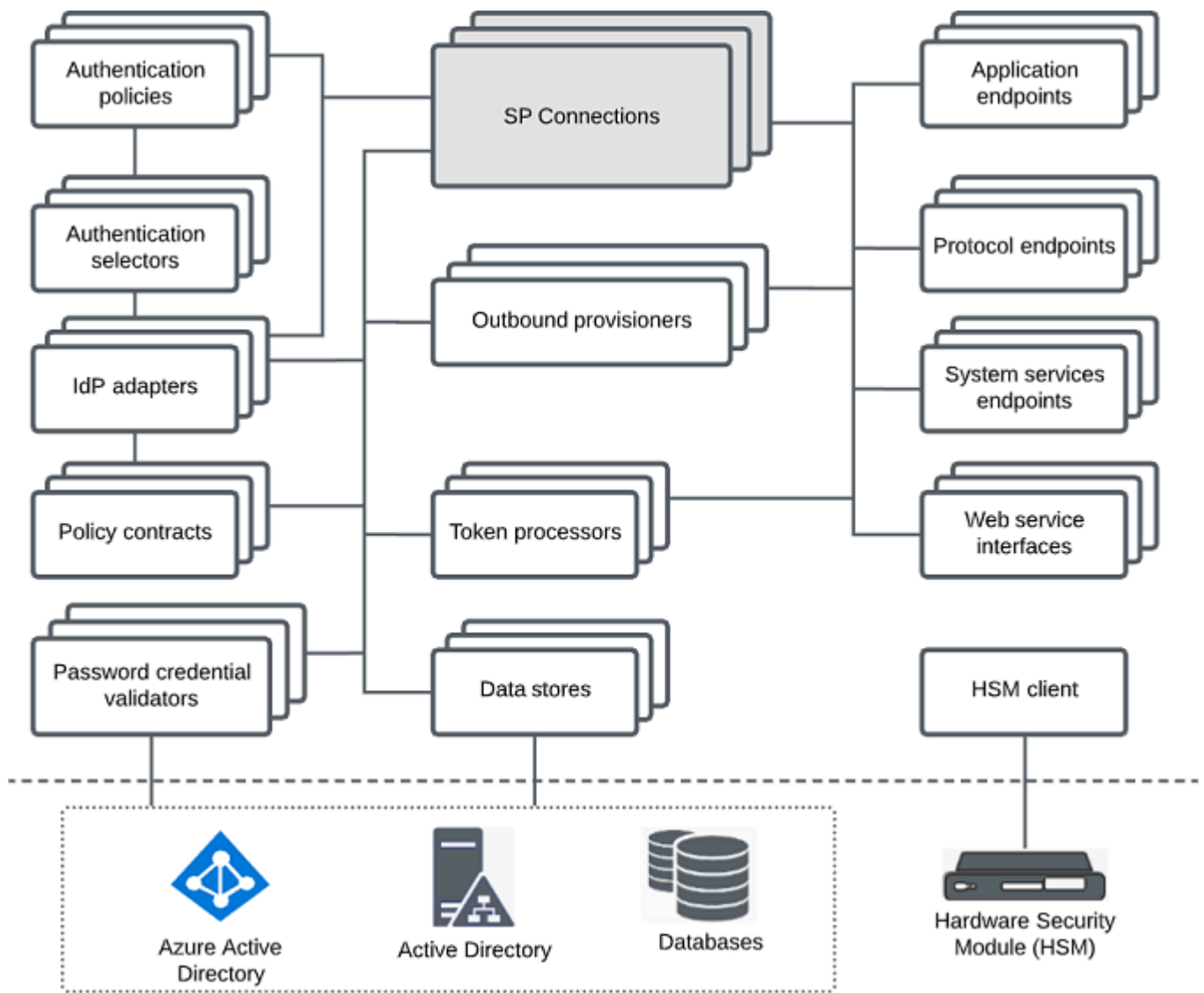


**SAML connection orchestration**

This diagram shows which PingFederate components are used to authenticate a SAML connection. PingCentral currently only orchestrates the PingFederate IdP connection, which is shaded in the diagram.

With PingCentral, SAML connection authentication can only occur if PingFederate is correctly configured with the appropriate data sources, password credential validators, authentication policies, and policy contracts. In this version, you cannot create connections to an IdP adapter with direct adapter mappings.



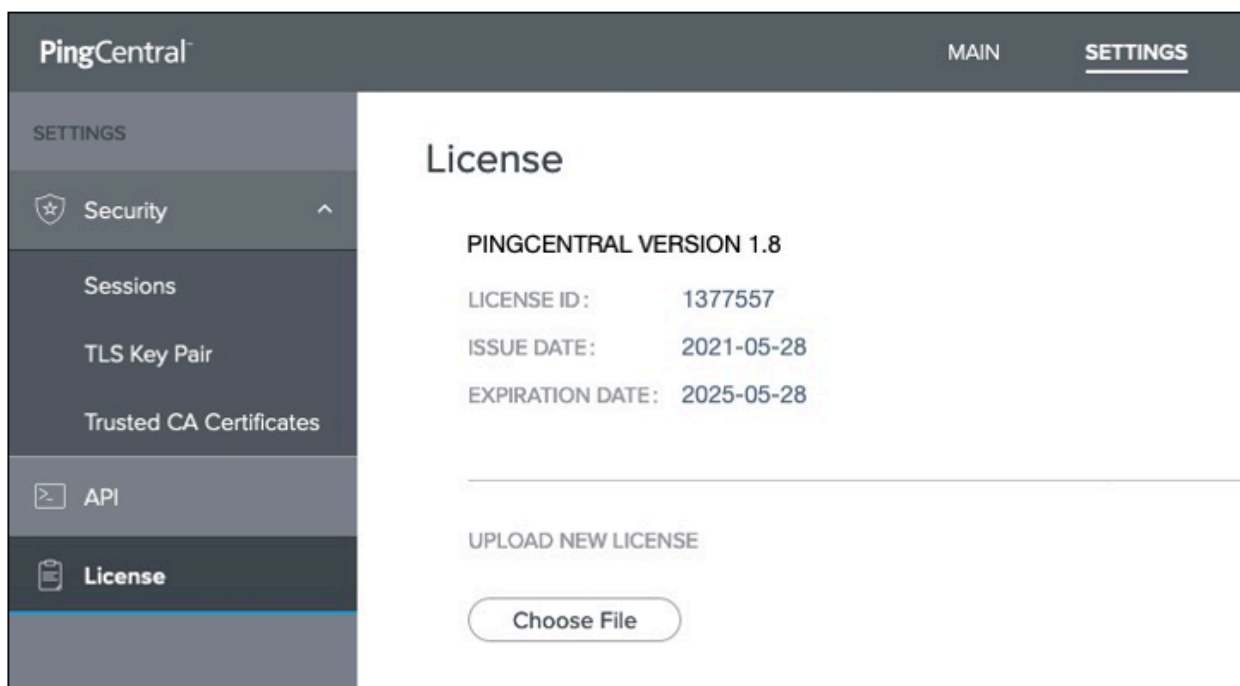


## PingCentral licensing

Licensing ensures that you are authorized to use the application and provides information about your contract terms.

You need a valid PingCentral license to access the application. After installing PingCentral, you are prompted to log in, accept the license agreement, and upload your license.

To view license information, click **Settings** at the top of the page and then **License**. The product version number, license ID, issue date, and expiration date display on the License page, as shown in this example:



If you are an IAM Administrator and your license expires, you will be prompted to upload a new license.

## Using Docker to deploy PingCentral

Preconfigured Docker images of PingCentral are available in Docker containers on [Docker Hub](#). Each container provides a complete working instance of an application that is available to use immediately after it is deployed.

Before you begin

Ensure that you have up-to-date tools and applications installed:

- [Docker CE for Windows](#) or [Docker for macOS](#)
- [Docker Compose](#)
- [Git](#)

To ensure you are using appropriate versions of Docker, see [System requirements and supported configurations](#).

Steps

1. When you are ready, deploy PingCentral:

- [Register for the DevOps program](#) to obtain a DevOps user name and key. Then, use the user name and key to start a container. For instructions, see [Using your DevOps user and key](#).
- Use an existing product license. For instructions, see [Use existing licenses](#).

2. Set up your DevOps environment.

For instructions, see [Set up your DevOps environment](#).

3. Deploy the stack and configure trust and SSO for PingCentral.

For instructions, see [Deploy PingCentral](#).

## Install and configure PingCentral

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Install and upgrade PingCentral on Microsoft Windows Server 2016 or 2019, or on Red Hat Enterprise Linux ES 7.6 or 8.0.

After installation, configure PingCentral to run as a Linux systemv service, a systemd service, or a Windows service, as appropriate. For more information, see the following topics:

- [Installing PingCentral on Microsoft Windows](#)
- [Installing PingCentral on Linux systems](#)
- [Configuring PingCentral to run as a Linux systemv service](#)
- [Removing the PingCentral systemv service](#)
- [Configuring PingCentral to run as a Linux systemd service](#)
- [Removing the PingCentral systemd service](#)
- [Configuring PingCentral to run as a Windows service](#)
- [Removing the PingCentral Windows service](#)

### Installing PingCentral on Microsoft Windows

PingCentral can be installed on Microsoft Windows Server 2016 or 2019. An installation script is not yet available, so download and extract the contents of the installation file to a suitable location within the host file system.

Before you begin

Ensure that:

- You are signed on to your system and have privileges that allow you to install applications.
- All [system requirements](#) are met, and the Oracle Java 11 LTS runtime environment is installed.
- The `<JAVA_HOME>` path points to the JDK software on your system. For example, `/usr/lib/jvm/java-11-openjdk-11.0.5.10-0.e17_7.x86_64`. To verify this information, run the `echo $JAVA_HOME` command.
- The `JAVA /bin` directory path is added to the `<PATH>` variable. To verify this information, run the `$echo $PATH` command.

Steps

1. Download the distribution `.zip` archive and extract its contents where you want the service run.
2. Go to `/<pingcentral_install>/bin/run.bat` and run `run.bat` from a command-line interface.
3. Open a web browser and go to `https://localhost:9022`.

**Note:**

While you are running PingCentral locally, your browser might warn you that the application you're accessing doesn't have a signed certificate.

4. Sign on to PingCentral using the following credentials:

- **Username:** Administrator
- **Password:** 2Federate

Without modification, PingCentral is secure by default.

Items worth mentioning:

- If you add PingAccess environments to PingCentral, ensure that PingFederate is configured as the PingAccess token provider. See [Configuring PingFederate as a PingAccess token](#) for details.
- If your application owners promote SAML applications to PingFederate or PingAccess environments, ensure that the appropriate trusted certificate authority (CA) certificates are available in PingCentral. See [Adding trusted CA certificates to PingCentral](#) for details.

5. Configure PingCentral to run as a Windows service, if appropriate.

For more information, see [Configuring PingCentral to run as a Windows service](#).

## Installing PingCentral on Linux systems

To install PingCentral, download the latest version of the software and follow the on-screen instructions.

Before you begin

Ensure that:

- You are signed on to your system and have privileges that allow you to install applications. Run PingCentral as a non-root user.
- All [system requirements](#) are met, and the Oracle or OpenJDK Java 11 LTS runtime environment is installed.
- The `<JAVA_HOME>` path points to the JDK software on your system. For example, `/usr/lib/jvm/java-11-openjdk-11.0.5.10-0.e17_7.x86_64`. To verify this information, run the `echo $JAVA_HOME` command.
- The `JAVA/bin` directory path is added to the `<PATH>` variable. To verify this information, run the `echo $PATH` command.

Steps

1. Download the latest version of PingCentral from the Ping Identity [website](#).
2. Extract the file into the appropriate target installation directory.
3. Start PingCentral by running `<pingcentral_install>/bin/run.sh`.
4. When the installation is complete, open a browser window and enter the machine and PingCentral admin port in the URL field.  
`https://<yourhost>:9022`.
5. Sign on to the application using the following credentials:
  - **Username:** Administrator
  - **Password:** 2Federate
6. Configure PingCentral to run as a Linux systemv service or a Linux systemd service, as appropriate.

For more information, see [Configuring PingCentral to run as a Linux systemv service](#) or [Configuring PingCentral to run as a Linux systemd service](#).

Without modification, PingCentral is secure by default.

## Configuring PingCentral to run as a Linux systemd service

Run PingCentral as a Linux systemd service that automatically starts when Linux starts.

Before you begin

Ensure that:

- You are signed on to your system as a root user.
- The `<JAVA_HOME>JAVA_HOME` path points to the Java Development Kit (JDK) software on your system. For example, `/usr/lib/jvm/java-11-openjdk-11.0.5.10-0.e17_7.x86_64`. To verify this information, run the `echo $JAVA_HOME` command.
- The `PINGCENTRAL_HOME` path points to the folder extracted from the `.zip` archive in your installation directory. Ensure that this path doesn't reside within a user's home folder.

Steps

1. Copy the `pingcentral` file from `<PINGCENTRAL_HOME>/sbin/linux/pingcentral` to `/etc/init.d`.
2. Create a new user to run PingCentral. You might want to create a new user account for each service you run as a way of keeping your services separate, or associate the account with a running process.
3. Create a new `pingcentral` folder in `/var/run/pingcentral` and ensure that the user who will run the service has read and write permissions to the folder.
4. Access the `pingcentral` file in the `/etc/init.d` folder and set values for the following variables at the beginning of the script:
  - `export <JAVA-HOME>`: Specify the name and location of the Java installation folder.
  - `export <PINGCENTRAL_HOME>`: Specify the name and location of the PingCentral installation folder.
  - (Optional): `export USER`: Specify the name of the user who will run the service, if applicable.
5. Register the service by running the `chkconfig --add pingcentral` command from the `/etc/init.d` folder.
6. Make the service script executable by running the `chmod +x pingcentral` command.

After registering the service, you can control it by running the `pingcentral` command from the `/etc/init.d` folder with the following options:

- `start`: Starts the PingCentral service.
- `stop`: Stops the PingCentral service.
- `restart`: Restarts the PingCentral service.
- `status`: Displays the status of the PingCentral service and the service process ID.

### Removing the PingCentral systemd service

If you have privileges that allow you to install applications, you can remove the PingCentral systemd service.

Steps

1. Sign on to the system as a root user.

Option	Description
<b>Stop the service</b>	Run the <code>/etc/init.d/pingcentral stop</code> command.
<b>Delete the service</b>	Run the <code>chkconfig --del pingcentral</code> command.

2. Delete the `/etc/init.d/pingcentral` script if it is no longer needed.

## Configuring PingCentral to run as a Linux systemd service

Run PingCentral as a Linux systemd service that automatically starts when Linux starts.

Before you begin

Ensure that:

- You are signed on to your system as a root user.
- The `<JAVA-HOME>` path points to the Java Development Kit (JDK) software on your system. For example, `usr/java/jdk11.0_4`.
- The `<PINGCENTRAL_HOME>` path points to the folder extracted from the `.zip` archive in your installation directory. Ensure that this path does not reside within a user's home folder.

Steps

1. Copy the `pingcentral.service` configuration file from `$PINGCENTRAL_HOME/sbin/linux/pingcentral.service` to `/lib/systemd/system/pingcentral.service`.

**Note:**

You can also copy this file to the `/etc/systemd/system` location, if appropriate

2. Open the `pingcentral.service` file and assign appropriate values to the following variables:

- `<PINGCENTRAL_HOME>`: Labeled "WorkingDirectory."
- `<PINGCENTRAL_USER>`: Labeled "User."
- `<JAVA_HOME>`: Labeled "Environment."

3. Enable read and write activity for the service using the `chmod 644 /lib/systemd/system/pingcentral.service` command.

If you copied this file to the `/etc/systemd/system` location in step 1, use this command instead: `chmod 644 /etc/systemd/system/pingcentral.service`.

4. Load the systemd service using the `systemctl daemon-reload` command.
5. Enable the service using the `systemctl enable pingcentral.service` command.
6. Start the service using the `systemctl start pingcentral.service` command.

### Removing the PingCentral systemd service

If you have privileges that allow you to install applications, you can remove the PingCentral systemd service.

Steps

1. Sign on to the system as a root user.

Option	Description
<b>Stop the service</b>	Run the <code>systemctl stop pingcentral</code> command.
<b>Disable the service</b>	Run the <code>systemctl disable pingcentral</code> command.

2. Delete the `/etc/systemd/system/pingcentral.service` script if it is no longer needed.

## Configuring PingCentral to run as a Windows service

Run PingCentral as a Windows service that automatically starts when Windows starts.

Before you begin

Manually start the server to ensure that PingCentral is running as expected.

About this task

 **Note:**

You must have administrator privileges to configure PingCentral as a Windows service.

Steps

1. In the **Search** field, enter `cmd` to access the command prompt.
2. Right-click **Command Prompt** and select **Run as administrator** in the menu.
3. In the command prompt, change directories to the `$PINGCENTRAL_HOME\sbin\windows` directory and run the `install-service.bat` script.
4. Open the Windows Control Panel and search for `view local services`.
5. In the list of available services, right-click **PingCentral Service**, and select **Start**.  
The service starts immediately and restarts automatically when rebooted, by default.

### Removing the PingCentral Windows service

If you have administrator privileges, you can remove the PingCentral Windows service.

Steps

1. In the **Search** field, enter `cmd` to access the command prompt.
2. Right-click **Command Prompt** and select **Run as administrator** in the menu.
3. In the command prompt, change to the `<PINGCENTRAL_HOME>\sbin\windows` directory and run the `uninstall-service.bat` script.
4. After the script has run, remove the `<PINGCENTRAL_HOME>` environment variable from the system.

## Setting up MySQL

Install the MySQL connector and configure it to communicate with PingCentral.

About this task

PingCentral uses the Java-based H2 relational database management system by default, but you can also use MySQL. To set up MySQL, you must have the privileges required to access the `pingcentral` schema and configure the database.

 **Note:**

This topic doesn't provide instructions on setting up or maintaining the MySQL database.

 **Important:**

if you choose to migrate from the PingCentral H2 database to a MySQL database, you will lose all of your PingCentral data, including your environments, templates, environments, and promotion history information. Data residing in PingFederate, PingAccess, and other Ping products will not be affected.

## Steps

1. Locate and download the appropriate MySQL connector.

For example, you can download the platform independent Java connector from <https://www.mysql.com/downloads/connector/j/>.

2. Place the MySQL connector in the following location: `/<pingcentral_install>/ext-lib/`.
3. Update the `/<pingcentral_install>/conf/application.properties` file to point to the new MySQL database:
  - a. Update the datasource URL to your location.

```
spring.datasource.url=jdbc:mysql://${MYSQL_HOST:localhost}:3306/
pingcentral?
createDatabaseIfNotExist=true&useUnicode=true&useJDBCCompliantTimezoneShift=true&us
```

- b. Update the user name and password, if necessary.

```
spring.datasource.username=PingCentralUsername
spring.datasource.password=PingCentralPassword
```

- c. Update the driver class name, if necessary.

```
spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver
```

4. Restart PingCentral for the changes to take effect.

## Upgrade PingCentral

---

You can upgrade from PingCentral 1.2 through 1.7 directly to 1.8. To begin the upgrade, download and extract the contents of the 1.8 distribution file and run the upgrade utility for Windows or Linux, as appropriate.

This section explains how the upgrade works and shows you which files are added and replaced during the process. For instructions on running the upgrade itself, see [Upgrading to PingCentral 1.8](#).

**Note:** Starting with PingCentral 1.8, signing certificates are stored in the PingCentral database instead of a PingCentral-specific trust store. Certificates that exist in this trust store are imported to the PingCentral database during the upgrade process.

