



Cisco Crosswork Workflow Manager 1.1 Operator Guide

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Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883



CHAPTER 1

UI overview

This sections contains the following topics:

- [UI overview, on page 1](#)

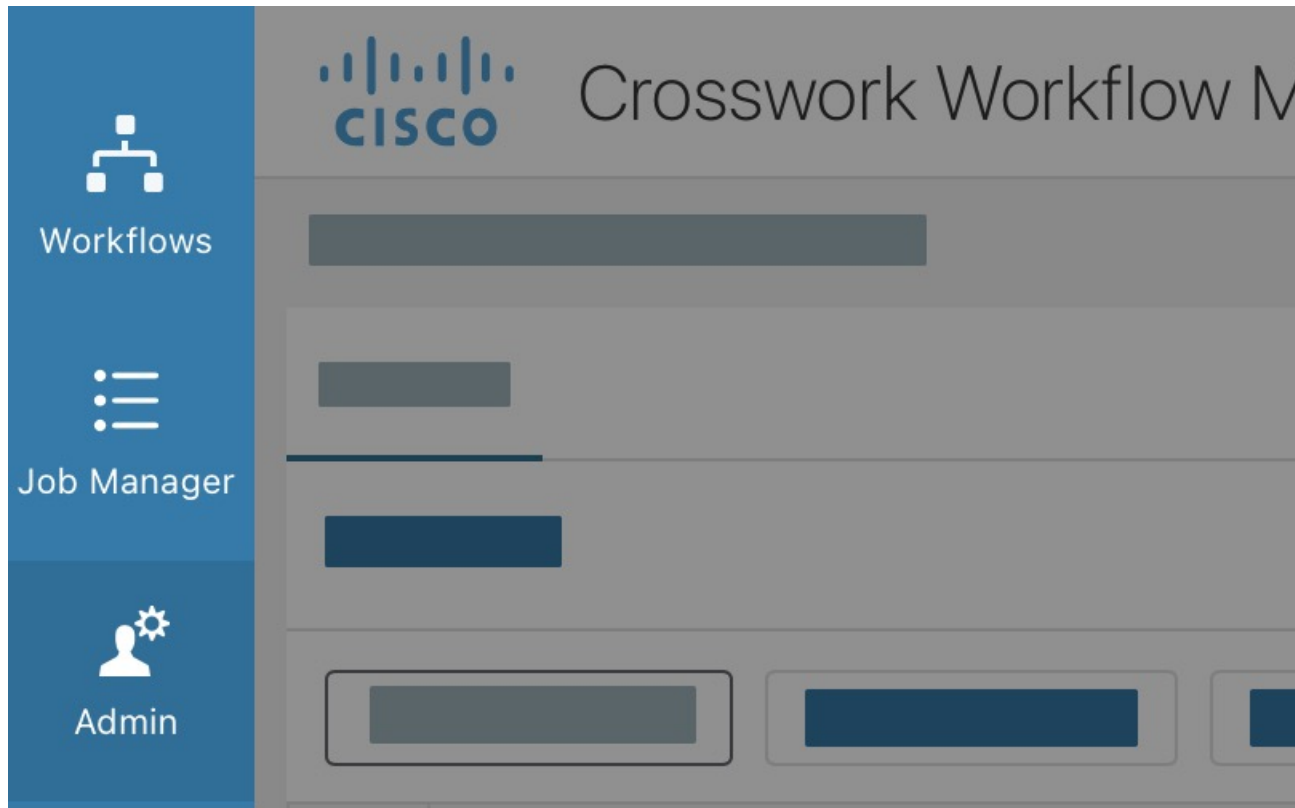
UI overview

The Crosswork Workflow Manager 1.1 gives users access to the core functionalities of the CWM via a graphical interface.

The CWM UI dashboard contains three main functional areas which you can access from the navigation menu on the left:

- **Workflows:** where you can add, manage, and delete workflow definitions.
- **Job Manager:** where you can run added workflows, check the status of particular workflow execution (job) or view schedules.
- **Admin:** where you can manage adapters, workers, secrets and resources.

