Proficy Authentication 2023

User Guide

We want to hear from you. If you have any comments, questions, or suggestions about our documentation, send them to the following email address:

doc@ge.com

Proficy Authentication

Contents

Chapter 1. Proficy Authentication

About Proficy Authentication

Proficy Authentication (UAA) provides identity-based security for Proficy based applications and APIs. It supports open standards for authentication and authorization, including Oauth2. You can configure Proficy Authentication from Configuration Hub.

When a user is created or deleted in a product that uses Proficy Authentication, the associated user account is created or deleted in the Proficy Authentication instance, respectively.

Several Proficy products use Proficy Authentication, including Historian, Plant Applications, and Operations Hub. To use Proficy Authentication, you must install one of these products. Each product can install an independent instance of Proficy Authentication, or it can reuse an existing instance of Proficy Authentication which was previously installed by another Proficy product. When more than one product uses the same instance of Proficy Authentication, this is called a shared or common Proficy Authentication.

Shared Proficy Authentication (UAA) means that if you have a Proficy product installed that uses Proficy Authentication, additional Proficy products installed after that initial product can also share that existing, already configured Proficy Authentication architecture.

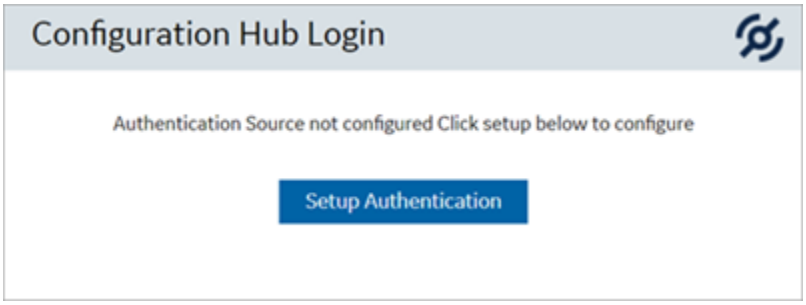
Proficy Authentication can additionally be configured to use an external identity provider. This includes identity providers which use Lightweight Directory Access Protocol (LDAP) or Security Assertion Markup Language (SAML). When you integrate Proficy Authentication with an external identity provider, you can provide the users and groups from that identity provider with access to Proficy products and their features.

Set up Proficy Authentication

This topic describes how to set up Proficy Authentication in Configuration Hub.

The following steps describe how to set up Proficy Authentication in Configuration Hub. Setting up authentication provides access to all the products (Historian, iFIX) registered with Configuration Hub. You use the same Proficy Authentication server to authenticate.

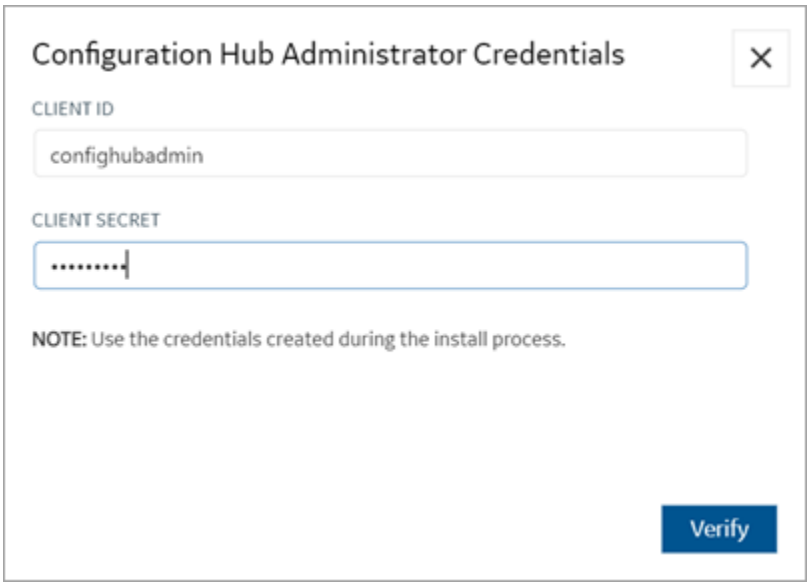
1. Double-click  desktop icon to launch the Configuration Hub application.
2. Select **Setup Authentication**.



The **Configuration Hub Administrator Credentials** screen appears.

3. Enter the details for logging in to the Configuration Hub application.

Field	Description
Client ID	The client ID provided during installing Configuration Hub. Example: `confighubadmin`
Client Secret	The client secret provided during installing Configuration Hub.



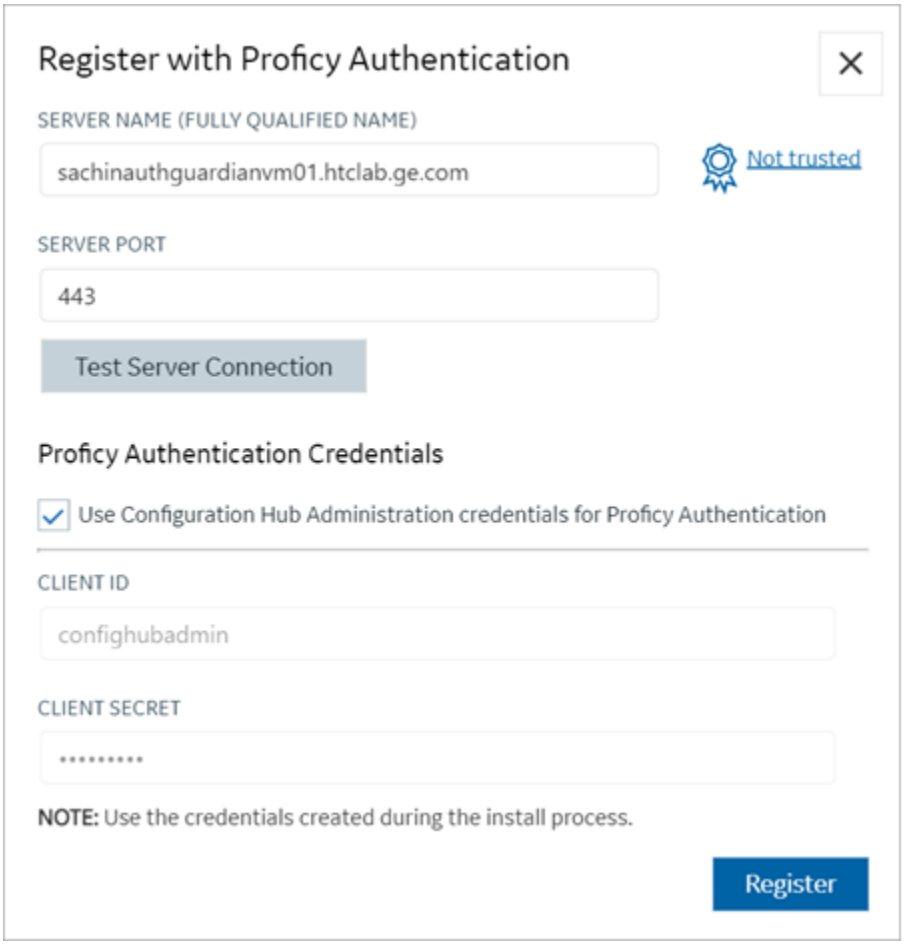
4. Select **Verify**.

   If the credentials are correct, the **Register with Proficy Authentication** screen appears.

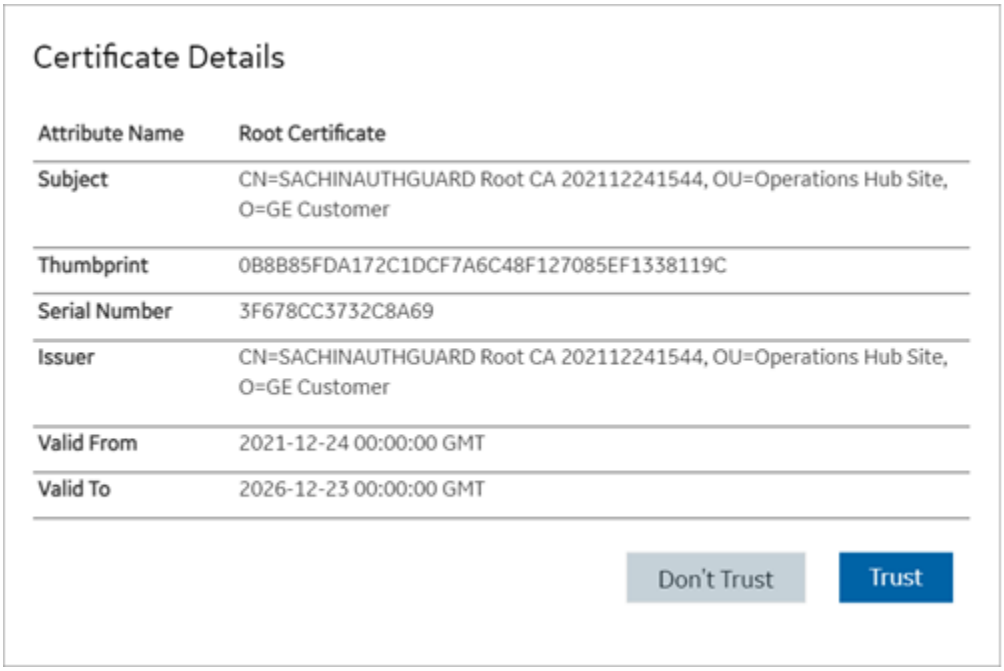
5. Provide these details to configure the Proficy Authentication application.

   These fields are populated automatically if you opted for installing Proficy Authentication along with Configuration Hub. You have the option to edit and update the details.

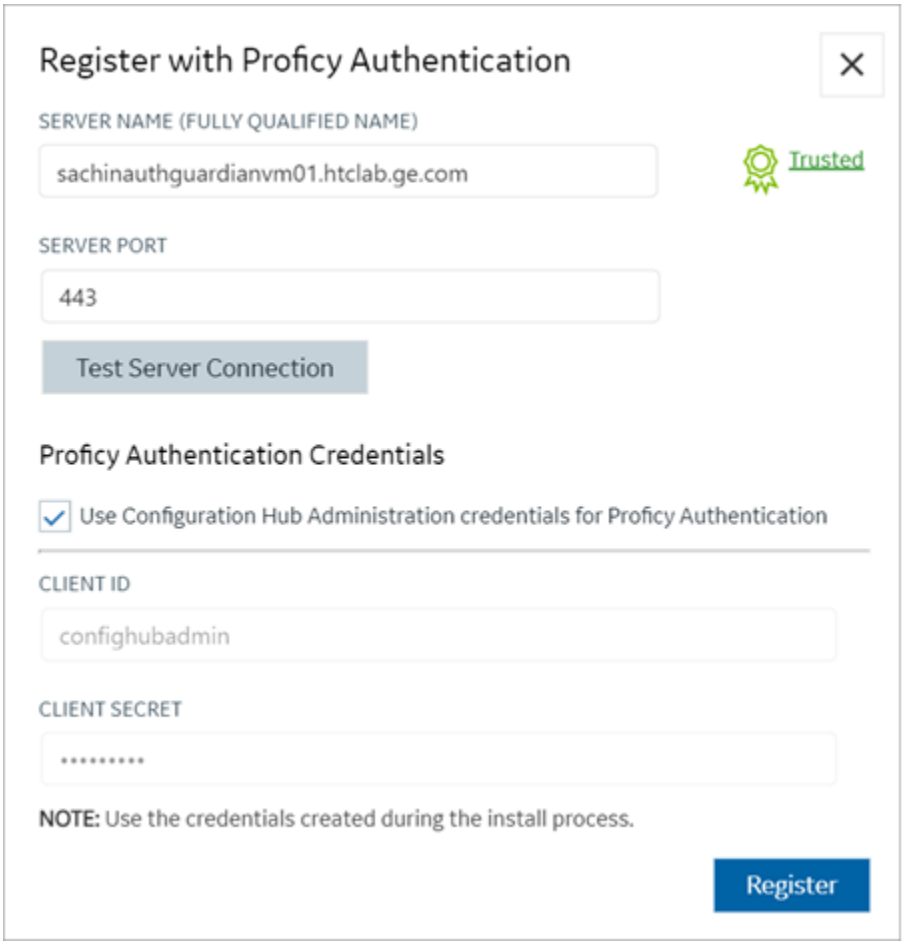
Field	Description
Server Name (Fully Qualified Name)	The host name of the machine where Proficy Authentication is installed. Enter a fully qualified domain name. For example, `desktop-sahfg5f.logon.ds.ge.com` Refer to step 6 to establish a trust with this server connection.
Server Port	The port number to communicate with the host machine. The default port where UAA is installed is `443`. The server connection is automatically tested on entering the port. You can also select **Test** to test the connection.
Use Configuration Hub Administration credentials for Proficy Authentication	Select this check box to populate the same login credentails you entered for Configuration Hub Admin account. If you want to use unique login credentials for Proficy Authentication, clear the check box and enter **CLIENT ID** and **CLIENT SECRET**.
Proficy Authentication Client ID	The administrator client identifier that has permission (authority) to log in to Proficy Authentication.
Proficy Authentication Client Secret	The administrator client secret to log in to Proficy Authentication.



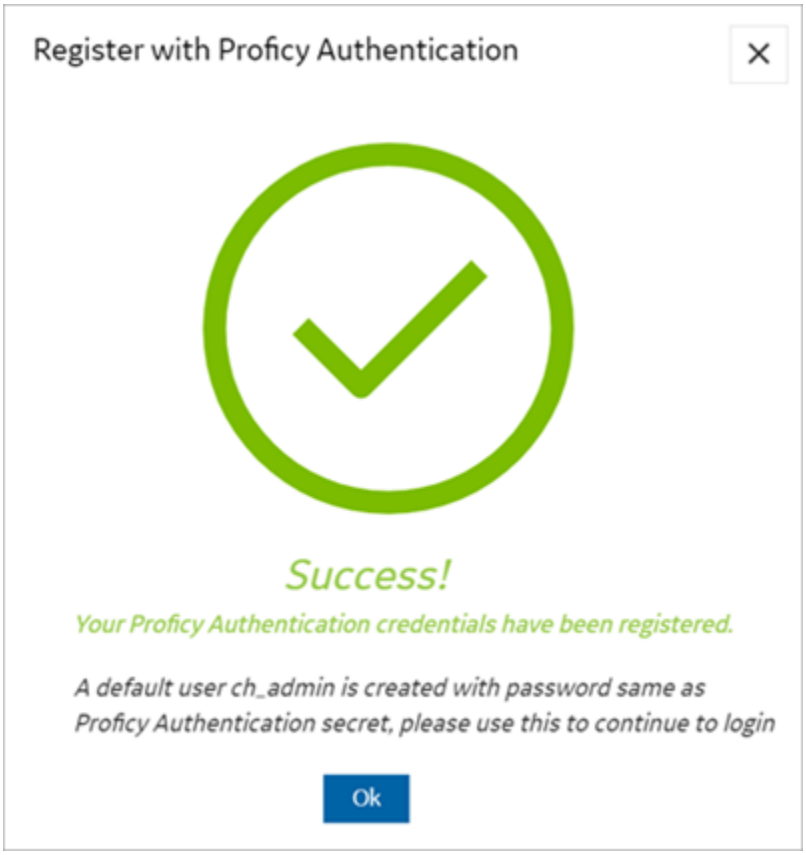
6. Select **Not trusted** to establish a trust connection between Configuration Hub and Proficy Authentication.
   The **Certificate Details** screen appears.



7. Select **Trust**.
   The trusted certificate(s) are added to the windows store on the machine where Configuration Hub is installed.



8. Select **Register**.



9. Select **Ok**.
   The **Configuration Hub Login** screen appears.

Configuration Hub is set up as a client for Proficy Authentication. The following default user is created to log in to the Configuration Hub application.

User ID	Password
`ch_admin`	The client secret you entered for Proficy Authentication.

Log in to Configuration Hub and perform operations related to Proficy Authentication.

Application Overview

Proficy Authentication provides identity-based security for Proficy based applications and APIs.

You can perform the following tasks in Proficy Authentication:

- Configure UAA/LDAP/SAML identity providers
- Create new user accounts
- Create new group accounts and add users/other groups as members
- Perform UAA/LDAP/SAML group mapping

Displaying Data Columns

You can show or hide columns within the Proficy Authentication application.

1. Select  for the respective data. The **Column Chooser** dialog appears with a list of available columns.
2. Select the check box for the column you want to show. To hide a column, clear its check box.
3. Close the dialog to apply the changes.

Sorting Data

The sorting option appears when you select a data column.

- Select  to sort data in an ascending order.
- Select  to sort data in a descending order.

Filtering Data

The filtering option appears next to each data column.

1. Select for the data you want to filter. A screen appears with a list of existing data in that column.
2. Select the check box for the data you want to filter. To undo filtering, you can **Select All**.
3. Select **OK** to apply.

Searching Data

Use the search option to seacrh for existing accounts in Proficy Authentication. You can also filter account details using search keywords.

Manage Identity Providers

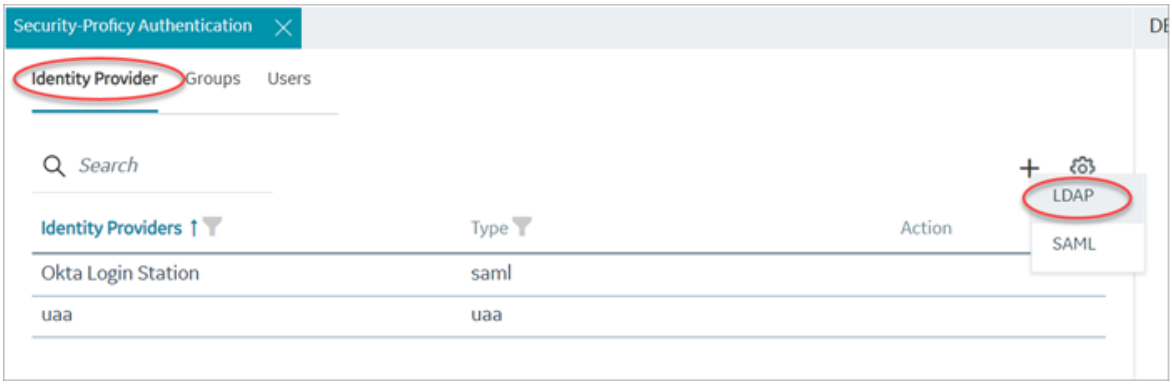
Add LDAP Identity Provider

This topic describes how to add a LDAP account in Proficy Authentication.

Log in to Configuration Hub with user/client having write access for admin and clients.

You can add multiple LDAP connections.

1. Go to **Proficy Authentication > Security > Identity Provider**.
2. Select + and then select **LDAP**.

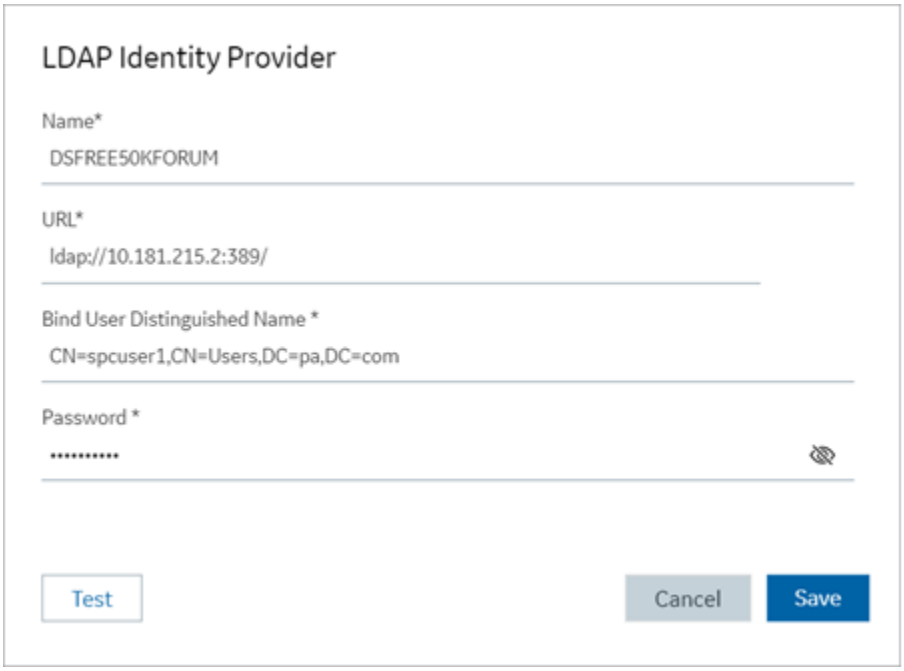


   The **LDAP Identity Provider** screen appears.

3. Enter the following details:

Field	Description
Name	A unique name to help identify your LDAP connection.
URL	The URL of the LDAP server. The trailing slash (/) must be included at the end of the URL. You can use LDAP with or without secure authentication in the following format: ◦ Insecure port: `ldap://100.100.100.2:389/` ◦ Secure port: `ldaps://100.100.100.2:636/` You can also use a fully qualified domain name instead of an IP address.

Field	Description
	For a secure port, provide user credentials.
Bind User Distinguished Name	Distinguished LDAP user name. Describes the part of the hierarchy the user belongs to on the active directory network. CN=Common Name. DC=Domain Component. OU= Organization Unit Name. CN and DC are typically required, while OU is optional. Example: `CN=John Smith,OU=Factory,DC=Company,DC=COM`
Password	The password to log in to the LDAP server if you choose secure authentication.
Test	Tests the connection to the LDAP server. If the URL and login details are correct, you will receive a test successful message.
Skip SSL Verification	This option appears only when you choose a secure port for LDAP. Select this check box if you want to skip establishing a secure connection between client and server for exchanging LDAP data. Clear the check box to allow SSL verification. Refer to step 4.

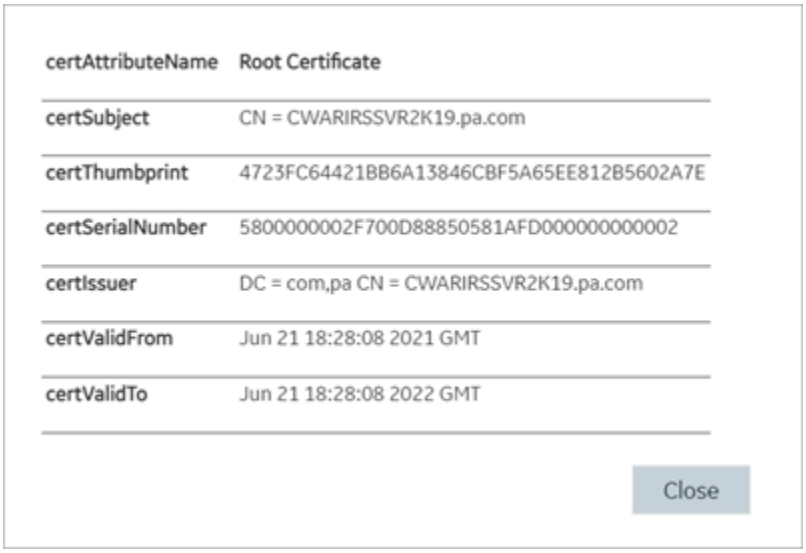


4. If you choose to secure LDAP, select for SSL verification.
   A message appears when the security certificate is trusted and added to the store.

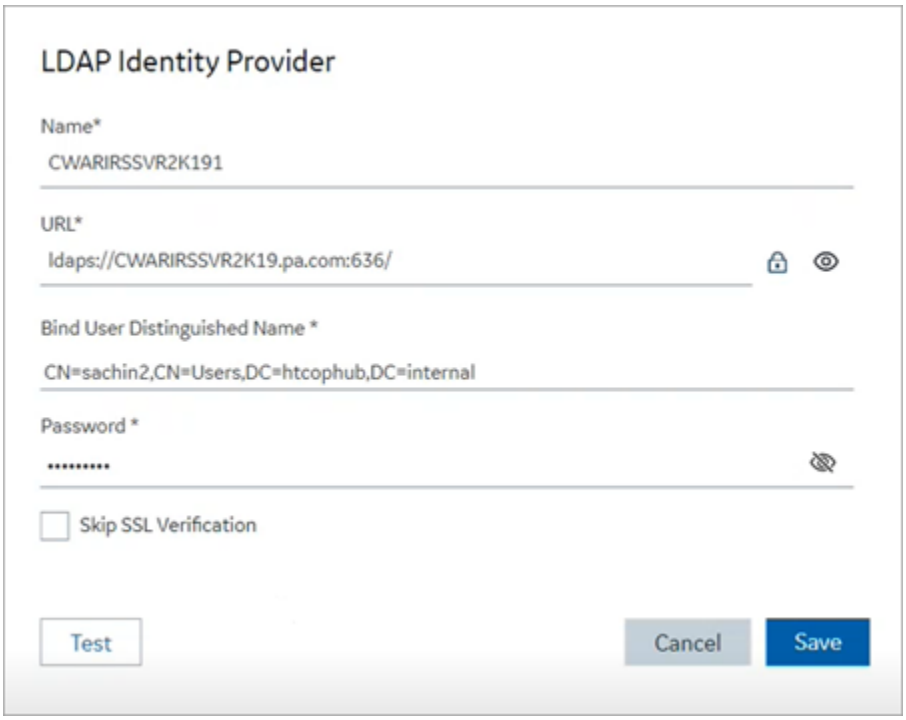
   In case the certificate is not added automatically, the following message appears.

   Select **Browse** to navigate and choose the server certificate from your local system.

5. **Optional:** Select next to the lock icon to view the certificate.



6. Select **Save**.



The LDAP identity provider is created.

Enable SAML

This topic describes how to configure SAML identity providers for Proficy Authentication.

You should enable SAML prior to adding SAML IDP accounts *(on page 26)* in Proficy Authentication.
To enable SAML, you will need to download the Proficy Authentication service provider's metadata file.

1. Visit `https://enter FQDN of the machine where Proficy Authentication is installed/uaa/saml/metadata` to download the `saml-sp.xml` file.
2. To configure any SAML identity provider, gather information from the downloaded `saml-sp.xml` file.
3. Generate a metadata XML file from the configured identity providers, and use the file to add a SAML IDP account *(on page 26)* in Proficy Authentication.

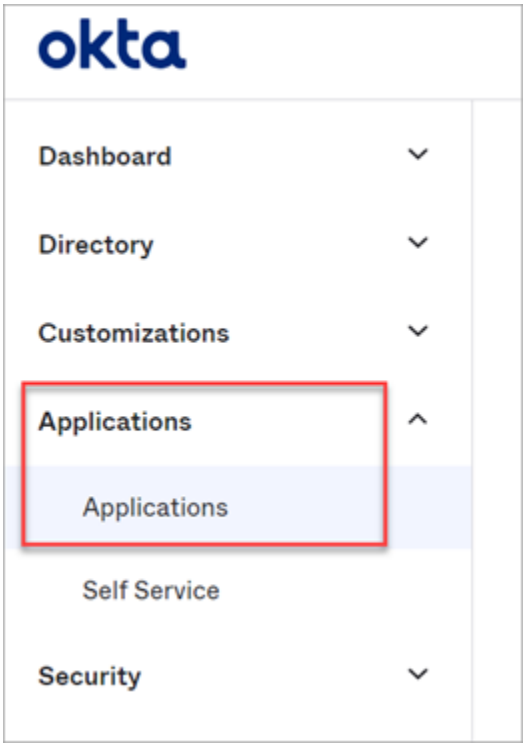
Refer to the following examples on how to set up SAML identity providers for Proficy Authentication:

- Configure Okta as SAML IDP *(on page 16)*
- Configure Azure AD as SAML IDP *(on page 22)*

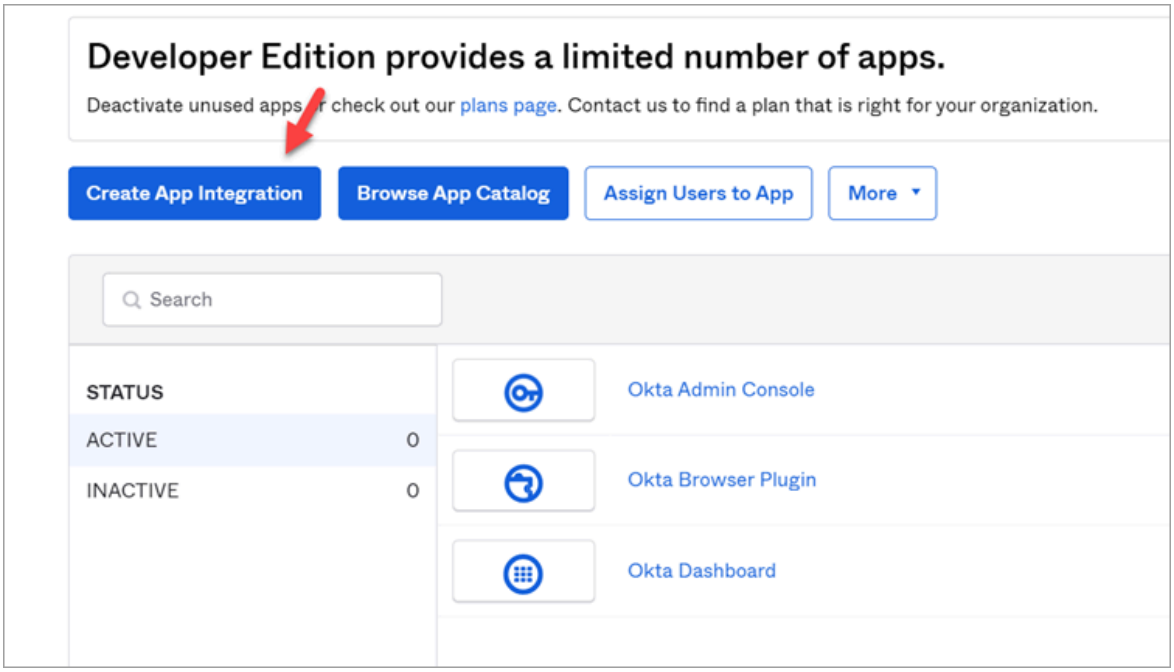
Configure Okta as SAML IDP

This topic describes SAML configuration with Okta.

1. Create an account in Okta.
    a. Visit https://developer.okta.com/.
    b. Sign up for an Okta account using your email address.
2. Log in to your newly created Okta account.
3. Navigate to **Applications > Applications**.