### How the upgrade works

The upgrade utility uses the extracted contents of the `ping-central-1.8.0.zip` file to copy and replace the appropriate information in the existing version installation location.

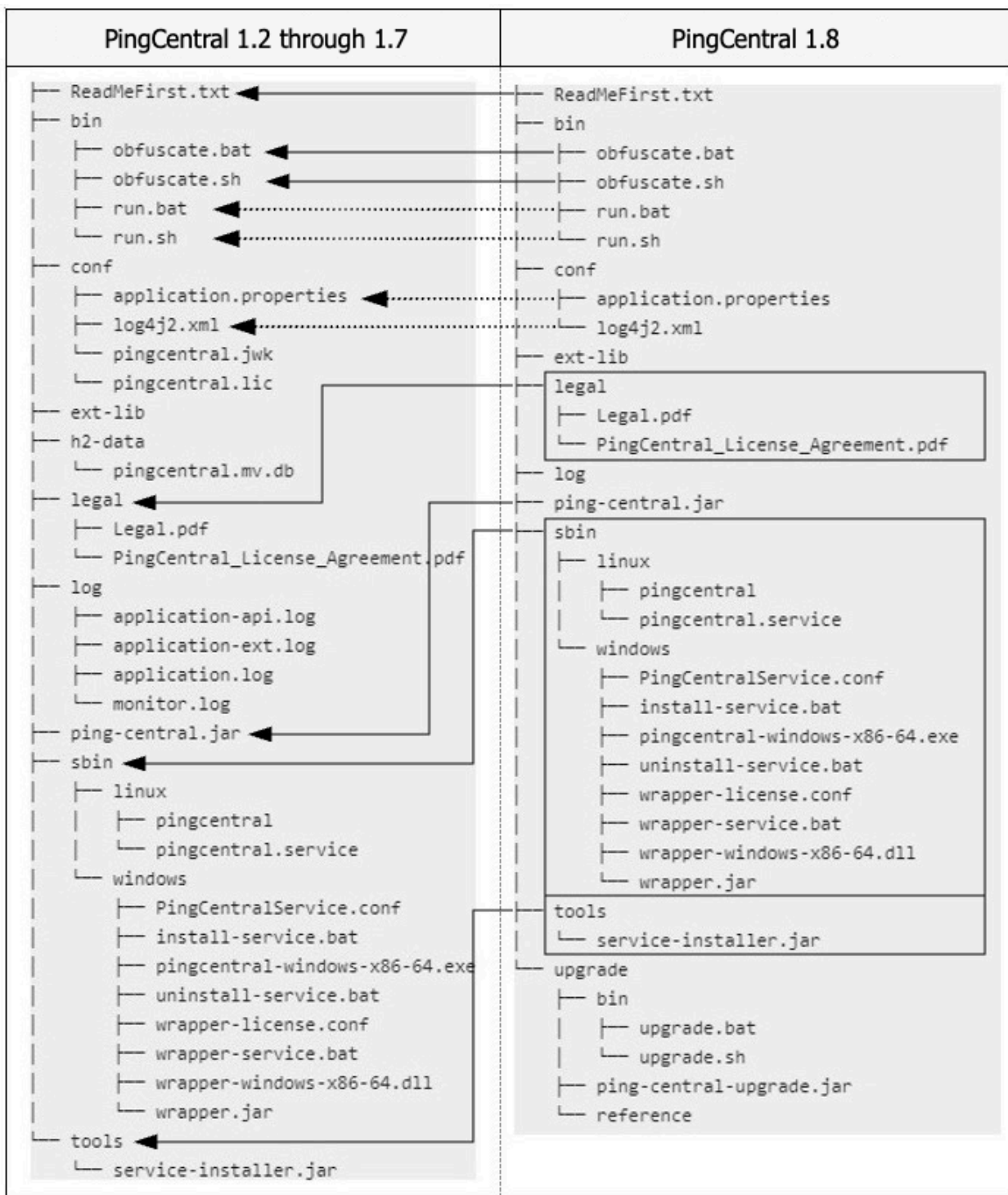
Files that were not modified since they were initially installed are overwritten with new versions during the upgrade process.

Note the following:

- The database files (`h2-data` directory), the log files (`log` directory), the external library files (`ext-lib` directory), and the host key file (`conf/pingcentral.jwk`) remain intact during the upgrade process to preserve user data.
- If the `application.properties` file was modified, the current version of the file will be merged with the latest version, preserving customizations.
- If the `conf/log4j2.xml`, `bin/run.sh`, and `bin.run.bat` files were modified, the new versions are installed and the old versions are renamed. Manually update the new files with customizations, as necessary.



The following image shows PingCentral 1.8 after it has been run and the database files that have been generated. It also shows which files are replaced with new files during the upgrade process.



## Upgrading to PingCentral 1.8

To upgrade PingCentral to 1.8, on either Windows or Linux, download the 1.8 installation file, run the PingCentral upgrade utility, and plan for a short period of downtime.

Before you begin

Ensure that:

- You are signed on to your system and have privileges that allow you to install applications.
- All [system requirements](#) are met, and the Oracle Java 11 LTS runtime environment is installed.
- The `<JAVA_HOME>` path points to the Java Development Kit software on your system. For example, `/usr/lib/jvm/java-11-openjdk-11.0.5.10-0.e17_7.x86_64`. To verify this information, run the `echo $JAVA_HOME` command.
- The `JAVA /bin` directory path is added to the `<PATH>` variable. To verify this information, run the `echo $PATH` command.

Steps

1. Download the `ping-central-1.8.0.zip` file and extract its contents.

You can delete this file after the upgrade is complete.

2. If PingCentral is running, shut it down.

This maintains the integrity of the H2 database file and ensures that you are running 1.8 as you complete the installation.

3. Make a copy of the existing PingCentral version product directory so that the older version can be restored if the upgrade process fails.

If PingCentral has been configured to use an external database, such as MySQL, or PostgreSQL, make a copy of that database so that it can be restored if the upgrade process fails.

4. Go to the `<pingcentral_1.8.0_install>/upgrade` directory and run the appropriate file:

Option	Description
<b>Windows</b>	Run <code>bin\upgrade.bat "--existing=&lt;PINGCENTRAL_HOME&gt;"</code>
<b>Linux</b>	Run <code>bin/upgrade.sh --existing=&lt;PINGCENTRAL_HOME&gt;</code>

The upgrade process begins. The upgrade utility uses the extracted contents of the `ping-central-1.8.0.zip` file to copy and replace the appropriate information in the existing version location.

 **Note:**

When the upgrade is complete for this release, PingCentral 1.8 will run from the directory in which PingCentral was initially installed. For example, if PingCentral 1.3 was initially installed and you upgraded to 1.4, and now to 1.8, PingCentral 1.8 will run from the original 1.3 directory. The same is true if you upgraded directly from 1.3 to 1.8.

5. Optional: To update the license file (`conf/pingcentral.lic`), add `--license=<file>` at the end of the upgrade command and specify the path to the new license.  
As the upgrade continues, a message displays that reminds you to shut down PingCentral if you have not already done so.
6. To continue, type `yes`.  
A message displays that reminds you to back up your PingCentral program files.

7. To continue, type `yes`.

The upgrade continues and the system displays a message when the upgrade is complete.

**Note:**

If PingCentral was installed as a service by one user, and the upgrade is performed by another user, the service will no longer start. To resolve this issue, run the following command to update the installation files to match the existing ownership:

```
chown -R [user]:[group] [INSTALL_DIR]
```

Where the user and group match the existing installation:

```
chown -R pingcentral:pingcentral /usr/local/pingcentral-1-1.8.0/
```

8. Inspect the upgrade utility output for warnings regarding required manual merges.

**Note:**

Other than the `application.properties` file, which is merged automatically, you must manually merge customizations you consider important. These customizations might include changes you made to the `conf/log4j2.xml` file, or changes you made to a file in the `/bin` directory.

9. Start PingCentral 1.8.

Option	Description
Windows	Run <code>&lt;PINGCENTRAL_HOME&gt;/bin/run.bat</code> .
Linux	Run <code>&lt;PINGCENTRAL_HOME&gt;/bin/run.sh</code> , or by running the systemd service command, <code>systemctl pingcentral-# start</code> .

10. Sign on to PingCentral using the credentials you used to sign on to the previous version.

There is no need to reconfigure PingCentral to run as a Windows or Linux `systemv` or `systemd` service after the upgrade.

11. Upon successful upgrade, delete the 1.8 distribution `.zip` file and the directory into which it was extracted.

**Tip:**

After the upgrade, advise your users to refresh their browsers if they experience issues.

## Configuring logging

The log file serves as a record of events that occurred within the system and is often used for troubleshooting purposes. This section explains how to access the log file, interpret the entries within it, and change the level of detail the log file captures.

### Steps

1. Access the PingCentral log file from the following location: `<pingcentral_install>/log/application.log`.

The level of detail that the log file contains depends on how the logging level is set. Logging levels are a means of categorizing the entries in your log file by severity, and are described in the following table.

Detailed log files require more system resources, so PingCentral only records errors, warnings, and some information events by default.

Logging level	Description
ERROR	Indicates a failure within the application occurred.
WARNING	Indicates the system detected an unusual situation and errors might occur.
INFO	Provide basic information about activities that occurred. For example, a service was started and stopped, or a new user was added to the application.
DEBUG	Provides additional detail regarding the events that occurred, and is often used to diagnose and troubleshoot reported issues.
TRACE	Provides even more detailed information than the Debug level regarding the application's behavior. This logging level is not used often and can affect system performance.

2. Changing the logging level to have the system record additional details can help with troubleshooting. To change the logging level:

- a. Open the configuration file at `<pingcentral_install>/conf/log4j2.xml`.
- b. Scroll down, locate the Logger line item shown below, and change the logging level within the quotations. The `DEBUG` logging level provides enough information to troubleshoot most issues.

```
<Logger name="com.pingidentity" level="INFO" additivity="false"
includeLocation="false">
<!--<AppenderRef ref="console"/>-->
<AppenderRef ref="file"/>
</Logger>
```

- c. Save and close the file and repeat the task you performed when the error occurred.
- d. For optimal system performance, open the `log4j2.xml` file again and change the logging level back to `INFO`.
- e. Access the `application.log` file again and review the information that was recorded in `DEBUG` mode. If you are working with a technical support team to troubleshoot an issue, you can send them the log file that recorded your activities.

## Monitoring PingCentral

The Spring Boot Actuator, enabled by default, collects a wide variety of information to help you monitor and manage PingCentral in production environments and can be connected to your time series database in a few simple steps.

Spring Actuator data and Spring Metrics can be accessed at their respective endpoints:

- `https://localhost:9022/actuator/`
- `https://localhost:9022/actuator/metrics`

Actuator data includes:

Endpoint	Usage
<code>/beans</code>	Displays a list of the Spring beans in PingCentral.
<code>/caches</code>	Displays a list of available caches.

Endpoint	Usage
/conditions	Displays the conditions that were evaluated on configuration and auto-configuration.
/configprops	Displays a list of configuration properties.
/env	Displays a list of environment properties.
/environmentConnectivity	Returns a list of environments in PingCentral and their connectivity statuses.
/environmentConnectivity/<environmentName>	Returns connectivity status of the specified environment.
/health	Displays health check information regarding PingCentral.
/heapdump	Used to perform a heap dump.
/info	Displays general information about PingCentral, such as the vendor and version number.
/liquidbase	Displays information regarding database migrations that have been applied.
/loggers	Displays the logger configuration for PingCentral.
/mappings	Displays a collated list of all @RequestMapping paths.
/scheduledtasks	Displays the scheduled tasks within PingCentral.
/threaddump	Used to perform a thread dump.

Metrics data includes a wide variety of information, such as the amount of JVM (Java Virtual Machine) memory used, the number of Jetty threads used, and the amount of time it takes to complete processes. Counters and timers are also available for most API endpoints. Counters count the number of times an endpoint is hit, and timers measure the amount of time it takes for events to occur.

Spring Metrics collects a large amount of data, but it does not present the data in ways that are easy to understand. Consequently, many choose to move this data to either a Prometheus or Graphite time series database and use Grafana to view it through interactive dashboards with charts and graphs.

Because Graphite supports only counters, but Prometheus supports both counters and timers, Prometheus is the preferred choice. See the following topics for instructions on setting up one of these time series databases to communicate with PingCentral:

- [Setting up Prometheus](#)
- [Setting up Graphite](#)

See [Setting up Grafana](#) for instructions on connecting it to either Graphite or Prometheus.

## Setting up Prometheus

Prometheus pulls information from PingCentral endpoints and stores the data it retrieves.

### Steps

1. In PingCentral, in the `conf/application.properties` file, which resides in the PingCentral installation directory, locate and define the following properties.

```
management.metrics.export.prometheus.enabled=true
management.metrics.export.prometheus.step=5s
```

2. Save and close the file.
3. Restart PingCentral.
4. Set up the Prometheus `prometheus.yaml` configuration file and save it in the appropriate location.

In this example, the following `prometheus.yaml` file is used locally.

```
global:
  scrape_interval: 15s # Set the scrape interval to every 15 seconds. Default is every 1 minute.
  # scrape_timeout is set to the global default (10s).

# A scrape configuration containing exactly one endpoint to scrape:
# Here it's Prometheus itself.
scrape_configs:
  # Metrics for PingCentral
  - job_name: 'pingcentral-metrics'
    honor_timestamps: false
    metrics_path: '/actuator/prometheus'
    scrape_interval: 5s
    scheme: https
    static_configs:
      - targets: [ '████.████.██.█:9022' ]
    basic_auth:
      username: Administrator
      password: 2Federate
    tls_config:
      insecure_skip_verify: true
```

5. Access Prometheus.

For more information, see [Accessing Prometheus and Grafana](#).

## Setting up Graphite

Use PingCentral to push data to the Graphite time series database.

### Steps

1. In PingCentral, in the `conf/application.properties` file, which resides in the PingCentral installation directory, locate and define the following properties.

```
management.metrics.export.graphite.step=5s
management.metrics.export.graphite.enabled=true
management.metrics.export.graphite.host=127.0.0.1
management.metrics.export.graphite.port=2004
```

2. Save and close the file.
3. Restart PingCentral.  
PingCentral automatically starts pushing data to Graphite.

## Setting up Grafana

Use Grafana with either Graphite or Prometheus to view data through interactive dashboards with charts and graphs.

### Steps

1. Connect Grafana to either Prometheus or Graphite by adding a data source with the information shown in this example.

The screenshot shows the Grafana 'Data Sources' configuration page for a Prometheus local docker data source. The page is titled 'Data Sources / Prometheus local docker' and has a 'Type: Prometheus' label. There are two tabs: 'Settings' (selected) and 'Dashboards'. The 'Name' field is 'Prometheus local docker' and is marked as 'Default'. The 'HTTP' section includes a 'URL' field with 'http://172.17.0.1:9090', an 'Access' dropdown set to 'Server (default)', and a 'Whitelisted Cookies' section with an 'Add Name' input and an 'Add' button. The 'Auth' section has several toggle switches: 'Basic auth' (off), 'With Credentials' (off), 'TLS Client Auth' (off), 'With CA Cert' (off), 'Skip TLS Verify' (off), and 'Forward OAuth Identity' (off). The 'Custom HTTP Headers' section has an 'Add header' button. The 'Scrape interval' is set to '15s', 'Query timeout' is '60s', and 'HTTP Method' is 'Choose'. The 'Misc' section has a 'Disable metrics lookup' toggle (off) and a 'Custom query parameters' field with the example 'max\_source\_resolution=5m&timeout=10'. At the bottom, there are three buttons: 'Save & Test' (blue), 'Delete' (red), and 'Back' (grey).

### Note:

The URL you enter in the **URL** field should reflect the location of your time series database.

2. Click **Save and Test**.
3. Access Grafana.

For more information, see [Accessing Prometheus and Grafana](#).

## Accessing Prometheus and Grafana

At Ping, we use Prometheus and Grafana to monitor PingCentral in our Docker PingCentral deployment in our CI/CD.

To access Prometheus and Grafana, use URLs that reflect their installation locations using the following format:

### Prometheus:

`http://██.███.██.███:9090/graph`

To ensure Prometheus is correctly gathering metrics from PingCentral, use

`http://██.███.██.███:9090/targets`

### Grafana:

`http://██.███.██.███:3000`

## Replacing the Admin Console SSL Certificate

To avoid seeing a certificate warning when you access PingCentral, replace the user-facing SSL certificate so it will no longer use the self-signed certificate.

About this task

Import your proprietary certificate into PingCentral by uploading the PKCS12 file that contains it.

Steps

1. Select the **Setting** tab..
2. Expand the **Security** menu and select **TLS Key Pair**.

The TSK Key Pair page displays information about the key pair, including its status and expiration date.

The screenshot shows the PingCentral Admin Console interface. The top navigation bar includes 'PingCentral', 'MAIN', and 'SETTINGS'. The left sidebar shows a 'SETTINGS' menu with 'Security' expanded, and 'TLS Key Pair' selected. The main content area displays the 'TLS Key Pair' page with the following details:

SERIAL NUMBER:	1562079646
SUBJECT DN:	CN=localhost, C=US
ISSUER DN:	CN=localhost, C=US
EXPIRES:	2028-10-27T23:40:40Z
STATUS:	Valid
SUBJECT ALTERNATIVE NAMES:	None
SIGNATURE ALGORITHM:	SHA256withRSA

An 'Import Key Pair' button is located at the bottom of the page.

3. To import a new key pair, click **Import Key Pair**.
4. On the **Import Key Pair** window, click **Choose PKCS12 File** and select the .p12 file to upload it.
5. In the **File Password** field, enter the password to the keystore file.



6. In the **Alias** field, specify the alias of the certificate in the keystore file that you want to use for the Admin Console SSL Certificate, if required.
  - If the .p12 file being imported for TLS key pair contains a single alias, PingCentral accepts the file without requiring an alias.
  - If the .p12 file being imported for TLS key pair contains multiple aliases, PingCentral requires the alias.
7. In the **Key Password** field, enter the password for the selected certificate if the PKCS12 file requires a separate password for the key.
8. Click **Import**.
9. Restart PingCentral.  
After PingCentral restarts, you will be able to access PingCentral without receiving a certificate warning.

## Environment management

---

All environments managed within PingCentral, as well as connected PingFederate and PingAccess environments, display on the **Environments** page, where you can view and update information about each environment and delete them from PingCentral when they are no longer needed.

Items worth mentioning:

- If you add PingAccess environments to PingCentral, ensure that PingFederate is configured as the PingAccess token provider. See [Configuring PingFederate as a PingAccess token provider](#) for details.
- If your application owners promote SAML applications to PingFederate or PingAccess environments, ensure that the appropriate trusted certificate authority (CA) certificates are available in PingCentral. See [Adding trusted CA certificates to PingCentral](#) for details.

 **Note:**

Starting with PingCentral 1.8, trusted CA certificates are stored in the PingCentral database instead of an external trust store. Certificates that exist in this trust store in previous versions are imported to the PingCentral database during the upgrade process.

For additional information, see the following:

- [Adding environments](#)
- [Updating environments](#)
- [Deleting environments](#)

## Configuring PingFederate as a PingAccess token provider

To add PingAccess environments to PingCentral, PingFederate must be configured as the token provider. If you have PingFederate and PingAccess environments established, this configuration is likely in place.

About this task

To configure PingFederate as the token provider for PingAccess, the Issuer URL in PingAccess must either match the Base URL in PingFederate, or one of the virtual hosts defined in PingFederate.

