Manage

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Manage adapters

To interact with external target systems, CWM requires adapters. You can manage them using the CWM API. The following API endpoints are available for handling adapters:

- `GET/adapter`: gets a list of adapters existing in the CWM application.
- `POST/adapter`: uploads an adapter **.tar** file to CWM storage.
- `GET/adapter/{adapterId}`: gets the details of a specific adapter existing in the CWM application. Among others, it lists all the activities available in the adapter.
- `PUT/adapter/{adapterId}`: updates an existing adapter file with a new adapter version.
- `DELETE/adapter/{adapterId}`: deletes an adapter from the CWM application.
- `POST/adapter/{adapterId}/deploy`: deploys an adapter in the system based on the uploaded adapter file.

Install adapter

CWM adapters come in **.tar** installation files. Before they can be used in a workflow, they need to be uploaded to storage and deployed in the system. Here's how to do it.

Upload adapter file

Before you deploy an adapter, you need to upload the adapter **.tar** file to CWM storage:

Step 1 Get a latest adapter installation file or create your own adapter.

Step 2 Log in to CWM and from the navigation menu on the left, click the **swagger** icon.

Step 3 In the **adapters** section, click the `POST/adapter` endpoint to expand it. Inside the endpoint, click **Try it out**.

Step 4 In the subsection that appears, click **Choose File**, select the adapter **.tar** installation file and click **Upload**, then click **Execute**.

If the server response code is `201`, the adapter file is successfully uploaded into the CWM database.

Deploy adapter

Step 1 In the CWM API **adapters** section, click the `GET/adapter` endpoint to expand it. Inside the endpoint, click **Try it out** and **Execute**.

Step 2 From the server response body, copy the value of the `id` field for your uploaded adapter.

Step 3 In the CWM API **adapters** section, click the `POST/adapter/{adapterId}/deploy` endpoint to expand it.

Step 4 Inside the endpoint, click **Try it out**. Paste the adapter id into the **Adapter ID** field.

Step 5 In the **createWorker** field, you may set the `createWorker` parameter to `true`. This will create a worker with the same name as the adapter id.

Step 6 Click **Execute**.

If the server response code is `201`, the adapter plugin is successfully installed.

Delete adapter

To delete an adapter permanently from storage and "uninstall" it:

Step 1 In the CWM API **adapters** section, click the `GET/adapter` endpoint to expand it. Inside the endpoint, click **Try it out** and **Execute**.

Step 2 From the server response body, copy the value of the `id` field for your uploaded adapter.

Step 3 In the CWM API **adapters** section, click the `DELETE/adapter/{adapterId}` endpoint to expand it.

Step 4 Inside the endpoint, click **Try it out**. Paste the adapter id into the **Adapter ID** field.

Step 5 Click **Execute**.

Manage workers

Workers are processes that execute actions defined in workflow definitions and adapter code. You can manage them using the CWM UI as described in the **Operator** guide, or with the CWM API, as described below.

The following actions for managing workers are available:

- `GET/worker`: gets a list of workers existing in the CWM application.
- `POST/worker`: creates a new worker in the CWM application.

- `GET/worker/{workerName}`: gets the details of a specific worker existing in the CWM application.
- `PUT/worker/{workerName}`: updates an existing worker with new parameter values.
- `DELETE/worker/{workerName}`: deletes a worker from the CWM application.
- `POST/worker/{workerName}/start`: activates a worker created in the application.
- `POST/worker/{workerName}/stop`: deactivates a worker created in the application.

Create worker

Step 1 Log in to CWM and from the navigation menu on the left, click the **swagger** icon.

Step 2 In the CWM API **workers** section, click the `POST/worker` endpoint to expand it. Inside the endpoint, click **Try it out**.

Step 3 In the **Worker data** field, provide the required values:

a) "activities": paste the ID of your deployed adapter or specific adapter activity.
b) "startWorker": set to `true`.
c) "workerName": provide a name for your worker.

Step 4 Click **Execute**.

Start worker

Step 1 In the CWM API **workers** section, click the `POST/{workerName}/start` endpoint to expand it. Inside the endpoint, click **Try it out**.

Step 2 In the **parameters** fields, provide the required values:

a) "Name of a worker to start": paste the name the worker to be started.
b) "forceReload": set to `true` if you want to force the worker to start.

Step 3 Click **Execute**.