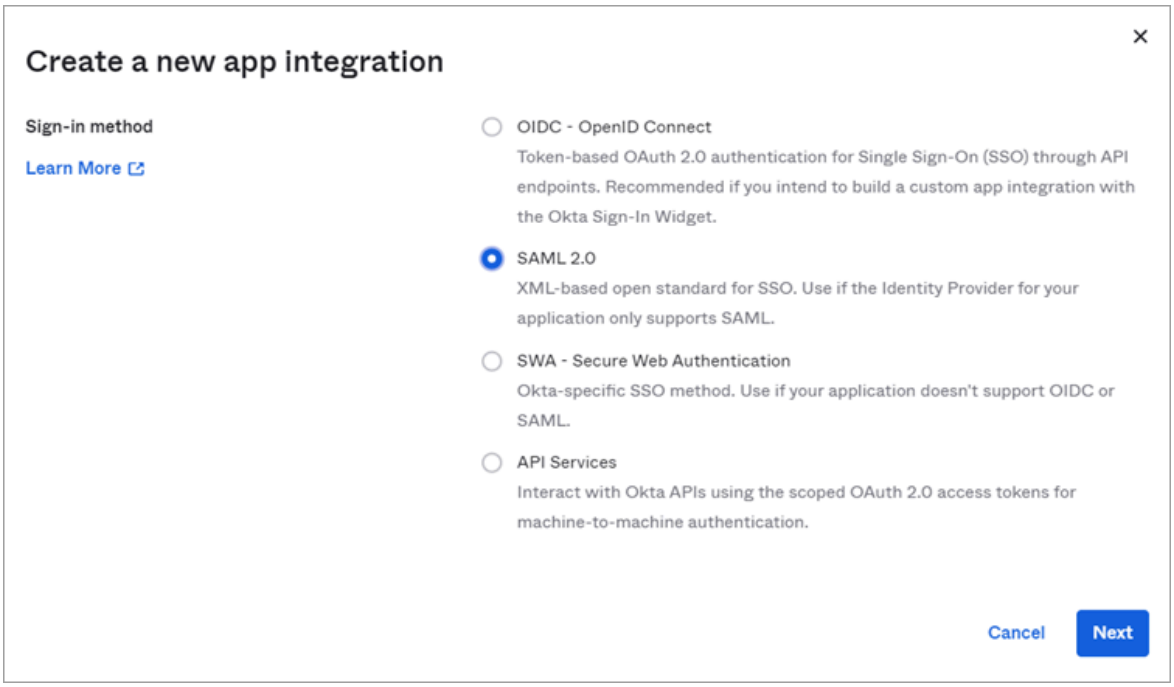


4. Select **Create App Integration**.



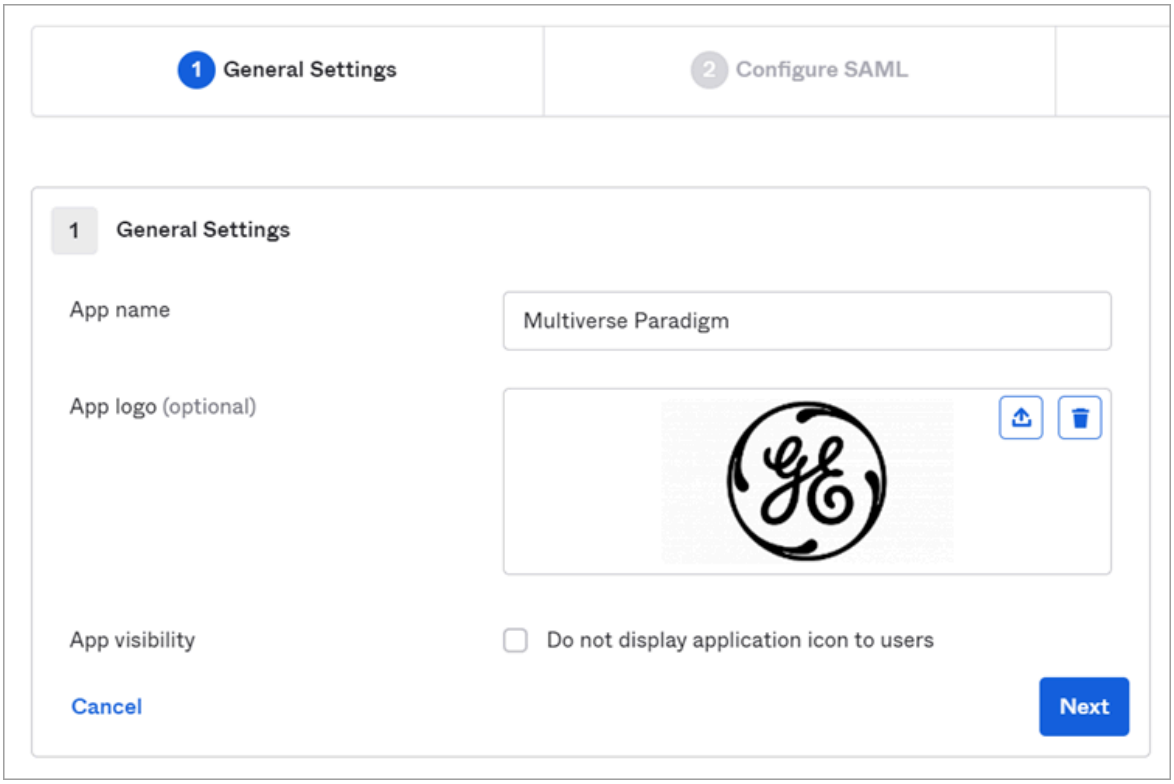
The **Create a new app Integration** screen appears.

5. Select **SAML 2.0**, then select **Next**.

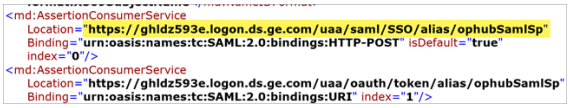


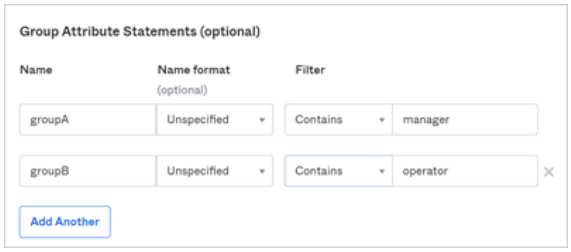
The **Create SAML Integration** screen appears.

6. Under **General Settings**, provide a name and logo for your application, then select **Next**.



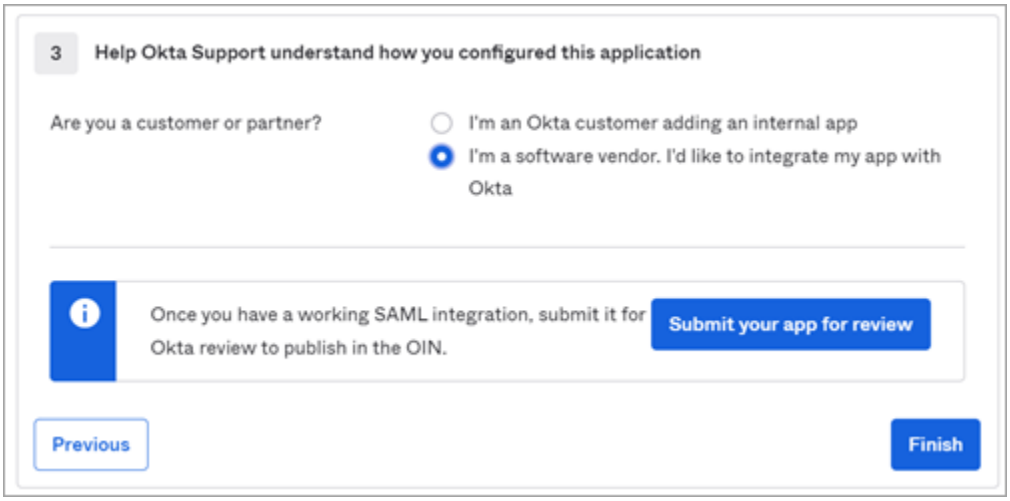
7. Under **Configure SAML**, fill out these details:

Single sign on URL	Use the dowloaded Proficy Authentication metadata file *(on page 15)* `saml-sp.xml` to get the URL for this field. It should look something like this: 
Audience URI (SP Entity ID)	Refer to `saml-sp.xml` to get the logout URL. It should look something like this: 
Enable Single Logout	a. Select **Show Advanced Settings**. b. Select the check box for **Allow application to initiate Single Logout**.

	c. Enter **Single Logout URL**. Refer to `saml-sp.xml` to get the logout URL. It should look something like this: 
Attribute Statements (optional)	Add user attribute statements such as email, first name, and last name as shown here: 
Group Attribute Statements (optional)	Add group attribute statements such as groupA and groupB as shown here: 

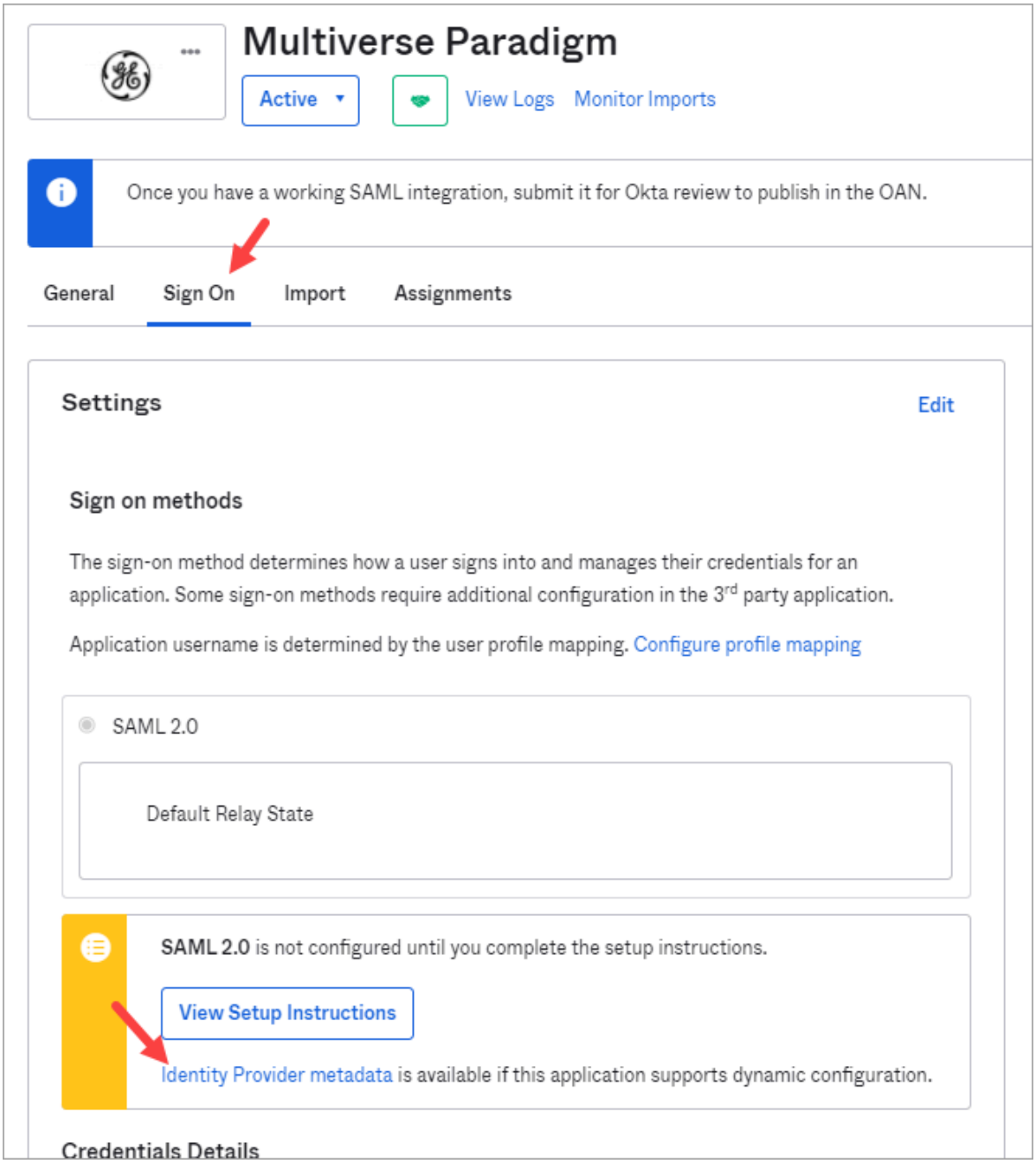
Note:
The setting option mentioned in this topic is the minimum requirement for setting up the SAML identity provider. Refer to the Okta documentation for information on using additional settings.

8. Select **Next**.
9. Provide your feedback and select **Finish**.



Your application is created.

10. Under **Sign On**, select **Identity Provider metadata**.



The metadata opens in a new tab.

11. Save the metadata as an .xml file.
    Use the metadata xml file to configure a SAML identity provider *(on page 26)* in Proficy Authentication.
12. Under **Assignments**, you can assign the app to groups and individual users.
    If there are no users/groups, navigate to **Directory > People** to create and activate new users/groups in Okta.

Configure Azure AD as SAML IDP

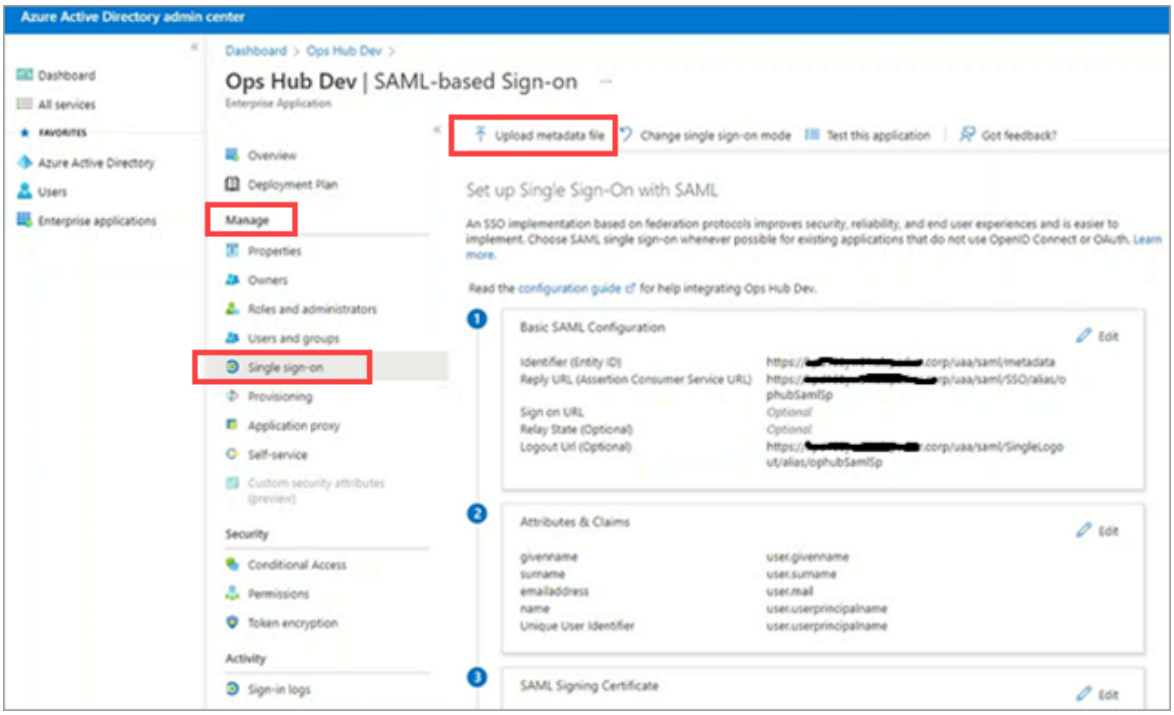
This topic describes SAML configuration with Azure AD (Active Directory).

1. Visit https://azure.microsoft.com/en-us/free/ and create an account.
2. Add an enterprise application. For more information, refer to Microsoft Azure documentation. `Ops Hub Dev` is the example enterprise application used in the procedural steps (refer to the figure in step 2).
3. Create at least one user and group.

The following steps include:

- Creating a SAML app in Azure (steps 1-5).
- Configuring Azure metadata xml in Proficy Authentication (steps 6-7).

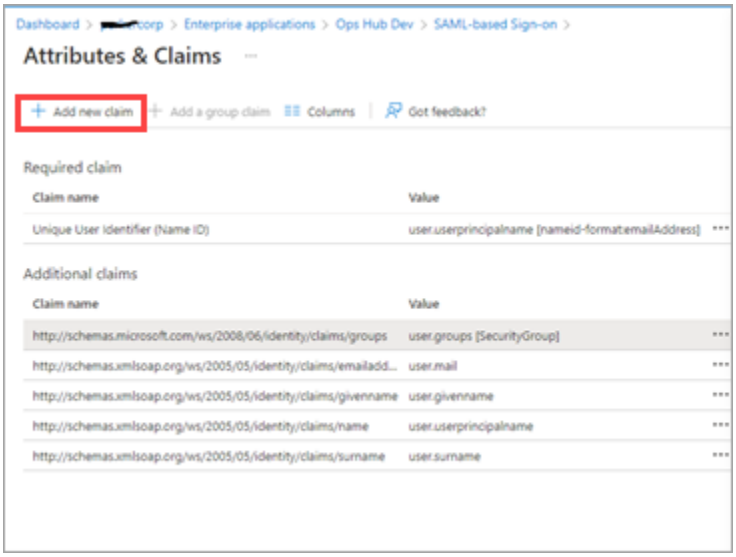
1. Download Proficy Authentication `saml-sp.xml` metadata file. Refer to Enable SAML *(on page 15)* on how to download the file.
2. Sign in to the Azure portal, and upload `saml-sp.xml`.
    a. From left menu, select **Manage > Single sign-on**.
    b. Select **Upload metadata file**.



3. Perform user and group attribute mapping in Azure.

a. Under the **User Attributes & Claims** section, select **Edit** and add claims.

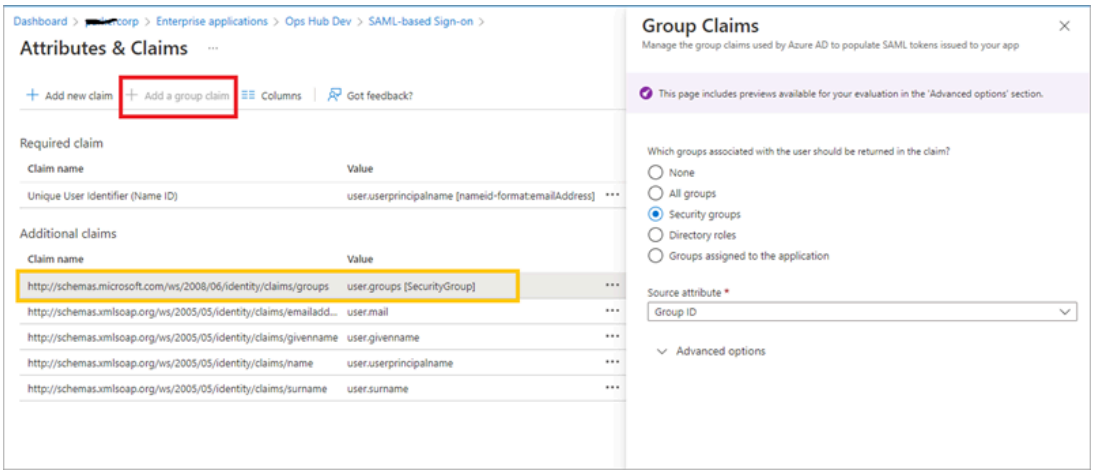
b. Select **Add new claim** and save entered details to set up claims.



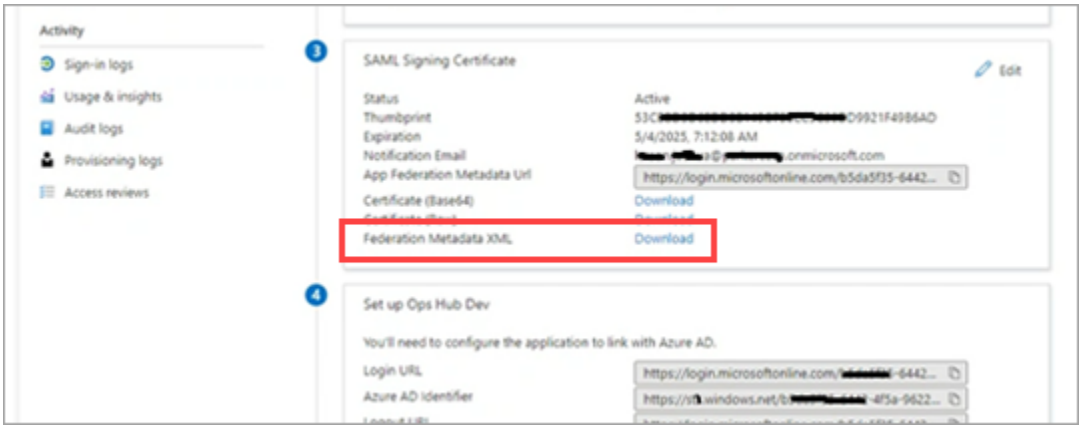
Note:

Make a note of the claim name value (for example `user.groups`). You need to provide this value in the **Attribute Name** field when adding a SAML identity provider in step 6a *(on page 25)*.

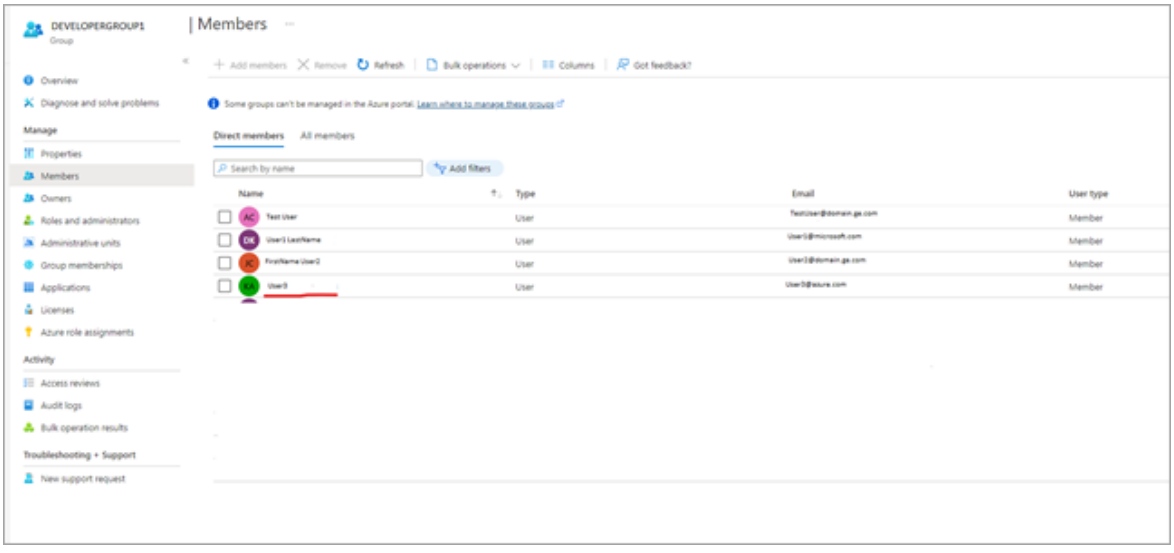
c. Select **Add a group claim** and set up group claims.



4. Under the **SAML Signing Certificate** section, download the **Federation Metadata XML** file.



5. Perform user group mapping in Azure.



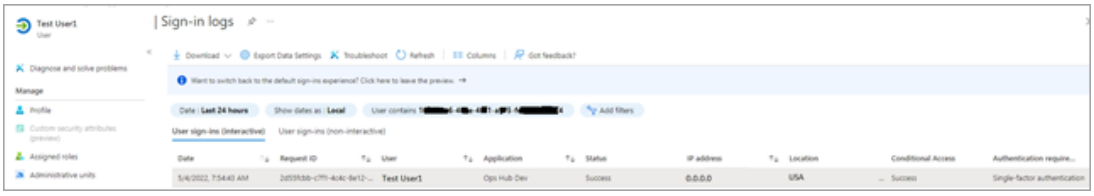
6. Log in to Proficy Authentication and do the following:

    a. Upload the **Federation Metadata XML** file downloaded from the Azure portal in step 4 *(on page 24)*.
    For step-by-step instructions, refer to Add SAML Identity Provider *(on page 26)*.

    b. Add and map SAML groups.
    For step-by-step instructions, refer to Map Groups *(on page 39)*.

7. To test SAML authentication, visit Operations Hub login page, and select **Sign In With Azure**.

    - You should login successfully. In Azure portal, you can access the logs to verify successful logins:

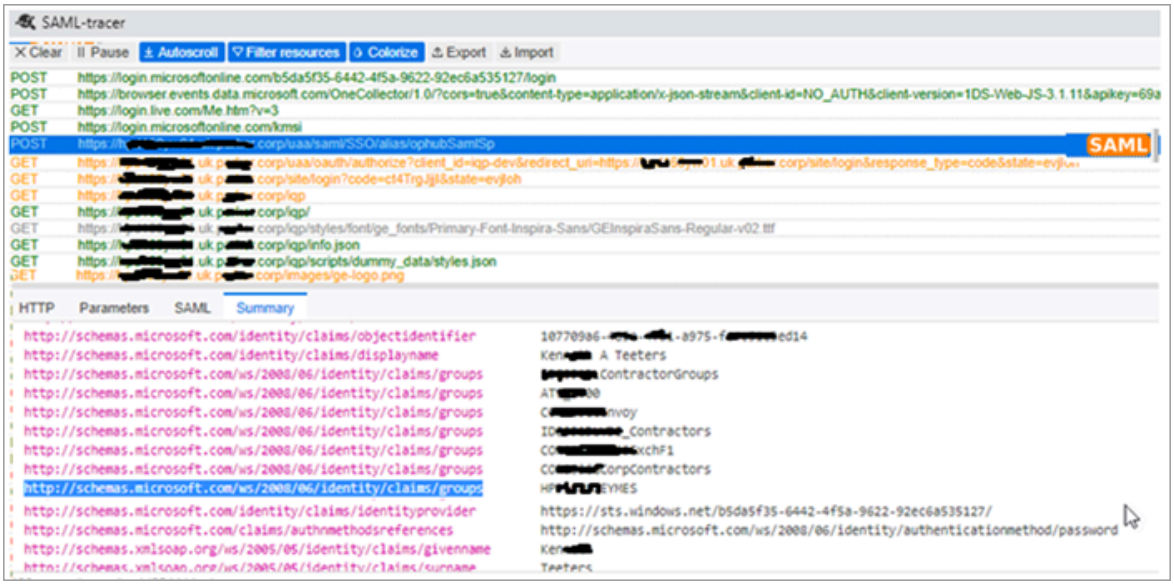


    - If login access is denied, then verify the group attribute name and group name from SAML Azure (see troubleshooting below). Clear the cache and login again.

Troubleshooting: For troubleshooting, add SAML-tracer extension to Chrome.

1. Open SAML-tracer from your browser extensions.
2. Log in to Operations Hub to reproduce the SSO login issue.
3. In SAML-tracer, look for `POST` messages, and select the **Summary** tab.

In the following screenshot, incorrect SAML group attribute names were detected, and replaced with the correct ones to fix the login issue.



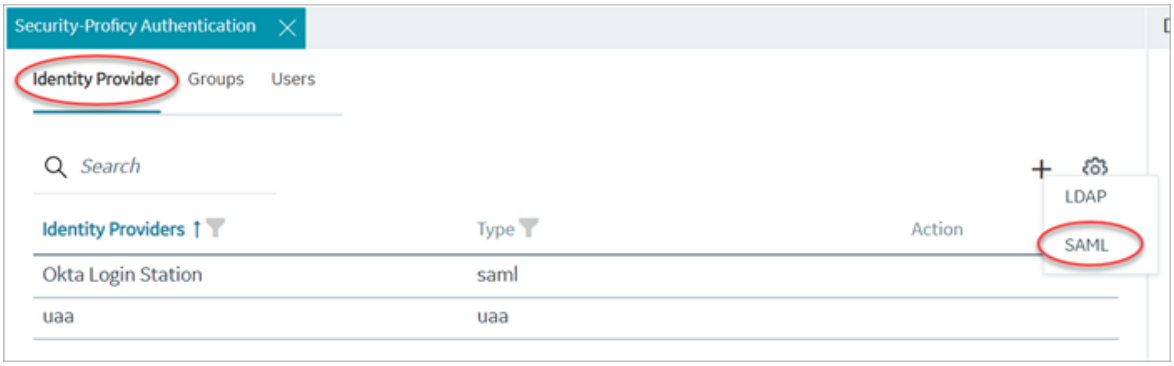
Add SAML Identity Provider

This topic describes how to add multiple SAML accounts in Proficy Authentication.

Enable a SAML identity provider *(on page 15)*. For example, Okta or Azure AD or any other IDP.

You can add multiple SAML connections.

1. Log in to Configuration Hub as an administrator.
2. Go to **Proficy Authentication > Security > Identity Provider**.
3. Select +, then select **SAML**.

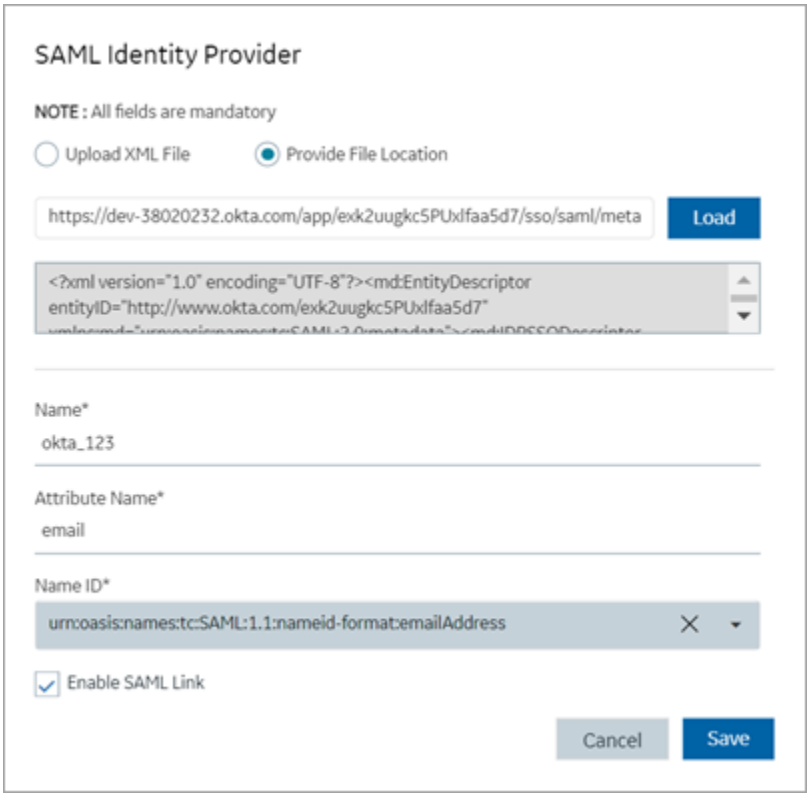


The **SAML Identity Provider** screen appears.

4. Enter the following details:

Note:
The XML file contains the metadata to interact with SAML enabled identity providers (Azure, ADFS, or Okta). Refer to Configure Okta as SAML IDP *(on page 16)*.

Field	Description
Upload XML File	Choose this option if you want to upload an XML document. Select **Upload XML File** to browse and locate the XML document from your local system. The uploaded data appears in a text box, and is read-only.
Provide File Location	Choose this option if you want to provide an external URL to the XML document. Enter the URL in the text field, and select **Load**. The data from the URL appears in a text box, and is read-only.
Name	Name of the SAML identity provider. You can provide any name. For example, `okta_123` or `demo_mach_azure`.
Attribute Name	The attribute that contains the group membership information about a user in a SAML assertion.
Name ID	SAML Name identifier and associated fields that you want to use in a link test.
Enable SAML Link	Select the check box.



5. Select **Save**.

The SAML identity provider is created.

Enable Multi-Factor Authentication

This topic describes how to enable multi-factor authentication for users.

Install the Google Authenticator app on your mobile device.

Only administrators can enable multi-factor authentication (MFA) for users.

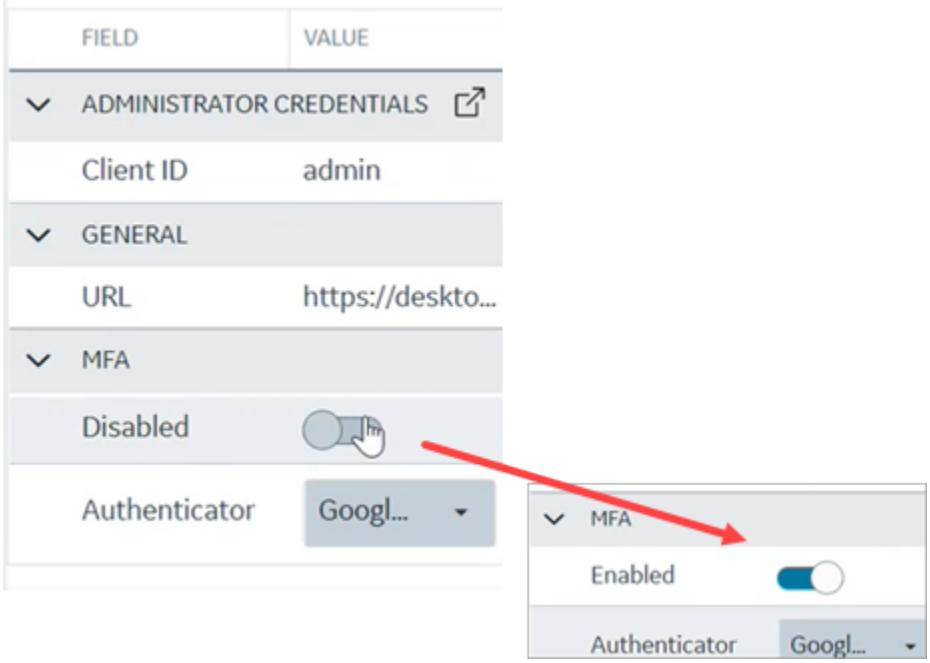
> **Note:**
> Enabling MFA also enables two-factor authentication for UAA and LDAP users as both the identity providers have a common login entry point.