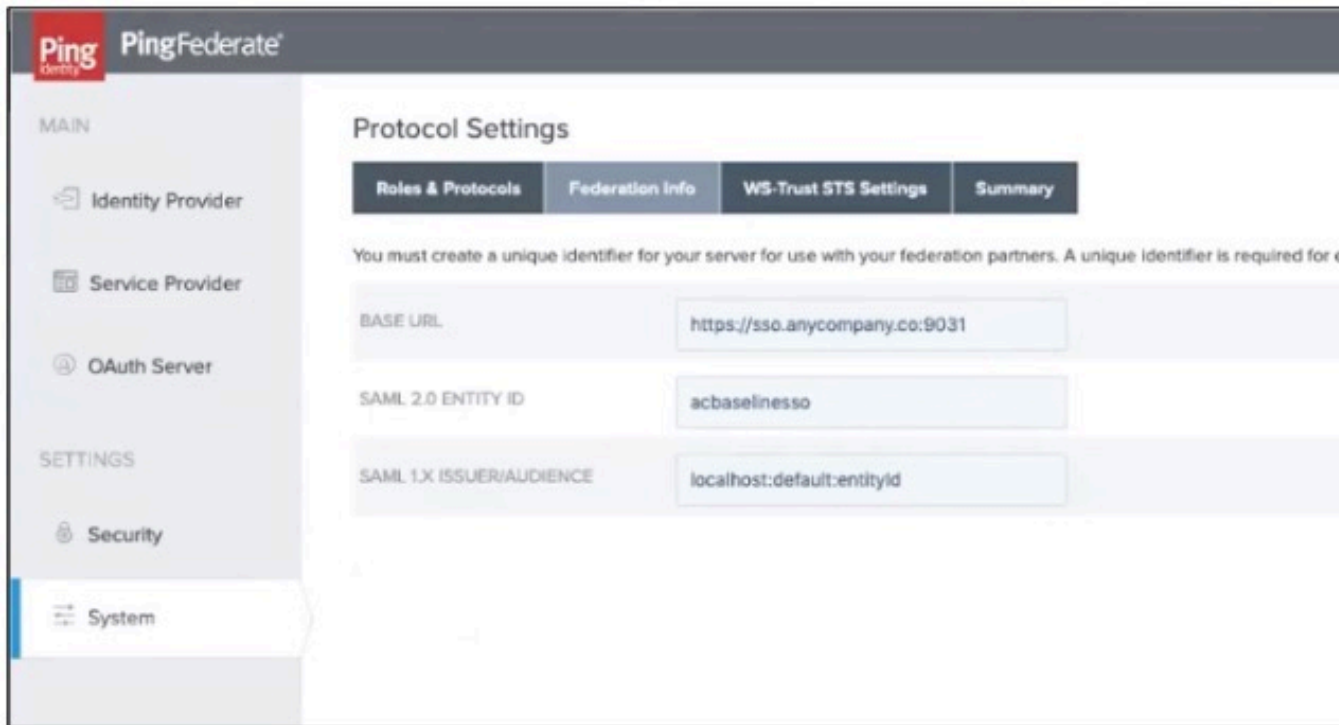
Steps

1. To configure PingFederate as a PingAccess token provider, ensure the PingAccess **Issuer URL** and the PingFederate **Base URL** match.

If a virtual host is defined in PingFederate, continue to step 3.

2. To locate this information:

- In PingFederate, to locate the **Base URL** field, go to **System# Protocol Settings# Federation Info**, as shown in the following example.



- In PingAccess, to locate the **Issuer URL** field, go to **System# Token Provider**.

ⓘ **Note:** In some versions of PingAccess, the Issuer URL might exist as separate **Host** and **Port** fields.

The screenshot shows the PingAccess System Settings page, specifically the Token Provider configuration. The left sidebar is expanded to 'System'. The main content area is titled 'System Settings' and has tabs for ADMIN AUTHENTICATION, CONFIGURATION EXPORT/IMPORT, CLUSTERING, LICENSE, TOKEN PROVIDER (selected), and TOKEN VAL. Under the TOKEN PROVIDER tab, there is a 'PINGFEDERATE' section with a link 'Change Token Provider Type'. Below this are three tabs: Runtime, Administration (selected), and OAuth Resource Server. A 'View Metadata' button is visible. The configuration fields are:
 

- ISSUER: [?](#)
- DESCRIPTION: [?](#)
- TRUSTED CERTIFICATE GROUP: [?](#)

 A 'Show Advanced' link is at the bottom.

3. If a virtual host is defined in PingFederate, the PingAccess Issuer URL can reference that instead of Base URL. In PingFederate, to locate the virtual host, go the **System# Virtual Host Names** page and review the information in the **Host Domain Name**

The screenshot shows the PingFederate Virtual Host Names configuration page. The left sidebar is expanded to 'System'. The main content area is titled 'Virtual Host Names' and has a sub-header: 'Optionally, you can define a list of alternate host names that may be used by the system in addition to what is defined for the PingFederate Base URL.' Below this is a table with two columns: 'Host Domain Name' and 'Action'.
 

Host Domain Name	Action
pchost.test.wrong	<a href="#">Edit</a>   <a href="#">Delete</a>
<input type="text"/>	<input type="button" value="Add"/>

 A 'Cancel' button is located at the bottom right. The footer contains copyright information: 'Copyright © 2003-2019 Ping Identity Corporation All rights reserved Version 9.2.2.0'.

field.

## Adding trusted CA certificates to PingCentral

For application owners to securely promote SAML applications to PingFederate and PingAccess environments, trusted certificate authority (CA) certificates must be available in PingCentral.

Steps

1. To add a trusted certificate to PingCentral, select the **Settings** tab.
2. Expand the **Security** menu and select **Trusted CA Certificates**.  
The **Trusted CA Certificates** page displays a list of the certificates currently available in PingCentral.
3. Click **Add Certificate**.
4. In the **Add Certificate** window, in the **Alias** field, enter a unique name for the certificate.
5. Click **Choose File**, select the certificate, and click **Add** to upload it.  
The certificate displays in the list of trusted CA certificates.
6. Click the **Expand** icon for the certificate to view details.

The screenshot shows the PingCentral interface with the 'Trusted CA Certificates' page. The left sidebar contains navigation options: SETTINGS, Security, Sessions, TLS Key Pair, Trusted CA Certificates (selected), API, and License. The main content area is titled 'Trusted CA Certificates' and includes a description: 'These certificates are used to make outbound TLS connections to PingFederate and PingAccess in PingCentral environments, and to OpenID backchannel authentication endpoints when SSO is configured.' There is an '+ Add Certificate' button in the top right. Below is a table of certificates:

Alias	Expires	Actions
<b>Test signing cert</b> CN=sso.anycompany.co, O=AnyCompany, C=US	Expires 11-27-2120	Expand
<b>Test signing cert details:</b> ALIAS: Test signing cert SERIAL NUMBER: 1608580120138 SUBJECT DN: CN=sso.anycompany.co, O=AnyCompany, C=US ISSUER DN: CN=sso.anycompany.co, O=AnyCompany, C=US VALID FROM: 12-21-2020 SIGNATURE ALGORITHM: SHA256withRSA STATUS: Valid EXPIRES: 11-27-2120 VERSION: 3 SUBJECT ALTERNATIVE NAMES: None		
<b>PingFederate signing cert</b> CN=sso.anycompany.co, O=AnyCompany, C=US	Expires 05-08-2120	Expand
<b>PingAccess signing cert</b> CN=sso.anycompany.co, O=AnyCompany, C=US	Expires 03-31-2120	Expand

## Adding environments

Use the wizard to add PingFederate and PingAccess environments to PingCentral.

Steps

1. On the **Environments** page, click **Add Environment**.

2. On the **Connect to Instances** page, connect to a PingFederate environment:

- a. Complete the **PingFederate Admin**, **PingFederate Admin Username**, and **PingFederate Admin Password** fields with your authentication information.

If this is the first time you have set up this PingAccess environment, and you set it up correctly, you won't see a **Skip Verification** option. However, if the initial validation fails, this option shows. If selected, it allows you to skip the validation process.

- b. Click **Next**.
- c. On the **Name Environment** page, complete the **Name**, **Short Code**, and **Description** fields.
- d. Optional: : To prevent non-administrators from promoting applications to the environment, select the **Protect** check box.
- e. Click **Save and Continue**.
- f. Optional: To add an identity provider certificate, select the appropriate certificate in the **Signing Certificate** list or to upload your own certificate, click **Choose** and enter the certificate password in the appropriate field. Click **Save and Close**.

The environment is displayed on the **Environments** page. If you chose to protect the environment, a shield icon displays next to its name. A **PF** icon also displays. The color of this icon represents the status of the environment. A green **PF** icon indicates that the environment is verified while a red **PF** icon indicates that the environment isn't verified.

- g. Click the expandable icon associated with the environment to view environment details.

Environment details include:

- A link to PingFederate.
- A description of the environment.
- The total number of applications hosted on this environment and a breakdown of OAuth/OIDC clients and SAML service provider (SP) connections. Click these links to access filtered lists of these applications on the **Applications** page.

The screenshot shows the PingCentral interface. The left sidebar contains navigation links for Applications, Environments, Templates, and Users. The main content area is titled 'Environments' and features a search bar and a '+ Add Enviro...' button. Three environment cards are visible: 'Production' (with a shield icon and a green PF icon), 'Staging' (with a green PF icon), and 'Development' (with a green PF icon). The 'Staging' environment is expanded, displaying the following details:

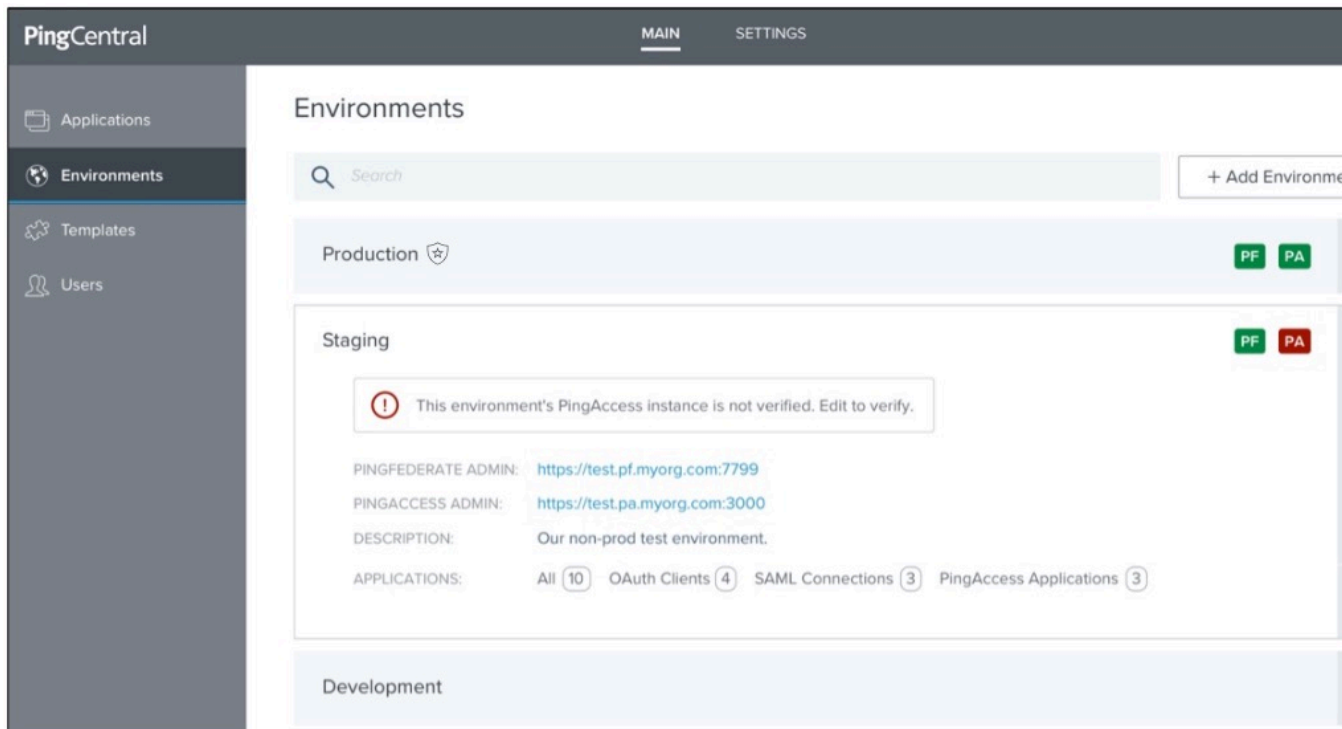
- PINGFEDERATE ADMIN:** <https://test.pf.myorg.com:7799>
- PINGACCESS ADMIN:** <https://test.pa.myorg.com:3000>
- DESCRIPTION:** Our non-prod test environment.
- APPLICATIONS:** All (10) OAuth Clients (4) SAML Connections (3)

3. To add a PingAccess environment instance to PingCentral, access the **Connect to Instances** page by either clicking on **Add Environment** or by clicking the **Pencil** icon for an existing PingAccess application.
  - a. Complete the **PingAccess Admin**, **PingAccess Admin Username**, and **PingAccess Admin Password** fields with your authentication information.

If this is the first time you have set up this PingAccess environment, and you set it up correctly, you won't see a **Skip Verification** option. However, if the initial validation fails, this option displays. If selected, it allows you to skip the validation process.
  - b. Click **Next**.
  - c. On the **Name Environment** page, complete the **Name**, **Short Code**, and **Description** fields.
  - d. Optional: To prevent non-administrators from promoting applications to the environment, select the **Protect** check box.
  - e. Click **Save and Continue**.

The environment is displayed on the **Environments** page. If you chose to protect the environment, a shield icon displays next to its name. A **PA** icon also displays. The color of this icon represents the

status of the environment. A green **PA** icon indicates that the environment is verified while a red **PA** icon indicates that the environment isn't verified.



- f. Click the expandable icon associated with the environment to view environment details.

Environment details include:

- A link to PingFederate.
- A link to PingAccess.
- A description of the environment.
- The total number of applications hosted on this environment and a breakdown of OAuth/OIDC clients, SAML SP connections, and PingAccess applications. Click these links to access filtered lists of these applications on the **Applications** page.

**Note:**

If an environment is unavailable, applications in that environment don't display on the **Applications** page.

If the environment is not verified, you receive an error message.

- g. Ensure that PingFederate is configured as a token provider for PingAccess.

For more information, see [Configuring PingFederate as a PingAccess token provider](#).

## Updating environments

Update PingFederate and PingAccess environment information at any time.

### Steps

To edit environment information, click the expandable icon associated with it, and then click the **Pencil** icon. All of the editable information displays on one page.

Option	Description
<b>To update the name and description:</b>	To update the name and description, change the information in the <b>Name</b> , <b>Short Code</b> , and <b>Description</b> fields, and click <b>Save</b> .
<b>To update the assertion encryption certificate:</b>	To update the assertion encryption certificate, click <b>Choose</b> to upload a new certificate and enter the certificate password in the appropriate field. Click <b>Save</b> .
<b>To update connection information:</b>	To update the connection information for either a PingFederate or PingAccess environment, change the information in the <b>Username</b> and <b>Password</b> fields and click <b>Save</b> .  <div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Note:</b></p> <p>If a PingAccess environment is added to PingCentral and removed through the edit page, the connection information is saved and restored if the PingAccess environment is selected again.</p> </div>
<b>To add or remove protection status:</b>	To add or remove the protected status of an environment, which prevents non-administrators from promoting applications to the environment, select or clear the <b>Only Administrators Can Promote Applications</b> check box and click <b>Save</b> .
<b>To update the signing certificate:</b>	To update the signing certificate used to promote SAML applications, select the appropriate certificate in the <b>Signing Certificate</b> list or upload your own. Click <b>Save</b> .
<b>To update the SP certificate:</b>	To update the SP certificate, click <b>Choose</b> to upload a new certificate and enter the certificate password in the appropriate field. Click <b>Save</b> .
<b>To update the assertion encryption certificate:</b>	To update the assertion encryption certificate, click <b>Choose</b> to upload a new certificate and enter the certificate password in the appropriate field. Click <b>Save</b> .

## Deleting environments

Delete environments from PingCentral when they are no longer needed.

Steps

1. Click the expandable icon associated with the environment to view environment details.
2. To delete the environment from PingCentral, click its associated **Delete** icon.  
A message displays asking you if you want to delete the environment.
3. Click **Delete**.  
A message displays saying that the environment was deleted.

## User management

You can set up PingCentral so users access the application through SSO, or you can set it up so users access the application directly through a login screen.

See the following:

- [Setting up SSO for PingCentral](#)
- [Managing users through PingCentral](#)



**Note:**

When SSO is enabled, local users defined within PingCentral and the default Administrator will not be able to access the application or access the Admin API using HTTP basic authentication.

## Setting up SSO for PingCentral

The single sign-on (SSO) method is significantly more secure than the password authentication method.

You must configure several components for SSO to work. See the following:

**Note:**

At this time, OpenID Connect (OIDC) is used for SSO.

- [Auto-provisioning users](#)
- [Configuring SSO](#)
- [Configuring resource server functionality](#)
- [Configuring the OIDC provider](#)

### Auto-provisioning users

For each single sign-on (SSO) user, a local PingCentral user is automatically created the first time they sign on with information obtained from the subject (sub) claim provided by the OpenID provider.

The user's first name, last name, and role are also recorded. The user's name is derived from the given\_name and family\_name claims defined by the profile scope.

If first-time access to PingCentral is through API access using a bearer token, auto-provisioning occurs if the user name and role are available. For performance reasons, subsequent bearer token access doesn't update the local user information, such as first name and last name.

At each SSO, the role, first name, and last name might be updated based on token claims, which overwrites any administrative updates made within PingCentral.

Although PingCentral administrators can modify or delete auto-provisioned users, doing so results in the SSO user being auto-provisioned again. Because the provisioning process generates a new PingCentral user ID, any application associations with the previous user ID will be lost.

### Configuring SSO for PingCentral

With PingCentral, single sign-on (SSO) is disabled by default.

To configure PingCentral for SSO, you must:

- Enable it.
- Configure OIDC properties to access OIDC configuration information.
- Define an OAuth client at the OpenID provider.
- Configure PingCentral role mapping.

### Enabling SSO for PingCentral

About this task

To enable SSO:

Steps

1. Open the `<PingCentral_install>/conf/application.properties` file.

2. Uncomment the following property and set the value to **true**.

```
pingcentral.sso.oidc.enabled=true
```

## Configuring OIDC for PingCentral

About this task

To configure OIDC:

Steps

- Locate the `pingcentral.sso.oidc.issuer-uri` property, uncomment it, and define the Issuer URI.

In this example, PingCentral attempts to access OIDC configuration information at `https://sso.mycompany.com:9031/.well-known/openid-configuration`.

```
pingcentral.sso.oidc.issuer-uri=https://sso.<mycompany>.com:9031
```

If PingCentral can't access the OIDC configuration information, it fails to start. Make sure the OpenID provider is running and accessible before starting PingCentral.

In the future, if changes are made on the OpenID Provider that affect the OIDC configuration information used for SSO, you must restart PingCentral to incorporate them.

## Defining the OAuth client for PingCentral

About this task

You must define an OAuth client for PingCentral at the OpenID provider.

Steps

- Locate the following property, uncomment it, and provide the client ID and client secret for the OAuth client.

```
pingcentral.sso.oidc.client-id=<CLIENT_ID>
pingcentral.sso.oidc.client-secret=<CLIENT_SECRET>
```

### Important:

Secure the secret using the obfuscation script available in `bin/obfuscate`, and by using output ciphertext rather than the cleartext secret.

## Configuring PingCentral role mapping

About this task

In PingCentral 1.0, two user roles are defined: the IAM Administrator, and the Application Owner. An initial IAM Administrator is created by default and can add other users to PingCentral and assign them to the appropriate role.