Stop worker

Step 1 In the CWM API **workers** section, click the `POST/{workerName}/stop` endpoint to expand it. Inside the endpoint, click **Try it out**.

Step 2 In the **parameters** fields, provide the required values:

a) "Name of a worker to stop": paste the name the worker to be stopped.
b) "forceStop": set to `true` if you want to force the worker to stop.

Step 3 Click **Execute**.

Manage workflows

Workflow instances can be managed both in the CWM UI as described in the **Operator** guide, or using the CWM API:

- `POST/workflow`: creates a new workflow instance in the CWM application.
- `GET/workflow/list`: gets a list of adapters existing in the CWM application.
- `GET/workflow/{id}`: gets the details of a specific workflow existing in the CWM application.
- `PUT/workflow/{id}`: updates an existing workflow with new workflow definition.
- `DELETE/workflow/{id}`: deletes a selected workflow from the CWM application.

Note The recommended method for managing workflows is through CWM UI. For details, refer to the **Operator** guide.

Manage resources and secrets

For CWM, adapters define activities that enable to execute actions in external entities, such as other systems or applications. These entities are, in most cases, integrated via APIs which usually require connection and authentication data. CWM provides a framework where when an activity is consumed in a workflow, the details of a connection endpoint and authentication data can be passed at runtime. Thus, the operator who runs a workflow may not know any details of these systems (resources) such as IP addresses, ports or usernames and password.

CWM provides a framework for secure handling of resources and secrets in database and identifying them by their respective IDs. When running a workflow instance, just the resource ID needs to be passed, with the rest of the data sent to the adapter by the Resource Manager without any intervention from the Operator or additional development from Adapter developer.

Resource and secret types

You can think of resource and secret types are buckets used to organize resources and secrets created by users by their type. Types are defined inside a given adapter and are added to the system automatically upon installing the adapter. You can list secrets belonging to a specific type using the `GET/secret/type/{type}` API endpoint.

Secrets API endpoints

The following actions for managing secrets are available:

- `GET/secret`: gets a list of secrets existing in the CWM application.
- `POST/secret`: creates a new secret in the CWM application.
- `GET/secret/type/{type}`: lists secrets existing in the CWM application that belong to a specific type.

- `GET/secret/types`: gets a list of secret types existing in the CWM application.
- `GET/secret/{id}`: gets details of an existing secret.
- `DELETE/secret/{id}`: deletes a secret from the CWM application.
- `PATCH/secret/{id}`: updates a secret existing in the CWM application with new parameter values.

Resources API endpoints

The following actions for managing resources are available:

- `GET/resource`: gets a list of resources existing in the CWM application.
- `POST/resource`: creates a new resource in the CWM application.
- `GET/resource/{resourceId}`: gets the details of a specific resource existing in the CWM application.
- `PUT/resource/{resourceId}`: updates an existing resource with new parameter values.
- `DELETE/resource/{resourceId}`: deletes a resource from the CWM application.
- `GET/resourceType`: gets a list of resource types existing in the CWM application.
- `GET/resourceType/{resourceId}`: gets the details of an existing resource type.

Create secret

Step 1 Log in to CWM and from the navigation menu on the left, click the **swagger** icon.

Step 2 In the CWM API **secrets** section, click the `POST /secret` endpoint to expand it.

Step 3 Inside the endpoint, click **Try it out**, and provide your data into the **Secret input** field. Example input can look like this:

```
{
"secret": {
"username": "admin",
"password": "admin"
},
"secretId": "NSOSecret",
"secretType": "basicAuth"
}
```

Step 4 Click **Execute**.

If the server response code is `201`, the secret is successfully created and you can start creating a resource to associate the secret with.

Create resource

Step 1 In the CWM API **resources** section, click the `POST /resource` endpoint to expand it.

Step 2 Inside the endpoint, click **Try it out**, and provide your data into the **Resource input** field. Example input can look like this:

```
{
    "resource": {
        "scheme": "http",
        "host": "127.0.0.1",
        "port": 8080
    },
    "resourceId": "NSOLocal",
    "resourceType": "cisco.nso.resource.v1.0.0",
    "secretId": "NSOSecret"
}
```

Step 3 Click **Execute**.

If the server response code is `201`, the resource is successfully created.

User access via NxF

The CWM allows you to manage user access and permissions via NextFusion (NxF). NxF adds an additional layer of security and works as a Single Authentication Agent, thus sharing local, LDAP and SAML users.