1. Log in to Configuration Hub as an administrator.
2. Go to **Proficy Authentication > Security > Identity Provider**.
   The existing list of identity providers appear.
3. Select the `UAA` record for which you want to enable the multi-factor authentication.

The option to enable MFA appears on the **DETAILS** panel under the **MFA** section.

4. Enable the toggle switch for MFA.

   By default, MFA is disabled.



   The multi-factor authentication for `UAA` is enabled.

5. Select **Authenticator**.

   Currently, Google authenticator is the only available authenticator.

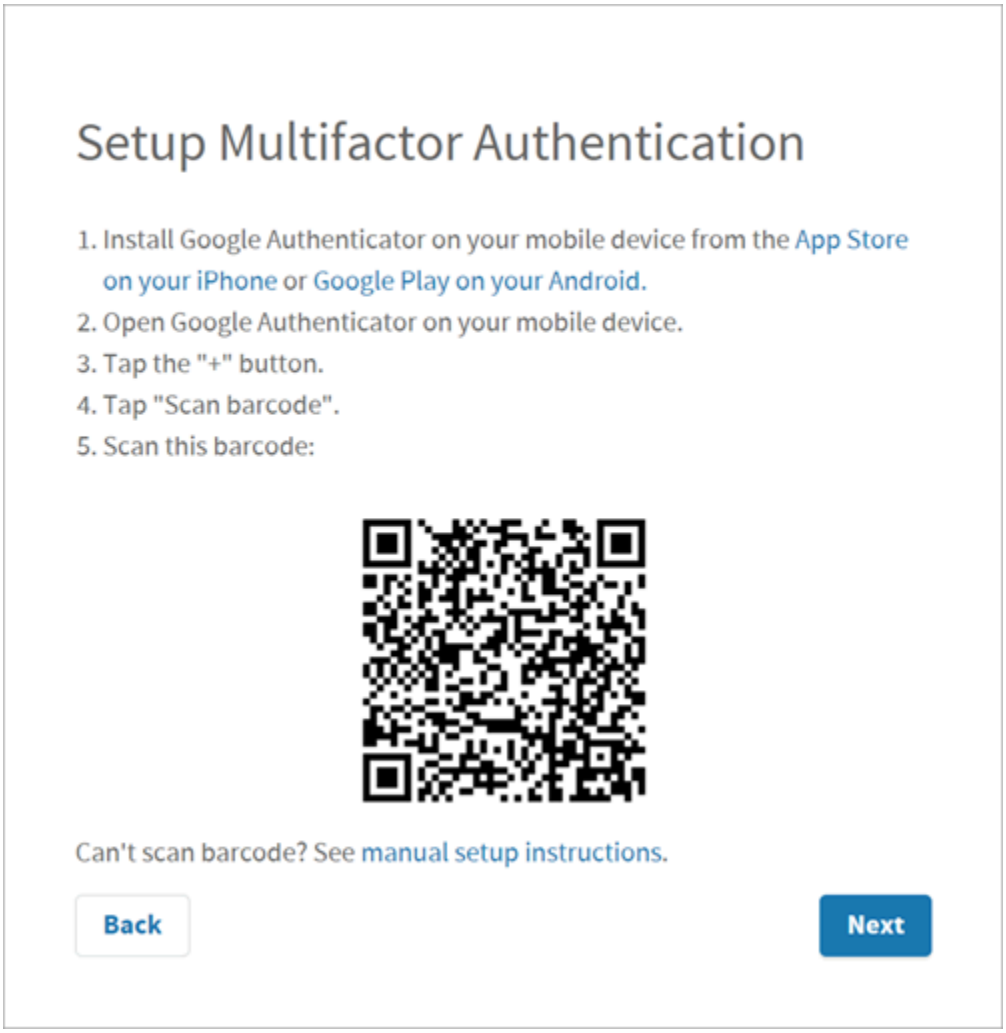
6. Restart the `GE Proficy Authentication Tomcat Web Server` service.

7. Activate multi-factor authentication for user logins.

   You need to perform the following steps only for the first time for every user login.

   a. Log in to Configuration Hub with UAA user credentials.

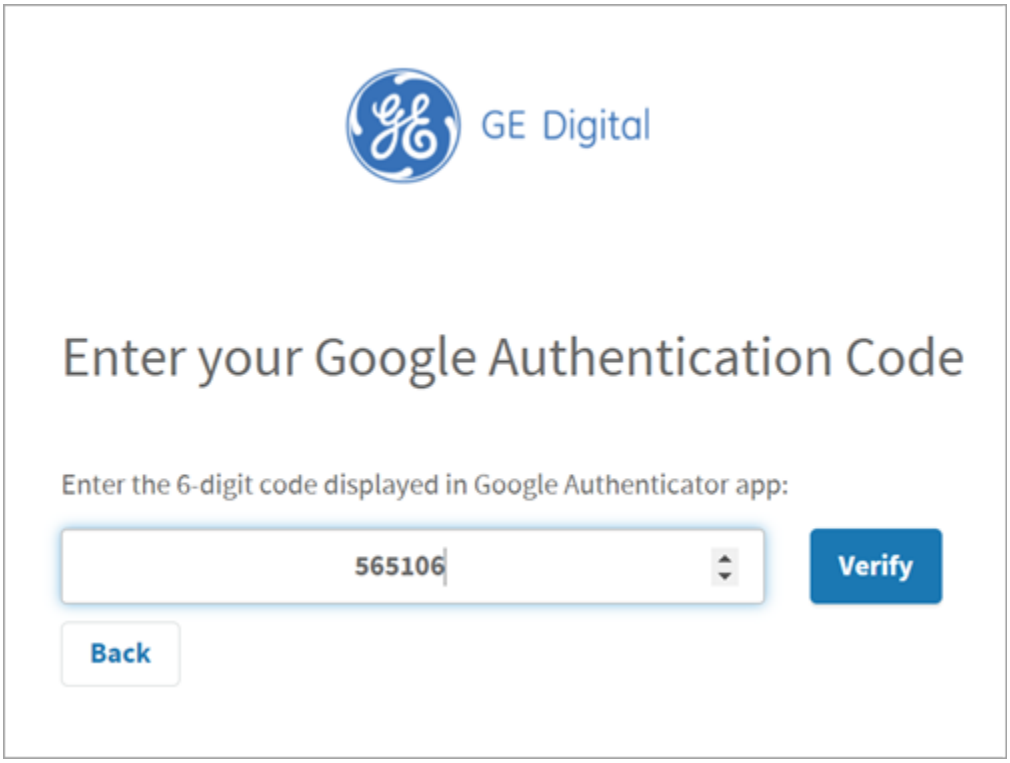
      The MFA setup screen appears with a barcode.



b. Open the Google Authenticator app on your mobile device and scan the barcode.
   The authentication app validates the user login and displays a 6-digit code. Barcode scanning appears only for the first time validation for every user login.

c. On your browser, select **Next** on the MFA setup screen.
   The code verification screen appears.

d. Enter the 6-digit code in the passcode field and select **Verify**



You are logged in successfully.

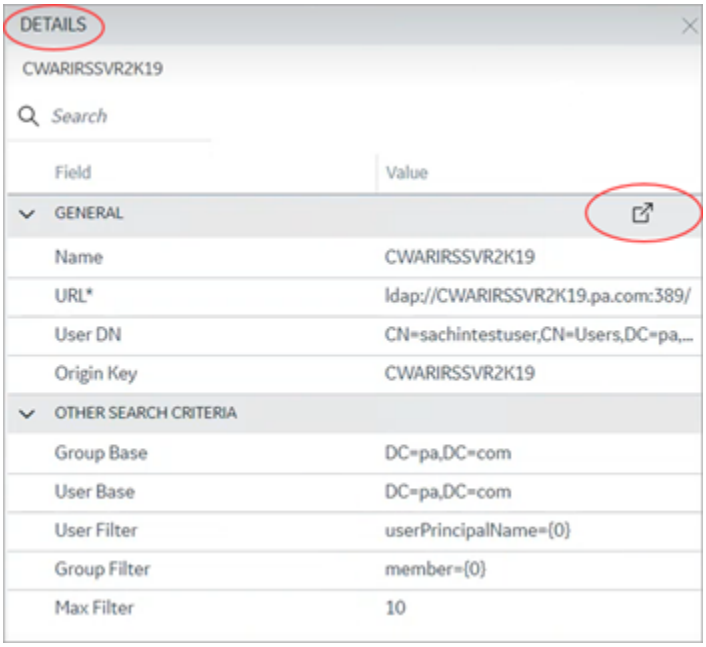
Multi-factor authentication is enabled for both UAA and LDAP users.

Modify LDAP Identity Provider

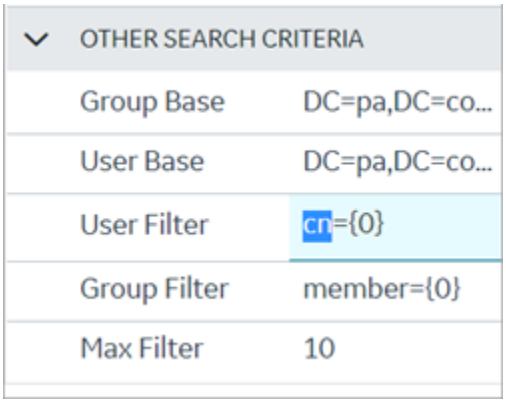
This topic describes how to modify the existing details for the LDAP account.

Add LDAP Identity Provider *(on page 12)*

1. Log in to Configuration Hub as an administrator.
2. Go to **Proficy Authentication > Security > Identity Provider**.
   The existing list of identity providers appear.
3. Select the LDAP identity provider.
   The existing information for the identity provider appears on the **DETAILS** panel.
4. To modify the **GENERAL** details, select to open a pop-up screen with the existing information.



5. If you modify any existing information, save the changes.
   The general details are required to configure LDAP authentication.
6. To modify **OTHER SEARCH CRITERIA** details, place your cursor and enter the new value for the respective criteria.



   Use these settings to enable the sub-directories in your search criteria.

Search Criteria	Example Value	Description
Group Base	`OU=Sales,OU=Groups,OU=En-terprise,DC=company,DC=com`	Defines the starting point for the LDAP group search in the active directory tree.

Search Criteria	Example Value	Description
		◦ **CN** is Common Name (required) ◦ **DC** is Domain Component (required) ◦ **OU** is Organization Unit Name (optional) **Note:** If you use only `DC=Ge,DC=com`, timeout may occur due to slow system response. Use the exact `OU` to avoid timeout.
User Base	`OU=Sales,OU=Users,OU=Enterprise,DC=company,DC=com`	Defines the starting point for the LDAP group user search in the active directory tree. **Note:** If you use only `DC=Ge,DC=com`, timeout may occur due to slow system response. Use the exact `OU` to avoid timeout.
User Filter	`userPrincipalName={0}`	Allows the LDAP user (active directory user) to login into Configuration Hub with their email address.
User Filter	`cn={0}`	Allows the LDAP user (active directory user) to login with their display name. This is field is populated by default.
User Filter	`sAMAccountName={0}`	Allows the LDAP user (active directory user) to login with their account name (Windows login name). This is field is populated by default.
Group Filter	`member={0}`	Retrieves the `memberOf` attribute values for the specific user. This is field is populated by default.

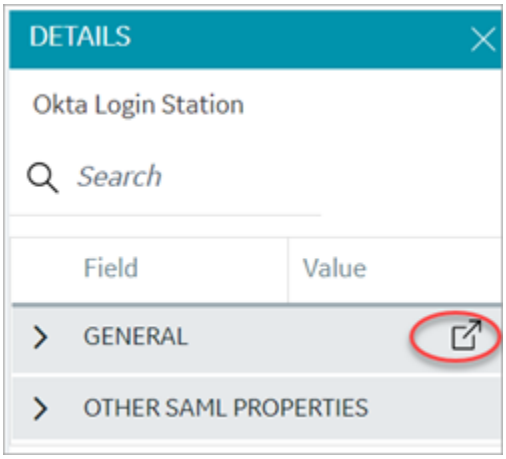
Search Criteria	Example Value	Description
Max Filter	`10`	Defines the maximum depth for searching the LDAP groups. The default value is `10`. For very large systems, set the value to `2` as it may impact system performance.

Modify SAML Identity Provider

This topic describes how to modify the existing details for a SAML account.

Add SAML Identity Provider *(on page 26)*

1. Log in to Configuration Hub as an administrator.
2. Go to **Proficy Authentication > Security > Identity Provider**.
   The existing list of identity providers appear.
3. Select the SAML identity provider you want to modify.
   The existing information for the identity provider appears on the **DETAILS** panel.
4. Select  to display the details in a pop-up screen.



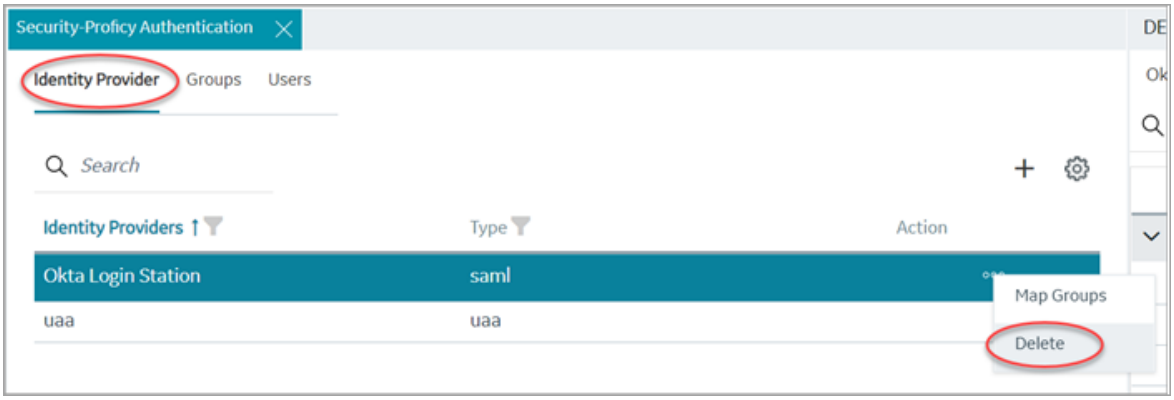
   The **SAML Identity Provider** screen appears.
5. You can modify the existing information and save the changes.
6. You can also modify items under **OTHER SAML PROPERTIES** section. Enter a new value to replace the existing value.

Delete Identity Provider

This topic describes how to delete identity providers.

Add SAML Identity Provider *(on page 26)*

1. Log in to Configuration Hub as an administrator.
2. Go to **Proficy Authentication > Security > Identity Provider**.
   The existing list of identity providers appear.
3. Select the identity provider you want to delete.
   Additional options appear under the **ACTION** column.
4. Select , then **Delete**.



   A message appears to confirm the delete action.
5. Select **Delete**.

The identity provider record is deleted from the Proficy Authentication database.

Manage Groups

Overview of iFIX Groups in Proficy Authentication

Proficy Authentication provides access to the following security groups for iFIX access: `scada.fix_shared_IFIX_PROFICY_AUTH_ADMIN`, `scada.fix.shared.APPLICATION_DESIGNER`, `scada.fix.shared.OPERATORS`, `scada.fix.shared.SUPERVISORS`, and `scada.proficy.admin`.

The following descriptions explain the access provided for iFIX groups in Proficy Authentication.

- `scada.fix_shared_IFIX_PROFICY_AUTH_ADMIN`: This group allows access to all iFIX application features. Any Proficy Authentication user who is a member of this group will have privileges similar to a native iFIX ADMIN user (except the access to security areas). Proficy Authentication users who want to directly log in to iFIX can use this group.

  This group is not available by default when you upgrade from iFIX 6.1 or 6.5. You must manually create this group with all the iFIX application features as needed.

- `scada.fix.shared.APPLICATION_DESIGNER`: This group allows a user to access Configuration Hub and provides use of iFIX features such as iFIX connection, database, and model management.

  Important:
  Be aware that the `scada.fix.shared.APPLICATION_DESIGNER` group is not available by default when you upgrade from iFIX 6.1 or 6.5. You must manually create the group with the required iFIX application features, or update your existing groups to include the following iFIX application features (if you want users in these groups to have access to and use Configuration Hub).
  - Database Block Add-Delete
  - Database Manager
  - Database Reload
  - Database Save
  - Security Configuration
  - System Configuration

  To create a new group or modify an existing group, use the iFIX Security Configuration application.

- `scada.fix.shared.OPERATORS`: This group provides run mode only access for a user in iFIX.
- `scada.fix.shared.SUPERVISORS`: This group provides access to WorkSpace run and configure mode, as well as access to background task exit, iFIX system shut down, and iFIX system user login.
- `scada.proficy.admin:` This group allows the Proficy Authentication user access to the iFIX Projects panel and to the Deploy operations from Configuration Hub. This group is for Proficy Authentication only; this group is not linked to any iFIX group and has no permissions in iFIX.

Overview of Historian Groups in Proficy Authentication

Proficy Authentication provides access to the following security groups for Historian access: `historian_enterprise.admin, historian_enterprise.user`, `historian_rest_api.admin`, `historian_rest_api.read`, `historian_rest_api.write`, `historian_visualization.admin`, `historian_visualization.user`, `ih_archive_admins, ih_audited_writers`, `ih_collector_admins`, `ih_readers`, `ih_security_admins`, `ih_tag_admins`, `ih_unaudited_logins`, and `ih_unaudited_writers`.

The following descriptions explain the access provided for Historian groups in Proficy Authentication:

- `historian_enterprise.admin`: Provides read/write access to Configuration Hub APIs.
- `historian_enterprise.user`: Allows access to Configuration Hub APIs.
- `historian_rest_api.admin`: Provides read/write access to public REST API.
- `historian_rest_api.read`: Provides read access to public REST API.

- `historian_rest_api.write`: Provides write access to public REST API.
- `historian_visualization.admin`: Provides access to Trend Client and the Web Admin console.
- `historian_visualization.user`: Allows access to Trend Client.

- `ih_archive_admins`, `ih_audited_writers`, `ih_collector_admins`, `ih_readers`, `ih_security_admins`, `ih_tag_admins`, `ih_unaudited_logins`, `ih_unaudited_writers`: Provides access to tables for the Historian OLE DB provider.

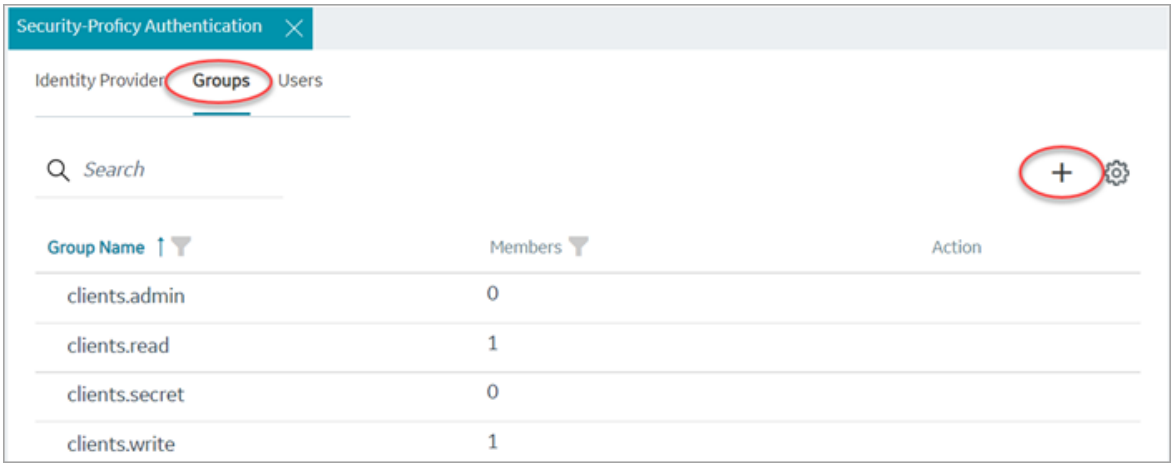
Create Groups

This topic describes how to create new groups in Proficy Authentication.

Log in to Configuration Hub as an administrator.

For example, you can create a group for users who perform the same task on the same resource. You can have a group of supervisors for each line such as, `Supervisors_LineA`, `Supervisors_LineB`, `Supervisors_LineC`.

1. Go to **Proficy Authentication > Security > Groups**.
2. Select +

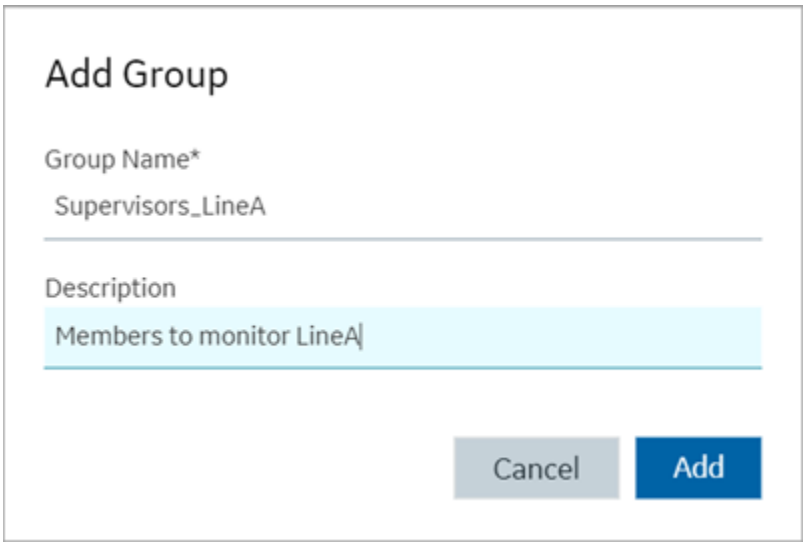


   The **Add Group** screen appears.

3. Enter the following details for the new group.

Field	Description
Group Name	A unique name of the group that does not match with any existing Proficy Authentication groups. For example, `Supervisors_LineA`

Field	Description
Description	A brief description of the group.



4. Select **Add**.
   The group is created successfully.

The newly created group is added to the list of groups on the **Groups** tab.

Modify Groups

This topic describes how to modify existing groups in Proficy Authentication.

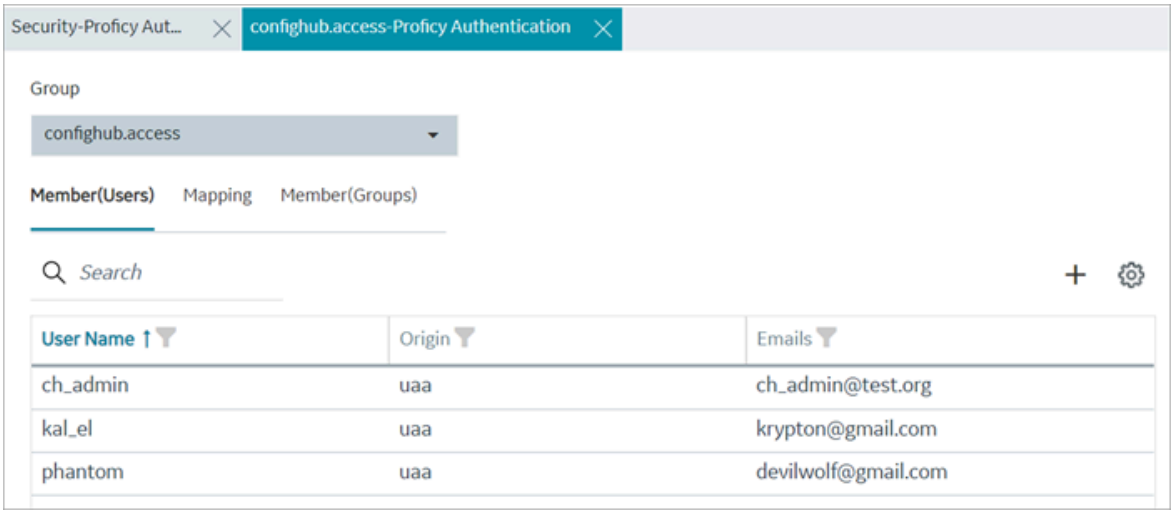
Log in to Configuration Hub as an administrator.

You can modify a group to:

- Add/Remove Users in a Group *(on page 42)*
- Add/Remove Sub-Groups in a Group *(on page 43)*
- Map Groups *(on page 39)*

1. Go to **Proficy Authentication > Security > Groups**.
   The existing list of Proficy Authentication groups appear.
2. Use any of these options to open a group.
   - Double-click the group name you want to modify.
   - For the group you want to modify, from its **ACTION** column, select ooo, then **Edit**.

   The group opens in a new tab.



3. You can modify the following:

Tab	Description
Member (Users)	Displays the list of users added to this group. Add/Remove Users in a Group *(on page 42)*.
Mapping	Displays the list of mapped groups for this group. You can add/remove mapped groups *(on page 39)*.
Member (Groups)	Displays the list of sub-groups added to this group. Add/Remove Sub-Groups in a Group *(on page 43)*.

Map Groups

This topic describes how to perform group mapping.

Log in to Configuration Hub as an administrator.

You can map any of the following to a Proficy Authentication group. The users belonging to these groups gain access to Proficy Authentication, and become a member of the target group.

- UAA groups
- LDAP
- SAML groups

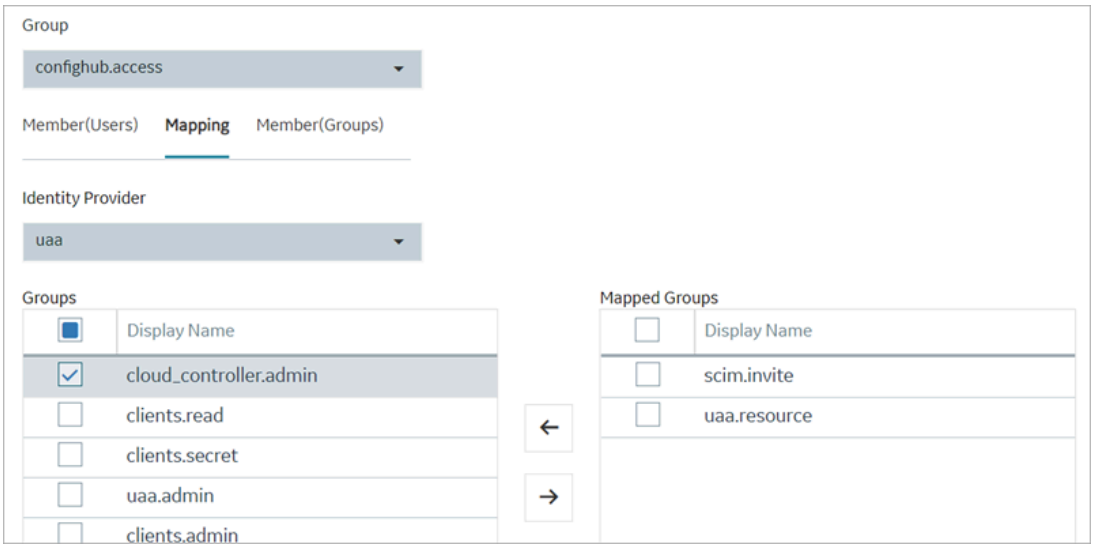
1. Go to **Proficy Authentication > Security > Groups**.
   The existing list of Proficy Authentication groups appear.
2. Double-click and open the group you want to map to UAA/LDAP/SAML groups.

3. Select the **Mapping** tab.
4. Map UAA groups.

    a. From the **Identity Provider** drop down list, select the UAA record.
    The groups from the UAA record appear.

    b. Select the check box for the groups you want to map to the Proficy Authentication group selected in step 2.

    c. Select → to move the selected items from **Groups** to **Mapped Groups**.



    The users belonging to the mapped UAA groups are now a member of the Proficy Authentication group selected in step 2.

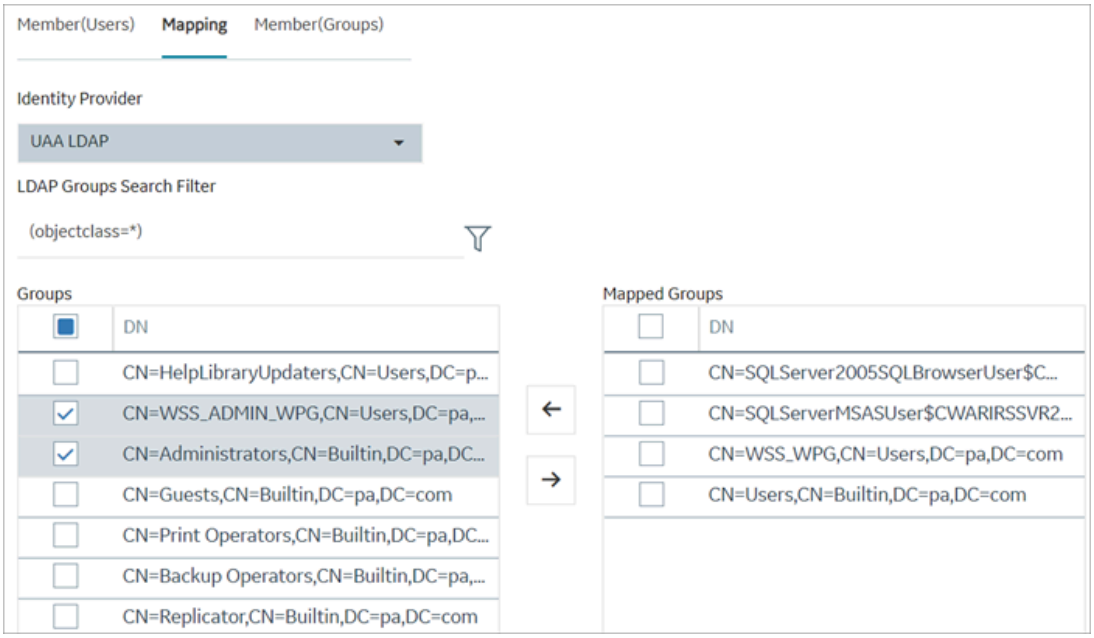
5. Map LDAP groups.

    a. From the **Identity Provider** drop down list, select the LDAP record.
    The groups from the LDAP server appear.

    b. Select the check box for the groups you want to map to the Proficy Authentication group selected in step 2.

    c. **Optional:** To search for an LDAP group, enter the keyword in the **LDAP Groups Search Filter** field and select .

    d. Select → to move the selected items from **Groups** to **Mapped Groups**.

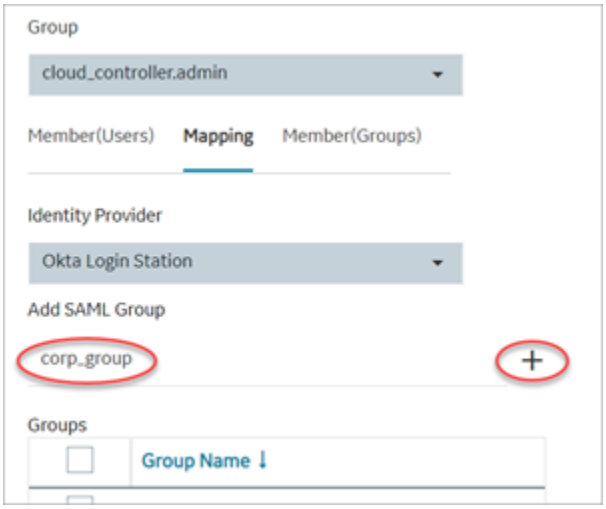


The users belonging to the mapped LDAP groups are now a member of the Proficy Authentication group selected in step 2.