When SSO is enabled, the OpenID Provider must indicate the PingCentral role with a claim defined in the ID token or UserInfo endpoint. If this claim isn't found, or its value is nonsensical, the user is denied access to PingCentral, and auto-provisioning doesn't occur.

With PingFederate, an attribute can be mapped into the appropriate claim. To configure role mapping:

## Steps

- Locate the following attributes and configure them for mapping into the appropriate claim.

```
# The name of the claim which identifies the PingCentral role associated
with the user.
#pingcentral.sso.oidc.role-claim-name=PingCentral-Role
```

```
# The expected value of the role claim which indicates the user is a
PingCentral administrator.
#pingcentral.sso.oidc.role-claim-value-admin=IAM-Admin
```

```
# The expected value of the role claim which indicates the user is a
PingCentral application owner (non-administrator).
#pingcentral.sso.oidc.role-claim-value-app-owner=Application-Owner
```

## Results

If these defaults can be used with the OpenID Provider, no further configuration is required.

## Next steps

If the defaults can't be used with the OpenID Provider, set the claim name or values to synchronize PingCentral to the OpenID Provider configuration as shown.

```
pingcentral.sso.oidc.role-claim-name=UserRole
pingcentral.sso.oidc.role-claim-value-admin=Admin
pingcentral.sso.oidc.role-claim-value-app-owner=Developer
```

## Configuring resource server functionality

PingCentral supports OAuth resource server functionality by validating provided bearer tokens when accessing the Admin API. Only signed JSON web token (JWT) tokens are supported in this release, so a JWKS endpoint is required to obtain the public keys for signature validation.

### About this task

If you are using PingFederate 10.1 or later, you can enable the centralized signing key functionality. Additional configuration isn't required in PingCentral to access the centralized JWKS endpoint.

If the access token manager has been configured with an explicit JWKS endpoint path, you must also specify this to PingCentral.

### Note:

In PingFederate, this endpoint is exposed as `https://<pf_host>:<port>/ext/<JWKS Endpoint Path>`.

## Steps

- To provide the JWKS endpoint to PingCentral, open the `<PingCentral_install>/conf/application.properties` file, uncomment the `pingcentral.sso.oidc.oauth-jwk-set-uri` property, and define the JWKS endpoint URI, as in this example.

```
pingcentral.sso.oidc.oauth-jwk-set-uri=https://sso.<mycompany.com>:9031/
ext/oauth/pingcentral/jwks
```

## 2. Configure the `username-claim` that PingCentral will use with bearer tokens.

```
pingcentral.sso.oidc.oauth-username-claim-name=UserId
```

With bearer tokens, PingCentral looks for the Username claim by default.

### **Note:**

While the subject (sub) claim is mandatory with OpenID Connect, it's not required when using OAuth 2.

## 3. Configure PingCentral to validate the access token issuer and audience claim values defined in the access token manager.

By default, these claims aren't validated. Validation for either or both is enabled by setting the following properties:

- `pingcentral.sso.oidc.oauth-iss-claim-value=<myissuer>`
- `pingcentral.sso.oidc.oauth-aud-claim-value=<myaudience>`

## 4. Make sure that the values specified match those defined in the access token manager.

### **Note:**

If the values don't match, the validation fails.

### **Tip:**

If a blank value is defined in PingFederate, the claim won't be present in the token, so do not enable the validation of that claim in PingCentral.

## Configuring the OpenID provider

PingCentral is an OpenID relying party for browser-based single sign-on (SSO), as well as an OAuth 2 resource server when directly accessing the admin API.

PingCentral has been tested with PingFederate 9.2.x, 9.3.x, 10.0.x and 10.1.x, serving as both the OpenID provider and OAuth 2 authorization server. This section provides tips for integrating PingCentral into an existing OIDC 1.0 SSO infrastructure using PingFederate as the OpenID provider.

### **Note:**

As long as an OpenID provider is able to provide the endpoints and claims required by PingCentral (most notably the user name and role), other OpenID Connect 1.0 providers, such as PingOne for Customers, can also be used.

This section doesn't provide all of the details of setting up access token managers, OIDC policies, or attribute contracts because these topics are complex and often specific to a customer environment.


## Configuring the OAuth client for PingCentral

Before you begin

Define a PingCentral-specific OAuth client. These steps explain how to configure PingFederate as the OpenID provider. See [Configuring OAuth clients](#) in the *PingFederate Server* guide for additional information.

### 1. In PingFederate, go to **Applications# OAuth# Clients**.

2. In the **Client ID** field, enter a unique identifier the client provides to the resource server (RS) to identify itself. This identifier is included with every request the client makes.
3. In the **Name** field, enter a descriptive name for the client instance. This name appears when the user is prompted for authorization.
4. In the **Client Authentication** field, select **Client Secret**, and manually enter a secret or click **Generate Secret** to have one created for you. You will also use this secret when you configure SSO for PingCentral. See [Configuring SSO for PingCentral](#) for details.
5. In the **Redirection URIs** field, enter this URI: `https://<pc-host>:<pc-port>/login/oauth2/code/pingcentral`.
6. Locate the **Allowed Grant Types** field and select **Authorization Code**.
7. **Optional:** If you want API access with bearer tokens, locate the field and select the **Resource Owner Password Credentials** option.

 **Note:** PingCentral doesn't support ID token encryption.

8. In the **OpenID Connect** field, select the **ID Token Signing Algorithm**, and then **RSA using SHA-256** from the list.
9. Click **Save**.

### Configuring the OIDC policy for PingCentral

About this task

The OAuth client will be associated with an OIDC Policy, which could be the default policy. This policy must map an attribute into the expected claim to signify the user's PingCentral role, which is defined in the **Attribute Contract**, **Attribute Sources & User Lookup**, and **Contract Fulfillment** in PingFederate.

Steps

- If the default PingCentral role claim name and values need to be altered to match the OIDC policy, update the `<PingCentral_install>/conf/application.properties` file.  
For more information, see [Configuring SSO](#).

### Configuring the Access Token Manager for PingCentral

About this task

The access token manager associated with the OIDC Policy must support signed JSON web token (JWT) tokens. To validate the token signature, PingCentral must be able to access a JWKS endpoint URL.

 **Note:**

Signing certificates and JSON web encryption (JWE) encryption (symmetric or asymmetric) are not supported in this release.

If you are using PingFederate 10.1 or later, you can enable the centralized signing key functionality.

 **Note:**

Additional configuration isn't required in PingCentral to access the centralized JWKS endpoint.

### Steps

1. Select the **Use Centralized Signing Key** check box.

<b>USE CENTRALIZED SIGNING KEY</b>	<input checked="" type="checkbox"/>	Select this option to use a centralized key when signing JWTs using an RSA-based or EC-based algorithm.
------------------------------------	-------------------------------------	---

2. If you are using an older version of PingFederate, define an explicit JWKS endpoint path:
  - a. Select **Show Advanced Fields** and specify the path in the **JWKS Endpoint Path** field.

<b>JWKS ENDPOINT PATH</b>	<input type="text" value="/oauth/pingcentral/jwks"/>	Path on the PingFederate server to publish a JSON Web Key Set with the keys/certificates that can be used for signature verification. Must include the initial slash (example: /oauth/jwks). The resulting URL will be https://<pf_host>:<port>/ext/<JWKS Endpoint Path>. If specified, the path must be unique across all plugin instances, including child instances.
---------------------------	--	---

**Note:**

This path must be explicitly configured in PingCentral. See [Configuring resource server functionality](#).

3. If you define either or both of the issuer or audience claim values within the access token manager, you can configure PingCentral to validate them.

These claim values are also defined within the advanced fields, as shown in the following example.

<b>ISSUER CLAIM VALUE</b>	<input type="text" value="myissuer"/>	Indicates the value of the Issuer (iss) claim in the JWT (omitted, if blank).
<b>AUDIENCE CLAIM VALUE</b>	<input type="text" value="myaudience"/>	Indicates the value of the Audience (aud) claim in the JWT (omitted, if blank).

## Managing users through PingCentral

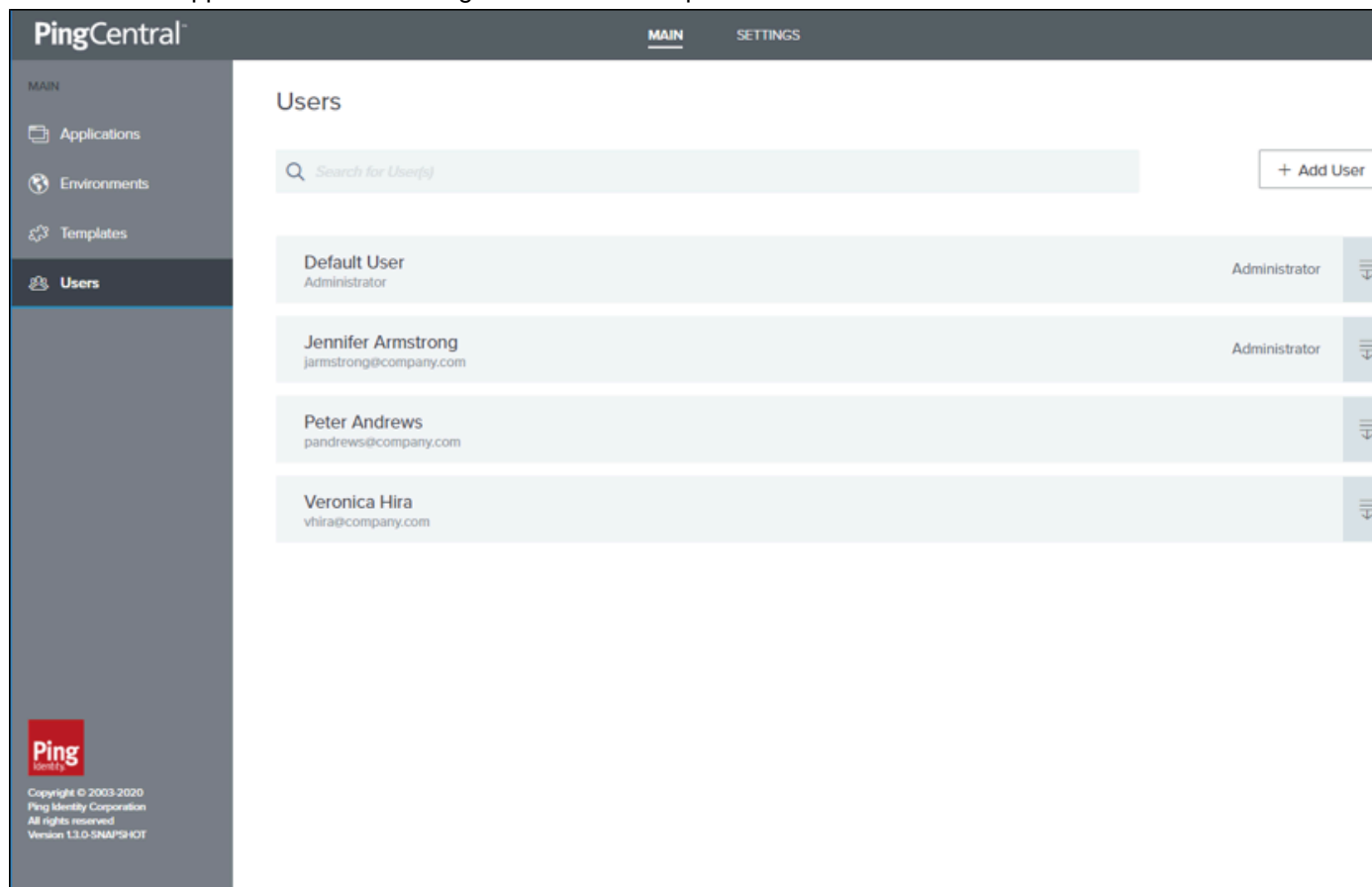
If you have a small number of users, you might want to manually add them to PingCentral and manage their access directly through the application. You need their first and last names, user names, and the roles they will assume.

### Steps

1. On the **Users** tab, click **Add User**.
2. Enter the user name, first name, and last name in the appropriate fields.
3. Select the user's role (either Application Owner or Administrator). Click **Next**.
4. Enter an initial password for the new user in the **Password** field. Passwords must be at least 8 characters long, contain one upper-case letter, one lower-case letter, and one number.

5. Enter it again in the **Confirm Password** field. Click **Save and Close**.

The new user appears in the list of PingCentral users in alphabetical order.



6. Update user information or delete a user by selecting the expandable icon associated with the user and clicking the pencil or delete icon.

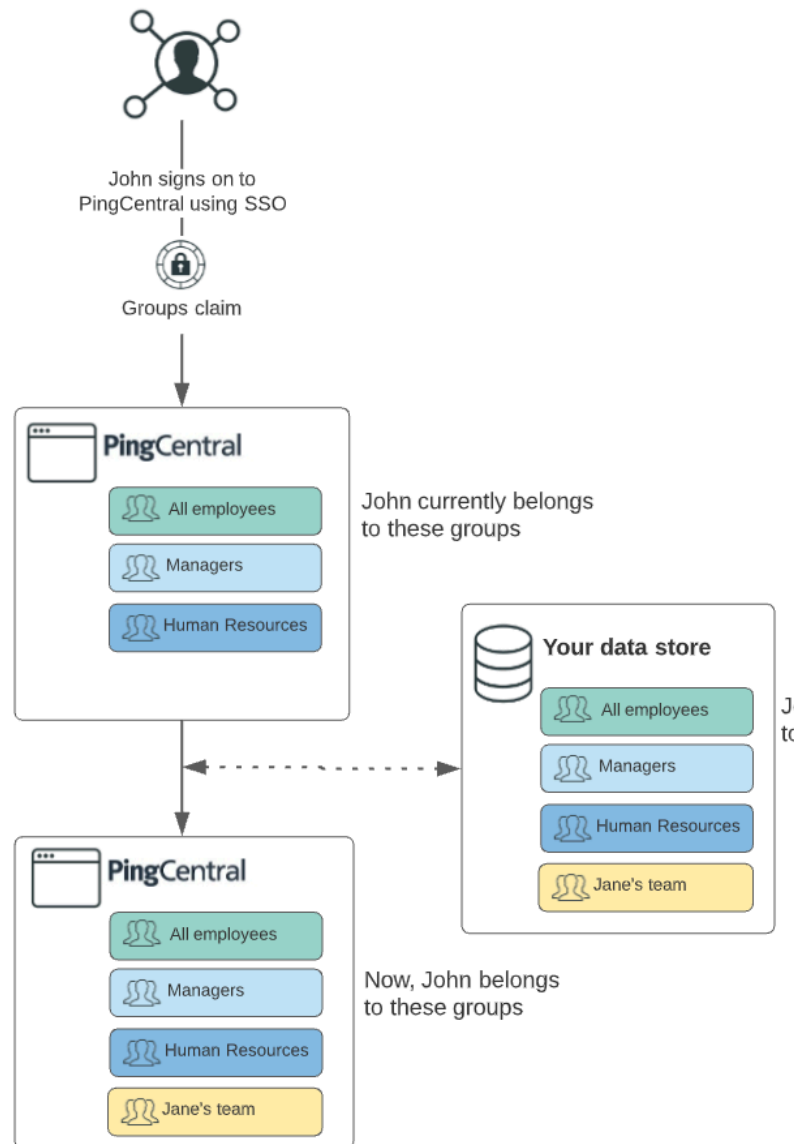
## Managing user groups

Adding individual users to PingCentral applications can be a time-consuming process. If you have user groups defined in your data store, you can add the groups to PingCentral so that application owners can associate them with PingCentral applications and provide application access to multiple users at once.

Start by signing on PingCentral using single sign-on (SSO). Next, add information about each group, such as the group name, display name, and description to PingCentral. Group names should match the group names in your data store and aren't case sensitive.

If you have a large number of groups to add, you can upload the information into PingCentral in a `.csv` file. Then, you can add these groups of users to PingCentral applications, which provides application access to each user in the group.

Identities, user groups, and group membership information are managed in your data store. When a user signs on to PingCentral, the groups to which the user belongs are sent as part of the groups claim. PingCentral not only updates its existing group information with information from the data store, but if the claim contains new groups, it adds those groups to PingCentral, as shown in this diagram. It also updates the user profile to reflect current group memberships.



See the following for details:

- [Adding user groups](#)
- [Updating user groups](#)
- [Deleting user groups](#)

## Adding user groups

After adding groups to PingCentral, associate them with PingCentral applications and provide application access to many users at once. Add groups one by one or import group information in a `.csv` file.

Steps

1. Sign on to PingCentral using SSO.

**Note:**

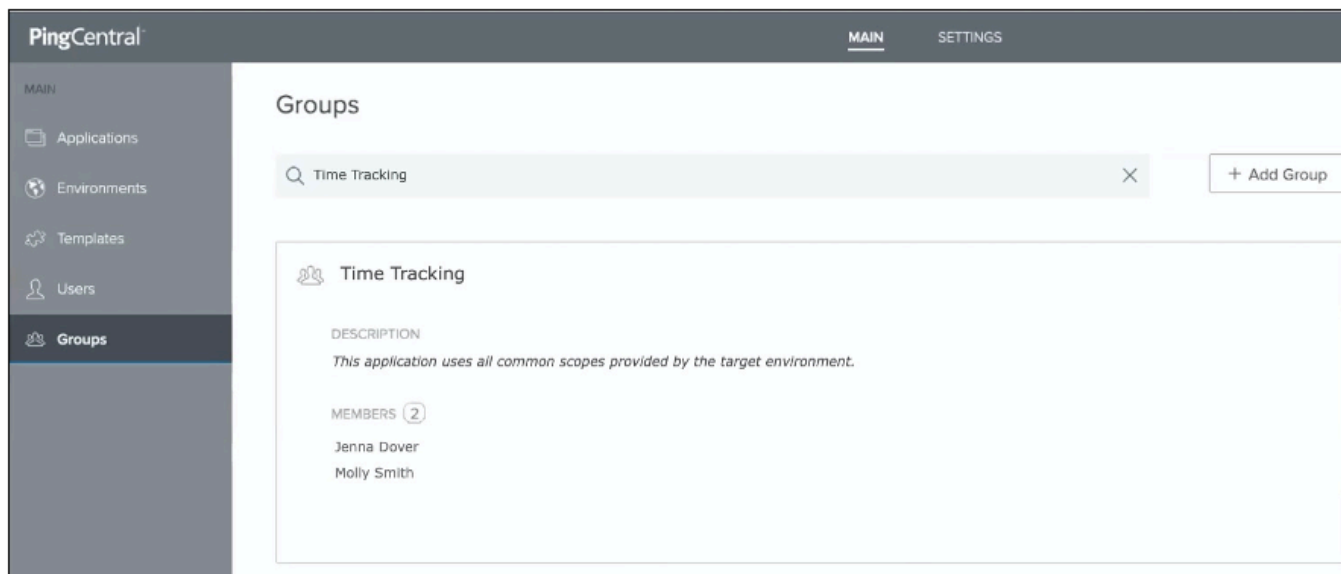
Group functionality is only available if you sign on using SSO.