Users, roles, and permissions

Currently, only one role and permission type (admin) is supported. Every user is associated with admin permissions by default.

To allow access to CWM to a larger group of regular users, set the user authentication via LDAP or/and SAML SSO protocols (you can have both at the same time), depending on your environment.

Permissions scope

Admin role has full access to the CWM and all of its functionalities; admins can control user access and permissions. All local users with admin permissions can create new users as needed.

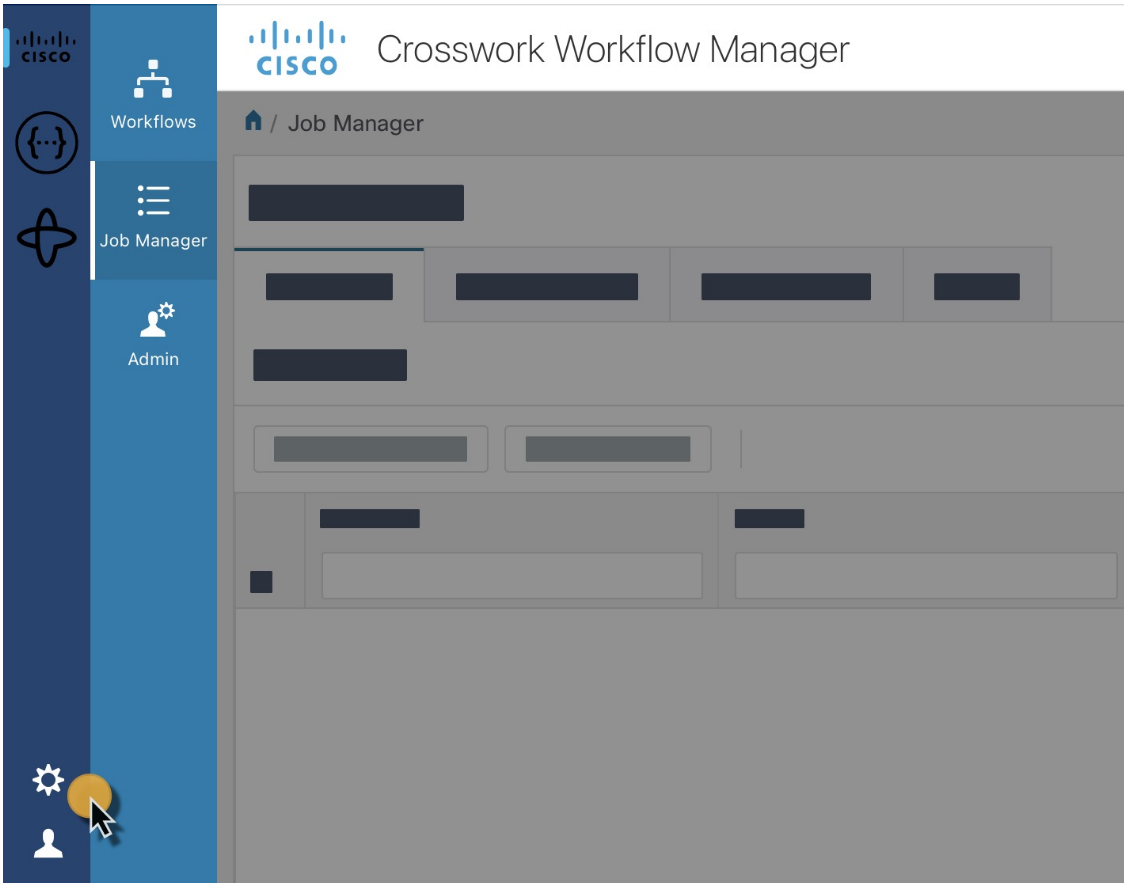
NxF functionality in CWM

NxF functionality is available for admin users from the **Settings** tab in CWM UI. To access NxF functionality in the CWM:

Step 1 In the CWM, go to the outermost navigation menu on the left.