6. Map SAML groups.

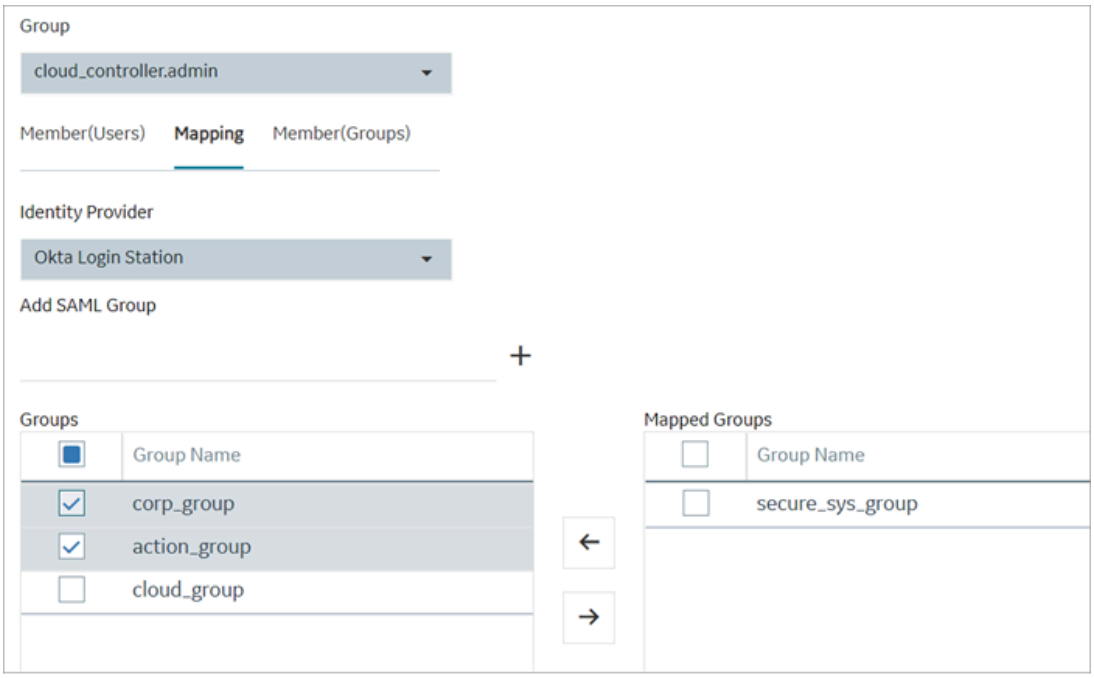
    a. From the **Identity Provider** drop down list, select the SAML record.

    b. To create SAML groups, enter the valid SAML group name in the **Add SAML Group** field and select the plus icon.



    c. Select the check box for the groups you want to map to the Proficy Authentication group selected in step 2.

d. Select → to move the selected items from **Groups** to **Mapped Groups**.



If the mapped SAML groups are valid, then all their users become a member of the Proficy Authentication group selected in step 2.

7. To unmap any of the mapped groups, select and move them back to **Groups**.

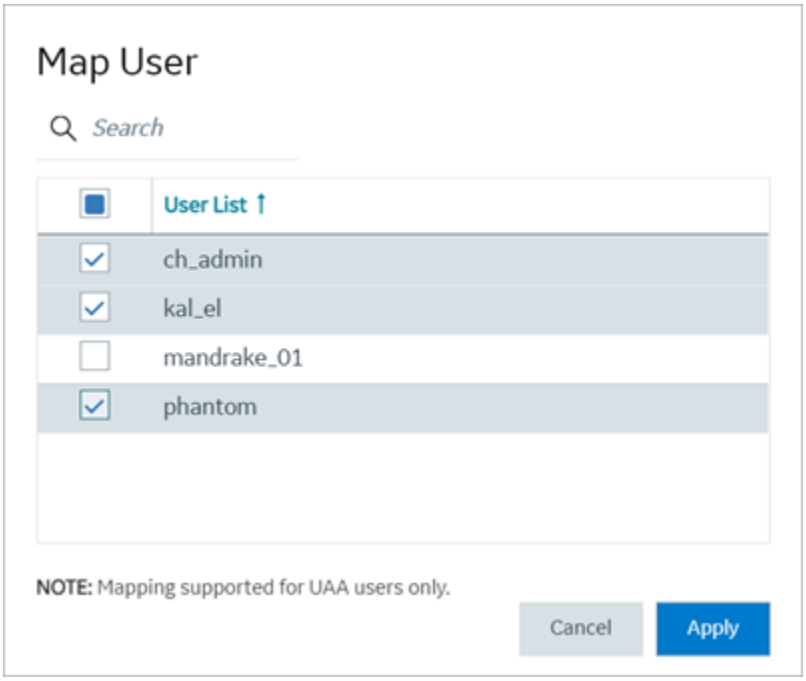
UAA/LDAP/SAML groups are successfully mapped.

Add/Remove Users in a Group

This topic describes how to add or remove users from a group.

Modify a group *(on page 38)* to add or remove users.

1. Select the **Member (Users)** tab.
2. Select +.
   The **Map User** screen appears.
3. Select the check box for the user account you want to add to the group.
   To remove user from a group, clear the check box.



4. Select **Apply**.

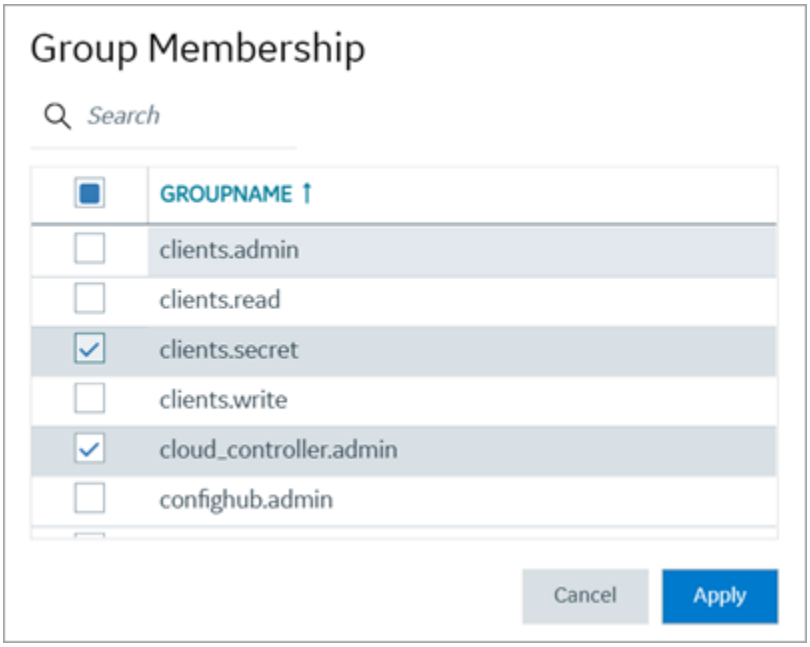
The users are added to (or removed from) the group.

Add/Remove Sub-Groups in a Group

This topic describes how to add or remove sub-groups from a group.

Modify a group *(on page 38)* to add or remove sub-groups.

1. Select the **Member (Groups)** tab.
2. Select +.
   The **Group Membership** screen appears.
3. Select the check box for the group/s you want to add as a sub-group.
   To remove a sub-group from a group, clear the check box.



Important:
Do not select the check box for `iqp.studioAdmin` group for any users or groups. As this group is for reserved purposes, make sure no user accounts or groups are assigned to this group to avoid runtime errors.

4. Select **Apply**.
   The groups are added (or removed) as sub-groups in the group.

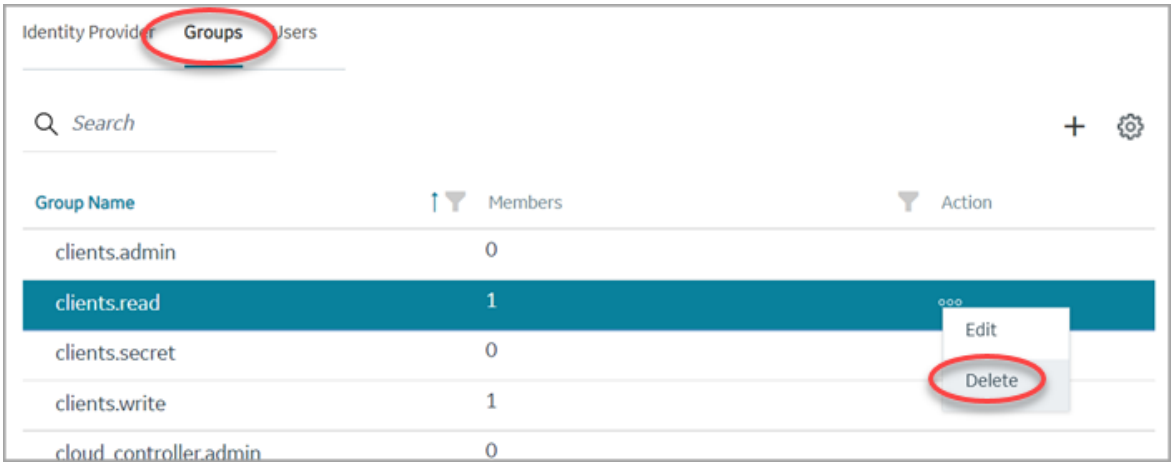
The users added to the sub-groups are automatically associated to the main group.

Delete Group

This topic describes how to delete Proficy Authentication groups.

Log in to Configuration Hub as an administrator.

1. Go to **Proficy Authentication > Security > Groups**.
   The existing list of groups appear.
2. Select the group you want to delete.
   Additional options appear under the **ACTION** column.
3. Select , then **Delete**.



A message appears to confirm the delete action. The message also informs if users are associated to the group being deleted.

4. Select **Delete**.

The group account is deleted from the Proficy Authentication database.

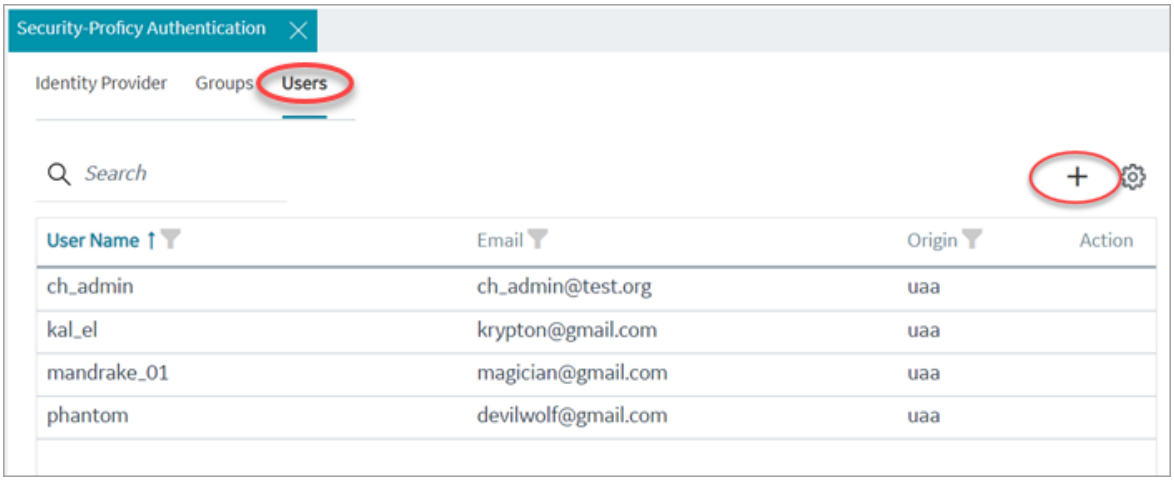
Manage Users

Create Users

This topic describes how to create new users in Proficy Authentication.

Log in to Configuration Hub as an administrator.

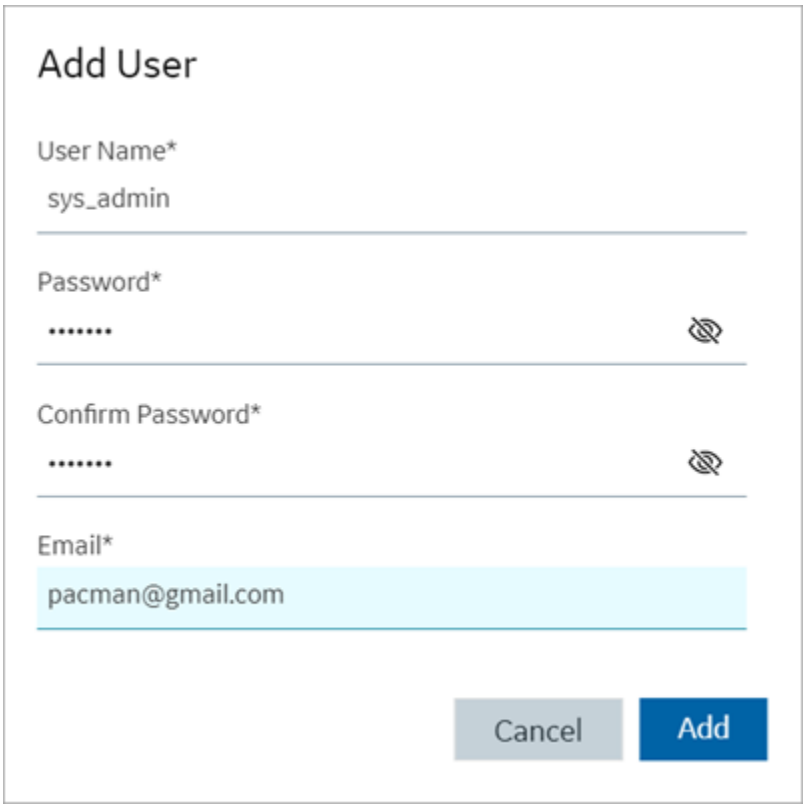
1. Go to **Proficy Authentication > Security > Users**.
2. Select +



The **Add User** screen appears.

3. Enter the following details for the new user account.

Field	Description
User Name	The user name to log in to Proficy Authentication.
Password	The password to log in to Proficy Authentication.
Confirm Password	Enter the password again for confirmation.
Email	User's email address.



4. Select **Add**.
   The user is created and added to the list of user accounts on the **Users** tab.

The new user is associated to default Proficy Authentication groups. These default groups cannot be deleted or modified: `approvals.me`, `cloud_controller.read`, `cloud_controller.write`,

`cloud_controller_service_permissions.read`, `oauth.approvals`, `openid`, `password.write`, `profile`, `roles`, `scim.me`, `scim.userids`, `uaa.offline_token`, `uaa.user`, `user_attributes`.

Every user/client must possess the following three scopes to access the Security plug-in via Configuration Hub. If these scopes are not added, then a warning message alerts the user to contact Admin.

Scope	Description
`uaa.admin`	This scope indicates that this is a superuser.
`clients.write`	This scope resets the Security plug-in's admin client secret.
`password.write`	This admin scope enables to change the user password. **Note:** This scope is assigned to all the UAA/ LDAP/SAML users by default without the need to assign manually.

Default `ch_admin` has all the three scopes.

For user accounts originating from LDAP or SAML, refer to Add LDAP/SAML Users *(on page 47)*.

Add LDAP/SAML Users

This topic describes how to add LDAP/SAML users to Proficy Authentication.

You must have an LDAP or SAML user account.

Only user accounts created in Proficy Authentication are immediately visible in the users list. LDAP or SAML users must perform the following steps to create user accounts in Proficy Authentication.

Log in to Proficy Authentication with LDAP/SAML user credentials.
A shadow user is created in Proficy Authentication. and can be subsequently seen in the Proficy Authentication users list.

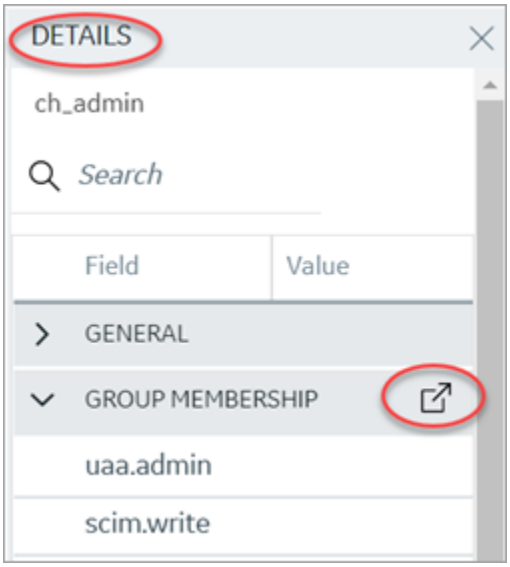
The LDAP/SAML user account is added to the list of accounts on the **Users** screen.

Add/Remove Groups for a User

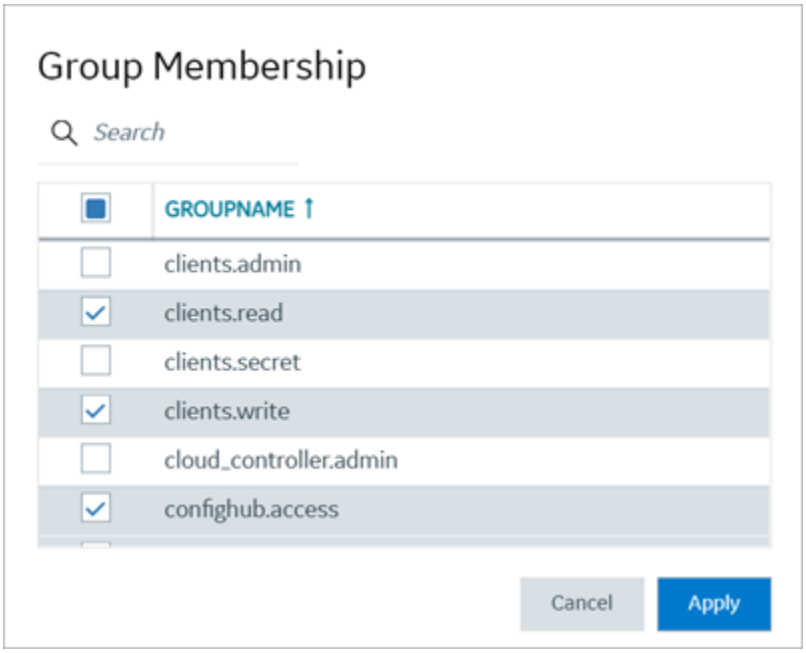
This topic describes how to modify group membership for existing user accounts.

Create Users *(on page 45)*

1. Go to **Proficy Authentication > Security > Users**.
   The existing list of user accounts appear.
2. Select the user account for which you want to modify group membership.
   The existing information for the user appears on the **DETAILS** panel.
3. Select next to the **GROUP MEMBERSHIP** section.



   The **Group Membership** screen appears.
4. Select the check box for the groups you want to add the user as a member.
   To remove a group, clear the check box.



Important:
Do not select the check box for `iqp.studioAdmin` group for any users or groups. As this group is for reserved purposes, make sure no user accounts or groups are assigned to this group to avoid runtime errors.

5. Select **Apply**.

The groups are added (or removed from) for the user.

Note:
If a logged-in user attempts to remove his/her own scopes/groups, the remove operation may fail and result in an error: `Error while assigning the group`. In such instances, the user should log out of the Configuration Hub application and log-in again. We recommend that logged-in users should avoid removing their own scopes.

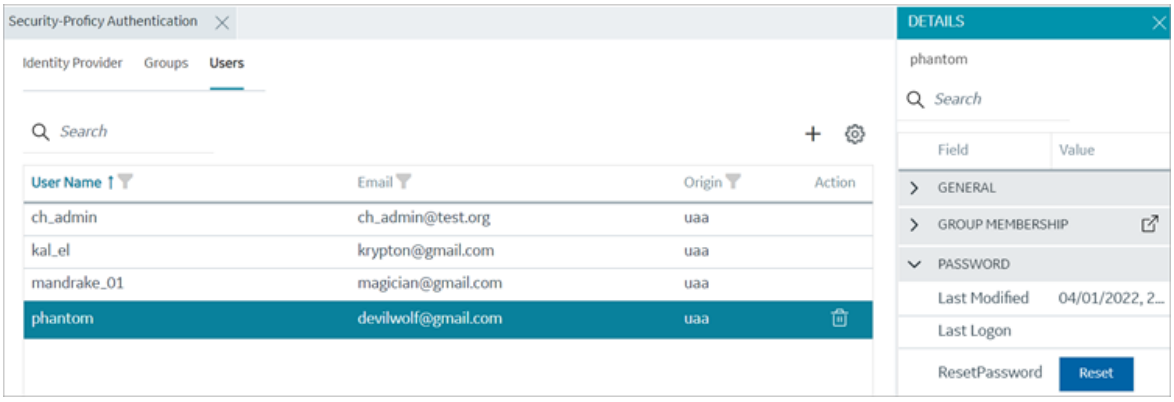
Reset User Password

This topic describes how to reset passwords for Proficy Authentication users.

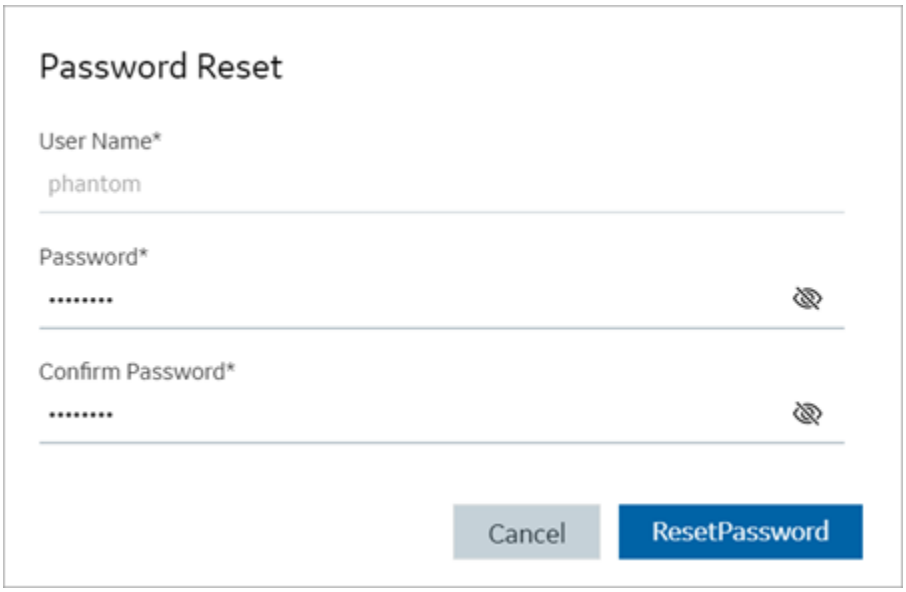
Log in to Configuration Hub as an administrator.

1. Go to **Proficy Authentication > Security > Users**.
   The existing list of user accounts appear.

2. Select the user account for which you want to reset the password.
   The option to reset password appears on the **DETAILS** panel under the **PASSWORD** section.



3. Select **RESET**.
   The **Password Reset** screen appears.
4. Enter the new **Password** and **Confirm Password** for the user account.



5. Select **Reset Password** to apply the changes.

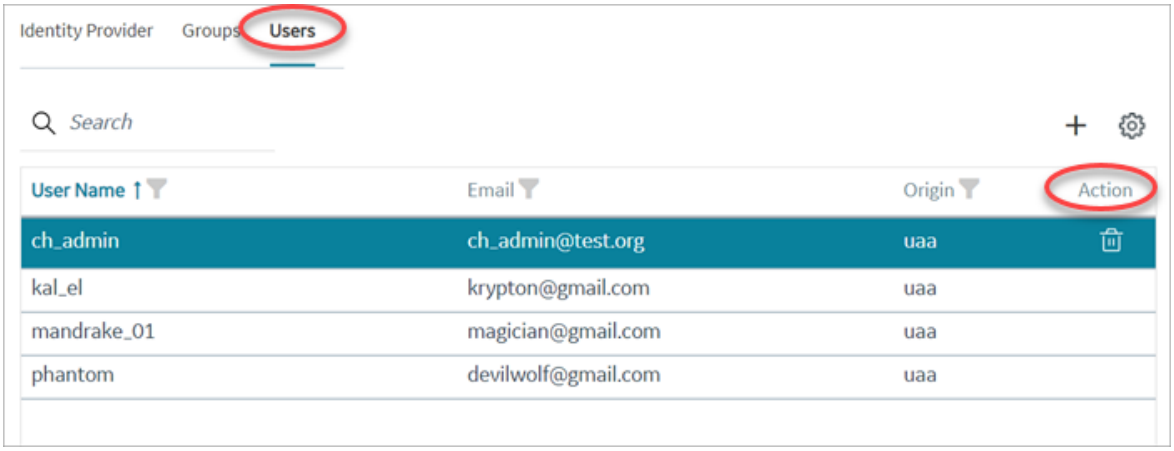
The password is reset for the user.

Delete User

This topic describes how to delete Proficy Authentication user accounts.

Log in to Configuration Hub as an administrator.

1. Go to **Proficy Authentication > Security > Users**.
   The existing list of user accounts appear.
2. Select the user you want to delete.
   Delete option appears in the **ACTION** column.



3. Select  .
   A message appears to confirm the delete action.
4. Select **Delete**.

The user account is deleted from the Proficy Authentication database.

Windows Integrated Authentication / Auto-login

Windows Integrated Authentication is a new capability added to Proficy Authentication Service from version 2.5.

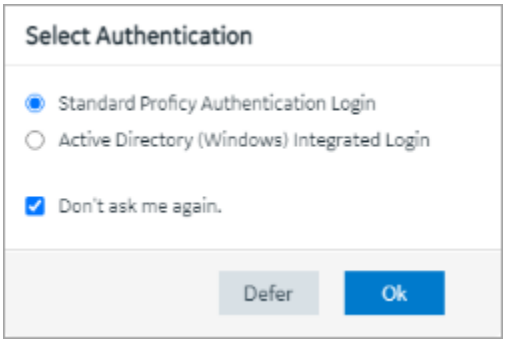
When Windows Integrated Authentication or Auto-login is enabled, users logged into any Windows machine in a domain are able to access Operations Hub and/or hosted Proficy applications without the need to type in their Windows credentials again. The same Windows logged-in user context is used for authenticating the user. Based on the user's privileges, access is provided to Operations Hub and/or its hosted applications.

This document describes the steps to configure the 'Windows Integrated Authentication' functionality in an instance of Proficy Authentication service. After configuring auto-login, when you attempt to log into Operations Hub / hosted Proficy applications, the **Select Authentication** screen appears (see figure below) to choose between `Standard Proficy Authentication Login` or `Active Directory (Windows) Integrated Login`.

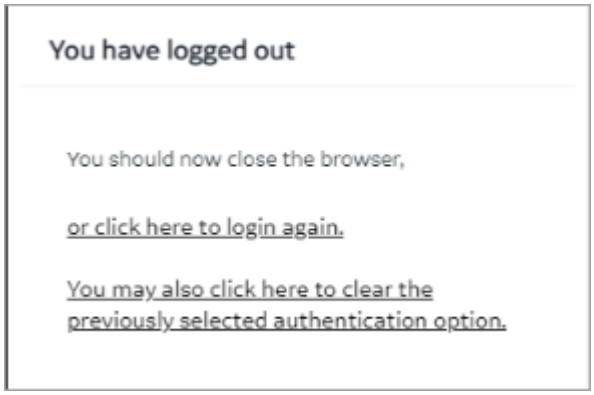
If you choose `Active Directory (Windows) Integrated Login`, the authentication option will follow the new flow and you will not be prompted for providing credentials. Whereas choosing `Standard Proficy Authentication Login` will take you through the normal authentication flow and prompt for your credentials.

Note:

- The auto-login capability is only for authenticating the users. For authorization or access permissions, you have to configure LDAP IDP. To accomplish this, select the same active directory service / LDAP server, which brings the authentication service node, application accessing nodes in the network, and the users seeking auto-login, into the same Windows scope.
- For configuring LDAP IDP, refer to Add LDAP Identity Provider *(on page 12)*.



Standard Proficy Authentication Login	Choose this option if you want to use the standard login (username/password or SAML). This is a regular login, which is based on username/password, including LDAP, or SAML.
Active Directory (Windows) Integrated Login	This option appears only if Windows auto-login is configured. This allows to automatically log into Operations Hub using the user's domain login session that was used to log in to Proficy Authentication.
Don't ask me again	Select this check box, if you don't want to display the **Select Authentication** screen every time you login. The system remembers the last selected authentication (between regular and autologin) and applies it for future logins.

	With **Don't ask me again** enabled, you can clear the last selected authentication only during logout.  Select **You may also click here to clear the previously selected authentication option** to clear the saved selection. Once cleared, the clearing option is hidden from the logout screen. Select **click here to login again** to return to the login page.
Defer	Select to dismiss this screen, and skip selecting an authentication. You have the choice to select authentication next time you login.

To configure Windows Auto-login, an administrator performs the following tasks only for the first time. The first task is performed on all the participating nodes (Active Directory service node, Proficy Authentication service node, and the client nodes). The second and third are performed on the Windows Active Directory Server machine. The fourth task is performed on the machine where Proficy Authentication is installed.

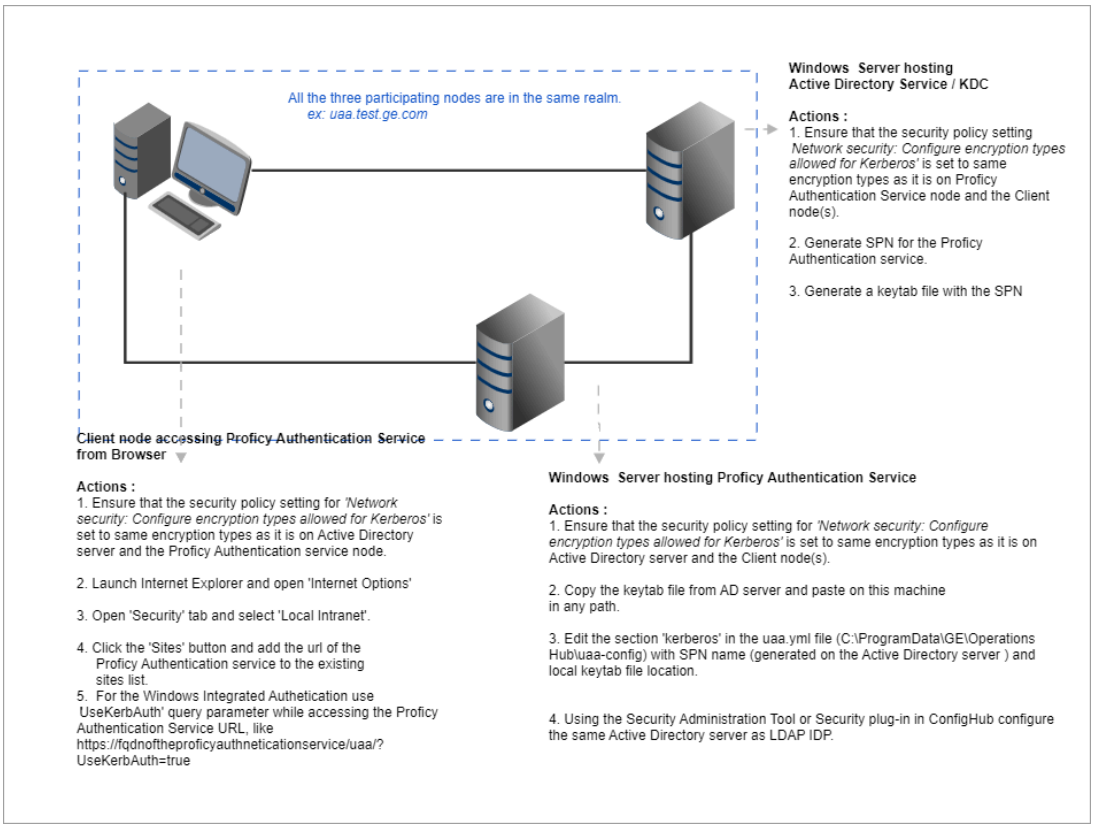
1. Configure Security Policy *(on page 54)*.
2. Create a service principal for your user account *(on page 56)*.
3. Generate the Kerberos keytab file *(on page 59)*.
4. Update the Proficy Authentication .yml file *(on page 62)*.
5. Add LDAP Identity Provider *(on page 12)* for the Active Directory service used in Steps 2 and 3.