2. To add groups of users one by one:

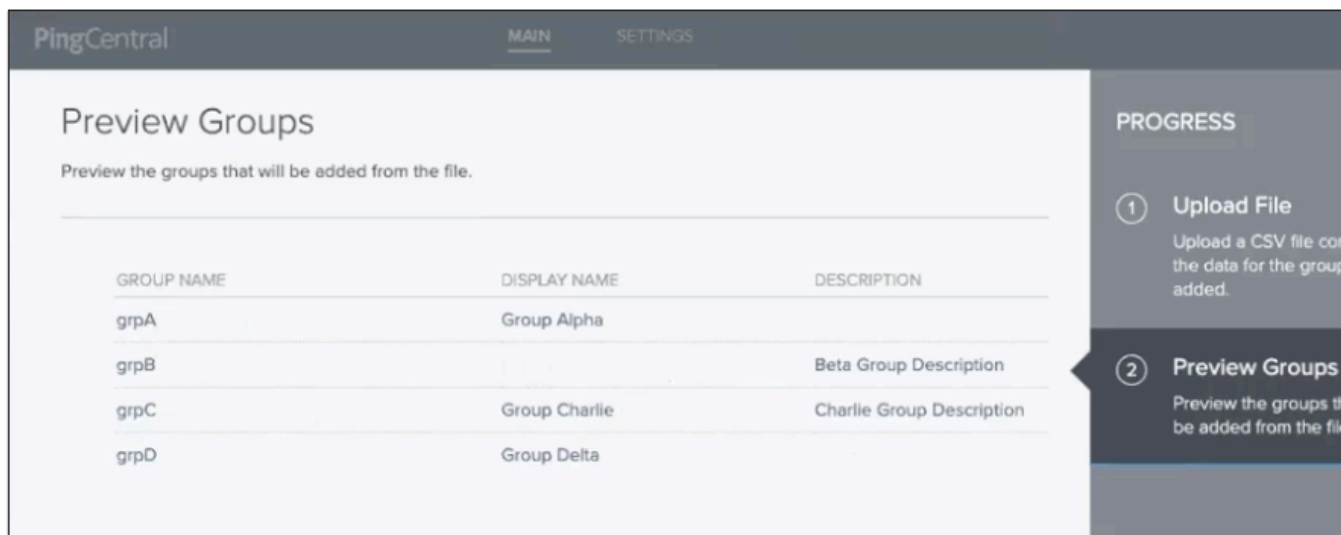
- a. On the **Groups** tab, click **Add Group**.
- b. On the **Add Group** page, complete these fields:
  - **Group Name:** Enter the group name. Group names should match the group names in your data store and are not case sensitive.
  - **Display Name (Optional):** Enter the name to display in PingCentral.
  - **Description (Optional):** Enter a description of the user group to display in PingCentral.
- c. Click **Save and Close**.

The new group displays at the top of the **Groups** list. Click the **Expand** icon to see information about the groups and its members. Use the filter to locate specific groups.



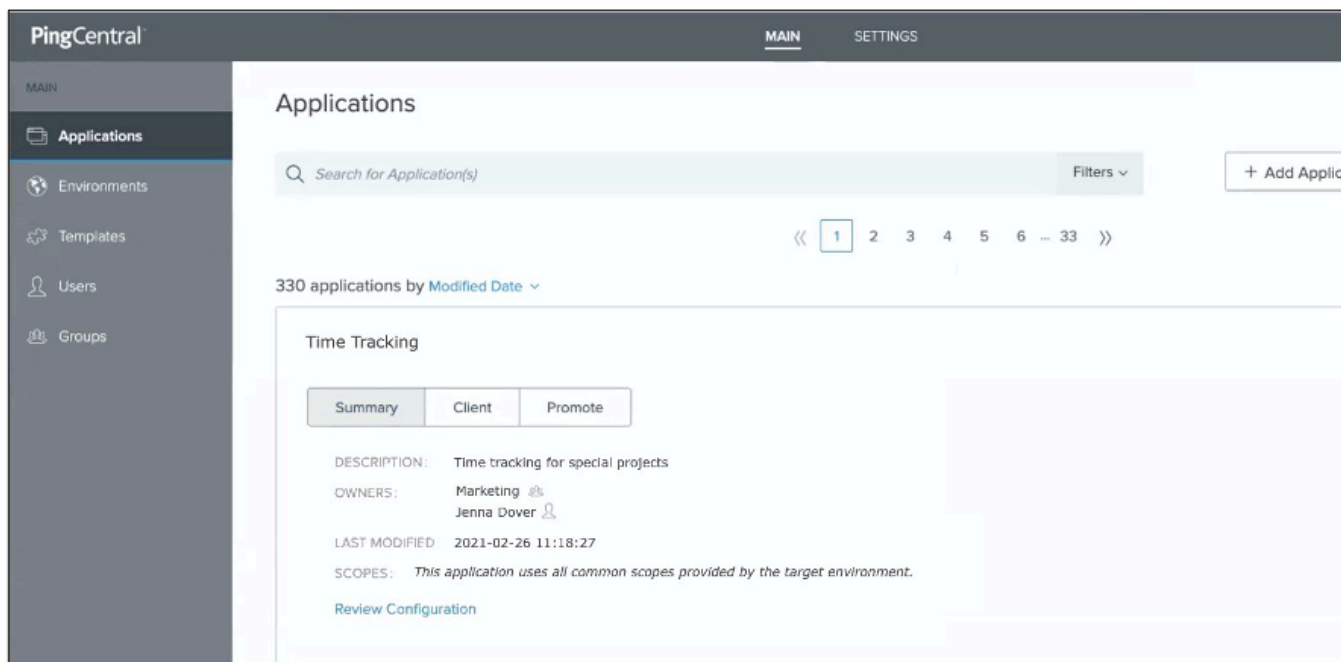
3. To import information about a group of users:
  - a. On the **Groups** tab, click **Import Groups**.
  - b. On the **Upload File** page, click **Choose**.
  - c. Select the `.csv` files that you want to import and click **Open** and click **Next**.
  - d. On the **Preview Groups** page, review the group names, display names, and descriptions, and ensure they are accurate. If not, correct the `.csv` file and import it again. .

The **Name** field is required, but the **Display Name** and **Description** fields are optional.



- e. Click **Save and Close**.  
The new group displays at the top of the **Groups** list. Click the **Expand** icon to see information about the groups and its members. Use the filter to locate specific members or groups.

After application owners associate users or groups of users with their applications, the ownership information also displays when you select the application.



## Updating user groups

Update the name, display name, and description for a user group at any time.

Steps

1. To update user group information, click the **Expand** icon associated with the group that you want to update and then click the **Pencil** icon.  
All of the editable information displays on the page.
2. Update the information in the **Name**, **Display Name**, and **Description** fields as needed, and click **Save and Close**.

 **Note:**

If the group name is updated in PingCentral but not in your data store, the groups will be out of sync, which might cause users to lose access to their applications.

## Deleting user groups

Delete user groups at any time.

Steps

1. On the **Groups** tab, select the group you want to delete and click the associated **Delete** icon.  
A message displays asking you if you want to delete the group.
2. Click **Delete**.

## Application management

---

All PingCentral applications and applications in verified PingAccess and PingFederate environments display on the **Applications** page, where you can filter the list of applications, add new applications, update existing applications, and delete them from PingCentral when they are no longer needed.

For more information, see the following topics:

- [Filtering applications](#)
- [Adding applications to PingCentral](#)
- [Updating applications](#)
- [Deleting applications](#)

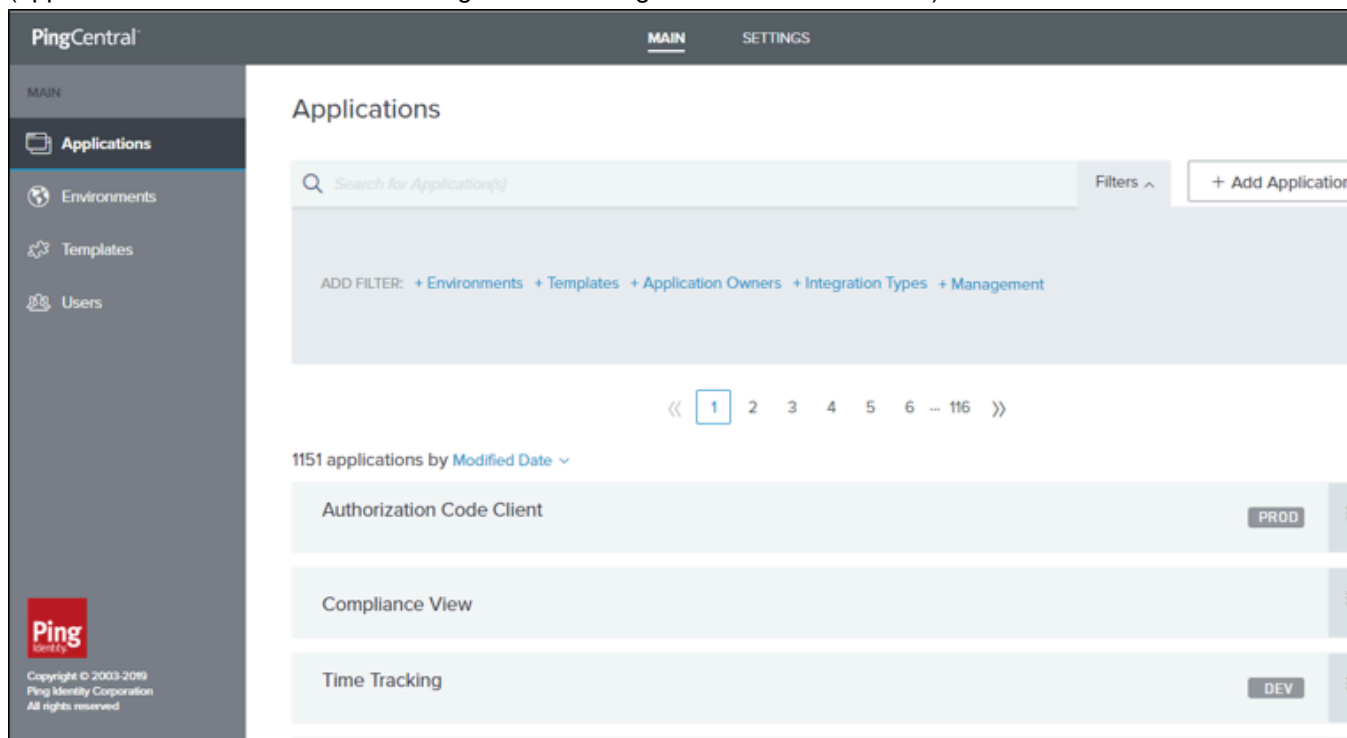
## Filtering applications

Use the filters at the top of the page to filter your list of applications and the search box to locate specific applications.

### Steps

1. Select your filters. You can filter by:

- Environment
- Template
- Application owner, or groups of application owners
- Integration type (OAuth and OIDC or SAML)
- Managed (applications created from or promoted to PingCentral environments), and Unmanaged (applications that reside in verified PingAccess or PingFederate environments.)



2. Click the filters to remove them.

3. If you know the name of an application, further refine your search by entering the first few letters of application's name.

## Adding applications to PingCentral

There are a variety of ways you can add applications to PingCentral. You can apply templates to them, you can create templates from them, or you can add them directly to PingCentral.

### Steps

1. To apply an OAuth, OIDC, SAML, or PingAccess template to an application:

- a. Click **Add Application**.
- b. On the **Select Template** page, select the appropriate template and follow the wizard prompts.

See [Selecting a template](#) in the *PingCentral for Application Owners* guide for additional information.

2. To create a template from an unmanaged application:
  - a. Select the expandable icon associated with the application.
  - b. Click **Add as Template** and follow the wizard prompts.

The template displays in the list of available templates.

3. To add a PingFederate or PingAccess application directly to PingCentral:
  - a. Use the search and filtering features to locate applications.

For more information, see [Filtering applications](#)

- b. Select the expandable icon associated with the application.
- c. Click **Add to PingCentral** as shown in the following example, name the application, assign owners, and save it.

The screenshot shows the PingCentral web interface. On the left is a dark sidebar with navigation links: Applications, Environments, Templates, and Users. The main area is titled '1128 applications by Modified Date'. A specific application, 'Time Tracking for Contract Workers', is selected and its configuration is displayed. The configuration includes: INTEGRATION TYPE: SAML 2.0 Service Provider; CONNECTION NAME: 1f1WVBdSxe-ewykwetLIC; ENTITY ID: 1f1WVBdSxe-ewykwetLIC; BROWSER PROFILES: SP\_INITIATED\_SSO, IDP\_INITIATED\_SSO; BINDINGS: REDIRECT, POST; CERTIFICATES: Service Provider; ACS URL: http://ping.com. Below the configuration are two buttons: '+ Add to PingCentral' (highlighted in blue) and '+ Add as Template'. The top navigation bar shows 'MAIN' and 'SETTINGS' tabs, and a pagination control shows page 1 of 113.

## Updating applications

Update applications at any time.

About this task

To keep your applications secure, rotate certificates and client secrets on a regular basis and apply updated security configurations to applications built from templates if new configuration templates become available. There is no need to recreate your applications in PingCentral to apply new templates. Replace the templates associated with your applications and promote them again.

Steps

1. Click the **Expand** icon associated with the application you want to update and then click the **Pencil** icon.  
All of the editable information displays on one page.
2. To update the name, description, and owners, change the information in the **Name**, **Description**, and **Owners** fields. Click **Save**.

- To change the template used to create the application, click **Change Template** and select a new template from the **Select Template** page. Click **Save and Close**.

**Note:**

You cannot apply a SAML template to an OAuth or OIDC application, nor apply an OAuth or OIDC template to a SAML application.

- Optional: To update OAuth or OIDC application information:

- In the **Client** section, change the scopes associated with OAuth or OIDC applications. Select or clear the appropriate check boxes and click **Save**.

**Note:**

You cannot edit scopes for applications created in version 1.2.0. However, you can update the template associated with an application to a template created in a later version, which will allow you to update scope information.

- In the **Promote** section, change the information in the **Redirect URI** fields for the appropriate environments and click **Save**.
- To change client secrets, return to the **Applications** page, promote the application again, and generate a new secret.

- Optional: To update SAML application information:

- In the **Attribute Mappings** section, add or remove attributes or update attribute values and click **Save**.
- In the **Promotions** section, upload a new `.xml` file that contains service provider metadata, such as the Entity ID, ACS URL, certificates, and attribute information, from another SAML application. Click **Choose File** or **Or Use URL** to provide the metadata file.

**Note:**

If metadata is used, the attribute mapping section might also need to be updated to include new attributes from the metadata file.

- Change the information in the **Entity ID** or **ACS URL** fields and click **Save**.
- Change the signing certificate. Select the appropriate certificate in the **Signing Certificate** list and click **Save**.
- Change the SP certificate. Click **SP Certificate** to upload a new certificate, or click **Remove** to remove it. Click **Save**.

- Optional: To update PingAccess application information:

- On the **Properties** tab, in the **Promote** section, update the **Virtual Hosts**, **Access Validation**, **Identity Mapping**, and **Site** or **Agent** names, as appropriate. Click **Save**.
- On the **Resources** tab, update information regarding each resource and click **Save**.
- On the **Policy** tab, click the **Pencil** icon associated with the policy you want to update. Make changes and click **Save**.

## Deleting applications

You can delete applications within PingCentral, but they will still exist in PingFederate. You will need to delete it from PingFederate or PingAccess.

About this task

Applications owners can also delete applications within PingCentral but cannot access PingFederate or PingAccess, so you might receive requests to delete applications from PingFederate for them.

## Steps

1. To delete an application from PingCentral, click the associated **Delete** icon.  
A message displays asking you if you want to delete the application.
2. Click **Delete**.

## Template management

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When you create a PingCentral template based on an existing PingFederate or PingAccess application, or add an existing PingFederate or PingCentral application to PingCentral, the raw JSON is saved to PingCentral.

PingCentral does not display the entire JSON file when you select an application, but the most relevant information is provided to help you distinguish between applications.

### OAuth and OIDC templates

For OAuth or OIDC, the following items are saved:

- The client application.
- The ATM, if one exists.
- The parent ATM, if one exists.
- The OIDC policy, if one exists.
- Definitions of exclusive scopes referenced by the client.

Refer to [OIDC connection orchestration](#) to see a diagram of the PingFederate items orchestrated by PingCentral.

### SAML templates

For SAML SP connections, the following items are saved:

- Connection information.
- Attribute names defined in the associated authentication policy contract.

Refer to [SAML connection orchestration](#) to see a diagram of the PingFederate items orchestrated by PingCentral.

### PingAccess templates

For PingAccess applications, the following items are saved:

- Virtual host information
- The context root
- Application type (Web, API, or Web + API)
- Destination type (site or agent)
- Web session information
- Identity mappings
- Resource definitions
- The rules with the application and resource policies

#### **Note:**

Virtual resources are available in PingAccess version 6.2+, but are not yet supported in PingCentral.

## Creating OAuth and OIDC application templates

To create a template, select a client configuration that exists in a PingFederate environment to replicate. PingCentral retrieves this configuration from PingFederate and saves it as a building block for future applications.

About this task

A good template configuration should include meaningful defaults that will make sense for many different OAuth and OIDC applications.

Steps

1. Select **Templates** to see a list of available templates.
2. Click **Add Template**, select either an OAuth or OpenID Connect template from the Integration Type page and click **Next**.
3. On the Select OAuth Client or OIDC Client page, select the PingFederate environment that hosts the client application you want to use as a template, and then select the application itself from the **Client** list.

Details regarding the selected client display.

The screenshot displays the 'Select OAuth Client' page in PingCentral. The interface includes a navigation bar with 'MAIN' and 'SETTINGS' tabs. The main content area is titled 'Select OAuth Client' and contains the instruction: 'Select the PingFederate OAuth client you want to base your template on.' Below this, there is a dropdown menu for 'ENVIRONMENT' currently set to 'Production Environment'. A 'Client' list is shown with a search bar and four radio button options. The first option, '\*Client Credentials (JWT)\*', is selected. To the right of the list, a configuration summary is displayed with the following details: CLIENT NAME: '\*Client Credentials (JWT)\*', CLIENT ID: '\*Client Credentials (JWT)\*', DESCRIPTION: 'None', GRANT TYPES: 'CLIENT\_CREDENTIALS', SCOPES: 'None', ATTRIBUTES: 'None', and OIDC POLICY: 'None'. A 'Review Configuration' link is located below the summary. At the bottom of the main content area, there are 'Cancel' and 'Next' buttons. On the right side, a 'PROGRESS' sidebar indicates the current step is '2. Select OAuth Client'.

4. To see the JSON for the application, click **Review Configuration**.
5. On the **Name Template** page, add a name and description for your template. This information will help application owners select the appropriate template.
6. Select an icon to represent your template. The icon you choose will display with the template name and description.



## 7. Click **Save and Close**.

You will see the new template in the list of available application templates. Application owners will see the new template on the **Select Template** page.

The screenshot displays the 'Select Template' interface in PingCentral. The main content area is titled 'Select Template' and includes the instruction: 'Select the template your application configuration and policy will be based on.' Below this, there are four template cards:

- PUBLIC APPLICATION** (OpenID Connect): This app should be accessible internally and externally, and sign-on is not required. Multi-factor authentication will not be required. [Review Configuration](#)
- INTERNAL APPLICATION (AND PARTNERS)** (OAuth): This app should be accessible only to internal employees and partners. They will be required to sign on via SSO, possibly requiring MFA. [Review Configuration](#)
- ACCESS CONTROL POLICY** (PingAccess): Our standard PingAccess template for adding fine-grained access control. [Review Configuration](#)
- EXISTING APPLICATION**: Your application already exists and you want to manage it in PingCentral.

To the right, a 'NEED HELP CHOOSING?' section asks 'What kind of application is this?' and provides buttons for:
 

- API**: OAuth can authorize API access. (OAuth button)
- WEB APPLICATION**: OpenID Connect provides authentication. (OpenID Connect button)
- SOFTWARE AS A SERVICE**: SAML can connect to SaaS partner applications. (SAML button)
- PINGACCESS**: PingAccess applications apply access policy. (PingAccess button)

On the far right, a sidebar titled 'ADD APPLICATION' shows a progress indicator with two steps:
 

- 1 Select Template**: Select the template your application configuration and policy will be based on.
- 2 Describe Application**: Provide the basic details for your application.