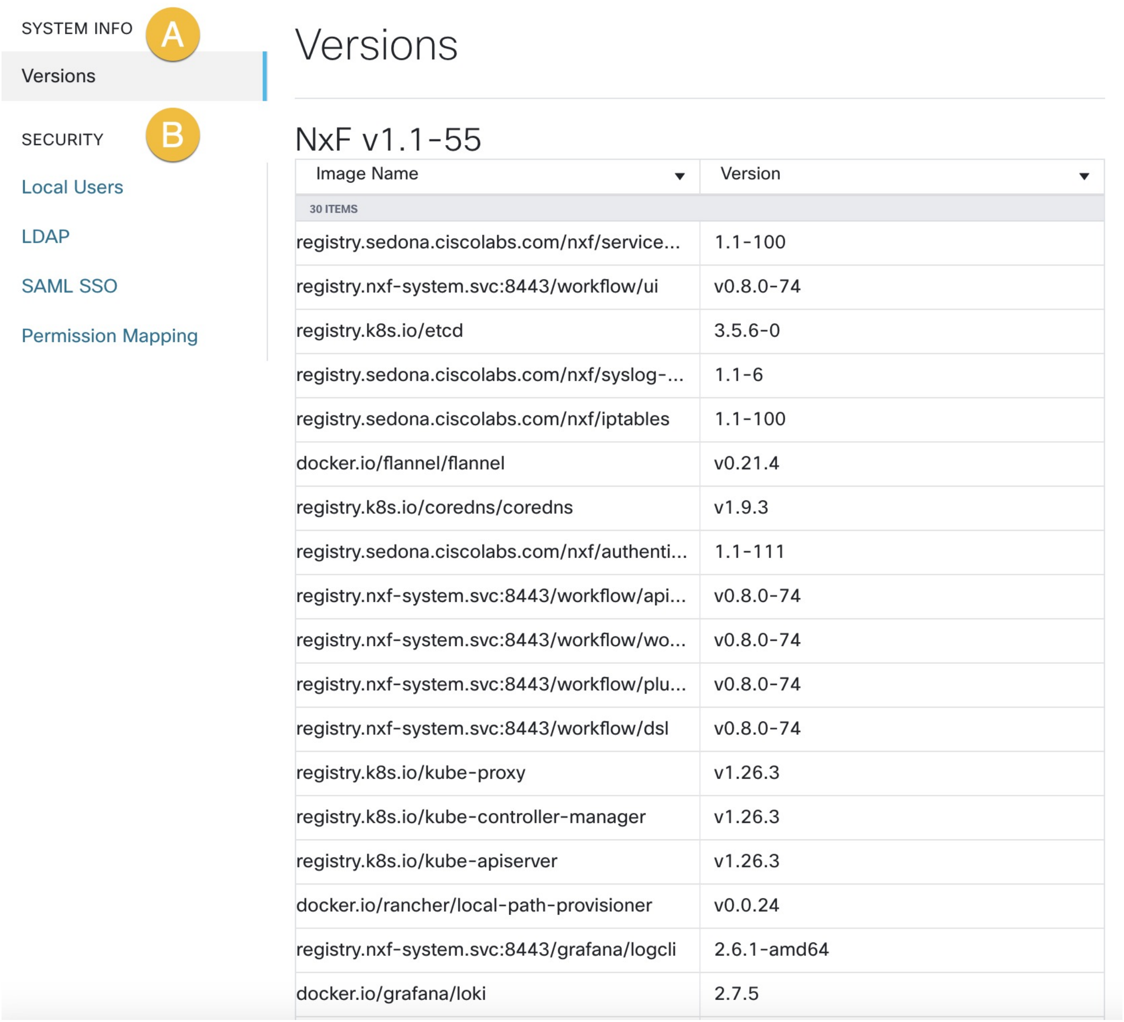
Step 2 Click the **Settings** icon (gear icon).

Figure 1: NxF settings



Step 3 In the expanded drawer, you can find the following:

Figure 2: Settings drawer



Versions

NxF v1.1-55

30 ITEMS

Image Name	Version
registry.sedona.ciscolabs.com/nxf/service...	1.1-100
registry.nxf-system.svc:8443/workflow/ui	v0.8.0-74
registry.k8s.io/etcd	3.5.6-0
registry.sedona.ciscolabs.com/nxf/syslog-...	1.1-6
registry.sedona.ciscolabs.com/nxf/iptables	1.1-100
docker.io/flannel/flannel	v0.21.4
registry.k8s.io/coredns/coredns	v1.9.3
registry.sedona.ciscolabs.com/nxf/authenti...	1.1-111
registry.nxf-system.svc:8443/workflow/api...	v0.8.0-74
registry.nxf-system.svc:8443/workflow/wo...	v0.8.0-74
registry.nxf-system.svc:8443/workflow/plu...	v0.8.0-74
registry.nxf-system.svc:8443/workflow/dsl	v0.8.0-74
registry.k8s.io/kube-proxy	v1.26.3
registry.k8s.io/kube-controller-manager	v1.26.3
registry.k8s.io/kube-apiserver	v1.26.3
docker.io/rancher/local-path-provisioner	v0.0.24
registry.nxf-system.svc:8443/grafana/logcli	2.6.1-amd64
docker.io/grafana/loki	2.7.5

a) **System Info** section with information about the latest versions of NxF and CWM microservices.
b) **Security** section for access management:

- **Local Users**: where you can display, create and edit local users via UI.
- **LDAP**: where you can set LDAP settings for user authentication.
- **SAML SSO**: where you can set SAML Single-Sign-On settings for user authentication.
- **Permission Mapping**: where you can handle permission management via Cisco Policy Management Tool.

Add local user

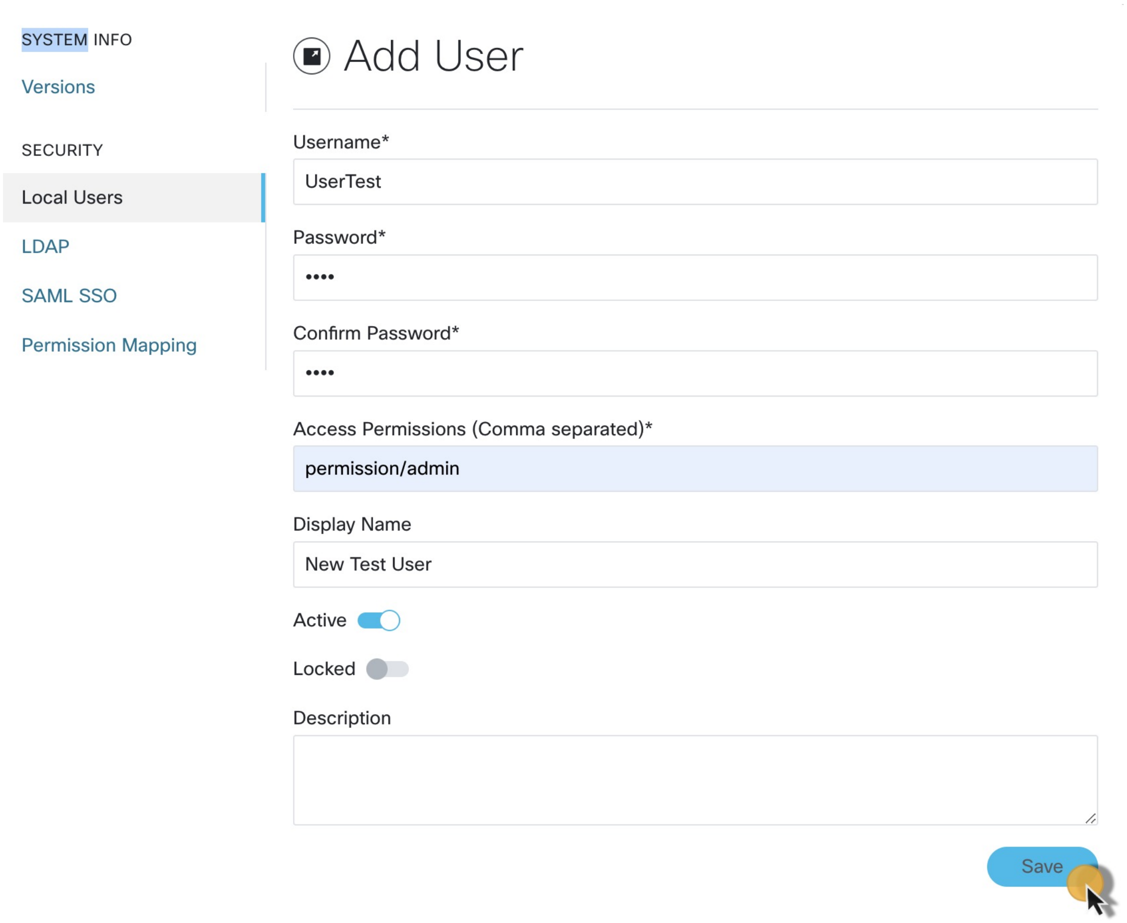
Step 1 In the CWM, go to the outermost navigation menu on the left.