> **Note:**
> Users logging into DPM products using Windows Auto-login are authorized / get the scopes based on the LDAP configuration performed in Step 5.

To configure the browser settings for Windows Auto-login, the following task is performed on the end-user machine.

- Configure the browser settings for Kerberos authentication *(on page 63)*.

Figure 1. Windows Auto-login - Deployment Topology and Configuration



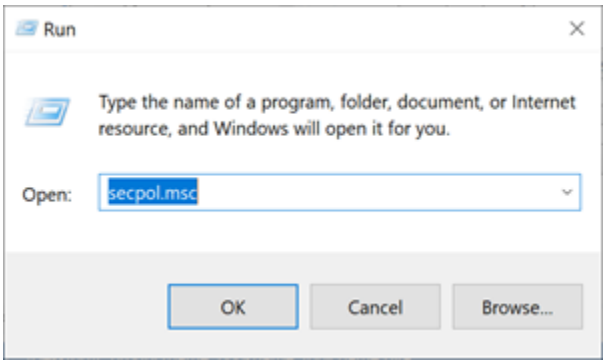
Configure Security Policy

This topic describes how to configure security policy setting associated to Kerberos authentication.

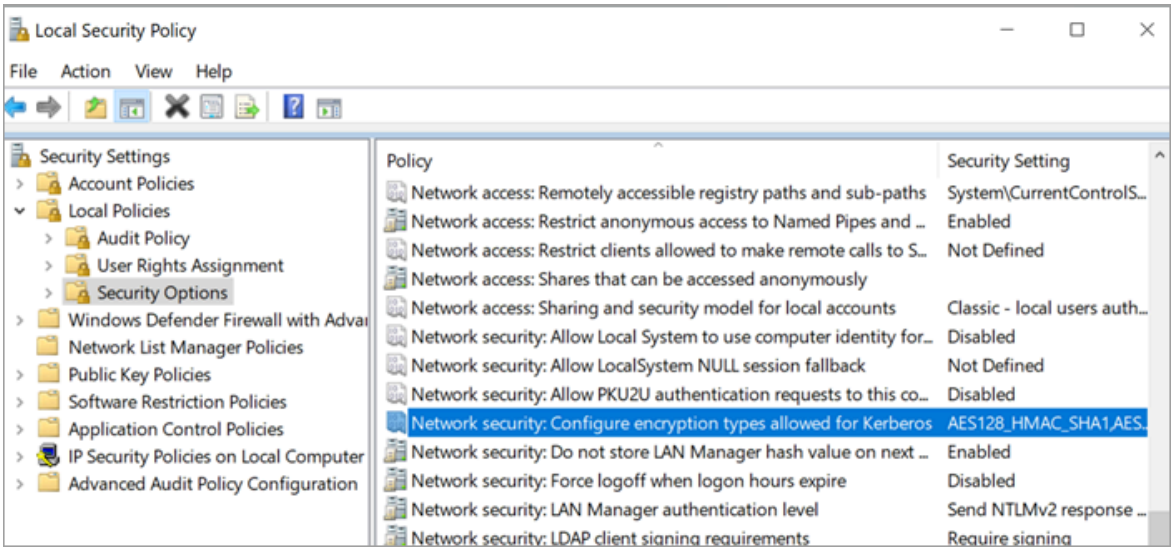
It is possible that you may not have access to your computer's local security policy settings, if it is governed by a group policy (controlled by your domain administrator). In any case, make sure that these security options are enabled for your computer.

If your environment is not governed by a group policy, then follow these steps to configure local security policy:

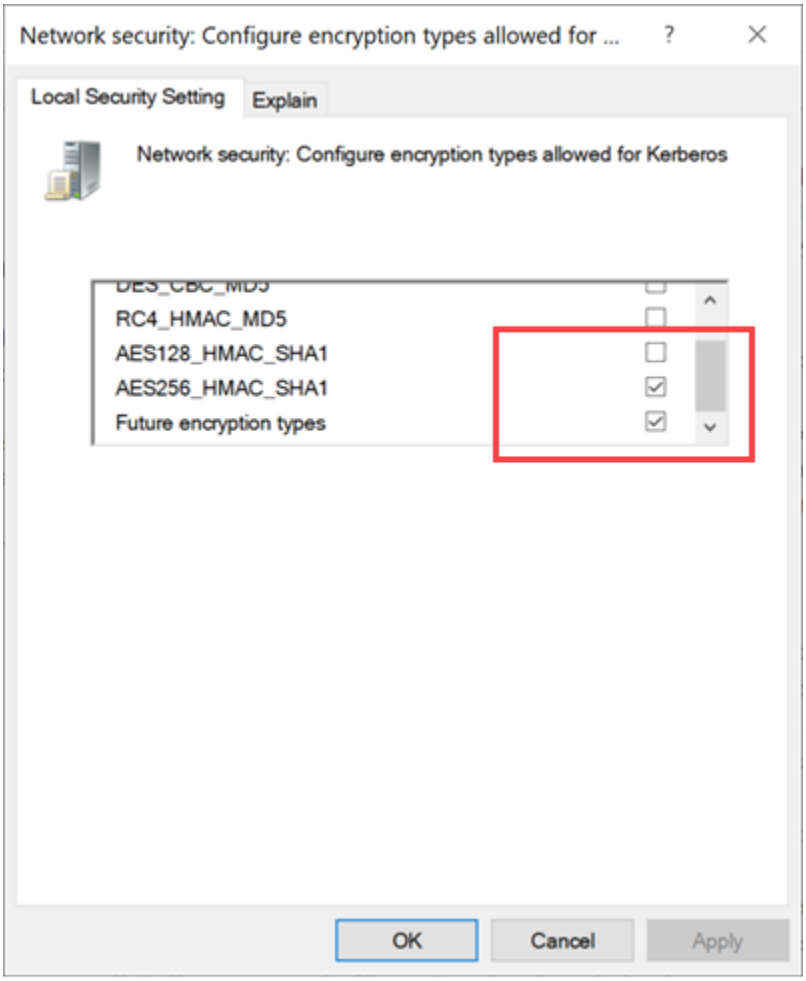
1. To access Local Security Policy, enter `secpol.msc` in Windows Run dialog and select **OK**.



2. Navigate to **Security Settings > Local Policies > Security Options**.



3. Double-click and open `Network security: Configure encryption types allowed for Kerberos` security policy setting.
4. Select the valid encryption types that you want to use as shown in the figure. Ensure that the selection is same across all the participating nodes.
   You can select either `AES128_HMAC_SHA1` or `AES256_HMAC_SHA1` as the encryption type. Also select the `Future encryption types` option.



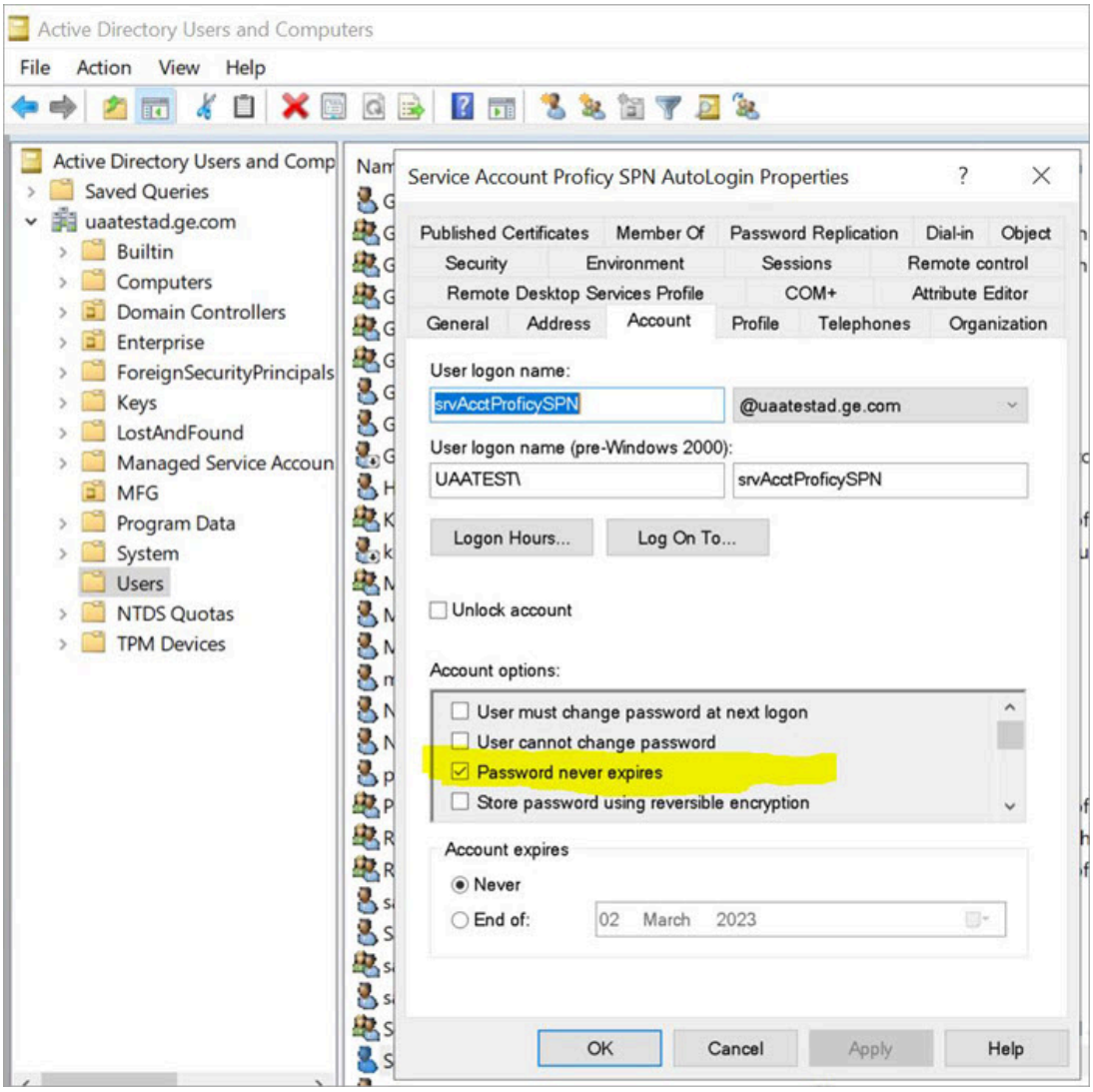
Note:
In our current documentation, we use `AES256_HMAC_SHA1` encryption type in our example code to generate the keytab file *(on page 59)*.

For more information refer to Microsoft documentation on security policy settings.

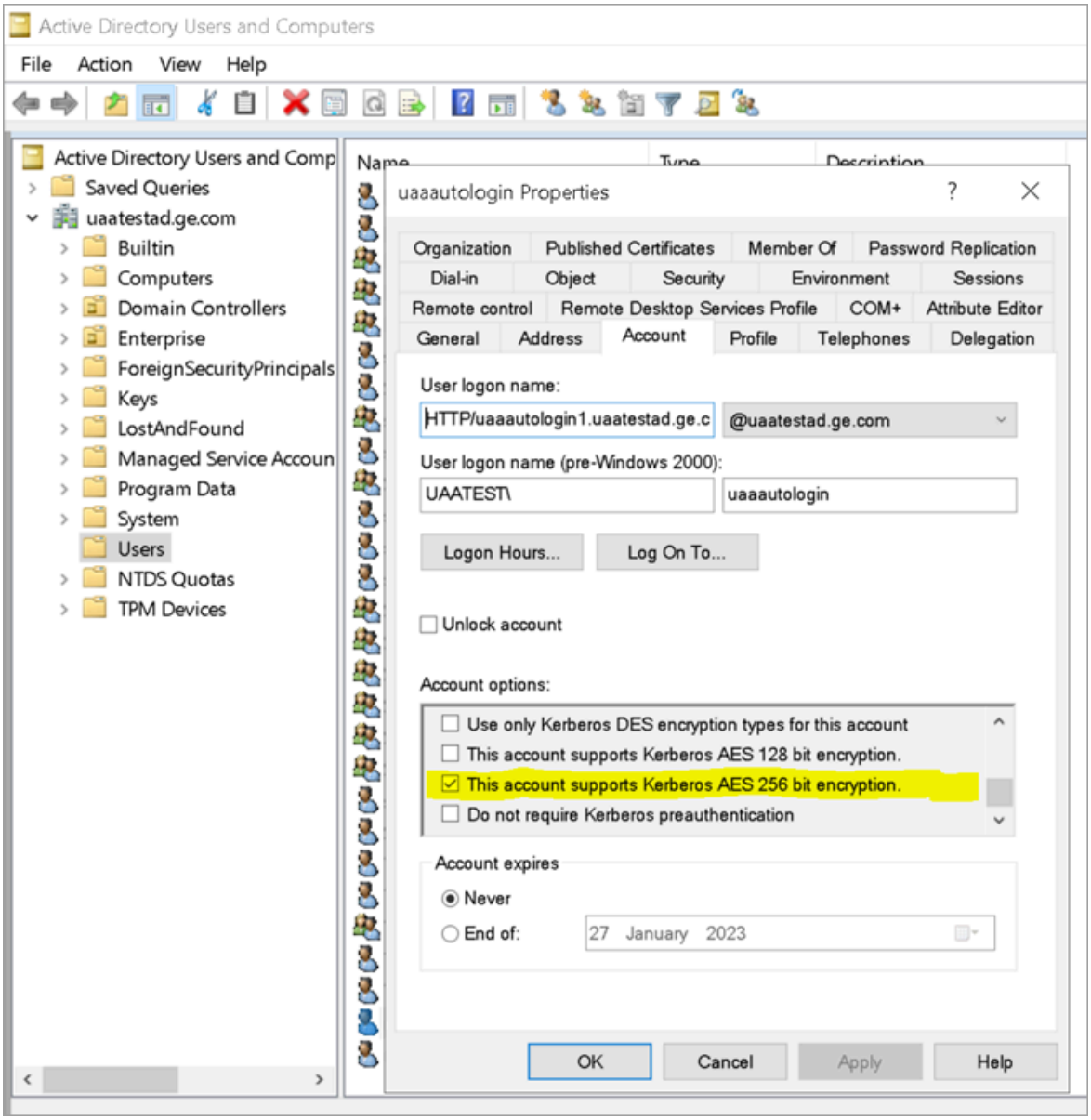
Create Service Principal Name

This topic describes how to create a service principal name.

- Create a dummy user account on the Active Directory Server node to represent the Proficy Authentication application in the active directory registry. Make sure to implement these settings for the account:
    - It is mandatory user is a member of the domain user group. Refer to Microsoft documentation for more information.
    - Set the account password to never expire. To do so, access the domain user account properties dialog: **Account > Account options > Password never expires**.



- Configure Security Policy *(on page 54)*



Note:
Delete existing SPNs, if any. Refer to Useful SPN commands *(on page 69)*.

You must be an administrator to perform this task.

1. Log in to your Active Directory machine.
2. Open the Windows Command Prompt application.

3. Run the following command replacing with the appropriate code: `setspn -S HTTP/<FQDN> <user account>`

Code	Replace With
`<FQDN>`	Fully Qualified Domain Name (FQDN) of the server on which Proficy Authentication service is running. For example, `HTTP/win16-phantomhost.uaatestad.ge.com@UAATESTAD-.GE.COM` **Note:** These should be in capital letters: ◦ `HTTP` ◦ `UAATESTAD.GE.COM` (the domain name that follows @)
`<user account>`	Dedicated dummy user account created for Proficy Authentication service. For example, `ghost1`.

   Based on the above examples, your code should look like this: `setspn -S HTTP/win16-phantomhost.uaatestad.ge.com@UAATESTAD.GE.COM ghost1`

The service principal name (SPN) is created.

Generate Keytab File *(on page 59)*

Generate Keytab File

Generate the Kerberos keytab file.

Create Service Principal Name *(on page 56)*

You must be an administrator to perform this task.

1. Log in to your system and open the Windows Command Prompt application.
2. Run the following command replacing with the appropriate code: `ktpass -out <filename> -princ HTTP/<service pincipal name> -mapUser <user account> -mapOp set -pass <password> -crypto AES256-SHA1 -pType KRB5_NT_PRINCIPAL`

Code	Replace With
`<filename>`	Name of the keytab file. **Note:** Keytab file name can be any given name. The file is created at the default location. You also have the option to specify an absolute path for file creation. For example, `-out c:\Documents\myskullcave.keytab`.
`<service pincipal name>`	Enter the service principal name that was created in the following format: `HTTP/win16-phantomhost.uaatestad.ge.com@UAATESTAD.GE-.COM`
`<User account>`	Enter the same dummy user account that was used during creating the service principal name. For example, `ghost1`. **Note:** If you want to use a different user account, delete the existing user account, (or) rename the **logon name** in the user account.
`<password>`	Proficy Authentication dummy user account password.
`AES256-SHA1`	Encryption algorithm you want to use. **Note:** GE recommends `AES256-SHA1`. But you can also use `AES128-SHA1`.
`KRB5_NT_PRINCIPAL`	Encryption type you want to use.

If the keytab is successfully created, the log should look something like this:

```
C:\Users\Administrator>ktpass -out c:\Temp\SACHINJOHUB21VM.uaatestad.ge.com.keytab -princ
 HTTP/SACHINJOHUB21VM.uaatestad.ge.com@UAATESTAD.GE.COM -mapUser Mark -mapOp set -pass Gei321itc -crypto
 AES256-SHA1 -pType KRB5_NT_PRINCIPAL
```

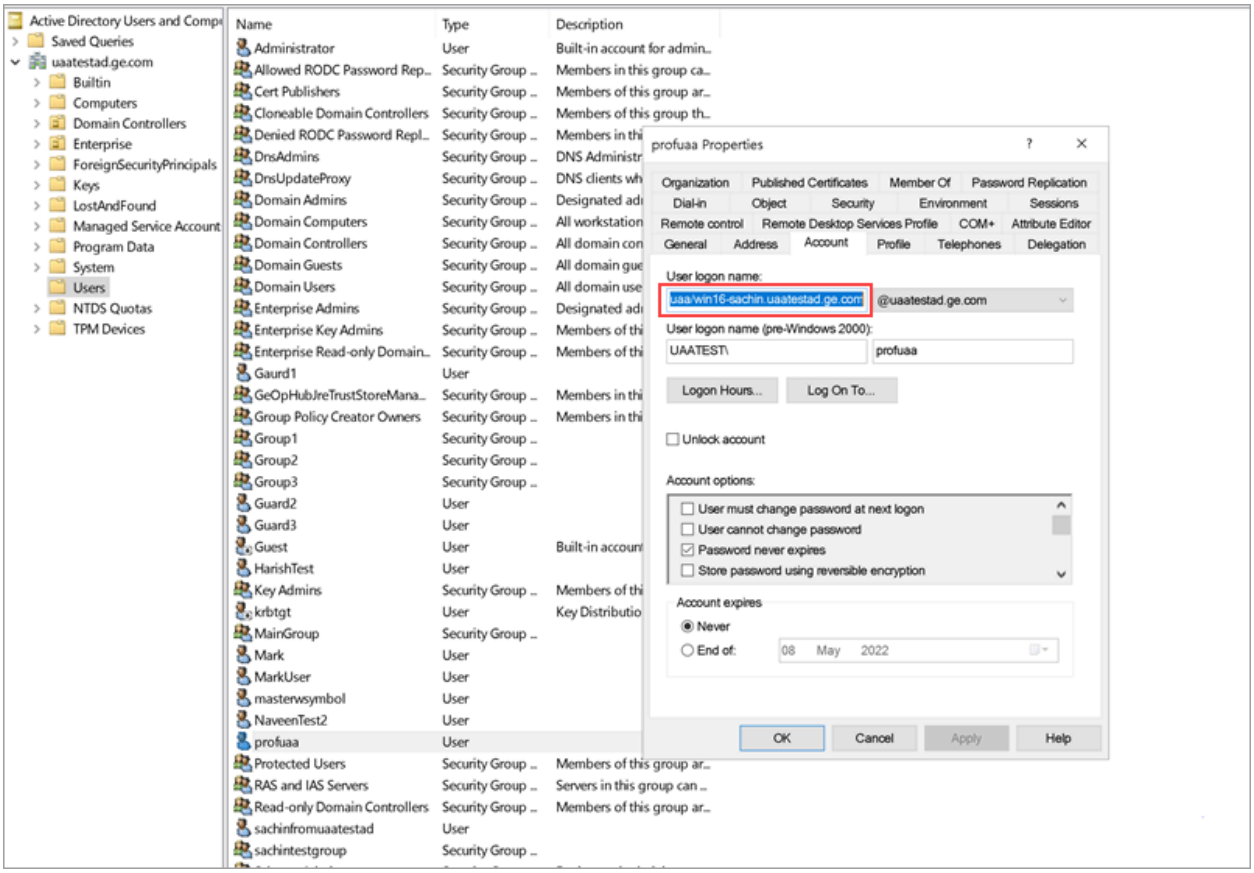
```
Targeting domain controller: uaatestad.uaatestad.ge.com

Using legacy password setting method

Successfully mapped HTTP/SACHINJOHUB21VM.uaatestad.ge.com to Mark.

Key created.

Output keytab to c:\Temp\SACHINJOHUB21VM.uaatestad.ge.com.keytab:

Keytab version: 0x502

keysize 105 HTTP/SACHINJOHUB21VM.uaatestad.ge.com@UAATESTAD.GE.COM ptype 1 (KRB5_NT_PRINCIPAL) vno 3 etype 0x12

 (AES256-SHA1) keylength 32 (0x3fb2a2824864a6b3617bfa4a6458af83534efdb8a3eac08b02316cce9c4ee7fc)
```

Example of a failed log:

```
C:\Windows\system32>ktpass -out c:\Temp\win16-sachin.uaatestad.ge.com.keytab -princ

 HTTP/win16-sachin.uaatestad.ge.com@UAATESTAD.GE.COM -mapUser John -mapOp set -pass Gei321itc -crypto

 AES256-SHA1 -pType KRB5_NT_PRINCIPAL

Targeting domain controller: uaatestad.uaatestad.ge.com

Using legacy password setting method

Failed to set property 'userPrincipalName' to 'HTTP/win16-sachin.uaatestad.ge.com@UAATESTAD.GE.COM' on Dn

 'CN=John,CN=Users,DC=uaatestad,DC=ge,DC=com': 0x13.

WARNING: Failed to set UPN HTTP/win16-sachin.uaatestad.ge.com@UAATESTAD.GE.COM on

 CN=John,CN=Users,DC=uaatestad,DC=ge,DC=com.

kinits to 'HTTP/win16-sachin.uaatestad.ge.com@UAATESTAD.GE.COM' will fail.

Successfully mapped HTTP/win16-sachin.uaatestad.ge.com to John.

Key created.

Output keytab to c:\Temp\win16-sachin.uaatestad.ge.com.keytab:

Keytab version: 0x502

keysize 102 HTTP/win16-sachin.uaatestad.ge.com@UAATESTAD.GE.COM ptype 1 (KRB5_NT_PRINCIPAL) vno 9 etype 0x12

 (AES256-SHA1) keylength 32 (0x8b551a22050935e9ace848cacbacc86a4eb845e63b6461d4f31b7d815158cf6c)
```

You can also do the following to verify if the service principal is mapped to the dummy account, and a keytab is created:

1. Go to **Active Directory Users and Computers > Users**.
2. Access the properties of the user account for which you created the keytab file.
3. On the **Account** tab, verify **User logon name**. is pointing to your service principal name.



- Copy the keytab file on the machine, where Proficy Authentication is installed.
- Update the Proficy Authentication uaa.yml file *(on page 62)*.

Proficy Authentication Service Configuration

This topic provides steps to update the Proficy Authentication `uaa.yml` file.

Make sure you have completed the following tasks:

- Generate Keytab File *(on page 59)*.
- Copy the keytab file from the Active Directory server, and paste it anywhere on the Proficy Authentication machine.
- Make a note of the keytab file location on the Proficy Authentication machine.

You must be an administrator to perform this task.

1. Log in to the computer machine where Proficy Authentication is installed.
2. Access the `uaa.yml` file.
   The file is located at `C:\ProgramData\GE\Operations Hub\uaa-config\uaa.yml`

3. To modify, open `uaa.yml` in any text editor.
   Example: Notepad++
4. Search for `kerberos` and enter values for the following keys:

service-principal	Enter the service principal name. For more information, refer to Create Service Principal Name *(on page 56)*.
keytab-location	Enter the location path where you copied the keytab file on this machine.

   For example:

```
kerberos:
    service-principal: HTTP/win16-phantomhost.uaatestad.ge.com@UAATESTAD.GE.COM
    keytab-location: 'file:///C:/ProgramData/GE/Proficy Authentication/uaa-config/myskullcave.keytab'
```

5. Save and close the modified file.
6. Restart the `GE Proficy Authentication Tomcat Web Server` service.
   a. Access the Windows Run dialog.
   b. Enter `services.msc` to open the **Services** screen.
   c. Right-click `GE Proficy Authentication Tomcat Web Server` and select **Restart**.

The Proficy Authentication service configuration is updated .

Configure Browser

Configure the browser settings for Kerberos authentication.

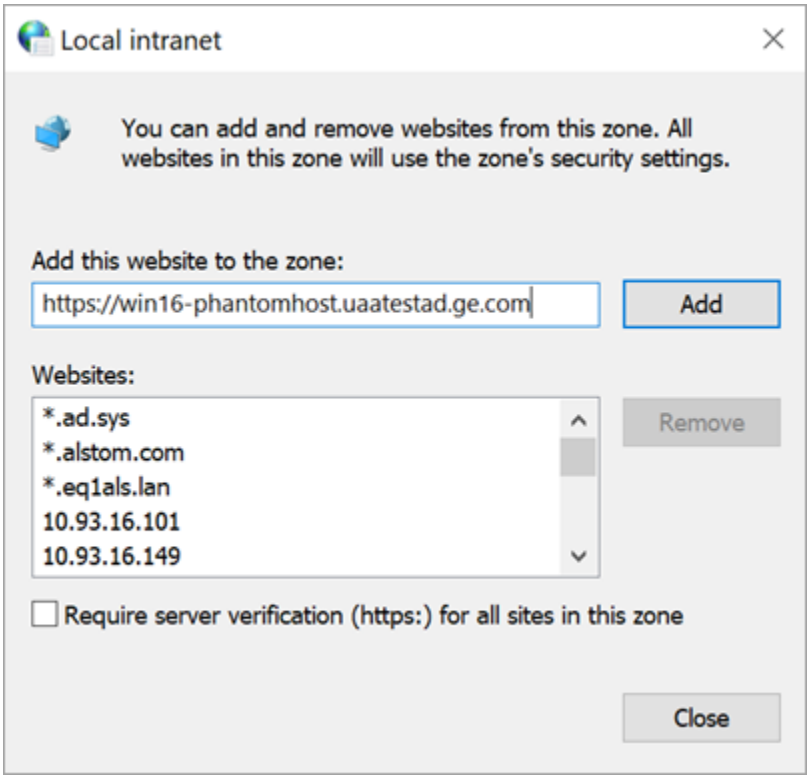
Windows Auto-login works if the following tasks are accomplished.

- Create Service Principal Name *(on page 56)*
- Generate Keytab File *(on page 59)*
- Proficy Authentication Service Configuration *(on page 62)*

The steps describe how to configure the browser settings on Internet Explorer (IE). Since IE settings are shared by Chrome, you do not have to configure it separately for the Chrome browser.

Important:
Windows Auto-login is not supported on the node where the Proficy Authentication service is running. To enable auto-login, configure the browser settings on a node different from the Proficy Authentication service node.

1. Go to **Control Panel > Internet Options**
   The **Internet Properties** dialog appears.
2. On the **Security** tab, select **Local intranet > Sites**.
   The **Local intranet** window appears.
3. Select **Advanced**.
4. In **Add this website to the zone**, enter the URL of the Proficy Authentication service, and then select **Add**.



5. Select **Close**.
6. Select **OK** to close the open windows.

Kerberos supported SPNEGO authentication is enabled on your IE browser.

For Windows Auto-login, use `UseKerbAuth` query parameter while accessing the Proficy Authentication service URL. For example, `https://FQDN of the Proficy Authentication Service Node/uaa/?UseKerbAuth=true`

Troubleshooting Error Logs

This topic describes Windows Auto-login success/failure scenarios.

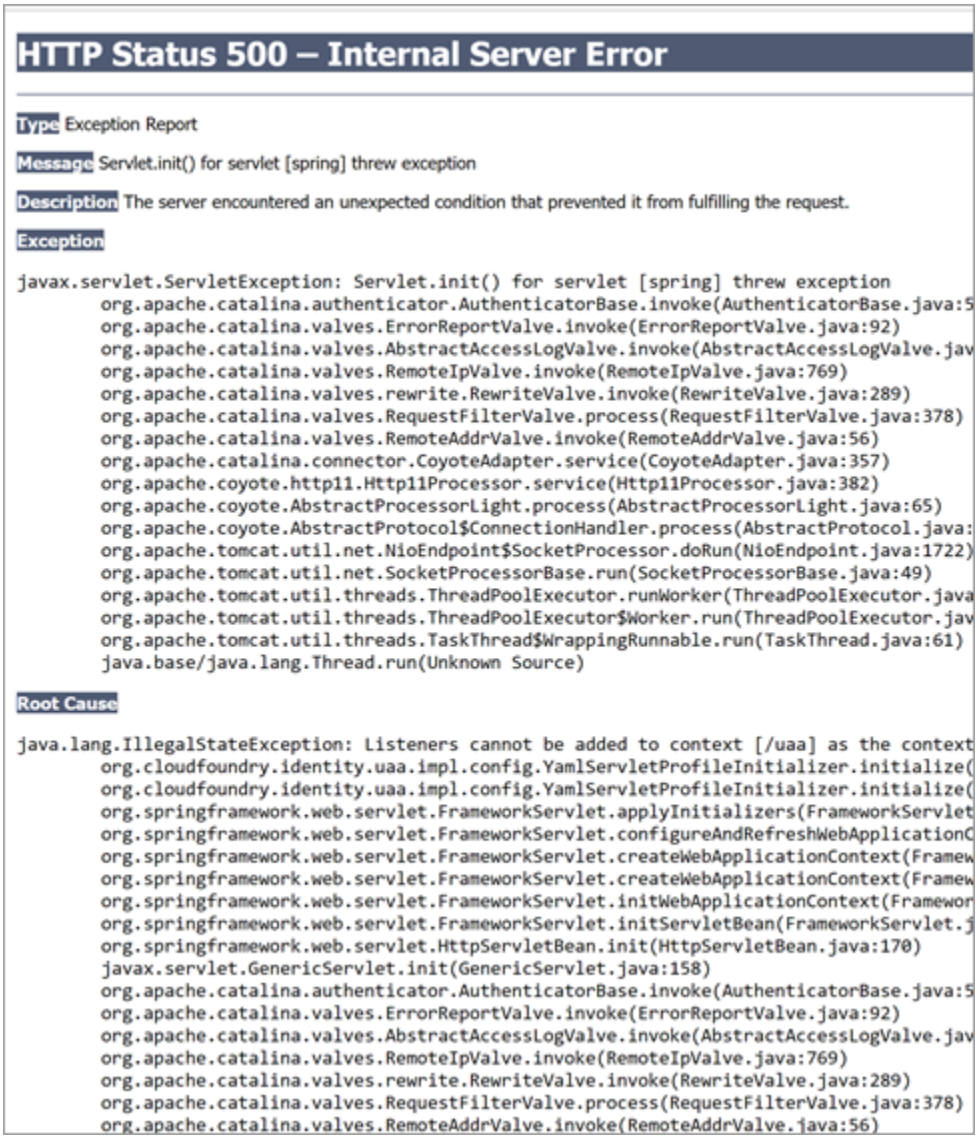
User logs in successfully

Verify the `uaa.log` if the TGT/Kerberos token is generated properly. It should start with **YII**. You can ignore the lengthy token value in the log entries.

```
[2022-02-22 19:29:41.949] cloudfoundry-identity-server - 14188 [http-nio-9480-exec-8] ....

 DEBUG --- SpnegoAuthenticationProcessingFilter: Received Negotiate Header for request

 https://win16-sachin.uaatestad.ge.com/uaa/: Negotiate YIIHVQYGKwY********
```

A local Windows (non-domain) user attempts Windows Auto-login (using query parameter in the URL) from a domain member machine

Browser displays an error. The error message also appears in `uaa.log`. The following error appears when attempting to login with domain name in the URL.