## Creating SAML SP application templates

To create a template, select a connection configuration that exists in a PingFederate environment to replicate. PingCentral retrieves this configuration from PingFederate and saves it as a building block for future applications.

### About this task

A good template configuration should include meaningful defaults that will make sense for many different SAML applications.

### Steps

1. Select **Templates** to see a list of available templates.
2. Click **Add Template** and select **SAML** from the Integration Type page. Click **Next**.

3. On the Select SAML Connection page, select the PingFederate environment that hosts the connection you want to use as a template, and then select the connection from the **Connection** list. Details regarding the connection display.

PingCentral

MAIN SETTINGS

## Select SAML Connection

Select the SAML connection you want to base your template on.

ENVIRONMENT

Staging Environment

Connection

Search...

- acbaselinesso
- acbaselinesso-auth-policy
- acbaselinesso-auth-policy-multi
- SAML App with signing 2
- spConnection787702262

CONNECTION NAME: acbaselinesso

ENTITY ID: acbaselinesso

BROWSER PROFILES: IDP\_INITIATED\_SSO  
SP\_INITIATED\_SSO

BINDINGS: POST REDIRECT

POLICY CONTRACTS ASSOCIATED: None

[Review Configuration](#)

Last retrieved from Staging Environment at 10:23 am. [Refresh Now](#)

Cancel Next

PROGRESS

- 1 Integration Type  
Select the type of connection you'll be making.
- 2 **Select SAML Connection**  
Select the SAML connection you want to base your template on.
- 3 Name Template  
Provide content to help guide application owners when this template should be used.

4. To see the JSON for the SAML connection, click **Review Configuration**.
5. On the Name Template page, add a name and description for your template. This information will help application owners select the appropriate template.
6. Select an icon to represent your template. The icon you choose will display with the template name and description.


## 7. Click **Save and Close**.

You will see the new template in the list of available application templates. Application owners will see the new template on the Select Template page.

**PingCentral** MAIN SETTINGS

## Select Template


Select the template your application configuration and policy will be based on.



**PUBLIC APPLICATION** OpenID Connect

This app should be accessible internally and externally, and sign-on is not required. Multi-factor authentication will not be required.


[Review Configuration](#)



**INTERNAL APPLICATION (AND PARTNERS)** OAuth

This app should be accessible only to internal employees and partners. They will be required to sign on via SSO, possibly requiring MFA.


[Review Configuration](#)



**ACCESS CONTROL POLICY** PingAccess

Our standard PingAccess template for adding fine-grained access control.

[Review Configuration](#)



**EXISTING APPLICATION**

Your application already exists and you want to manage it in PingCentral.

**NEED HELP CHOOSING?**

What kind of application is this?

**API**  
OAuth can authorize API access.

**WEB APPLICATION**  
OpenID Connect provides authentication.

**SOFTWARE AS A SERVICE**  
SAML can connect to SaaS partner applications.

**PINGACCESS**  
PingAccess applications apply access policy.

**ADD APPLICATION**

① **Select Template**  
Select the template your application configuration and policy will be based on.

② **Describe Application**  
Provide the basic details for your application.

## Creating PingAccess application templates

To create a PingAccess template, select a configuration that exists in a PingAccess environment to replicate. PingCentral retrieves this configuration from PingAccess and saves it as a building block for future applications.

### About this task

A good template configuration includes meaningful defaults that make sense for many different PingAccess applications.

### Steps

1. To see a list of available templates, select **Templates**.
2. Click **Add Template**.

3. From the **Integration Type** page, select **PingAccess**. Click **Next**.
4. On the **Select PingAccess Application** page, from the **Environment** list, select the PingAccess environment that hosts the application you want to use as a template, and then from the **Application** list, select the application.  
The application details display next to the Application list.

**PingCentral** MAIN SETTINGS

## Select PingAccess Application

Select the PingAccess application you want to base your template on.

ENVIRONMENT

PFPA

APPLICATION

Search...

- Basic Access Policy
- Manager Access Policy
- Disabled Access Policy
- DoNotUse
- Test Access Policy
- Test Dynamic Site Access Token Validator

DESCRIPTION: Manager Access Policy

VIRTUAL HOSTS: virtualhostweb09:7709

CONTEXT ROOT: /pint/myAPPS/Application

APPLICATION TYPE: Web+API

DESTINATION TYPE: Site

SITE: AnyCompany Demo Sites

ACCESS VALIDATION: Token Provider

WEB SESSION: AnyCompany

CLIENT ID: pa\_wam

API IDENTITY MAPPING: AnyCompany

WEB IDENTITY MAPPING: AnyCompany

RESOURCES: Another  
Extra  
Make  
More  
Root Resource  
[Show More](#)

RULES: None

Cancel **Next**

**PROGRESS**

- 1 Integration Type  
Select the type of connection you'll be making.
- 2 Select PingAccess Application**  
Select the PingAccess application you want to base your template on.
- 3 Name Template  
Provide content to help guide users when this template should be used.

5. To see the JSON for the PingAccess application, click **Review Configuration**.
6. On the **Name Template** page, add a name and description for your template.  
This information helps application owners select the appropriate template.
7. Select an icon to represent your template.  
The icon you choose displays with the template name and description.

## 8. Click **Save and Close**.

The new template appears in the list of available application templates. Application owners can see the new template on the **Select Template** page.

The screenshot displays the 'Select Template' interface in PingCentral. At the top, there are navigation links for 'MAIN' and 'SETTINGS'. The main heading is 'Select Template' with a sub-instruction: 'Select the template your application configuration and policy will be based on.'

Four template cards are listed on the left:

- PUBLIC APPLICATION** (OpenID Connect): This app should be accessible internally and externally, and sign-on is not required. Multi-factor authentication will not be required. [Review Configuration](#)
- INTERNAL APPLICATION (AND PARTNERS)** (OAuth): This app should be accessible only to internal employees and partners. They will be required to sign on via SSO, possibly requiring MFA. [Review Configuration](#)
- ACCESS CONTROL POLICY** (PingAccess): Our standard PingAccess template for adding fine-grained access control. [Review Configuration](#)
- EXISTING APPLICATION**: Your application already exists and you want to manage it in PingCentral.

On the right, a 'NEED HELP CHOOSING?' section asks 'What kind of application is this?' and provides buttons for:
 

- API: OAuth can authorize API access. [OAuth](#)
- WEB APPLICATION: OpenID Connect provides authentication. [OpenID Connect](#)
- SOFTWARE AS A SERVICE: SAML can connect to SaaS partner applications. [SAML](#)
- PINGACCESS: PingAccess applications apply access policy. [PingAccess](#)

On the far right, a vertical sidebar shows a two-step process:
 

- 1 Select Template**: Select the template your application configuration and policy will be based on.
- 2 Describe Application**: Provide the basic details for your application.

## Promotion processes

PingCentral makes it possible for application owners to promote their OAuth, OpenID Connect (OIDC), SAML, and PingAccess applications to development environments themselves.

After applying the templates to their applications, application owners enter information about their target environments into PingCentral and promote their applications to the designated environment.

The templates contain the raw JSON from the model applications on which the templates were based. Although PingCentral saves this information, it doesn't modify it. Instead, the saved JSON is used as a starting point for creating new applications and is modified only in memory with the environment-specific information during the promotion process.

After an application is promoted, application owners can revert them to previously promoted versions. The reverted version of the application won't exist outside of PingCentral until it's promoted again, at

which point it's also available in PingFederate or PingAccess. For details, see [Reverting applications to previously promoted versions](#).

# PingCentral for Application Owners

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## Introduction to PingCentral

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Use PingCentral to add user authentication and authorization support to your applications, promote them to the appropriate development environments for testing, and monitor them throughout their life cycles.

PingCentral:

- Makes it possible for you to apply security configurations to your applications yourself without assistance from an administrator.
- Allows you to promote these applications yourself, when you are ready, rather than submitting a request and waiting for someone else to promote them for you.
- Provides a central monitoring location for greater visibility into applications across deployment life cycles.
- Minimizes the risk of promoting applications with vulnerable security policies within your organization.

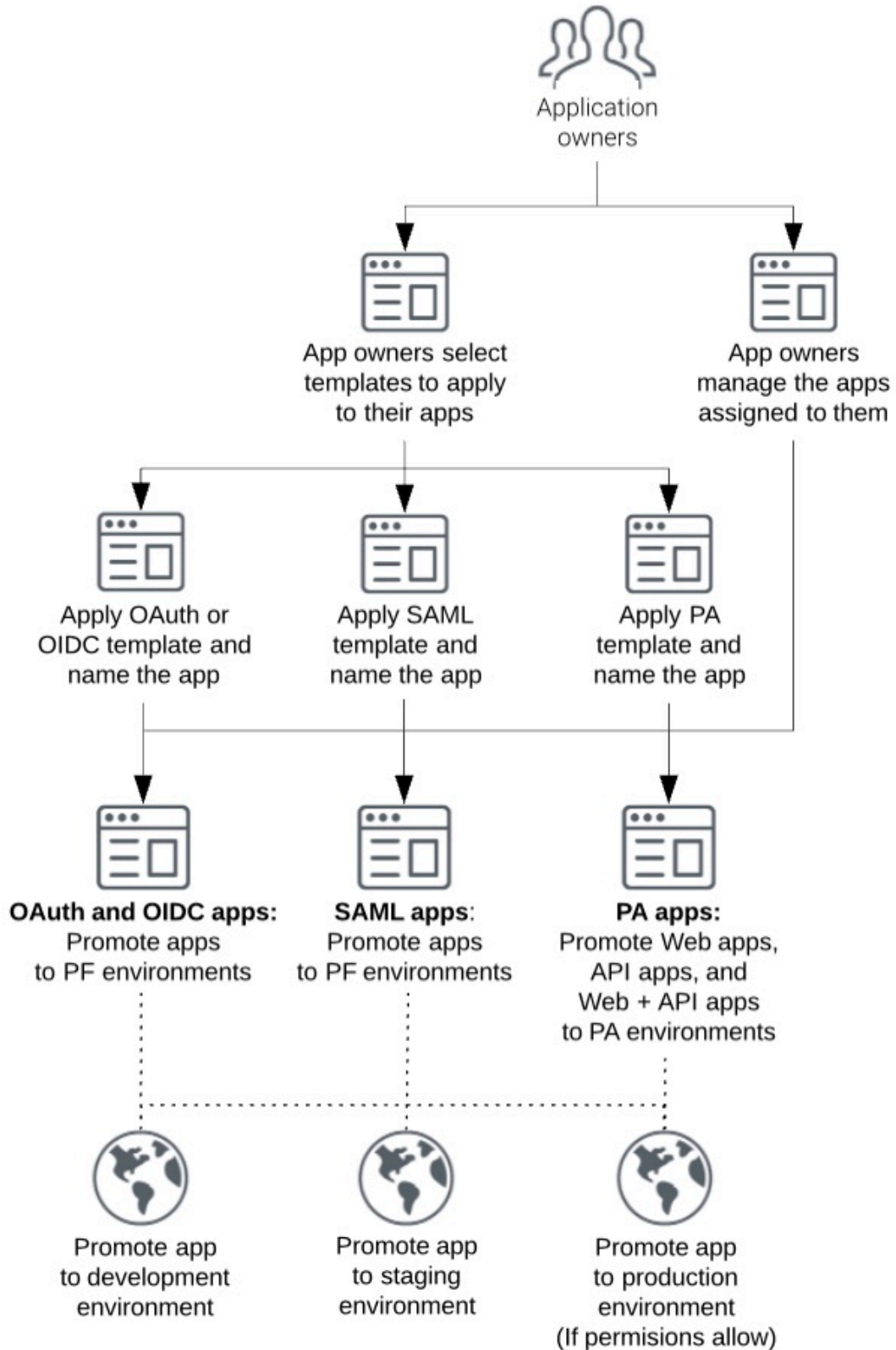
Using PingCentral does not require extensive training. However, for the best possible experience, become familiar with how the platform works before getting started.

How PingCentral works

1. IAM Administrators create OAuth, OpenID Connect (OIDC), SAML, and PingAccess templates based on clients, connections, and application security configurations they think are worth replicating.
2. Administrators can also add clients, connections, and applications directly to PingCentral and assign owners to them.
3. You use SAML, OAuth, OIDC, and PingAccess templates to apply security configurations to your applications. A wizard guides you through the process of providing a name and description for each application you add to PingCentral. Another wizard guides you through the process of promoting your application to the target environment.



- When you're ready, promote applications to the appropriate development environments to test them and promote them directly to production environments if your permissions allow.



## Accessing PingCentral

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PingCentral is a web-based application that you access from a URL. For the best possible experience, use Chrome or Firefox as your browser.

### Steps

1. Contact your IAM Administrator for the PingCentral URL and your sign-on credentials.
2. Enter your credentials.

 **CAUTION:**

If you have multiple failed login attempts, you will be locked out of PingCentral for a short period of time.



## Managing applications

If you are an owner of an application, the application displays on the **Applications** page. From this page, you can add new applications, view and update existing applications, and delete them from PingCentral when they are no longer needed.

### Steps

1. Use the menu at the top of the page to sort the list of applications by modified date or by application name, or use the search feature to locate an application by name.

OAuth, OIDC, SAML, and PingAccess applications are listed in the order in which they were last modified, by default, with the most recently modified at the top of the list.

The screenshot shows the PingCentral interface for managing applications. The top navigation bar includes 'PingCentral', 'MAIN', and 'SETTINGS'. The left sidebar has 'MAIN' and 'Applications' (selected). The main content area is titled 'Applications' and features a search bar with the placeholder 'Search for Applications' and a '+ Add Application' button. Below the search bar, it indicates '7 applications by Modified Date'. The applications are listed in a table-like format with the following details:

Application Name	Protocol	Environment	Actions
Sales: Expense tracking	OAuth	DEV	⋮
Sales: Project tracking	SAML 2.0 Service Provider	DEV	⋮
Sales: Travel scheduling	OAuth		⋮
Sales: Resource requests	SAML 2.0 Service Provider	DEV	⋮
Sales: New employee onboarding app	OpenID Connect	PROD, DEV	⋮
Accommodation requests	OAuth	PROD, DEV	⋮
Travel requests	SAML 2.0 Service Provider	DEV	⋮

## 2. On the **Applications** page, you can:

- View information about an application. Click the expandable icon associated with it.  
For more information, see [Viewing application information](#).
- Add a new SAML, OAuth, or OIDC application to PingCentral. Click **Add Application**, select a template, and follow the wizard prompts.

For more information, see [Adding applications](#).

**Note:** Administrators can also assign you as the owner of an application, in which case the application will display on your **Applications** page.

- Promote applications to development or production environments. Click the expandable icon associated with the application you want to promote and click the **Promote** tab.  
For more information, see [Promote applications](#).
- To update applications, click the expandable icon associated with the application you want to update and click the **Pencil** icon. All of the editable information displays on one page. Update it as necessary.  
For more information, see [Updating applications](#).
- Delete an application from PingCentral, click its associated **Delete** icon.

**Note:** Although the application will no longer be available in PingCentral, it will still exist in PingAccess or PingFederate. Ask your administrator to delete it from PingAccess or PingFederate, as necessary.

## Viewing application information

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If you are an owner of an application, the application displays on the **Applications** page.

### Steps

1. Use the menu at the top of the page to sort the list of applications by modified date or by application name, or use the search feature to locate an application by name.  
SAML, OAuth, OIDC, and PingAccess applications are listed in the order in which they were last modified, by default, with the most recently modified at the top of the list.

- To view details regarding an application, click the expandable icon associated with it.

Applications promoted to development environments (such as development, staging, or production) display icons associated with each environment. If an application has not yet been promoted to a specific environment, you will not see an icon representing that environment.

The screenshot shows the PingCentral interface for managing applications. The main header is 'Applications' with a search bar and a '+ Add Application' button. Below this, it shows '2 applications by Modified Date'. The first application is 'Accounting -Template-OpenID' with a 'STG' environment icon. It has tabs for 'Summary', 'Template', and 'Promote', and a '+ Promote' button. Below the tabs are two tables: 'ENVIRONMENT' and 'HISTORY'. The 'ENVIRONMENT' table shows a '-Staging Environment' promoted on '2020-02-26 12:56:28' with a 'View Client Details' link. The 'HISTORY' table shows two promotion events for '-Staging Environment' on the same date and time, each with a 'View Client Details' link. The second application is 'Time Tracking -Template-SAML' with a 'PROD' environment icon. The footer contains the Ping Identity logo and copyright information: 'Copyright © 2003-2020 Ping Identity Corporation All rights reserved Version 13.0 SNAPSHOT'.

- To review additional information about the application, click each tab.

- **Summary tab:** This tab displays the application or connection name, description, owners, the date on which the application was last modified, and additional information specific to the application, client, or connection.
- **Template tab:** This tab displays if the application was created from a template. It includes the name of the template applied to the application, and details regarding the application, client or connection on which the template was based.
- **Client tab:** This tab displays if the application was created from an OAuth or OIDC application that was directly added to PingCentral from PingFederate. It includes the client name, ID, grant types, attributes, and applicable policies.
- **Connection tab:** This tab displays if the application was created from a SAML application that was directly added to PingCentral from PingFederate. It includes the name of the connection, browser profiles, and binding information.
- **Application tab:** This tab displays if the application was directly added to PingCentral from PingAccess. It includes the application name, description, and details regarding the application.
- **Promote tab:** This tab displays the promotion history of this application, which includes the date and time each promotion occurred.

- To access additional information regarding the application and its promotion history, click **View Client Details**.

## Adding applications

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Before you can promote applications to development environments for testing, you must add them to PingCentral.

To add applications to PingCentral, you can use OAuth, OIDC, SAML, and PingCentral templates to apply security configurations to your applications. Wizards guide you through these processes.

See the following:

- [Selecting a template](#)
- [Using OAuth and OIDC templates](#)
- [Using SAML templates](#)
- [Using PingAccess templates](#)

Administrators can also assign applications directly to you. These applications display on your **Applications** page, where you can promote them, test them on development environments, modify them, and manage them throughout their life cycles.

### Selecting a template

IAM Administrators can create OAuth, OIDC, SAML, and PingAccess templates and make them available for you to use to apply security configurations to your application.

Steps

1. Click **Add Application**.

## 2. Review the template descriptions to determine which template you should use.

The screenshot displays the 'Select Template' interface in PingCentral. At the top, there are navigation links for 'MAIN' and 'SETTINGS'. The main heading is 'Select Template' with a sub-instruction: 'Select the template your application configuration and policy will be based on.' Below this, four template cards are listed:

- PUBLIC APPLICATION** (OpenID Connect): This app should be accessible internally and externally, and sign-on is not required. Multi-factor authentication will not be required. [Review Configuration](#)
- INTERNAL APPLICATION (AND PARTNERS)** (OAuth): This app should be accessible only to internal employees and partners. They will be required to sign on via SSO, possibly requiring MFA. [Review Configuration](#)
- ACCESS CONTROL POLICY** (PingAccess): Our standard PingAccess template for adding fine-grained access control. [Review Configuration](#)
- EXISTING APPLICATION**: Your application already exists and you want to manage it in PingCentral.

To the right, a 'NEED HELP CHOOSING?' section asks 'What kind of application is this?' and offers buttons for:
 

- API**: OAuth can authorize API access. (OAuth button)
- WEB APPLICATION**: OpenID Connect provides authentication. (OpenID Connect button)
- SOFTWARE AS A SERVICE**: SAML can connect to SaaS partner applications. (SAML button)
- PINGACCESS**: PingAccess applications apply access policy. (PingAccess button)

On the far right, a vertical sidebar titled 'ADD APPLICATION' contains a numbered list:
 

- 1 Select Template**: Select the template your application configuration and policy will be based on.
- 2 Describe Application**: Provide the basic details for your application.