Step 2 Navigate to **CWM** (Cisco icon) -> **Local Users** tab.

Step 3 Click **Add...**

Step 4 In the Add User panel, fill in the mandatory fields (marked with an asterisk): Username (used to log in to the CWM), Password, Confirm Password and Access Permissions (enter `permission/admin`). The Description and Display Name (visible next to the username in the CWM) are optional fields.

Figure 3: NxF Add User



Add User

Username*: UserTest

Password*: ••••

Confirm Password*: ••••

Access Permissions (Comma separated)*: permission/admin

Display Name: New Test User

Active: ●

Locked: ○

Description:

Step 5 Use radio buttons to set the user status. You can make both radio buttons disabled or enabled at the same time.

- **Active enabled**: allows the user to log in to the CWM.
- **Active disabled**: forbids the user to log in to the CWM.
- **Locked enabled**: prevents deleting the user.
- **Locked disabled**: allows removal of the user.

Step 6 Click **Save**.

Set up authentication via LDAP

Besides supporting local users, CWM allows adding LDAP users through integration with LDAP (Lightweight Directory Access Protocol) servers.

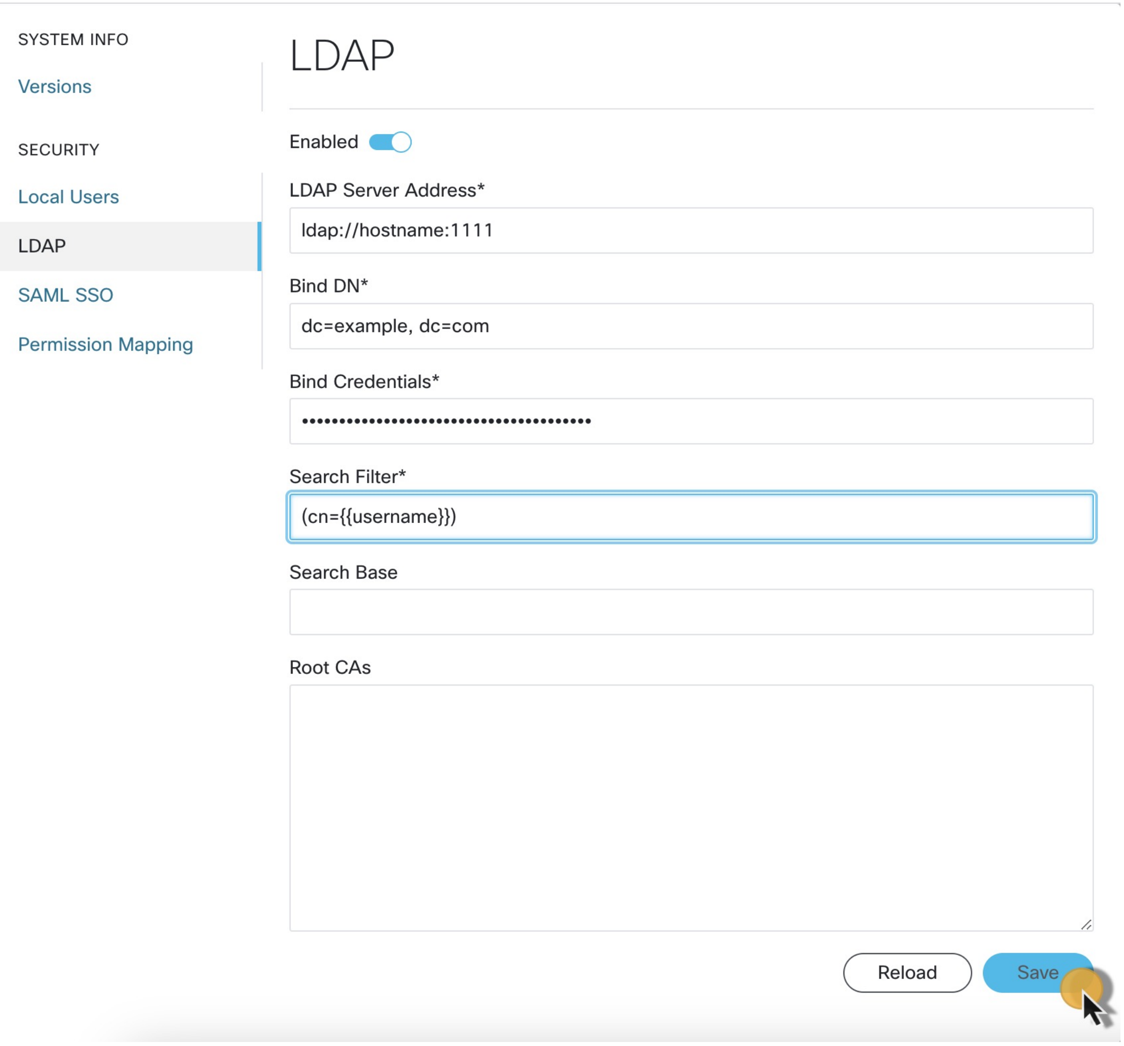
Step 1 In the CWM, go to the outermost navigation menu on the left.