HTTP Status 500 – Internal Server Error

Type Exception Report

Message Servlet.init() for servlet [spring] threw exception

Description The server encountered an unexpected condition that prevented it from fulfilling the request.

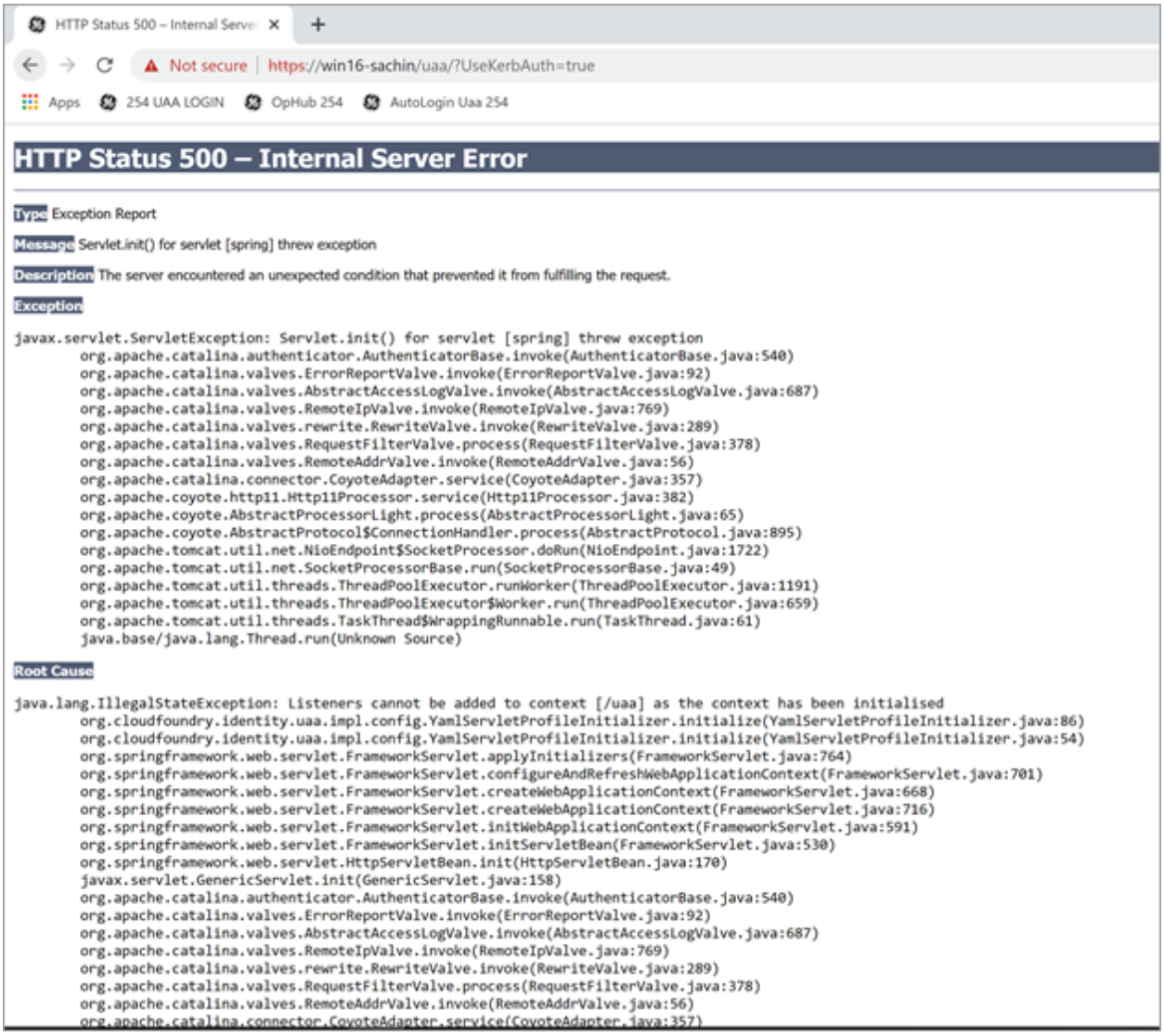
Exception

```
javax.servlet.ServletException: Servlet.init() for servlet [spring] threw exception
        org.apache.catalina.authenticator.AuthenticatorBase.invoke(AuthenticatorBase.java:5
        org.apache.catalina.valves.ErrorReportValve.invoke(ErrorReportValve.java:92)
        org.apache.catalina.valves.AbstractAccessLogValve.invoke(AbstractAccessLogValve.jav
        org.apache.catalina.valves.RemoteIpValve.invoke(RemoteIpValve.java:769)
        org.apache.catalina.valves.rewrite.RewriteValve.invoke(RewriteValve.java:289)
        org.apache.catalina.valves.RequestFilterValve.process(RequestFilterValve.java:378)
        org.apache.catalina.valves.RemoteAddrValve.invoke(RemoteAddrValve.java:56)
        org.apache.catalina.connector.CoyoteAdapter.service(CoyoteAdapter.java:357)
        org.apache.coyote.http11.Http11Processor.service(Http11Processor.java:382)
        org.apache.coyote.AbstractProcessorLight.process(AbstractProcessorLight.java:65)
        org.apache.coyote.AbstractProtocol$ConnectionHandler.process(AbstractProtocol.java:
        org.apache.tomcat.util.net.NioEndpoint$SocketProcessor.doRun(NioEndpoint.java:1722)
        org.apache.tomcat.util.net.SocketProcessorBase.run(SocketProcessorBase.java:49)
        org.apache.tomcat.util.threads.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java
        org.apache.tomcat.util.threads.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.jav
        org.apache.tomcat.util.threads.TaskThread$WrappingRunnable.run(TaskThread.java:61)
        java.base/java.lang.Thread.run(Unknown Source)
```

Root Cause

```
java.lang.IllegalStateException: Listeners cannot be added to context [/uaa] as the context
        org.cloudfoundry.identity.uaa.impl.config.YamlServletProfileInitializer.initialize(
        org.cloudfoundry.identity.uaa.impl.config.YamlServletProfileInitializer.initialize(
        org.springframework.web.servlet.FrameworkServlet.applyInitializers(FrameworkServlet
        org.springframework.web.servlet.FrameworkServlet.configureAndRefreshWebApplicationC
        org.springframework.web.servlet.FrameworkServlet.createWebApplicationContext(Framew
        org.springframework.web.servlet.FrameworkServlet.createWebApplicationContext(Framew
        org.springframework.web.servlet.FrameworkServlet.initWebApplicationContext(Framewor
        org.springframework.web.servlet.FrameworkServlet.initServletBean(FrameworkServlet.j
        org.springframework.web.servlet.HttpServletBean.init(HttpServletBean.java:170)
        javax.servlet.GenericServlet.init(GenericServlet.java:158)
        org.apache.catalina.authenticator.AuthenticatorBase.invoke(AuthenticatorBase.java:5
        org.apache.catalina.valves.ErrorReportValve.invoke(ErrorReportValve.java:92)
        org.apache.catalina.valves.AbstractAccessLogValve.invoke(AbstractAccessLogValve.jav
        org.apache.catalina.valves.RemoteIpValve.invoke(RemoteIpValve.java:769)
        org.apache.catalina.valves.rewrite.RewriteValve.invoke(RewriteValve.java:289)
        org.apache.catalina.valves.RequestFilterValve.process(RequestFilterValve.java:378)
        org.apache.catalina.valves.RemoteAddrValve.invoke(RemoteAddrValve.java:56)
```

The following error appears when attempting to login with non-domain name in the URL.



Bad or missing keytab file (or) Bad SPN in `uaa.yml` file

The following errors appear in `uaa.log`.

```
[2022-02-21 19:09:21.839] cloudfoundry-identity-server - 13956 [http-nio-9480-exec-8] .... ERROR ---

 DynamicKerberosAuthenticationManager: Kerberos validation not successful. Encountered Bad Credentials Exception :

 Kerberos validation not successful

[2022-02-21 19:09:21.839] cloudfoundry-identity-server - 13956 [http-nio-9480-exec-8] .... ERROR ---

 DynamicKerberosAuthenticationManager: Kerberos validation not successful. Encountered Bad Credentials Exception :

 Kerberos validation not successful

[2022-02-21 19:09:21.839] cloudfoundry-identity-server - 13956 [http-nio-9480-exec-8] .... ERROR ---

 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : null
```

```
[2022-02-21 19:09:21.839] cloudfoundry-identity-server - 13956 [http-nio-9480-exec-8] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : null
[2022-02-21 19:09:21.839] cloudfoundry-identity-server - 13956 [http-nio-9480-exec-8] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Defective token detected (Mechanism
 level: GSSHeader did not find the right tag)
[2022-02-21 19:09:21.839] cloudfoundry-identity-server - 13956 [http-nio-9480-exec-8] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Defective token detected (Mechanism
 level: GSSHeader did not find the right tag)
[2022-02-21 19:09:21.839] cloudfoundry-identity-server - 13956 [http-nio-9480-exec-8] ....
  WARN --- SpnegoAuthenticationProcessingFilter: Negotiate Header was invalid: Negotiate
 TlRMTVNTUAABAAAAl4II4gAAAAAAAAAAAAAAAAAAAAAKADk4AAAADw==
org.springframework.security.authentication.BadCredentialsException: Bad Credentials excpetion. It could be due to
 keytab file and the SPN configuration.
```

Crypto Mismatch

A crypto mismatch occurs if the encryption algorithm specified while using `ktpass.exe` to generate keytab does not match what is supported by the service account.

```
[2022-02-22 11:39:18.326] cloudfoundry-identity-server - 6084 [http-nio-9480-exec-3] .... ERROR ---
 DynamicKerberosAuthenticationManager: Kerberos validation not successful. Encountered Bad Credentials Exception :
 Kerberos validation not successful
[2022-02-22 11:39:18.326] cloudfoundry-identity-server - 6084 [http-nio-9480-exec-3] .... ERROR ---
 DynamicKerberosAuthenticationManager: Kerberos validation not successful. Encountered Bad Credentials Exception :
 Kerberos validation not successful
[2022-02-22 11:39:18.326] cloudfoundry-identity-server - 6084 [http-nio-9480-exec-3] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : null
[2022-02-22 11:39:18.326] cloudfoundry-identity-server - 6084 [http-nio-9480-exec-3] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : null
[2022-02-22 11:39:18.326] cloudfoundry-identity-server - 6084 [http-nio-9480-exec-3] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Failure unspecified at GSS-API
 level (Mechanism level: Invalid argument (400) - Cannot find key of appropriate type to decrypt AP-REQ - RC4 with
 HMAC)
[2022-02-22 11:39:18.326] cloudfoundry-identity-server - 6084 [http-nio-9480-exec-3] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Failure unspecified at GSS-API
 level (Mechanism level: Invalid argument (400) - Cannot find key of appropriate type to decrypt AP-REQ - RC4 with
 HMAC)
```

```
[2022-02-22 11:39:18.326] cloudfoundry-identity-server - 6084 [http-nio-9480-exec-3] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Invalid argument (400) - Cannot
 find key of appropriate type to decrypt AP-REQ - RC4 with HMAC
[2022-02-22 11:39:18.326] cloudfoundry-identity-server - 6084 [http-nio-9480-exec-3] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Invalid argument (400) - Cannot
 find key of appropriate type to decrypt AP-REQ - RC4 with HMAC
```

Clock skew between client and server

The following errors appear in `uaa.log`.

```
[2022-02-19 13:14:55.556] cloudfoundry-identity-server - 14532 [http-nio-9480-exec-9] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : null
[2022-02-19 13:14:55.556] cloudfoundry-identity-server - 14532 [http-nio-9480-exec-9] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : null
[2022-02-19 13:14:55.556] cloudfoundry-identity-server - 14532 [http-nio-9480-exec-9] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Failure unspecified at GSS-API
 level (Mechanism level: Clock skew too great (37))
[2022-02-19 13:14:55.556] cloudfoundry-identity-server - 14532 [http-nio-9480-exec-9] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Failure unspecified at GSS-API
 level (Mechanism level: Clock skew too great (37))
[2022-02-19 13:14:55.556] cloudfoundry-identity-server - 14532 [http-nio-9480-exec-9] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Clock skew too great (37)
[2022-02-19 13:14:55.556] cloudfoundry-identity-server - 14532 [http-nio-9480-exec-9] .... ERROR ---
 DynamicKerberosAuthenticationManager: Root cause for Kerberos validation failure : Clock skew too great (37)
```

Note:
Make sure the clocks on all the three systems are synchronized.

Useful SPN commands

To view existing SPNs	`setspn -F -Q HTTP/<FQDN>` Example: `setspn -F -Q HTTP/win16-phantomhost.uaatestad.ge.com@UAATESTAD-.GE.COM`
To delete SPN	`setspn -D HTTP/<FQDN> <user account>` Example: `setspn -D HTTP/win16-phantomhost.uaatestad.ge.com@UAATESTAD.GE-.COM ghost1`

High Availability

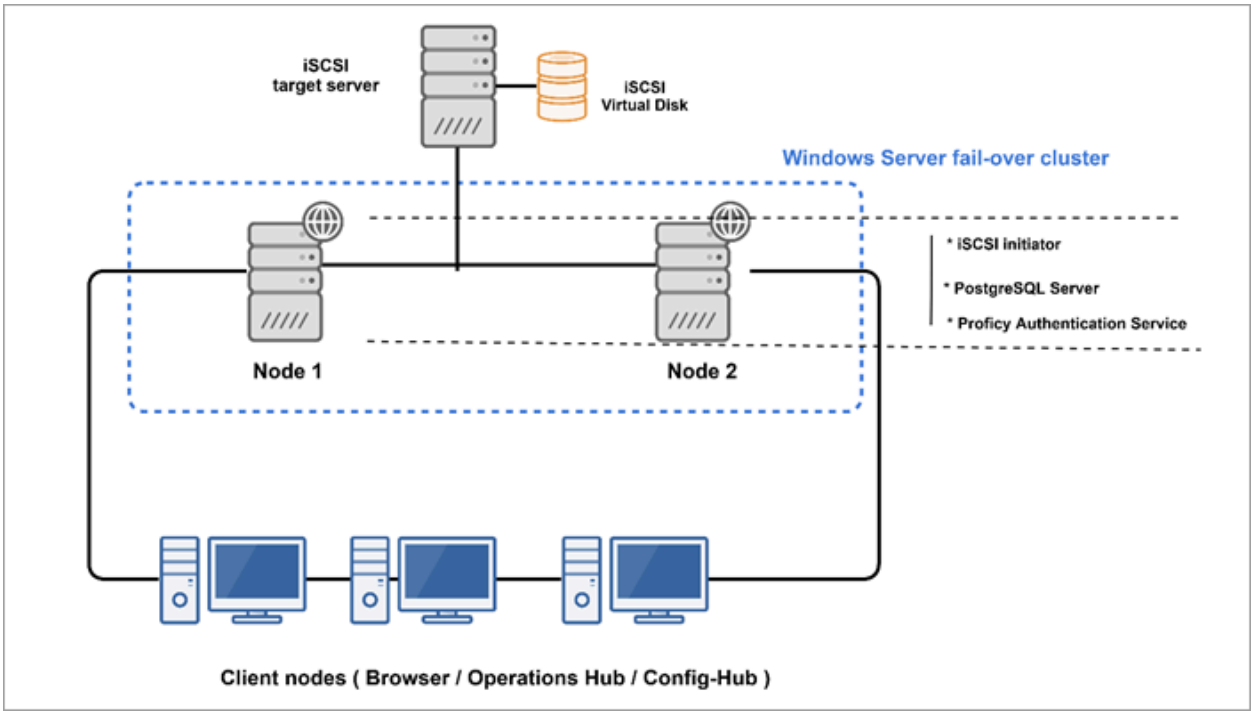
Configure High Availability for Proficy Authentication

This topic describes how to set up a highly available server for the Proficy Authentication service that is based on the Windows failover cluster and iSCSI technologies.

You need:

- One Windows Server 2019 virtual machine to serve as iSCSI Target.
- Two Windows Server 2019 virtual machines to serve as iSCSI Initiators:
  - A primary node (Node1) server
  - A secondary node (Node2) server

The following image illustrates the simplest form of deploying the Windows failover cluster and iSCSI technology-based high available solution for the Proficy Authentication Service.



In failover cluster technology, a group of independent computers work together to increase the availability and scalability of clustered roles (identified as nodes in a cluster). Nodes are clustered server machines running applications and services.

Failover cluster feature and file server roles are installed on the Node1 and Node2 servers (also called iSCSI initiators). A virtual disk is created on the iSCSI target server for shared storage. Failover clustering technology arranges for a backup server whenever the primary server has failed for any reason. So, if the

primary server Node1 is down, then the backup server Node2 is automatically activated to replace the role of the primary server. This ensures uninterrupted access to shared storage and continuity of services even during failure of the primary server.

1. Set up the iSCSI Target.
    a. Configure iSCSI Target *(on page 71)*
    b. Create a Virtual Disk *(on page 74)*
2. Set up the iSCSI initiators: Node1 and Node2.
    a. Configure iSCSI Initiator *(on page 72)*
    b. Initialize a Virtual Disk *(on page 76)*
3. Open Failover Cluster Manager on any of the iSCSI initiator nodes in a cluster (Node1 or Node2), and create a cluster *(on page 78)*.
4. Create and configure a role for the failover cluster. See Configure Role *(on page 82)*.
5. Install Proficy Authentication on both the nodes.
   See Configure Proficy Authentication Installation *(on page 87)*.

   If you are installing Operations Hub in a highly available cluster, follow the steps as described in Prerequisites for Installing Operations Hub with External Proficy Authentication *(on page 92)*.
6. Restart the services on both the nodes.

Configure iSCSI Target

This topic describes how to configure an iSCSI target server.

You can configure an external storage using Windows 2019.

1. Log in to the virtual machine where you want to set up the iSCSI target server.
2. Go to **Start > Administrative Tools > Server Manager**.
3. From the Server Manager dashboard, select **Manage > Add roles and features**.
4. Complete **Add Roles and Features Wizard** with these options:

Section	What To Do
Before You Begin	Skip to the next section.
Installation Type	Select **Role-based or feature-based installation**.
Server Selection	a. Choose the option **Select a server from the server pool**. b. Under the server pool section, select your target server. You will be installing the role/feature on this server.
Server Roles	In the roles list box:

Section	What To Do
	a. Expand **File and Storage Services > File and iSCSI Services**. b. Select the check box for **iSCSI Target Server**.
Confirmation	Select **Install**.

When the installation is complete, restart the machine.

Log in to the same server again and create a virtual disk *(on page 74)*.

Configure iSCSI Initiator

This topic describes how to configure an iSCSI initiator and connect to the target server.

Configure iSCSI Target *(on page 71)*.

You must perform these steps on all the initiator server nodes you want to add to a cluster. Let us assume you are setting up a basic two-node cluster, where there are two iSCSI initiators:

- A primary server called Node1
- A secondary server called Node2

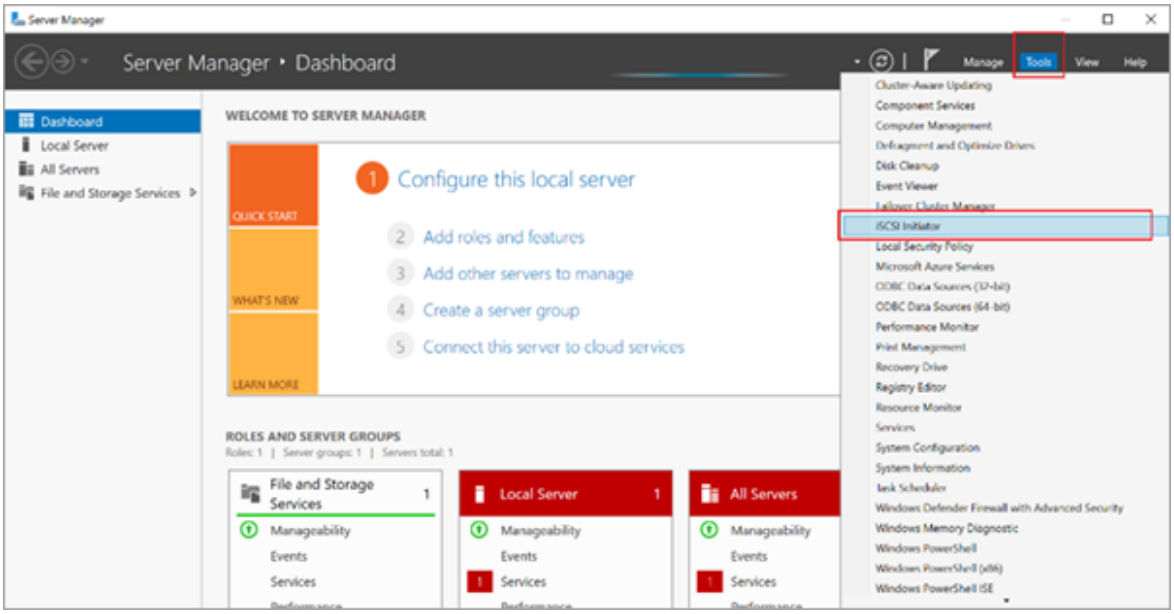
1. Log in to the Node1 server.
2. Go to **Start > Administrative Tools > Server Manager**.
3. From the Server Manager dashboard, select **Manage > Add roles and features**.
4. Complete **Add Roles and Features Wizard** with these options:

Section	What To Do
Before You Begin	Skip to the next section.
Installation Type	Select **Role-based or feature-based installation**.
Server Selection	a. Choose the option **Select a server from the server pool**. b. Under the server pool section, select your Node1 server. You will be installing the role/feature on this server.
Server Roles	In the roles list box: a. Expand **File and Storage Services > File and iSCSI Services**. b. Select the check box for **iSCSI Target Server**.
Features	To allow the installation of Failover Cluster Manager:

Section	What To Do
	a. In the features list box, select the check box for **Failover Clustering**. The **Add features that are required for Failover Clustering?** screen appears, which shows the dependencies that are installed with this feature. b. Select **Add Features**.
Confirmation	Select **Install**.

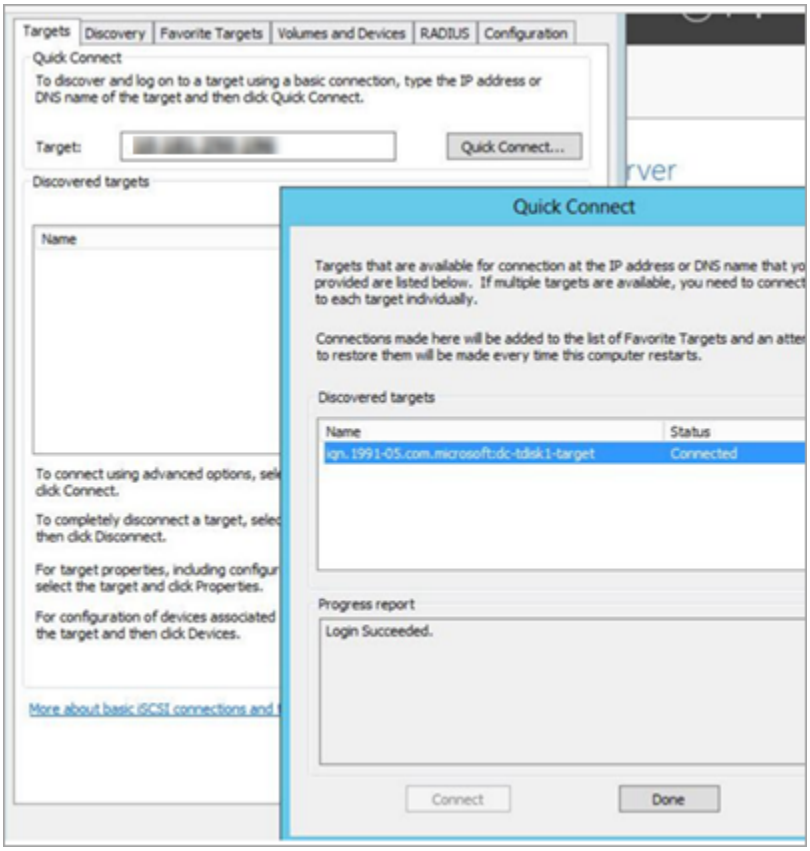
The selected role and feature is installed on the Node1 server.

5. When the installation is complete, restart the machine.
6. Log in to the same server again and launch **Server Manager**.
7. From the **Tools** menu, select **iSCSI Initiator**.



8. In the **Target** field, enter the iSCSI target server address.
9. Select **Quick Connect**.

   If connected, the login success appears as shown in the following figure:



10. Select **Done**, then **OK** to exit.
11. Log in to the Node2 server and repeat steps 1-9.

Initialize a Virtual Disk *(on page 76)*

Create a Virtual Disk

This topic describes how to create an iSCSI virtual disk and configure the access server.

You must first configure the iSCSI target server *(on page 71)*.

1. Log in to the iSCSI target server.
2. Go to **Start > Administrative Tools > Server Manager**.
3. Go to **File and Storage Services > iSCSI**.
4. From the **TASKS** drop-down menu, select **New iSCSI Virtual Disk**.
5. Complete **New iSCSI Virtual Disk Wizard** with these options:

Section	What To Do
iSCSI Virtual Disk Location	The iSCSI target server and volume details are displayed.
iSCSI Virtual Disk Name	Enter a name for the virtual disk. For example, `sharedDisk`
iSCSI Virtual Disk Size	a. Enter the disk size. For example, `10GB`. The disk size depends on your database utilization and number of users. b. Select **Dynamically expanding**.
iSCSI Target	Select **New iSCSI target**. If the target is new, then it should be assigned later as described in step 8.
Target Name and Access	Enter a name for the iSCSI target server. For example, `hauaatarget`
Access Servers	Add the iSCSI initiators (Node1 and Node2) and enable them to access the iSCSI virtual disk. Follow these steps to add the servers one at a time: a. Select **Add**. The **Add initiator ID** screen appears. b. Select **Enter a value for the selected type**. c. From the **Type** drop-down menu, choose any of the following options to enter a value: ▪ If you select **DNS Name**, enter the DNS name of the computer where the iSCSI initiator is installed. ▪ If you select **IP Address**, then enter the IP address of the computer where the iSCSI initiator is installed. ▪ If you select **Mac Address**, then enter the MAC address of the computer where the iSCSI initiator is installed. d. Select **OK** to exit. e. To add Node2, repeat the above steps.
Enable authentication	Skip to the next section.
Confirmation	Select **Create**.

When the iSCSI virtual disk is created successfully, select **Close** to exit the wizard.

6. In Server Manager, go to **File and Storage Services > iSCSI** and verify the newly created virtual disk is listed under iSCSI virtual disks.

The virtual disk status appears as `Not Connected`. This occurs when a new iSCSI target is selected during iSCSI virtual disk creation.

7. Right-click the `Not Connected` iSCSI virtual disk and select **Assign iSCSI Virtual Disk**.
8. Complete **Assign iSCSI Virtual Disk Wizard** with these options:

Section	What To Do
iSCSI Target	Select **Existing iSCSI target** and select the target server to connect.
Confirmation	Select **Assign**.

When the iSCSI virtual disk is assigned successfully, select **Close** to exit the wizard.

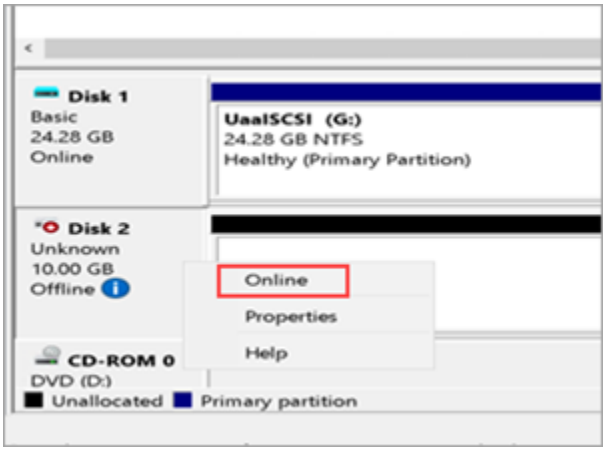
Initialize a Virtual Disk

This topic describes how to initialize a disk and create a volume.

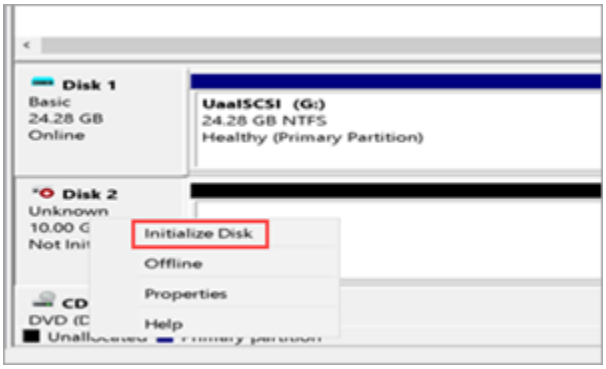
Create a Virtual Disk *(on page 74)*.

You need to perform the following tasks only once on any of the iSCSI initiator nodes and it applies to the other nodes in a cluster. Suppose there are two nodes in a cluster, Node1 and Node2. If you initialize a virtual disk on the Node1 server, then you don't need to do it again on the Node2 server.

1. Log in to any of the server nodes in a cluster (Node1 or Node2).
2. Go to **Control Panel > Administrator Tools > Computer Management > Storage > Disk Management**.
3. Look for the unknown disk, right-click and select **Online**.
   If the unknown disk is offline, you must bring it online.

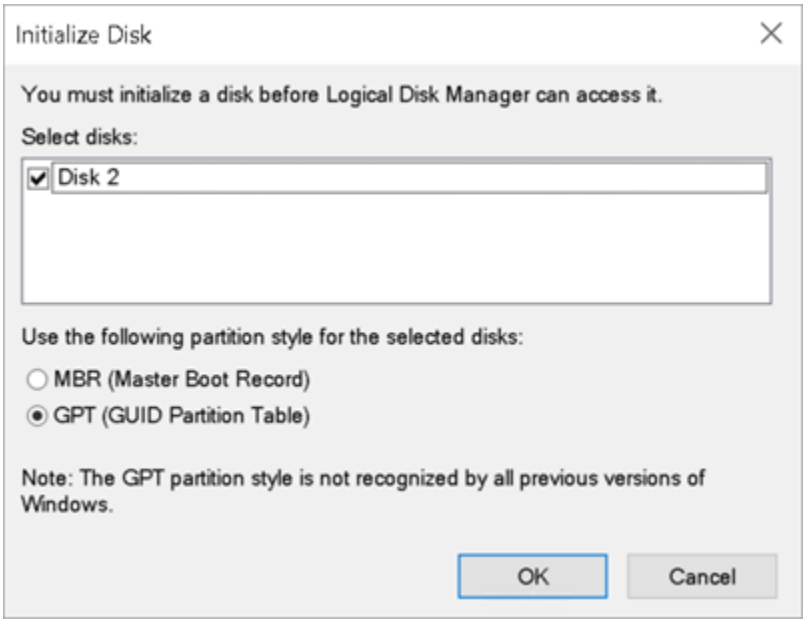


4. Right-click the unknown disk again and select **Initialize disk**.

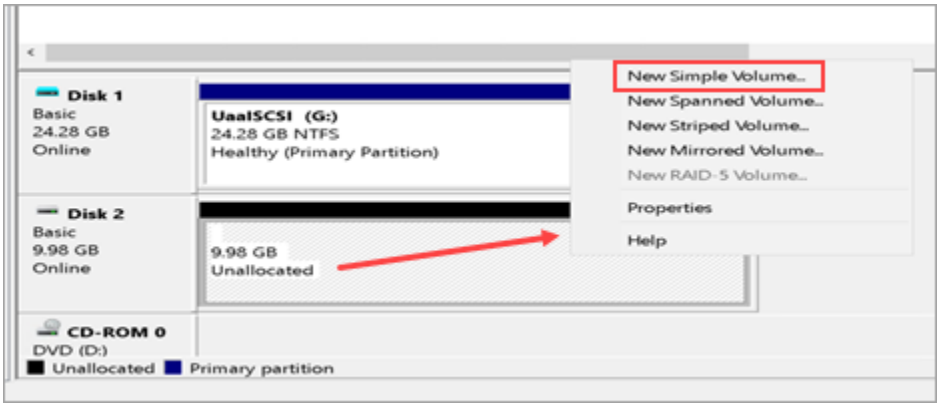


The **Initialize Disk** screen appears.