On this page, you can:

- Select the filtering options to filter OAuth, OpenID Connect, SAML, and PingAccess templates.
- Click the **Review Configuration** link within the template description to view the details associated with each template.

If you are unclear about what type of template to select, keep the following in mind:

- OAuth and OIDC are most commonly used by consumer applications and services so users do not need to sign up for a new username and password. "Sign in with Google," or "Log in with Facebook" are examples of OAuth protocols you are likely familiar with. You might also use OAuth if your application is consumed on a mobile device.
- SAML is most commonly used by businesses to allow their users to access services they pay for. Salesforce and Gmail are examples of service providers an employee could gain access to after completing a SAML login. SAML templates can also be used for web applications created and used within your organization.
- PingAccess templates can be used to apply access policy to Web and API applications.

3. Select the template you want to use, or the existing application you want to add to PingCentral and click **Next**.
4. To proceed, see the appropriate topic:
  - [Using OAuth and OIDC templates](#)
  - [Using SAML templates](#)
  - [Using PingAccess templates](#)

## Using OAuth and OIDC templates

After selecting an OAuth or OIDC template, use that template to apply user authentication and authorization support to an application.

Before you begin

Prepare to provide the following:

- Name of the application.
- A brief, accurate description of your application.
- Scopes, which are optional and can be customized to meet your needs. See [Scopes and scope management](#) in the PingFederate documentation for additional information.

Steps

1. If you want to add scopes to the applications, begin typing the name of the scope you want to add and select it from the list when it displays.

 **Note:**

The names of scopes added to applications cannot contain spaces, nor can the **Scopes** field contain spaces before or after the scope name. If spaces exist, applications cannot be successfully promoted.

When this application is later promoted, the target PingFederate scope management configuration is referenced to satisfy the scope requirements of the client. Any named scope identified as a common scope in the target environment is configured within the client as a restricted scope.

If the named scope does not exist in the target environment, the scope is created as an exclusive scope. In that case, or if the scope already exists as an exclusive scope, then the scope is associated with the client as an exclusive scope.

2. Click **Next**.
3. On the **Describe Application** page, enter the name of your application and a description of the application in the **Name** and **Description** fields.

You are adding this application to PingCentral, so your name will automatically populate the **Owners** field.

4. **Optional:** To add owners, or groups of owners, select additional owners from the **Owners** list. If the name you are looking for does not display in the list, contact your PingCentral administrator and request that the person be provisioned.

The screenshot shows the 'Describe Application' form in PingCentral. The form is titled 'Describe Application' and includes the instruction 'Provide the basic details for your application.' The form has three main sections: 'NAME', 'DESCRIPTION', and 'OWNERS'. The 'NAME' field contains 'Time Tracking'. The 'DESCRIPTION' field contains 'Time tracking for special projects'. The 'OWNERS' field shows a list of users: 'Jenna Dover' (selected), 'Marketing', 'Molly Smith', and 'Paul Taylor'. At the bottom right, there are 'Cancel' and 'Save and Close' buttons. On the right side, a 'PROGRESS' sidebar shows two steps: '1 Select Template' and '2 Describe Application' (the current step).

5. Click **Save and Close**.

The application appears at the top of the list of applications on the **Applications** page.

## Using SAML templates

After selecting a SAML template, use that template to apply user authentication and authorization support to an application.

Before you begin

Prepare to provide the following:

- Name of the application
- A brief, accurate description of your application
- Attribute mapping information, used to map your application attributes to the identity attributes required from the identity provider to verify users' identities

## Steps

1. On the the **Select Metadata** window, you can:

- Provide a metadata file. Click **Choose file** to provide the file.
- Provide a URL to the metadata file. Click **Or Use URL** to provide the URL.
- Skip this step and provide the Entity ID, ACS URL, certificate, and attributes, or all of this information, during the promotion process.

If you choose to provide a metadata file, the information in the file will display, as shown in this example.

The screenshot shows the 'Select Metadata' window in PingCentral. The window title is 'Select Metadata' and it says 'Provide SAML metadata for simpler configuration.' Below this, it asks 'If you have SAML metadata for this application, provide it here.' and displays the following information:

- ENTITY ID: EntityID-Random
- ACS URL: https://sso.anycompany.co:9031/idp/SSO.saml2
- CERTIFICATE: CN=Config Signing Cert, OU=Dev, O=Ping, L=Denver, ST=CO, C=US (Valid 08-2018 to 08-2033)
- ATTRIBUTES: anycompanyCustomAttribute, sn, cn

At the bottom, there are 'Remove' and 'Or Use URL' buttons. On the right side, there is a 'PROGRESS' sidebar with four steps:

1. Select Template: Select the template your application configuration policy will be based on.
2. Select Metadata: Provide SAML metadata simpler configuration. (Current step)
3. Map Attributes: Map your application's attributes to source attributes and static values.
4. Describe Application: Provide the basic details your application.

2. Click **Next**.

3. On the **Map Attributes** page, map the application attributes to the identity attributes required to fulfill the authentication policy contract in PingFederate. Select identity attributes from the **Identity Attribute** list or click to add static values in the **Static Value** field. Click **Next**.

4. On the **Describe Application** page, enter the name of the application and a description in the appropriate fields.

You are adding this application to PingCentral, so your name will automatically populate the **Owners** field.

5. Optional: To add owners, or groups of owners, click the **Owners** field and select additional owners from the list. If the name you are looking for does not display in the list, contact your PingCentral administrator and request that the person be provisioned. Click **Next**.

6. Click **Save and Close**.

The application displays at the top of the list of applications on the **Applications** page.



## Using PingAccess templates

After selecting a PingAccess template, use that template to apply user authentication and authorization support to an application.

Before you begin

Prepare to define the following, as appropriate:

- The application context root and resources
- The application policy
- The resource policy
- The application name and description

For details regarding each of these items, see [Information needed to add PingAccess applications](#).

Steps

1. On the **Define Resources** page, enter the context root for the application.

The context root is the common root of all application resources, specifies where in the URL path the application begins, and starts with a slash. In the example URL, `den-ping.com:8443/mygreatapp/home`, the `/mygreatapp` is the context root.

## 2. Add, delete, or reorder application resources for your application.

Every application has at least one root resource.

If resource reordering is available, a **Reorder Resources** link displays on the page, as shown in the following example. If resource ordering was not enabled in the PingAccess application that was used to create this template, it is not enabled in PingCentral.

**Define Resources**  
Define your application's context root and resources.

CONTEXT ROOT

/mygreatapp

RESOURCES [+ Add Resource](#) [Reorder Resources](#)

RESOURCE NAME

More

RESOURCE AUTHENTICATION

Standard  Anonymous  Unprotected

PATH PATTERNS

/Ping/More/More\*  Regex

[+ Add Path Pattern](#)

METHODS

\*

OPTIONS

Audit  Enabled

---

RESOURCE NAME

Root Resource

RESOURCE AUTHENTICATION

Standard  Anonymous  Unprotected

PATH PATTERNS

^ x

METHODS

\*

OPTIONS

Audit  Enabled

**PROGRESS**

- 1 Select Template  
Select the template you want to use. The application configuration policy will be based on this template.
- 2 Define Resources  
Define your application's context root and resources.
- 3 Define Application Policy  
Customize your policy for your application.
- 4 Define Resource Policy  
Customize the policy for your resources.
- 5 Describe Application  
Provide the basic details for your application.

### **Note:**

Virtual resources are available in PingAccess version 6.2+, but are not yet supported in PingCentral.

To add a new resource:

- Click **Add Resource** and in the **Resource Name** field, enter the name of the resource.
- In the **Path Patterns** field, enter a list of URL path patterns that identify this resource. Path patterns start with a forward slash (/), begin after the context root, and extend to the end of the URL.

There are two different types of path patterns: Basic and Regex. Select the **Regex** option, when appropriate.

- c. In the **Resource Authentication** section, select the type of authentication the resource requires.

If the resource requires the same authentication as the root application, select **Standard**. If authentication is not required to access the resource, select **Anonymous** or **Unprotected**.

- d. If the application is an API or Web + API application, in the **Methods** field, select the HTTP methods supported by the resource. Leave this field empty if the resource supports all methods.
- e. To log information regarding requests to this resource, select the **Audit** check box.
- f. Resources are enabled when they are added, by default. To disable a resource, clear the **Enable** check box.
- g. If resource reordering is available, a **Reorder Resources** link displays on the page. To change the order of these resources, click the link, rearrange the resources, and click **Done**.

To delete the resource, click the associated **Delete** icon.

3. On the **Define Application Policy** page, customize the policy for the application, if needed.

To apply rules or rule sets, drag them from the **Available Rules** list to the **Policy** list. Click **Next**.

4. **Optional:** On the **Define Resource Policy** page, customize the policy for each of your resources.

To apply rules or rule sets to each resource, drag them from the **Available Rules** list to the **Policy** list. Click **Next**.

5. On the **Describe Application** page, enter the name of the application and a description in the appropriate fields.

By adding this application to PingCentral, your name automatically populates the **Owners** field.

6. **Optional:** To add owners, or groups of owners, click the **Owners** field and select additional owners from the list. Click **Next**.

If the name you are looking for does not display in the list, contact your PingCentral administrator and request that the person be provisioned.

7. Click **Save and Close**.

The application displays at the top of the list of applications on the **Applications** page.

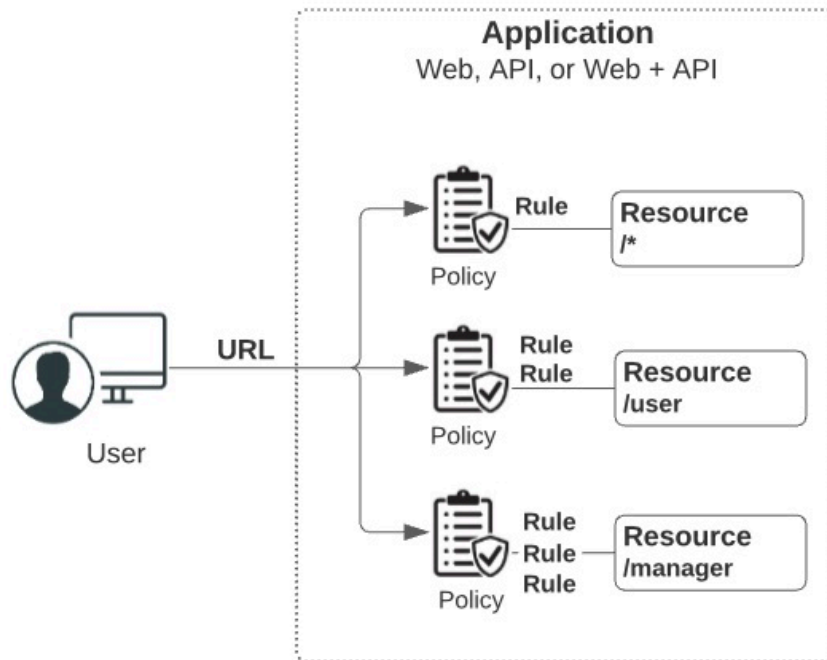
### Information needed to add PingAccess applications

When you use templates to PingAccess applications to PingCentral, you provide the application context root and then define its resources, application policy, and resource policies. This section describes these items in detail and explains why you are prompted to provide this information.

There are three different types of PingAccess applications: Web, API, and Web + API. With Web + API applications, administrators can configure both Web and API settings for an application. These applications can switch between web and API processing behaviors on the fly based on whether the inbound request contains a web session cookie (Web) or an OAuth token (API).

### Resources

Each application consists of one or more resources, which you define in PingCentral. Resources are components of an application that require different levels of security. When you define resources within an application, you also define security regarding those resources.



Resources are protected by rules, which let you specify who can access your applications and resources, how and when they can do so, and what modifications can be made to the requested content. When rules, or sets of rules, are applied to applications and resources, they are called policies. Policies are applied to requests, which determine whether users are granted or denied access to the requested resource.

To access an application, users enter a URL. This URL consists of a virtual host, a context root, and the name of the resource they want to access.

**Virtual host:**

`https://den-ping.com:8843/mygreatapp/home`

**Context root:**

`https://den-ping.com:8843/mygreatapp/home`

**Resource:**

`https://den-ping.com:8843/mygreatapp/home`

When you use a template to add a PingAccess application to PingCentral, you are prompted to provide the context root and define the resources within it. For more information, see [Application resources](#) in the *PingAccess User Interface Reference Guide*.

**Path patterns**

When handling requests, PingAccess uses resource path patterns to match resources. There are two different types of path patterns: Basic and Regex.

- **Basic patterns:** The default path pattern type, which defines a path to a specific resource or a pattern that matches multiple paths. Basic patterns can contain any number of "\*" wildcards. For example:

```
/path/x/*
```

matches any of these request paths:

```
/path/x/
```

```
/path/x/index.html
/path/x/y/z/index.html
```

- **Regex patterns:** Regex patterns contain regular expressions and allow for more flexibility in resource matching as they support resource ordering. For example:

```
/[^\s]+/[a-z]+\.\html
```

matches any of these request paths:

```
/images/gallery.html
/search/index.html
```

However, it would not match any of these request paths:

```
/images/gallery2.html
/search/pages/index.html
/index.html
```

 **Note:**

Although Regex path patterns function in an agent deployment, system performance might decrease if they are used. Agents are unable to interpret Regex path patterns, so they must consult PingAccess for policy decisions for each resource with a Regex path pattern.

When one or more path patterns match a request, PingAccess uses the first matching pattern it identifies, so the order in which path patterns are evaluated is important. By default, PingAccess orders path patterns automatically so that the most specific patterns are matched first. However, if more explicit control is needed, or if you are using regular expressions, enable resource ordering to manually specify the order in which path patterns are evaluated.

For example, an application might have three resources, such as:

- /images/logo.png (**Basic**)
- /images/\* (**Basic**)
- /.+/[a-z]+\.\png (**Regex**)

A request to resource /images/logo.png is matched by all 3 path patterns, yet each resource can have different policy requirements. Resource ordering allows you to specify which of these path patterns is parsed first, further allowing you to control the policy that is applied to a particular request.

When you define the application resources in PingCentral, you are prompted to provide path pattern information. For more information, see [Path patterns reference](#) in the *PingAccess User Interface Reference Guide*.

## Rules and policies

Rules let you specify who can access your applications and resources, how and when they can do so, and what modifications can be made to the requested content. There are two different types of rules: access control rules and processing rules. Access control rules determine whether users can access a resource, and processing rules determine how requests are processed.

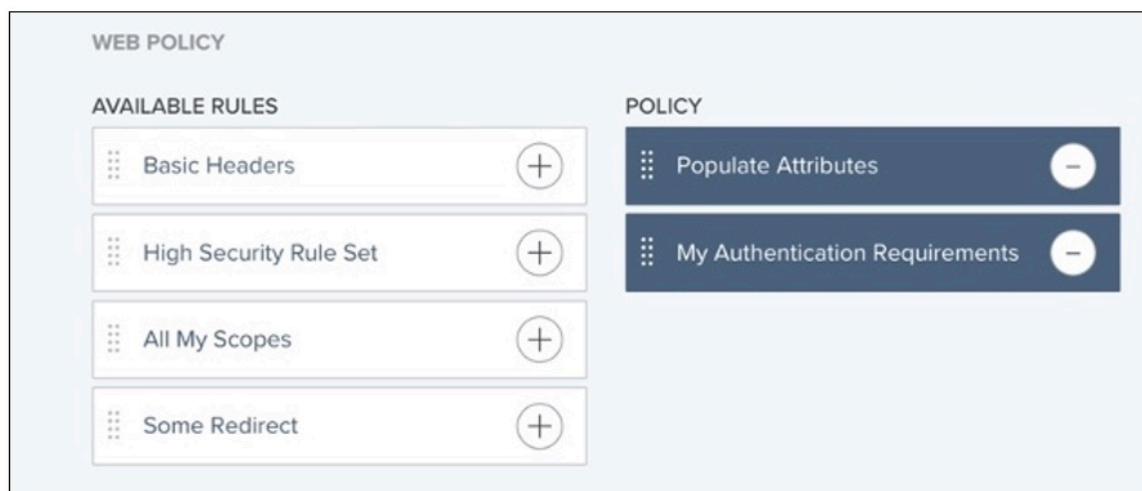
When you put rules together, they are called policies.

- **Application policies:** Rules applied to the application as a whole. You can define Web rules and API rules for Web + API applications.
- **Resource policies:** Rules applied to specific resources. Every application has at least one resource.

Rules can limit access based on information such as user attributes, client network range, time of day. You can combine rules to create rule sets, which are reusable and can be applied to many different resources and applications. Rule sets grant requests if any or all of the constituent rules are successful:

- **Any:** An any rule set is evaluated from top to bottom and stops at the first rule that has its criteria met. If all rules fail, the request is denied.
- **All:** An all rule set is evaluated from top to bottom and stops when it gets to the first rule that does not have its criteria met. If one rule fails, the request is denied.

Since rules within a rule set are evaluated from top to bottom, the order in which rules display in rule sets is important. In PingCentral, you can customize policies by dragging rules from the **Available Rules** list to the **Policy** list and changing the order to meet your needs.



For more information, see [Rules](#) in the *PingAccess User Interface Reference Guide*.

## Updating applications

Update applications at any time.

About this task

To keep your applications secure, rotate certificates and client secrets on a regular basis and apply updated security configurations to applications built from templates if new configuration templates become available. There is no need to recreate your applications in PingCentral to apply new templates. Replace the templates associated with your applications and promote them again.

Steps

1. Click the **Expand** icon associated with the application you want to update and click the **Pencil** icon.  
All of the editable information displays on one page.
2. To update the name, description, and owners, change the information in the **Name**, **Description**, and **Owners** fields. Click **Save**.
3. To change the template used to create the application, click **Change Template** and select a new template from the **Select Template** page. Click **Save and Close**.

**Note:**

You cannot apply a SAML template to an OAuth or OIDC application, nor apply an OAuth or OIDC template to a SAML application.

#### 4. Optional: To update OAuth or OIDC application information:

- In the **Client** section, change the scopes associated with OAuth or OIDC applications. Select or clear the appropriate check boxes and click **Save**.

**Note:**

You cannot edit scopes for applications created in version 1.2.0. However, you can update the template associated with an application to a template created in a later version, which will allow you to update scope information.

- In the **Promote** section, change the information in the **Redirect URI** fields for the appropriate environments and click **Save**.
- To change client secrets, return to the **Applications** page, promote the application again, and generate a new secret.

#### 5. Optional: To update SAML application information:

- In the **Attribute Mappings** section, add or remove attributes or update attribute values and click **Save**.
- In the **Promotions** section, upload a new `.xml` file that contains service provider metadata, such as the Entity ID, ACS URL, certificates, and attribute information, from another SAML application. Click **Choose File** or **Or Use URL** to provide the metadata file.

**Note:**

If metadata is used, the attribute mapping section might also need to be updated to include new attributes from the metadata file.

- Change the information in the **Entity ID** or **ACS URL** fields and click **Save**.
- Change the signing certificate. Select the appropriate certificate in the **Signing Certificate** list and click **Save**.
- Change the SP certificate. Click **SP Certificate** to upload a new certificate, or click **Remove** to remove it. Click **Save**.

#### 6. Optional: To update PingAccess application information:

- On the **Properties** tab, in the **Promote** section, update the **Virtual Hosts**, **Access Validation**, **Identity Mapping**, and **Site** or **Agent** names, as appropriate. Click **Save**.
- On the **Resources** tab, update information regarding each resource and click **Save**.
- On the **Policy** tab, click the **Pencil** icon associated with the policy you want to update. Make changes and click **Save**.