Step 2 Navigate to **CWM** (Cisco icon) -> **LDAP** tab.

Step 3 Click the **Enabled** radio button.

Step 4 Fill in the mandatory fields (marked with an asterisk): LDAP Server Address, Bind DN, Bind Credentials and Search Filter. Search Base and Root CAs are optional.

Figure 4: LDAP



LDAP

Enabled

LDAP Server Address*

ldap://hostname:1111

Bind DN*

dc=example, dc=com

Bind Credentials*

•••••••••••••••••••••••••••••••••••••••

Search Filter*

(cn={{username}})

Search Base

Root CAs

Step 5 Click **Save**.

Set up authentication via SAML SSO

CWM offers SAML SSO feature that supports both LDAP and non-LDAP users to gain single sign-on access based on the protocol SAML (Security Assertion Markup Language). You can enable SAML SSO for CWM along with LDAP or without it.

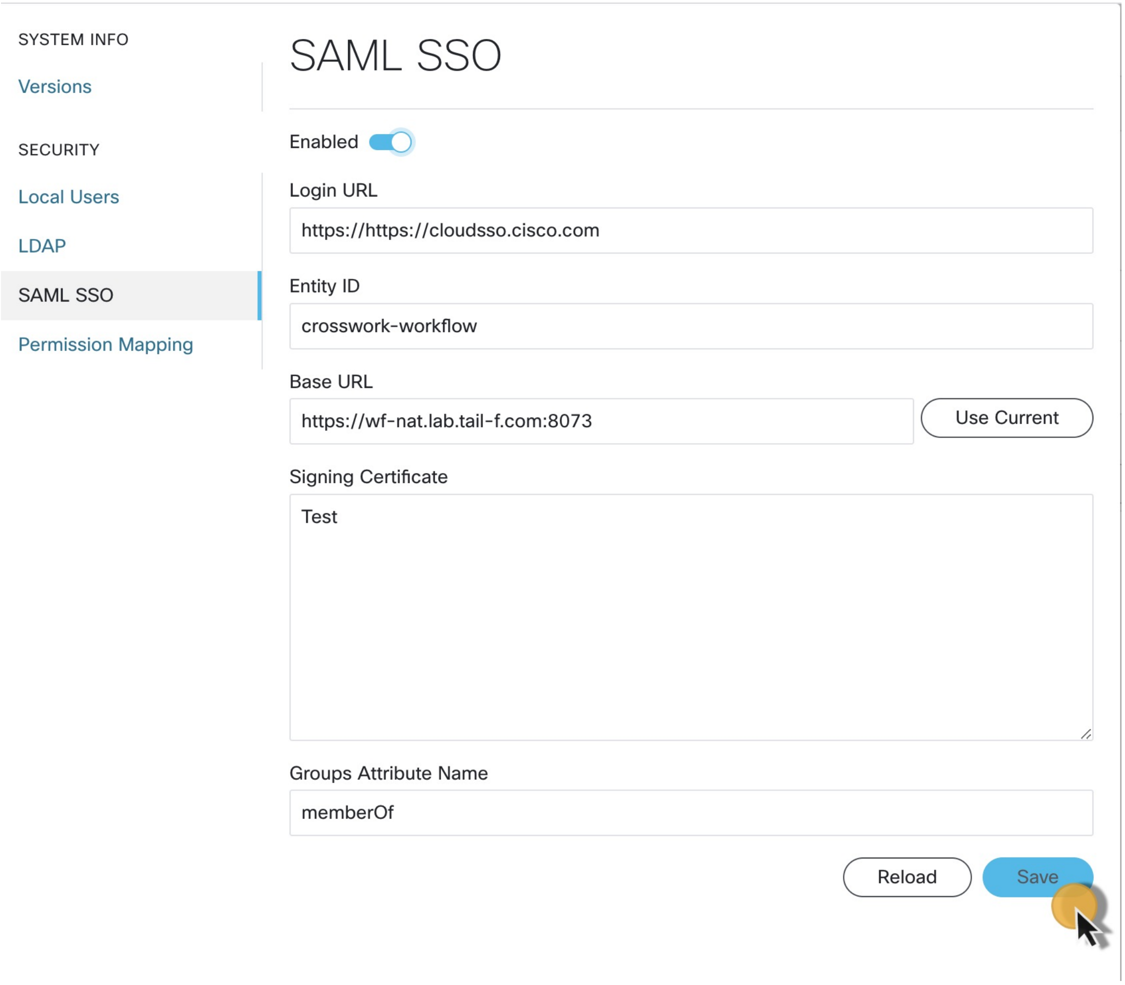
Step 1 In the CWM, go to the outermost navigation menu on the left.