5. Select **OK**.



6. Right-click the unallocated space on the disk, and select **New Simple Volume**.



The **New Simple Volume Wizard** screen appears.

7. Complete the steps in the wizard to create a new volume.
   You need to:
   - Specify the size of the volume you want to create in megabytes (MB).
   - Assign a drive letter to identify the partition.
   - Format the volume with default settings.

The newly created volume should appear under **This PC** on the logged-in machine.

Create a Cluster

This topic describes how to create a failover cluster.

Install Failover Cluster Manager on the iSCSI initiator nodes. Refer to steps 1-4 in Configure iSCSI Initiator *(on page 72)*.

You can perform these steps on either Node1 or Node2. Suppose you perform these steps on Node1, they are automatically applied to Node2.

1. Log in to the iSCSI initiator node.
2. Go to **Start > Administrative Tools > Failover Cluster Manager**.
3. In Failover Cluster Manager, select **Validate a Configuration**.
   Before starting to create a cluster of nodes, you should validate whether the nodes that you are adding to the cluster are compatible with the cluster hardware requirement. For more information, refer to the Microsoft documentation.
4. Complete **Validate a Configuration Wizard** with these options:

Section	What To Do
Before You Begin	Skip to the next section.
Select Servers or a Cluster	Browse and locate the servers you want to add to the cluster. Refer to Add Server Nodes for Validation *(on page 79)*.
Testing Options	Select **Run all tests (recommended)**.
Confirmation	Review the list of tests run on the selected servers. The number of tests run are based on the roles installed on the server nodes.
Validating	This process may take several minutes depending on your network infrastructure, and the number of server nodes selected for validation.

Section	What To Do
Summary	a. Select **View Report**. b. Review **Failover Cluster Validation Report** and fix any failed validations. You can ignore expected warnings. The validation report should be free of any errors, otherwise the cluster setup will not be successful. c. Select **Finish**.

5. In Failover Cluster Manager, select **Create a Cluster**.
6. Complete **Create Cluster Wizard** using these options:

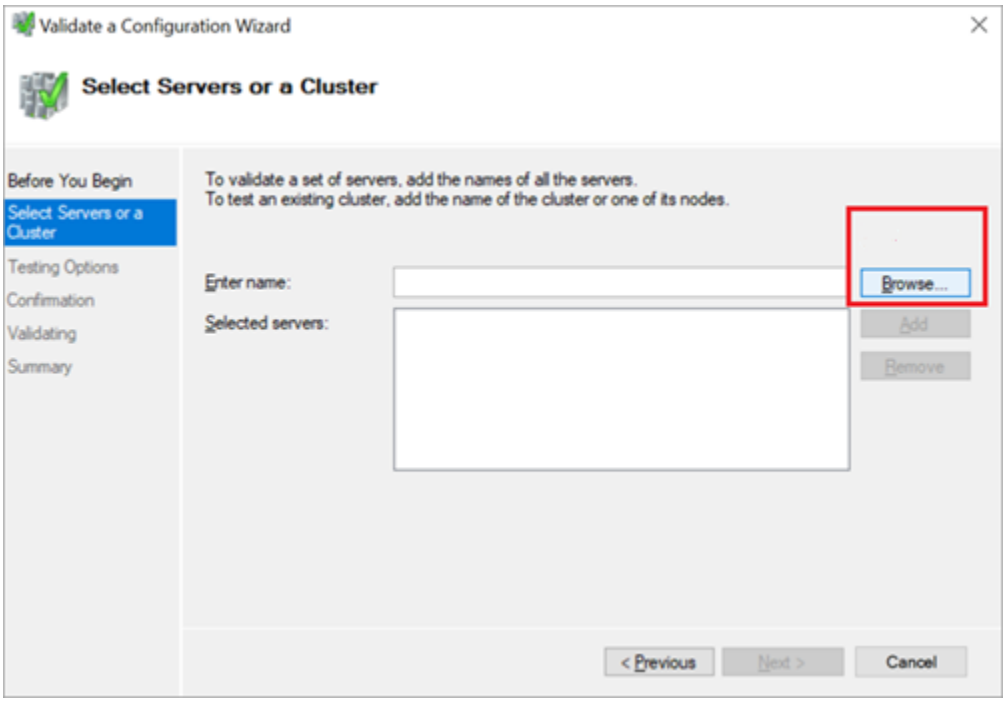
Section	What To Do
Before You Begin	Skip to the next section.
Select Servers	Nodes were already added during validating the configuration process.
Validation Warning	Select **No**.
Access Point for Administering the Cluster	Enter a unique name for your cluster. For example, `hauaacluster`
Confirmation	Clear the check box for **Add all eligible storage to the cluster**.
Creating New Cluster	This process may take a while as there are several checks that must be run, and tests that are conducted while the system is configured.
Summary	Select **Finish**.

Add Server Nodes for Validation

This topic describes how to select computers during validating a cluster configuration.

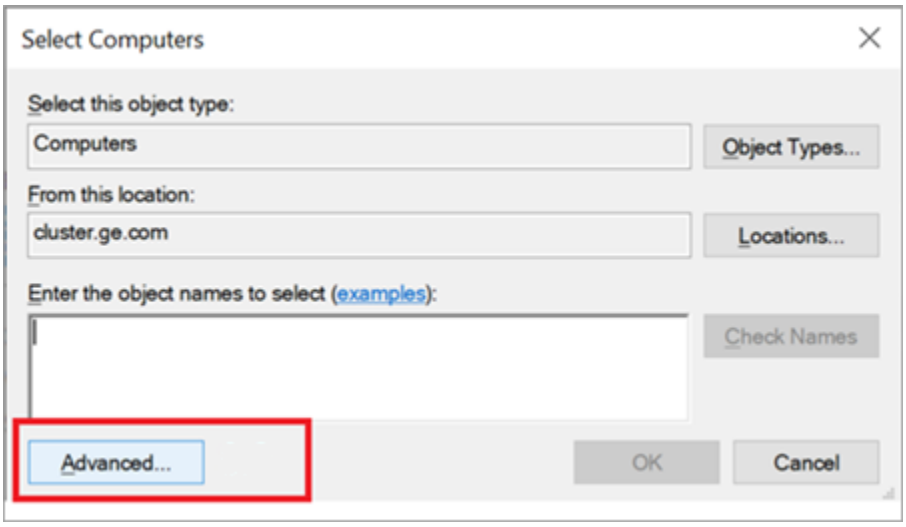
In the following steps, `UAAHANODE1` (Node1 server name) and `UAAHANODE2` (Node2 server name) are used as example server nodes in a cluster.

1. On the **Select Servers or a Cluster** tab, select **Browse**.

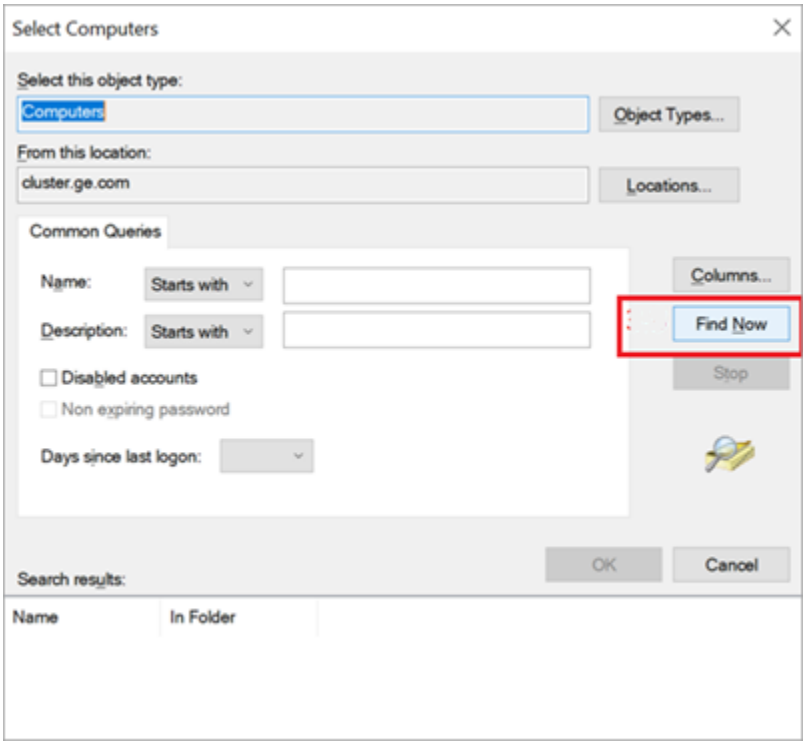


   The **Select Computers** screen appears.

2. Select **Advanced**.

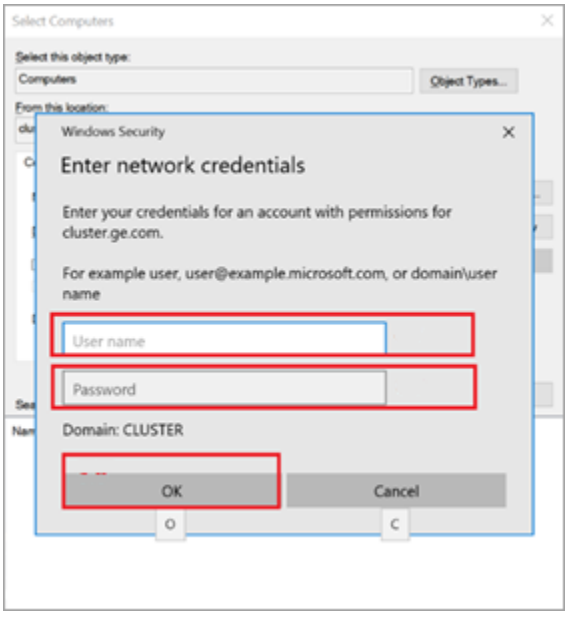


3. Select **Find Now**.



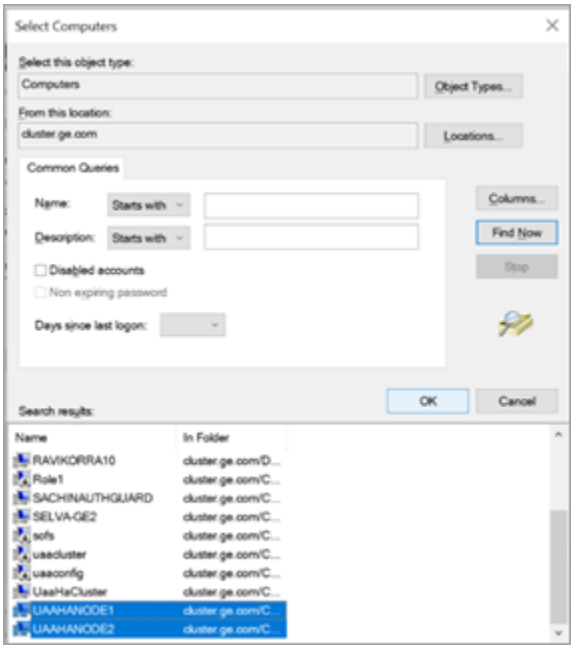
A screen appears prompting to enter the network credentials.

4. Enter the user name and password of the domain where the cluster validation is being performed, and select **OK**.

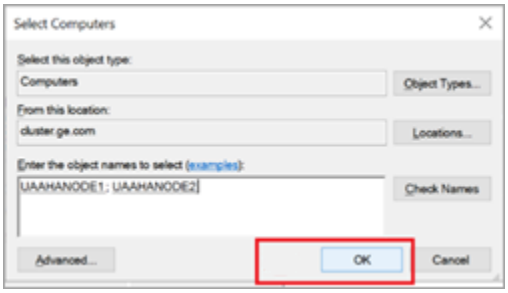


After successful login, you can see the associated nodes.

5. Select `UAAHANODE1` and `UAAHANODE2`, and select **OK**.



6. Select **OK** to exit.



Configure Role

This topic describes how to configure a highly available virtual machine.

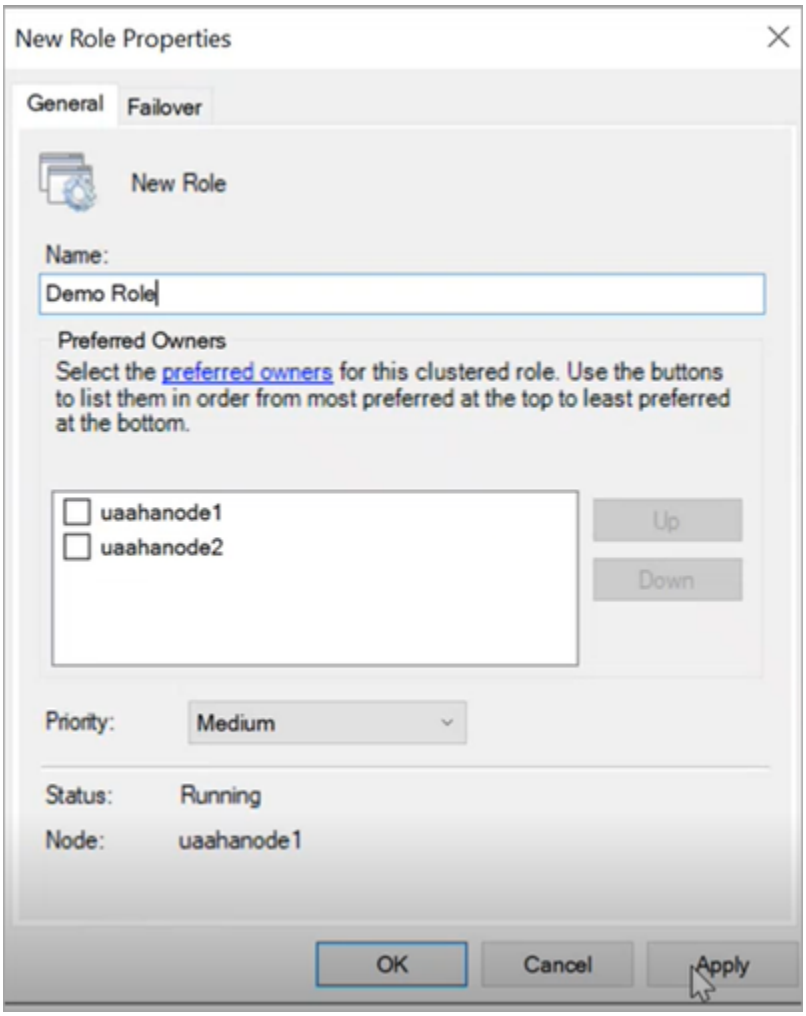
In failover cluster technology, each highly available virtual machine is considered to be a role.

You can perform the following steps on either Node1 or Node2. Suppose you perform these steps on Node1, they are automatically applied to Node2.

1. Log in to any of the iSCSI initiator nodes.
2. Go to **Start > Administrative Tools > Failover Cluster Manager**.
3. In Failover Cluster Manager, expand your cluster name and go to **Storage > Disks**.
   The cluster name is the unique name entered when creating your cluster. Refer to step 6 in Create a Cluster *(on page 78)*.
4. Right-click **Disks** and select **Add Disk**.

The **Add Disks to a Cluster** screen appears.

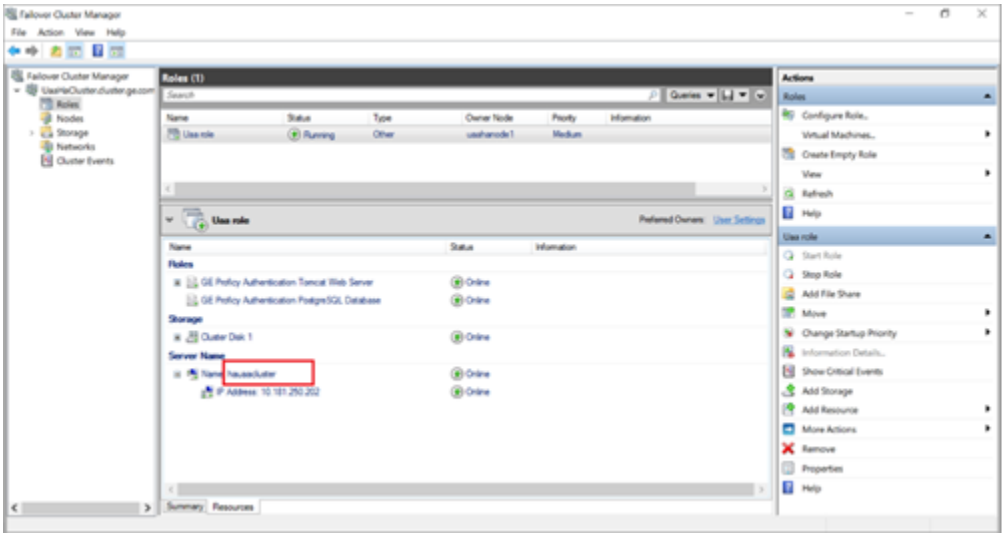
5. Select the disk you want to add, and select **OK**.
6. In Failover Cluster Manager, expand your cluster name and select **Roles**.
7. Right-click **Roles** and select **Create Empty Role**.
   The newly created role appears in the Roles pane with the name `New Role`.
8. Right-click `New Role` and select **Properties**.
   The **New Role Properties** screen appears.
9. Enter a name for the new role, and select **Apply**.
   You can assign the role to multiple node servers and set an order of preference.
   For example, the new name is `Demo Role`.



10. Right-click `Demo Role` and select **Add Storage**.
    The **Add Storage** screen appears.
11. Select the storage that is already associated to the cluster, and select **OK**.
12. Right-click `Demo Role` and select **Add Resource > Client Access Point**.

13. Complete **New Resource Wizard** with the following options.

Section	What To Do
Client Access Point	Enter a name. For example, `hauaacluster` Make a note of this name. You need to provide the fully qualified domain name while installing Proficy Authentication. See step 3a in Configure Proficy Authentication Installation *(on page 87)*. For example, `hauaacluster.cluster.ge.com` wherein `cluster.ge.com` is the domain where cluster is installed. Make sure all the initiator nodes are in the same domain name.
Confirmation	The network name and IP address are displayed for confirmation. **Note:** After creating this resource, the IP address and the name should be added to the `hosts` file on the node servers configured for high availability.
Configure Client Access Point	Verifies the validity of the client access point settings and creates a new resource.
Summary	Select **Finish**.



On the node servers configured for high availability, go to `..\Windows\System32\Drivers\etc\hosts` and open the file in a text editor to add the network IP address and name as follows.

```
<ipaddress>   hauaacluster.cluster.ge.com

        <ipaddress>   hauaacluster
```

In the above example, `<ipaddress>` should be replaced with the actual ip address of your machine.

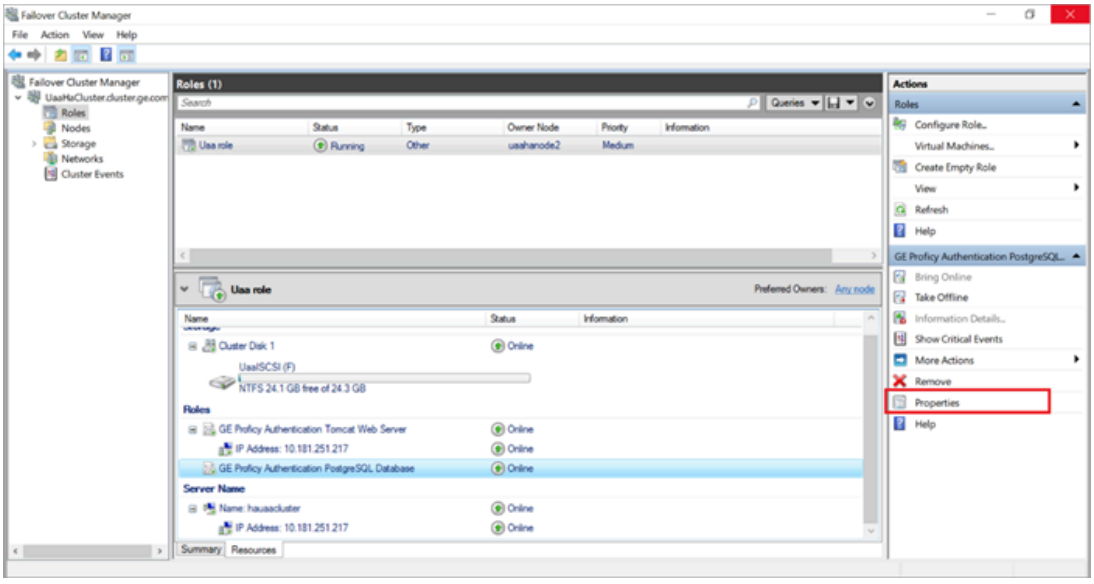
14. Right-click `Demo Role` and select **Add Resource > Generic Service**.
15. Complete **New Resource Wizard** with the following options:

Section	What To Do
Select Service	In the services list, select `GE Proficy Authentication Tomcat Web Service`.
Confirmation	Skip to the next section.
Configure Generic Service	Skip to the next section.
Summary	Select **Finish**.

16. Add the dependency service to role using properties of the added service, so that services restart when switching the node (failover condition).

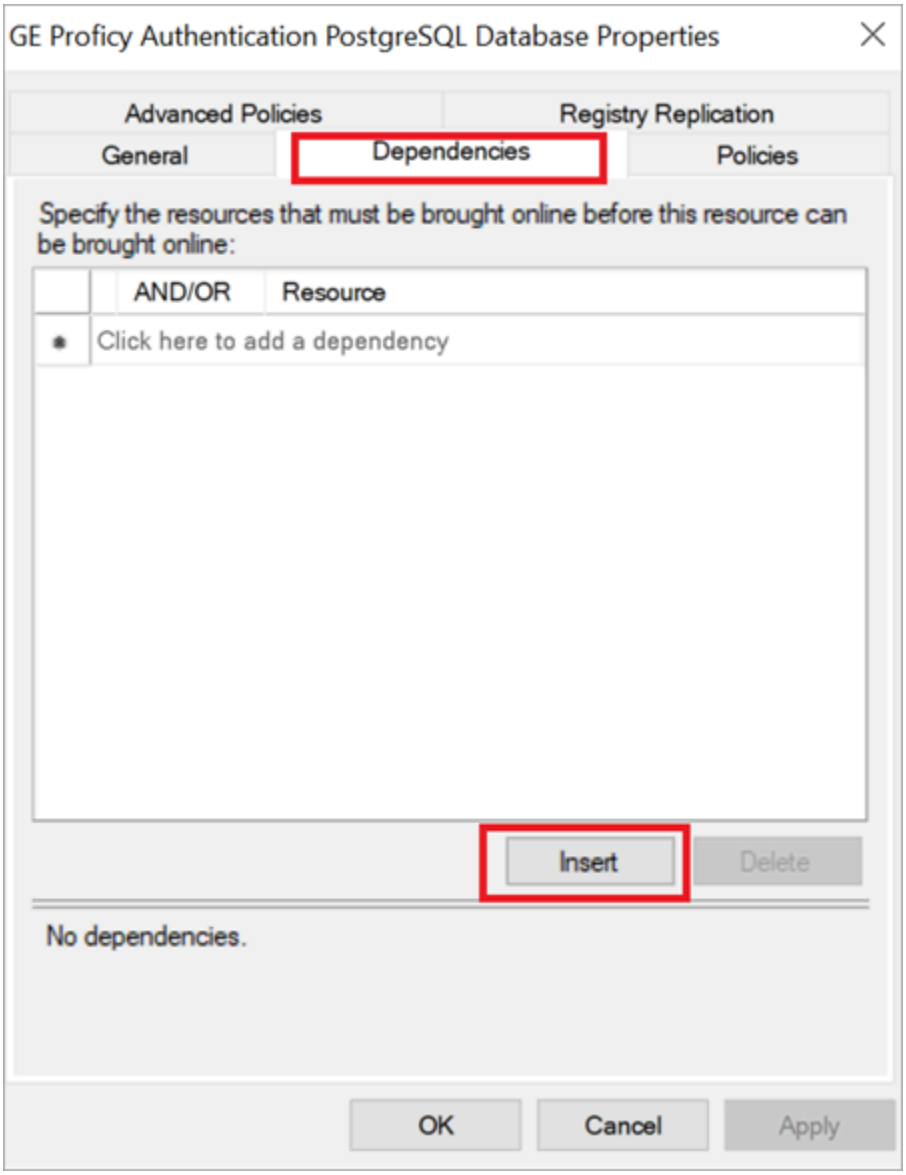
    a. In Failover Cluster Manager, select the added service.

    b. Select **Properties**.



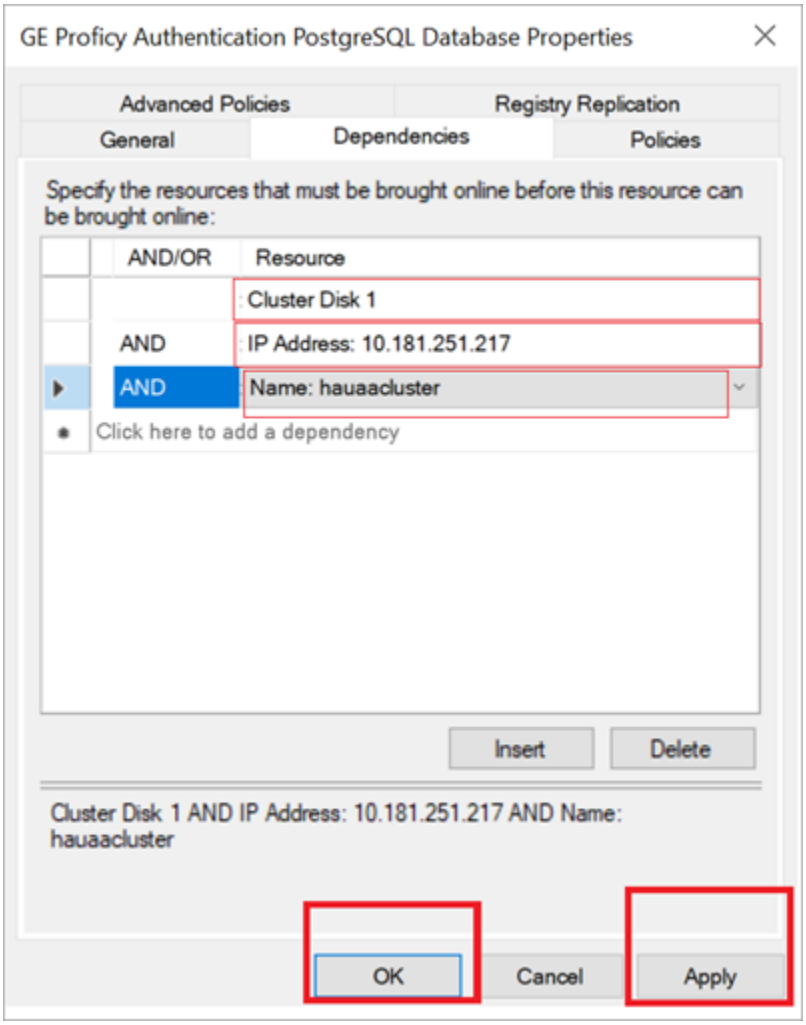
The properties screen for that service appears.

    c. Select the **Dependencies** tab, and select **Insert**.



A row is added to specify our required dependencies.

d. From the drop-down, select the required resource one by one to be added as part of dependencies.



e. After inserting the resource, select **Apply** and then **OK**.

Configure Proficy Authentication Installation

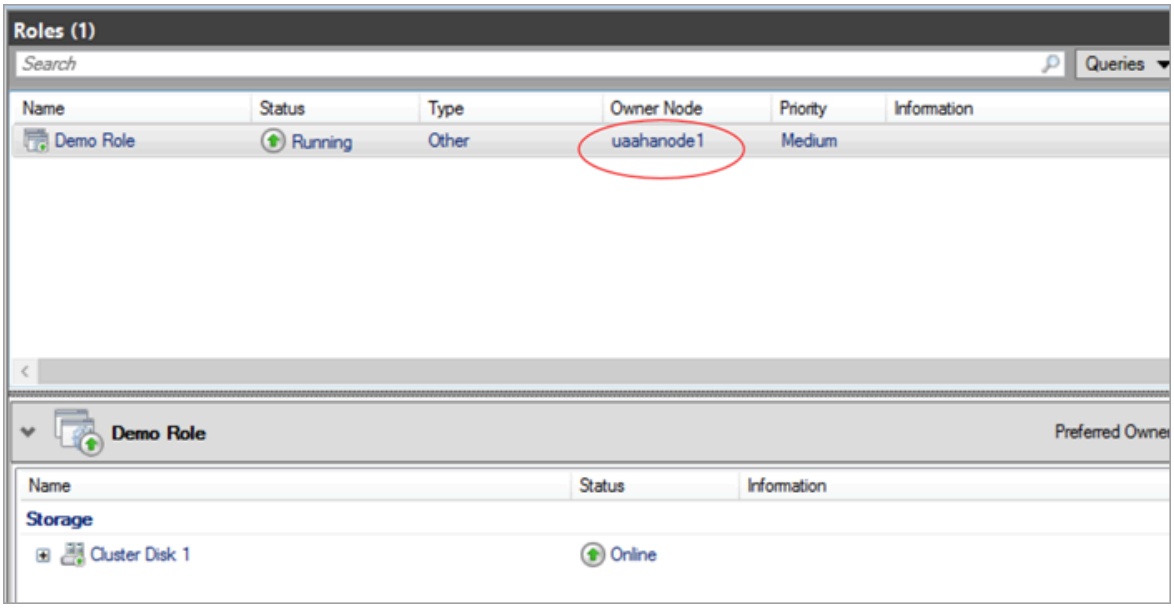
This topic describes Proficy Authentication installation setup in a high available environment.

For fresh installation, you can straightaway proceed with the procedural steps in this topic. But, if you want to use an existing database, do the following before you start with the procedural steps:

1. Copy your Proficy Authentication existing database (found in the Postgress database location) from wherever installed to the shared drive created using the iSCSI server. When you copy, make sure the cluster is pointing to the drive before copying the database. For example, if the cluster is pointing to Node1, then copy the database to Node1.
2. Make a note of the location path where you copied the database in the iSCSI server. For example, `F:\UaaConf`. You need to provide this path for installing Proficy Authentication on Node1 and Node2 machines.

To install Proficy Authentication on the iSCSI initiators (Node1 and Node2), make sure the shared drive in available on the node where you want to run the installation.

1. Log in to the iSCSI initiator Node1 server.
2. Open Failover Cluster Manager and verify that the cluster role is associated to the node where you want to install Proficy Authentication.