## Promote applications

---

You can promote all applications assigned to you to development environments for testing, and to production environments if your permissions allow.

See the following topics:

- [Promoting OAuth and OIDC applications](#)
- [Promoting SAML applications](#)
- [Using metadata to promote SAML applications](#)
- [Promoting PingAccess applications](#)

## Promoting OAuth and OIDC applications

You can promote the OAuth and OIDC applications assigned to you.

Before you begin

Prepare to provide the following:

- Redirect URIs, if required. These are the URIs your users will be directed to after they receive authorization to access your application. Redirect URIs are only required when promoting applications that use an authorization code and implicit grant types.

Redirect URIs are not limited to the number of characters they can contain, but cannot include wildcards or some special characters.

- If a client secret is required to authenticate your application, you can create a custom secret, generate a secret, or leave the field empty and PingCentral will generate a client secret for you.

Steps

1. To promote the application to an environment, click the expandable icon associated with the application, select the **Promote** tab, and click **Promote**.
2. From the **Available Environments** list, select the environment to which you want to promote the application.

**Note:** If you have the Application Owner role, you cannot promote applications to protected environments, which have shield icons associated with them.

3. If redirect URIs are required to promote the application, enter them in the **Redirect URIs** field.
4. If a client secret is required to authenticate your application, you can:
  - Create a custom secret and enter it in the **Client Secret** text box.
  - Generate a client secret by clicking the **Generate Secret** button.
  - Leave the **Client Secret** text box empty and PingCentral will automatically generate a client secret for you.

**Promote to Environment**

Promoting Time Tracking to the Development Environment. Please confirm the redirect URIs for this environment.

**REDIRECT URIS**

https://company.com ×

**CLIENT SECRET**

.....
✍



5. Click **Promote**.

PingCentral promotes your application to the designated environment in PingFederate. You will see the new promotion in the **History** section of the page.

6. To configure the SSO connection, provide the following information to your service provider:

- The client ID. Click **View Client Details** to access the **Promotion Details** window, which displays the client ID.
- The client secret and OIDC discovery endpoint are also available in this window.

**Promotion Details**

Staging - 2020-02-26 10:12:18

---

^ PROMOTION


PROMOTED: 2020-02-26 10:12:18

CURRENT OWNERS: Jennifer Armstrong

**BASIC**

OIDC DISCOVERY ENDPOINT: <https://sso.anycompany.co:9031/.well-known/openid-configuration>

CLIENT ID: a4992be3-30d5-4ca0-8376-5dc7f0582dc2

CLIENT SECRET: 

**ADVANCED**

GRANT TYPE: IMPLICIT

TOKEN AUTH METHOD: NONE

---

∨ SUMMARY

---

∨ CLIENT

---

∨ OIDC POLICY

---

∨ ACCESS TOKEN MANAGER

---

Revert Application

Close

## Promoting SAML applications

You can promote the SAML applications assigned to you.

Before you begin

Prepare to provide the following:

- Entity ID: used to uniquely identify the application and obtained from the service provider ACS URL, the application's URL to which SAML assertions from the identity provider will be sent after user authentication occurs.

- ACS URL: the application's URL to which SAML assertions from the identity provider will be sent after user authentication occurs.
- SP certificates: if the template you select is based on a PingFederate connection that requires a certificate.
- An assertion encryption certificate: required if encryption is enabled for the connection.

#### Steps

1. To promote the application to an environment, click the **Expand** icon associated with the application, select the **Promote** tab, and click **Promote**.
2. In the **Available Environments** list, select the environment to which you want to promote the application.

 **Note:**

If you have the Application Owner role, you cannot promote applications to protected environments, which have shield icons associated with them.

3. In the **Entity ID** and **ACS URL** fields, enter the appropriate information.

If you provided a metadata file when you added your application to PingCentral, the **Promote to Environment** window is prepopulated with the information from the other SAML application. You can modify this information as necessary.

4. In the **Signing Certificate** list, select the appropriate certificate:

- If the PingFederate environment contains signing certificates, those certificates display in the list.
- The signing certificate added to the environment when it was created or last updated displays as the **Environment Default** certificate.
- If signing certificates are not available in the PingFederate environment and an environment default certificate isn't available, or if an environment default certificate is available but expired, the **Automatically generate certificate** option displays in the list.

 **Note:**

If you used signing certificates that were automatically generated to promote applications in PingCentral 1.7 or earlier, and you want to promote those applications to the same environments, you need to locate the signing certificates. Search for a signing certificate with a subject DN that matches the name of the application and select it as the signing certificate.

5. Upload SP certificates, if required.

SP certificates are required for PingFederate SP connections when:

- Either of the single logout (SLO) options, **IdP-Initiated-SLO** or **SP-Initiated-SLO**, are selected as the SAML profile.
- Digital signatures are required, and the Signature Policy is set to the **Require authn requests to be signed when received via the POST or redirect bindings** option.
- Inbound backchannel authentication is configured. For more information, see the following topics in the *PingFederate Server Guide*:
  - [Configure digital signature settings](#)
  - [Configure signature verification settings \(SAML 2.0\)](#)

- If encryption is enabled for the connection, click in the **Assertion Encryption Certificate** field. Select an assertion encryption certificate used for a previous promotion in the list or provide a new one.

**Note:**

Only whole encryption is currently supported, so if a connection has attributes specified for encryption, the promotion will fail.

- Verify that the information displayed in the **Promote to Environment** window is correct and click **Promote**.  
PingCentral promotes your application to the designated environment in PingFederate. The new promotion shows in the **History** section of the page. If the signature verification certificate used during promotion is available in the PingFederate environment, that certificate is used. If not, a new certificate is created.
- To configure a single sign-on (SSO) connection, provide the application Entity ID and the SSO endpoint URL to your service provider.

To locate the SSO endpoint URL, click the **View Connections Detail** link associated with the promotion. The URL displays on the **Promotion Details** window.

The screenshot shows a 'Promotion Details' window with the following content:

- Header: Promotion Details (with a close button)
- Sub-header: Time Tracking - Staging -2021-05-20 17:38:41
- Section: PROMOTION (expanded)
  - PROMOTED: 2021-06-24 17:38:41
  - ACS URL: https://acme.com
  - SSO ENDPOINT URL: https://sso.anycompany.co:9031/idp/SSO.saml2
  - CERTIFICATES: Identity Provider
  - SAML METADATA: Download Service Provider Metadata
- Section: SUMMARY (collapsed)
- Section: CONNECTION (collapsed)
- Buttons: Revert Application and Close

### Using metadata to promote SAML applications

When SAML applications are promoted, the connection metadata is exported and stored as part of that application. This metadata is available to download as a `.xml` file, which you can use to promote similar SAML applications.

#### Steps

- On the **Applications** page, locate an application that has a configuration you want to replicate in a new SAML application and click the expandable icon associated with that application.

2. Go to the **Promote** tab and click the **View Connection Details** link.

The promotion information displays.

**Promotion Details**

Time Tracking-from-SAML-template -- Staging-Environment - 2020-02-25 15:25:18

^ PROMOTION

PROMOTED: 2020-02-25 15:25:18

CURRENT OWNERS: Jennifer Armstrong

ACS URL: <https://sso.anycompany.co:9031/idp/SSO.saml2>

SSO ENDPOINT URL: <https://sso.anycompany.co:9031/idp/SSO.saml2>

CERTIFICATES: [Identity Provider](#)  
[Service Provider](#)

SAML METADATA: [Download Service Provider Metadata](#)

∨ SUMMARY

∨ CONNECTION

Revert Application Close

3. Click **Download Service Provider Metadata** to download the metadata as a `.xml` file and click **Close**.

Note the location of this file to promote similar SAML applications.

4. Update applications with this service provider information, as appropriate.

For more information, see [Updating applications](#).

## Promoting PingAccess applications

Promote the PingAccess applications assigned to you.

Before you begin

The information required to promote PingAccess Web applications, API applications, and Web + API applications varies by type. Prepare to provide the following information:

Web applications	API applications	Web + API applications
Virtual host (required)	Virtual host (required)	Virtual host (required)
	Access validation method (required if an identity mapping is specified)	Access validation method (required)
Web session (optional)	Web session (optional)	Web session (required)

Web applications	API applications	Web + API applications
Identity mapping (optional)	Identity mapping (optional)	Identity mapping (optional)
Site or agent (required)	Site or agent (required)	Site or agent (required)

For details regarding each of these items, see [Information needed to promote PingAccess applications](#).

**Note:**

Customized authentication challenge responses, which support single-page applications, are available in PingAccess version 6.2+. Applications with this type of policy can be added to PingCentral, but cannot be promoted to another environment unless the authentication challenge policy also exists in the target environment.

### Steps

1. To promote the application to an environment, click the Expand icon associated with the application, select the **Promote** tab, and click **Promote**.
2. From the **Available Environments** list, select the environment to which you want to promote the application.

**Note:**

If you have the Application Owner role, you cannot promote applications to protected environments, which have shield icons associated with them.

3. On the **Configure Promotion** page, click in the **Virtual Hosts** field, and select the virtual hosts you want to add.

To remove a virtual host, click the **X** icon next to the virtual host name.

4. Complete the remaining fields, which vary, depending on the type of application you are promoting.

The following example shows the fields available to provide information for a Web + API application.

**PingCentral** MAIN SETTINGS

## Configure Promotion

Select the values specific to this application in the target environment.

Promoting Application Reorder Resources-TLyTJItDc to PF2-Host.

**VIRTUAL HOSTS**

virtualhostweb:9000 x

**ACCESS VALIDATION**

Token Provider v

**WEB SESSION**

XYZ Company web session v

**API IDENTITY MAPPING**

XYZ Company API mapping v

**WEB IDENTITY MAPPING**

XYZ Company Web mapping v

**SITE**

XYZ Company Site v

Cancel Next

**PROGRESS**

- 1 Configure Promotion  
Select the values specific to this application in the target environment.
- 2 Review Promotion  
Review application information before promoting it to the target environment.

5. Click **Next**.
6. On the **Review Promotion** page, review promotion information you added.  
Additional detail is available in the **Summary** and **Application** sections of the page.
7. Click **Promote and Close**.
8. To review details regarding the promotion, click the **View History Details** link associated with the promotion.

### Information needed to promote PingAccess applications

When you promote PingAccess applications to PingAccess environments, you provide virtual host, access validation, web session, and identity mapping information, as appropriate.

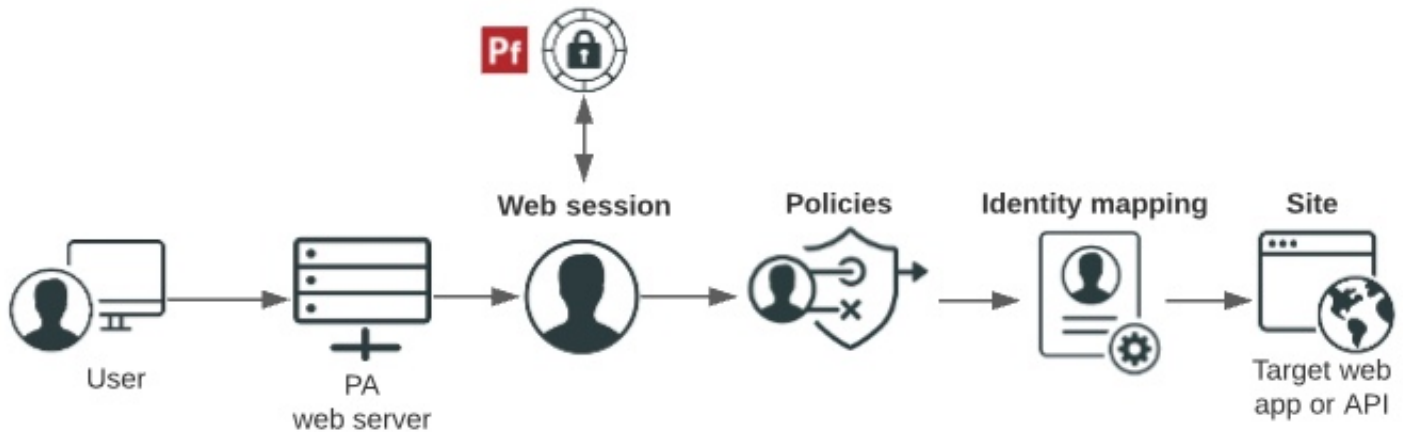
PingAccess can be deployed in one of two ways:

- **Gateway deployment:** In a gateway deployment, the destination is a site. Requests are routed to a PingAccess web server, which then forwards authorized requests to the target application or API on the site.
- **Agent deployment:** In an agent deployment, the destination is an agent. Requests are intercepted at the web server hosting the target application or API by the PingAccess agent plugin. The agent communicates with the PingAccess policy server to validate access before allowing the request to proceed to the target application or API.

The key difference between these deployments is where the initial request is directed. In a gateway deployment, the initial request is routed to a PingAccess web server, so the destination is a site. In an agent deployment, the initial request is routed to the web server that hosts the target application or API, so the destination is an agent. When you promote PingAccess applications, you are prompted to provide the name of the site or agent.

### Gateway deployment

The following diagram shows how users are authenticated, and how access policies and identity mappings are applied to requests to access applications or APIs with a gateway deployment.



1. Users enter a URL that consists of a unique virtual host and context root.
  - **Virtual host:** The public-facing host name and host port. For example, den.ping.com:8443.  
A wildcard (\*) can be used either to define either any host (\*:8443, for example) or any host within a domain (\*.ping.com, for example). If a request matches more than one virtual host, the most specific match is used.
  - **Context root:** The common root of all resources, specifies where in the URL path the application begins, and starts with a slash. In the example URL, den-ping.com:8443/mygreatapp/home, /mygreatapp/ is the context root.

PingCentral prompts you for the context root when you add the application, and for the virtual hosts when you promote it.

2. The PingAccess web server determines whether a PingAccess session cookie (Web) or an OAuth token (API) exists for the user. If it does not, a web session starts. Web sessions define the policy for web application session creation, lifetime, timeouts, and their scope.

**Note:** If you promote Web + API applications in PingCentral, you are required to select a Web session from a drop-down list. This information is not required to promote Web or API applications.

3. You can configure API and Web + API applications to use access token validators to locally verify signed and encrypted access tokens. If you are promoting an API or Web + API application in PingCentral, you can specify the access validation method, whether it be a token provider or a token validator, if appropriate.
4. Users are authenticated through the web session.
5. Policies are applied to the request. Policies are rules, or sets of rules, that are applied to application resources. PingAccess makes policy-based decisions to grant or deny access to the requested resource.

You can customize application and resource policies when you use templates to add applications to PingCentral.

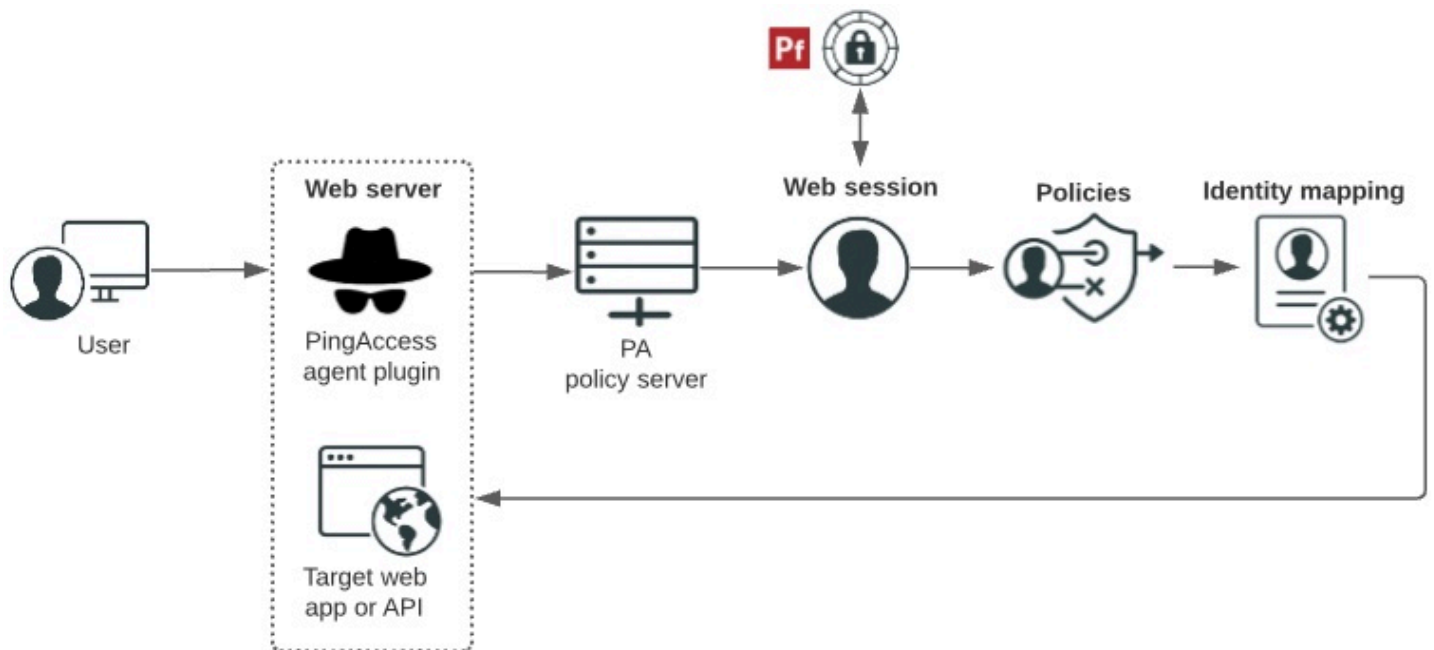
- Identity mapping is applied to the request if the target application expects user information to be included to further authenticate the user.

PingCentral prompts you for the name of the Web and/or API Identity mapping, as appropriate, when you promote it.

- The user accesses the target web application or API.

### Agent deployment

The following diagram shows hows users are authenticated, and how access policies and identity mappings are applied to requests to access applications or APIs with an agent deployment.



- Users enter a URL to request access to a resource and their requests.
- The PingAccess agent plugin intercepts the request. Agents use names and shared secrets to authenticate with the policy server. These names and secrets do not need to be unique. Any number of agents can have the same name and secret, and they are all treated equally by the policy server.
- If the agent does not have previously cached policies for the resource, it contacts the PingAccess policy server for instructions.
- The PingAccess policy server receives claims from the token provider, which provides instructions for handling the request.
- Policies are applied to the request and PingAccess makes policy-based decisions to grant or deny access to the requested resource.
- Identity mapping is applied to the request if the target application expects user information to be included to further authenticate the user.
- The user accesses the target web application or API.

## Reverting applications to previously promoted versions

Revert applications to previously promoted versions. The reverted versions of the application will not exist outside of PingCentral until you promote them again, at which point they will also be available in PingFederate or PingAccess.

### About this task

You cannot revert applications created in previous versions of PingCentral.



## Steps

1. On the **Applications** page, locate the application you want to revert to a previously promoted version.
2. Click the expandable icon associated with the application, select the **Promote** tab, and then click **View Details**.
3. In the **Promotion Details** window, click **Revert Application**.  
A message displays asking you if you are sure you want to revert this application.
4. Click **Revert**.  
The reverted version of the application displays in your applications list.

 **Note:**

Reverting OAuth and OIDC applications to previously promoted versions overrides client secrets, so you will need to create or generate new secrets before you promote them again. Reverting SAML applications to previously promoted versions overrides the Entity IDs, ACS URLs, and certificates, so you might need to update this information before you promote them again.