Step 2 Navigate to **CWM** (Cisco icon) -> **SAML SSO** tab.

Step 3 Click the **Enabled** radio button.

Step 4 Fill in the mandatory fields: Login URL, Entity ID, Base URL, Signing Certificate and Groups Attribute Name.

Figure 5: NxF SAMLSSO



Enabled ●

Login URL: https://https://cloudsso.cisco.com

Entity ID: crosswork-workflow

Base URL: https://wf-nat.lab.tail-f.com:8073

Signing Certificate: Test

Groups Attribute Name: memberOf

Step 5 Click **Save**.

Set up permission mapping

You can give specific permissions to a group of users via Cisco Policy Management Tool (PMT).

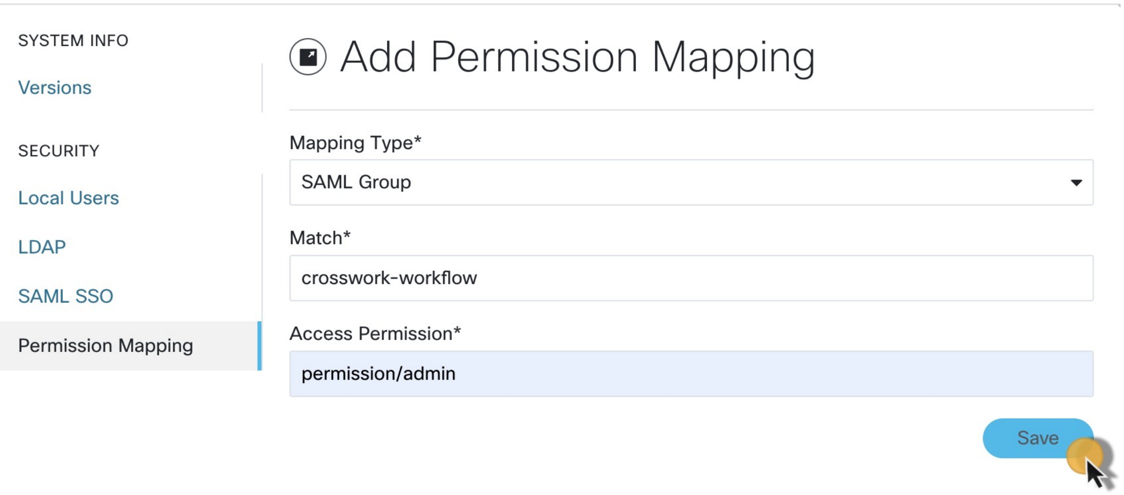
Step 1 In the CWM, go to the outermost navigation menu on the left.

Step 2 Navigate to **CWM** (Cisco icon) -> **Permission Mapping** tab.

Step 3 Click **Add...**.

Step 4 In the Add Permission Mapping panel, choose one **Mapping Type** from the dropdown menu: SAML User, SAML Group, LDAP User, or LDAP Group.

Figure 6: Permission mapping



Mapping Type*: SAML Group

Match*: crosswork-workflow

Access Permission*: permission/admin

Step 5 Fill in the Match field with the entry from the Cisco Policy Management Tool. You can find the match in PMT UI -> **OAuth Clients** tab -> Client ID Column.

Step 6 Enter appropriate permission (for example `permission/admin`) in the Access Permission field.

Step 7 Click **Save**.