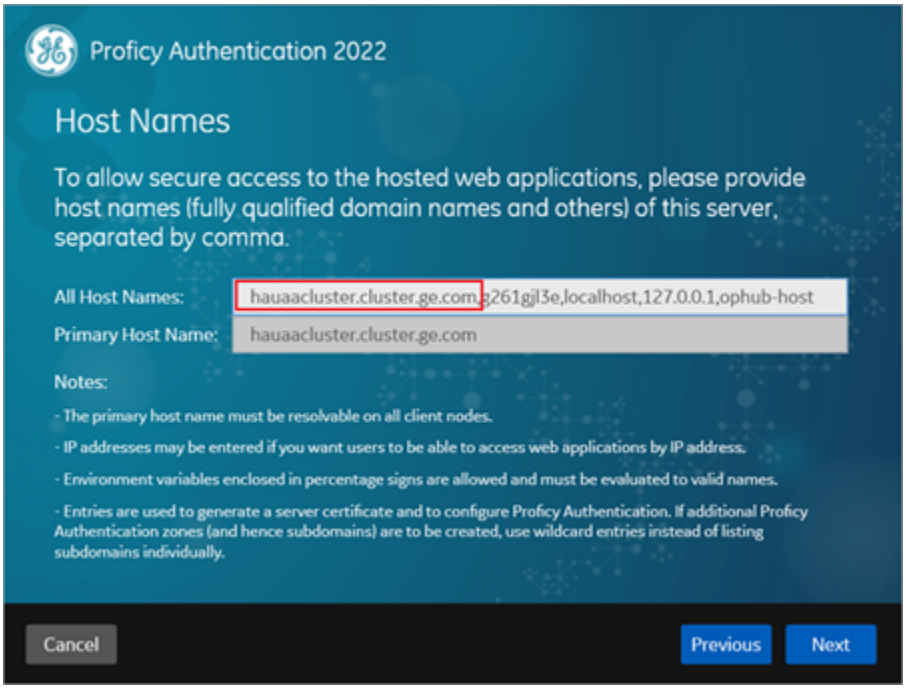
If not, then follow these steps to associate the node server:

a. Right-click your cluster role and select **Select Node**.
The **Move Clustered Role** screen appears.

b. Select the Node1 server, and select **OK**.
Once the cluster is mapped to Node1, the shared drive is available on Node1.

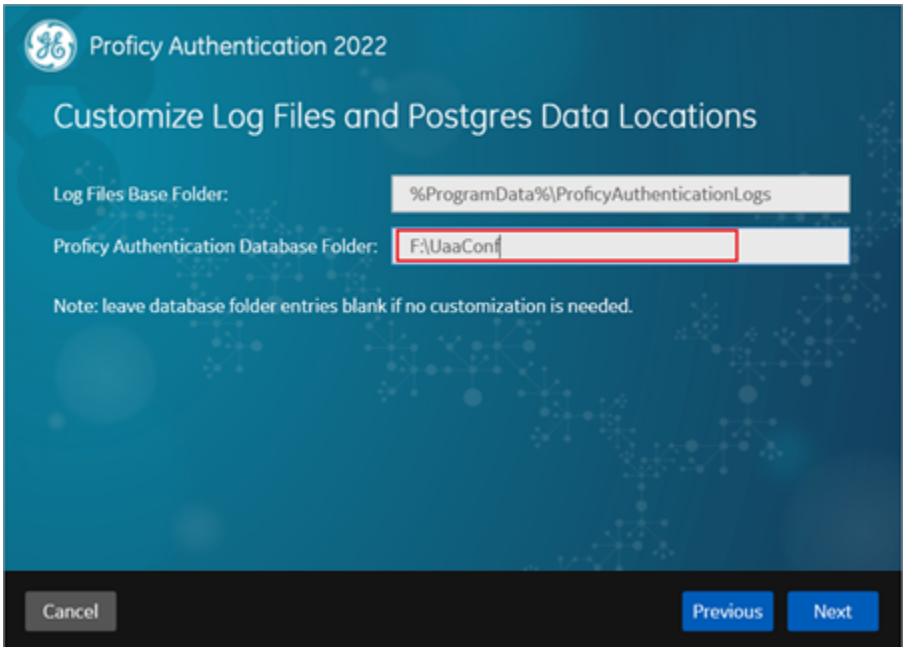
3. Run Proficy Authentication installation setup, and provide these details for the respective screens:

a. In **All Host Names** field, enter `hauaacluster.cluster.ge.com` as the leading hostname, followed by any other hostname/s.



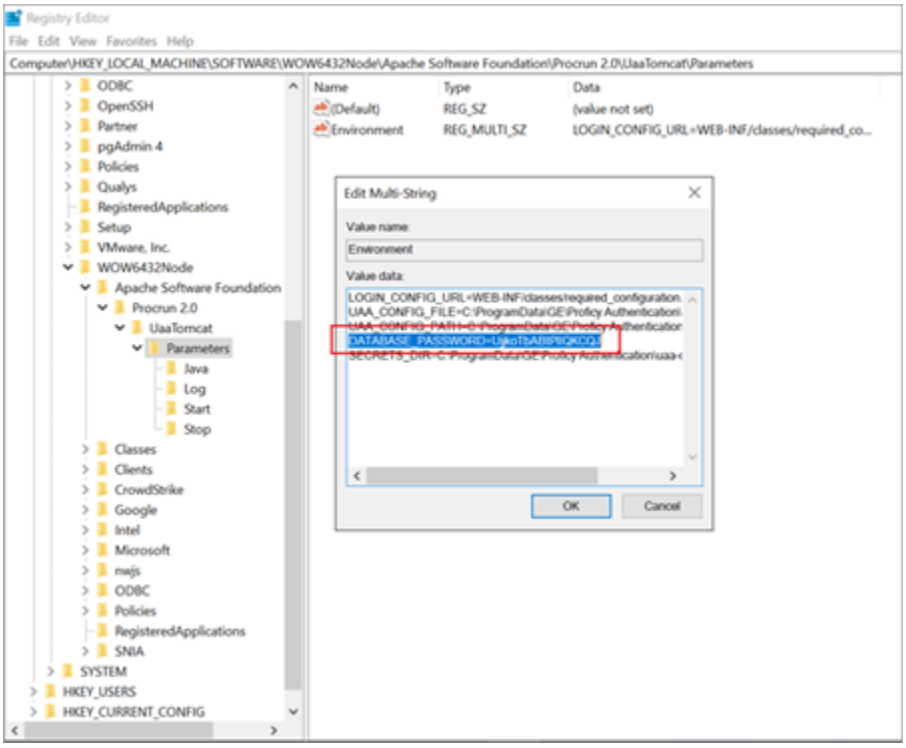
b. This step applies for associating existing database. Enter the iSCSI server shared drive location path where you copied the Proficy Authentication database. Refer to the steps at the beginning of this topic *(on page 87)*.

For example, `F:\UaaConf`

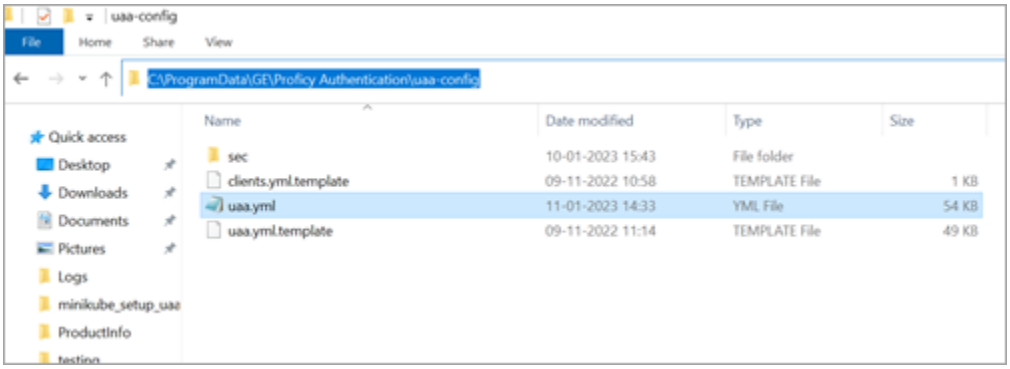


4. Log in to the iSCSI initiator Node2 server, and repeat the above steps to install Proficy Authentication on Node2.
5. After installing Proficy Authentication on both the nodes, copy the `DATABASE_PASSWORD` registry key from the last installed node to overwrite the registry key in the first installed node.
   For example, in the following scenario:
   a. First Proficy Authentication is installed successfully on the Node1 machine.
   b. Next Proficy Authentication is installed successfully on the Node2 machine.

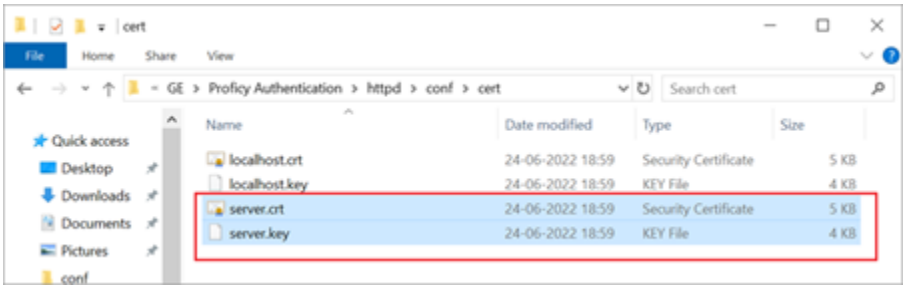
   Node2 is considered as the latest installation. Node1 is considered as the first installation. So, copy the Node2 registry key and overwrite the Node1 registry key.



6. Copy and replace the `UAA.yaml` file from Node 2 (latest installation) to Node 1 (first installation).
   The file is located here `C:\ProgramData\GE\Proficy Authentication\uaa-config`



7. Copy `server.crt` and `server.key` from Node 2 (latest installation) to Node 1 (first installation). The certificates are located here: `C:\Program Files\GE\Proficy Authentication\httpd\conf\cert`



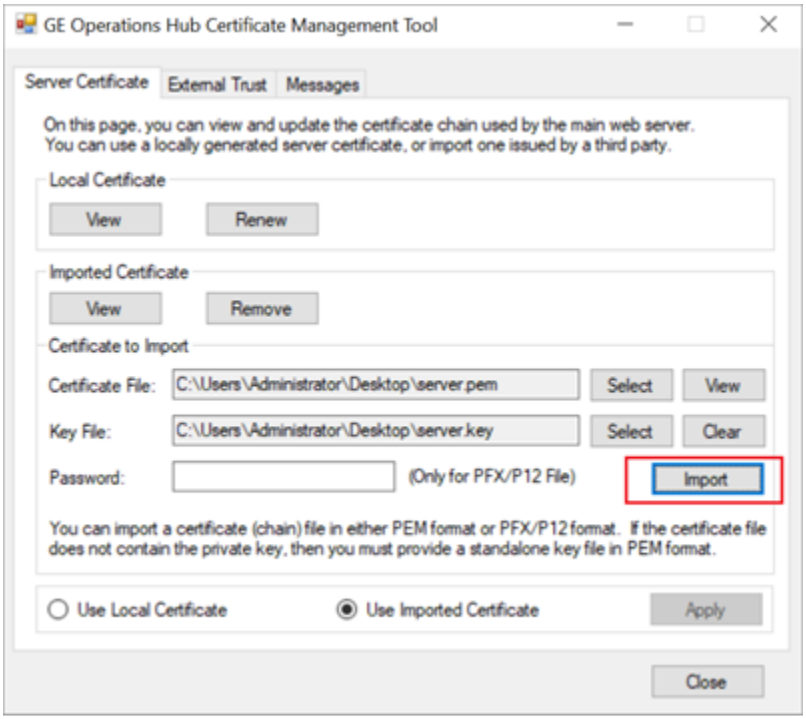
8. After copying the certificates (to Node1), rename `server.crt` to `server.pem`.

9. Open  **Certificate Management Tool** on Node1 from the desktop shortcut, and import the certificates as follows:

   a. For **Certificate File**, select the `server.pem` file created in the earlier step.

   b. For **Key File**, select the `server.key` file.

   c. Select **Import**.



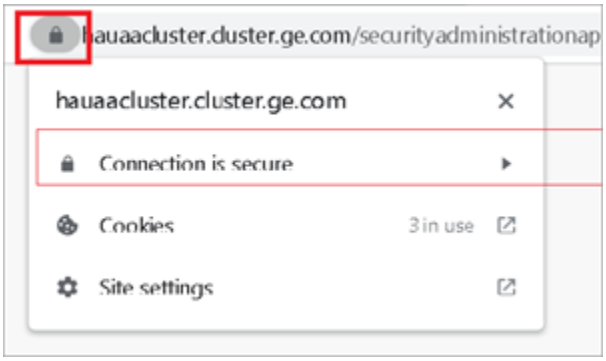
Prerequisites for Installing Operations Hub with External Proficy Authentication

This topic describes how to install Operations Hub with external Proficy Authentication in a high available environment.

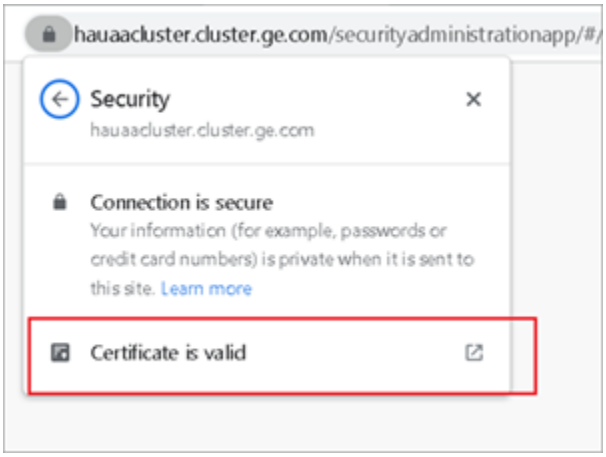
Set up a high available environment. See Configure High Availability for Proficy Authentication *(on page 70)*.

These steps apply for installing Operations Hub with external Proficy Authentication. The steps include mandatory changes prior to installing Operations Hub on any highly available server.

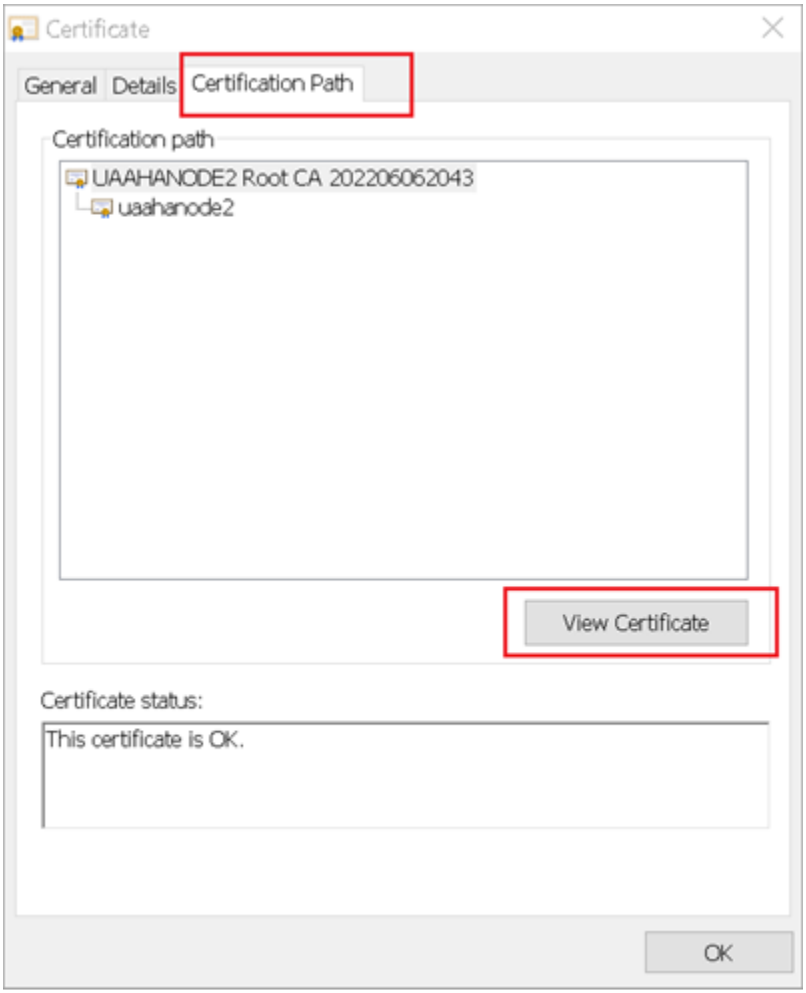
1. Log in to the node server where you want to install Operations Hub.
2. Open a browser and enter `https://hauaacluster.cluster.ge.com /securityadministrationapp/`
3. Select the lock icon next to the web address, and then select **Connection is secure**.



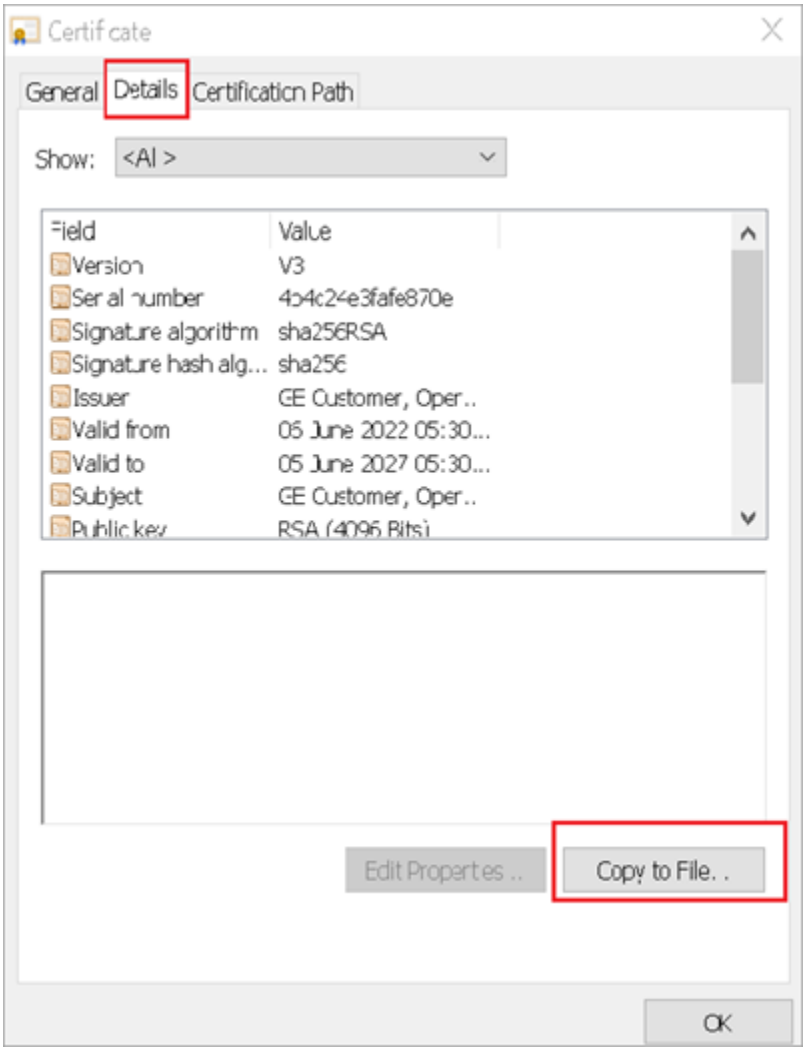
4. Select **Certificate is valid**.



   The issued certificate appears.
5. Select **Certificate Path > View Certificate**.

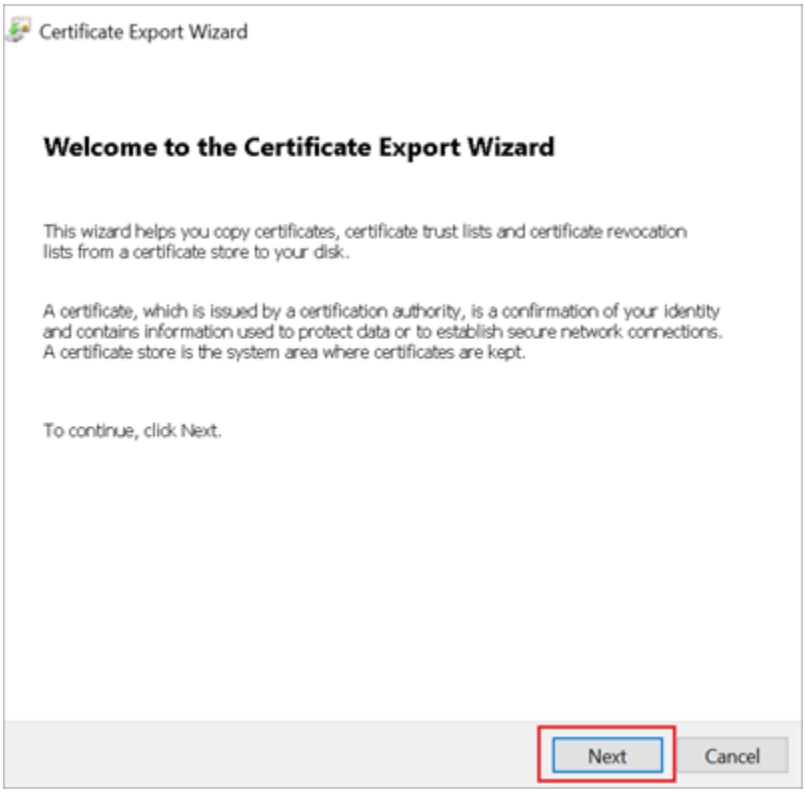


6. Select **Details > Copy to File**.

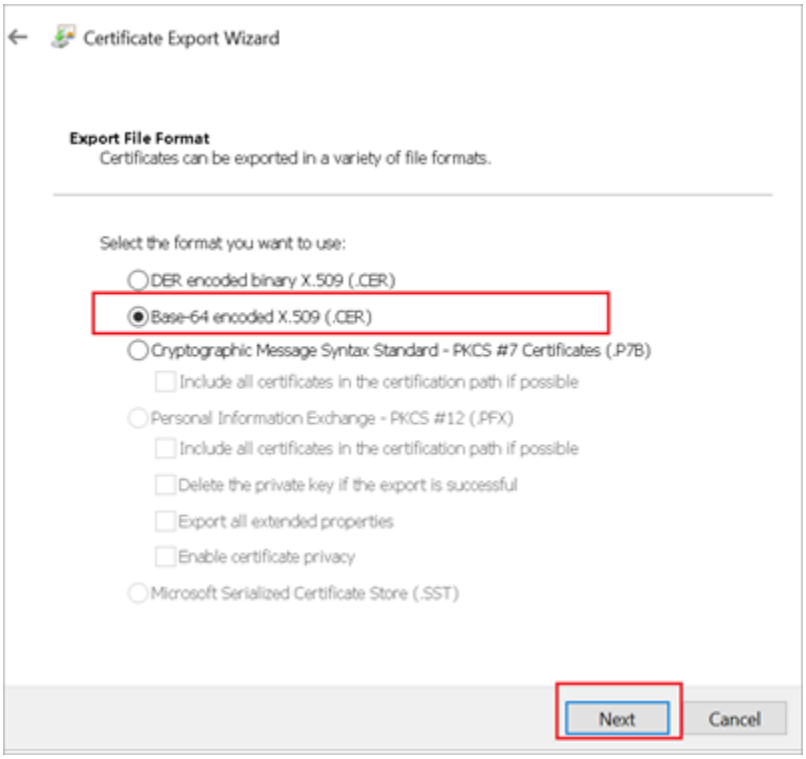


The **Certificate Export Wizard** appears.

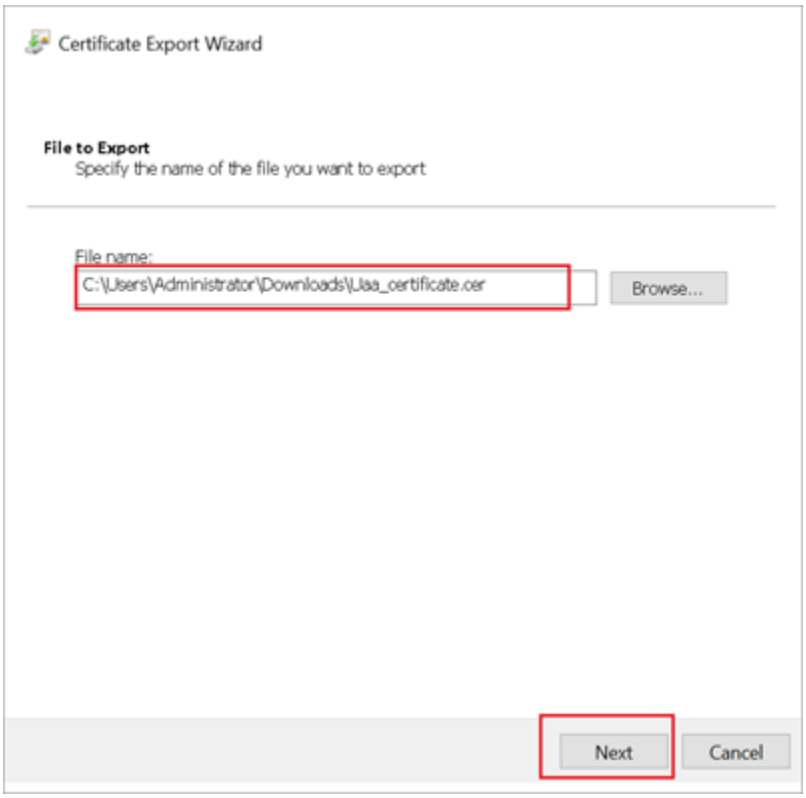
7. Select **Next**.



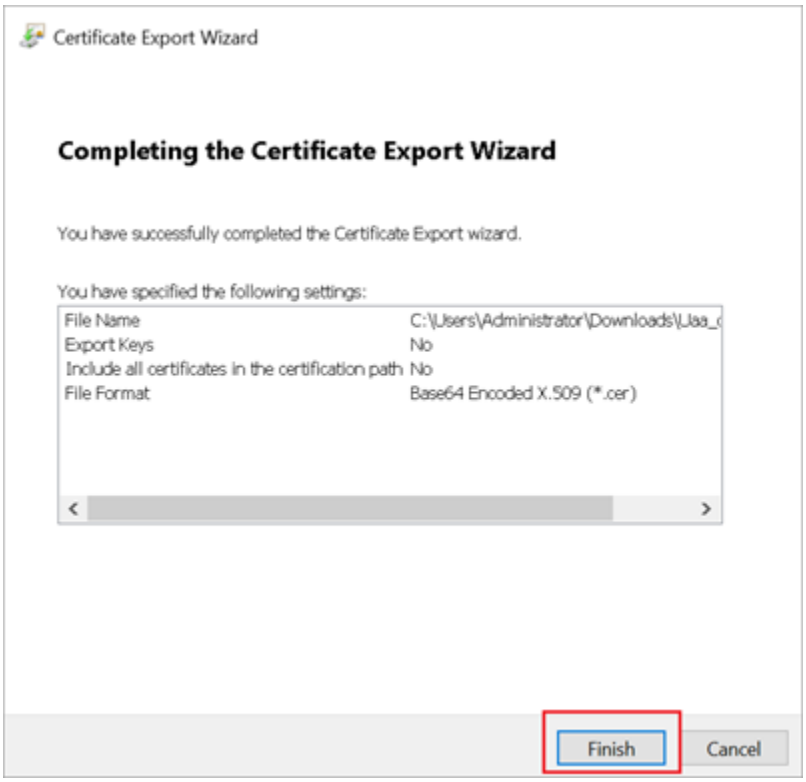
8. Select **Base-64 encoded X.509 (.CER)**, and select **Next**.



9. Browse and specify the file location, and select **Next**.

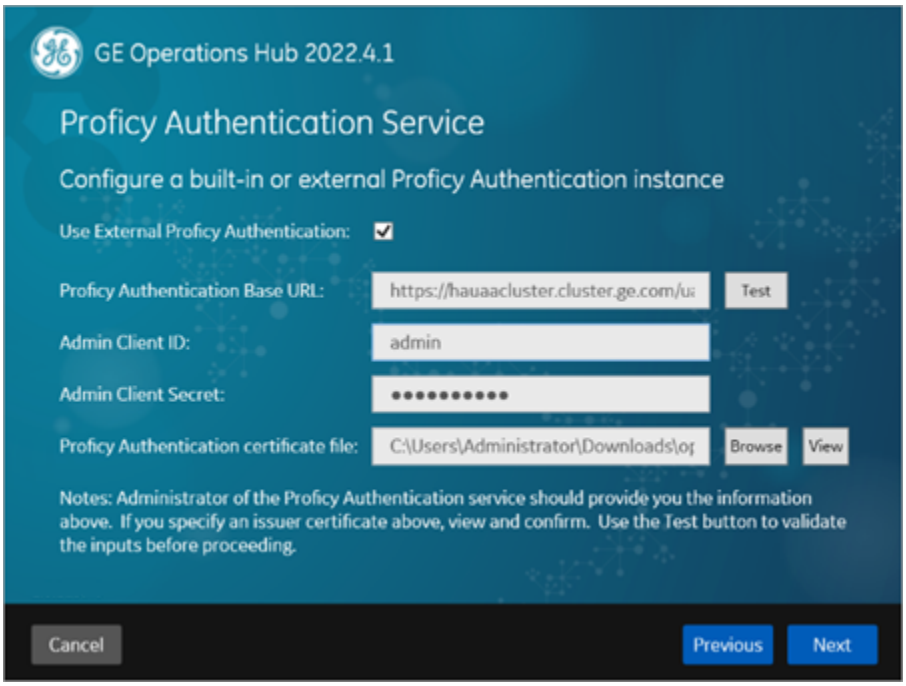


10. Select **Finish**.



11. Rename `Uaa_certificate.crt` to `Uaa_certificate.pem`.
12. Run Operations Hub installation setup, and provide these details for external Proficy Authentication fields:

Proficy Authentication Base URL	`https://hauaacluster.cluster.ge.com/uaa`
Admin Client ID	`admin`
Admin Client Secret	`Gei@321itc`



Operations Hub is installed successfully.

Customize Login Screen

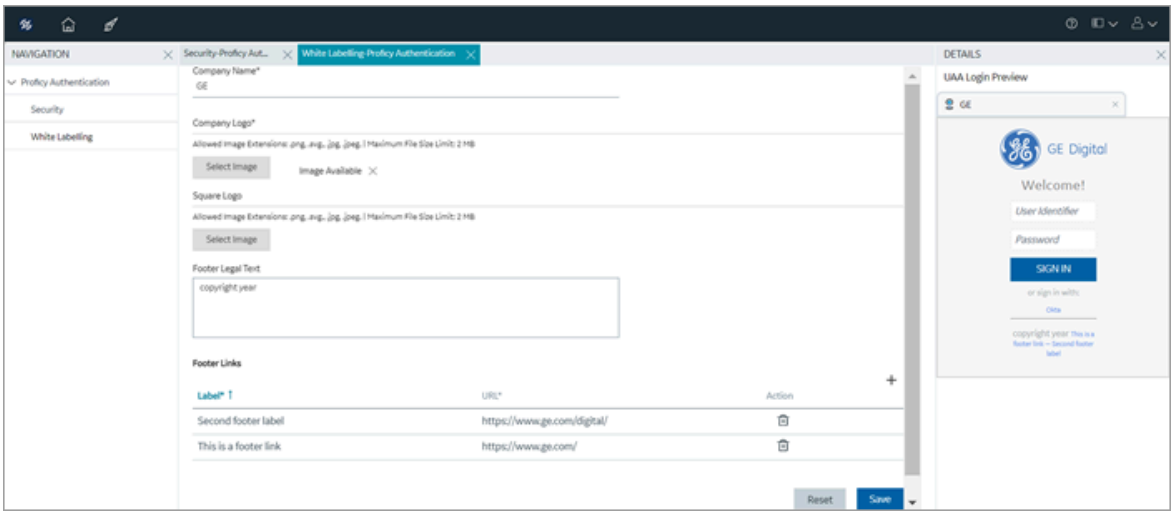
This topic describes how to customize the Proficy Authentication login screen.

You can customize the company name, logo, favicon, and include additional text/links to appear on the login screen.

1. Log in to Configuration Hub.
2. Go to **Proficy Authentication > White Labelling**.
   The default login screen details appear.
3. Use the following fields to customize your login screen.
   A quick preview appears on the **DETAILS** tab.

Field	Description
Company Name	Name of the company that appears on the login homepage.
Company Logo	Select an image from your local system to upload as company logo. Select ✕ to remove an existing image.
Square Logo	Select an image from your local system to upload as a favicon, which appears on the browser tab. Select ✕ to remove an existing image.
Footer Legal Text	Use this space to enter any legal information.
Footer Links	To add hyperlinks, create a label and provide a URL to connect. a. Select + to add a row. b. Enter a label name. c. Enter a URL for the label name. Select 🗑 to delete existing labels.

4. Select **Save** to save the updates you made to the login screen appearance.
   To undo the saved changes, select **Reset**. The login screen is reset to the previously saved appearance.



5. Restart `GE Proficy Authentication Tomcat Web Server` to apply the changes.