Figure 1: Navigation bar



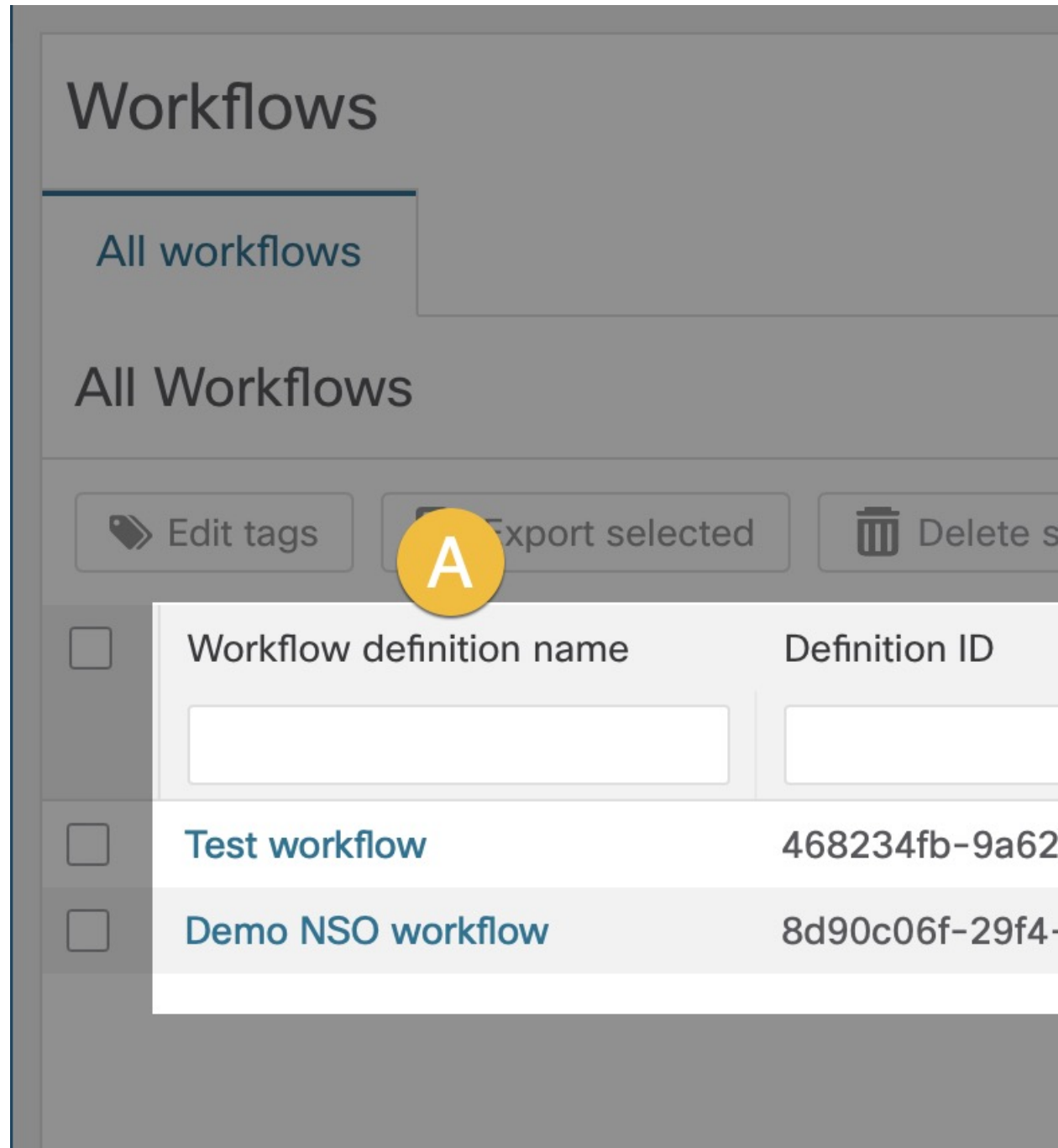
Workflows

The main **Workflows** window consists of the **All Workflows** tab that lists workflows added to CWM with details and possible actions.

All Workflows

All Workflows table consists of the following columns:

Figure 2: All Workflows tab

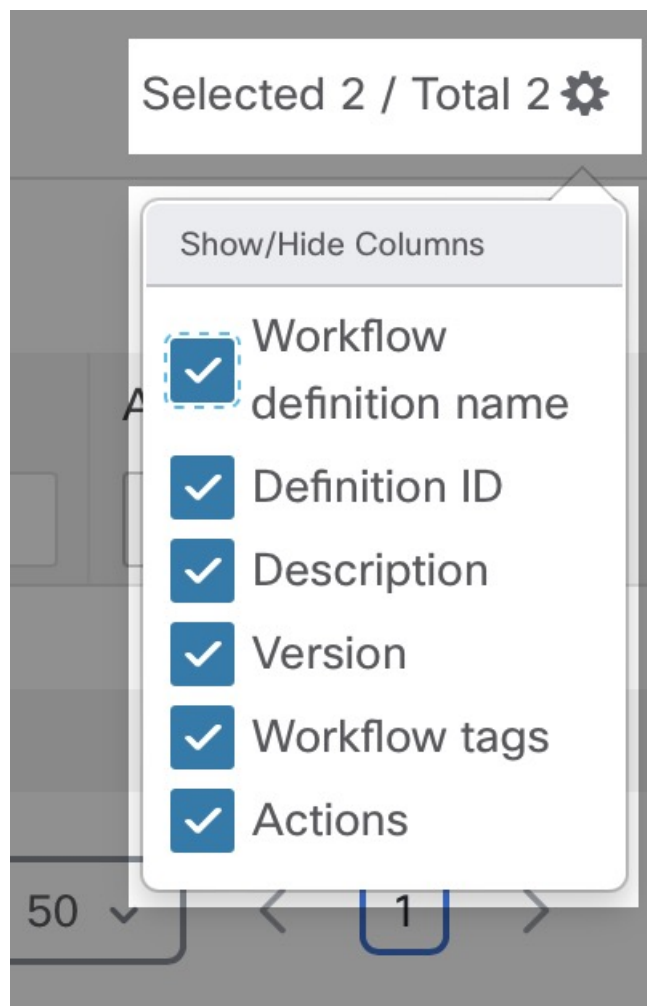


- A) **Workflow definition name**: unique name of the workflow.
- B) **Definition ID**: unique identifier assigned automatically after workflow creation.
- C) **Description**: optional field used for describing your workflow functionality.

- D) **Version**: indicates the current workflow version number, allows keeping track of the workflow versioning.
- E) **Workflow tags**: shows tags assigned to a given workflow.
- F) **Actions**: shows possible actions for a given workflow:
 - **Run**: starts a single execution of a given workflow (job).
 - **Delete**: removes an added workflow from CWM (this action is irreversible).

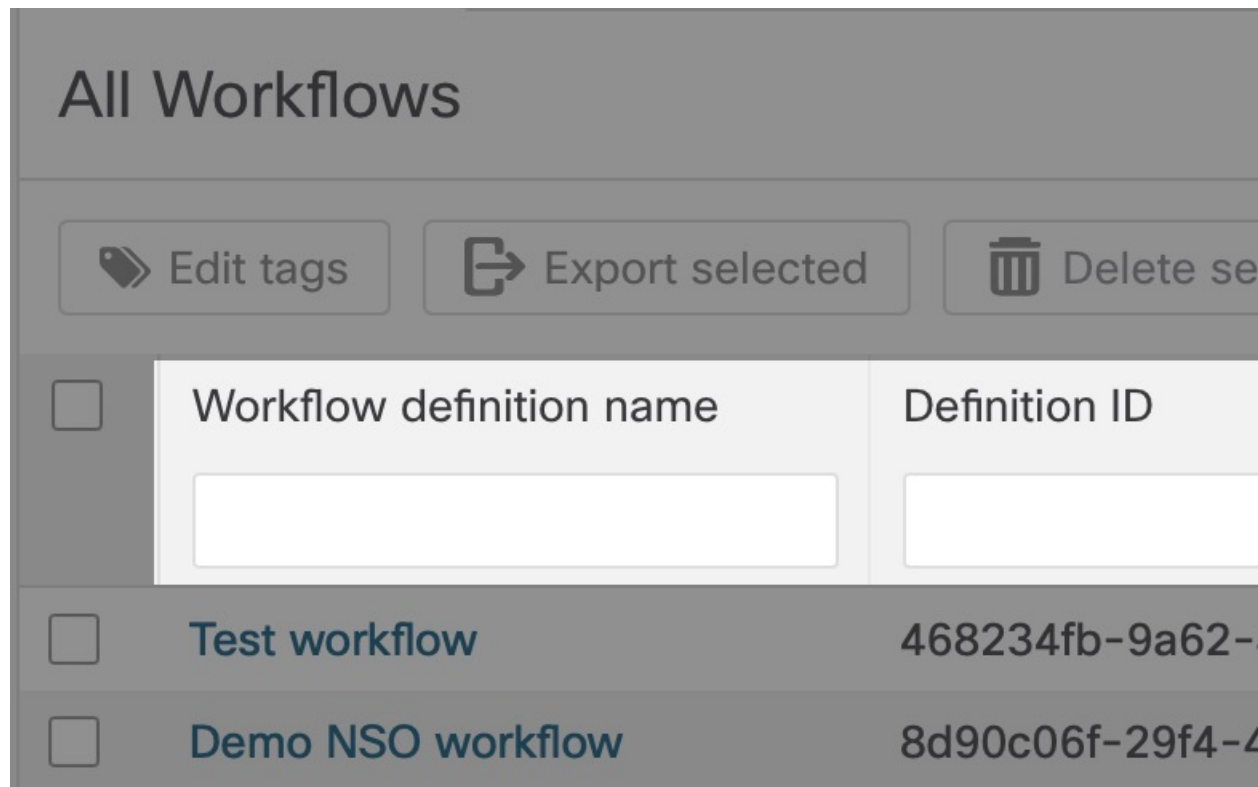
To adjust the columns displayed in the table, use the :gear: icon on the right side above the table.

Figure 3: Gear icon



You can use the filter table option to search the table for the specified value(s). By default, the filter fields are displayed; click the :material-filter: icon on the right to hide/unhide them.

Figure 4: Filter option

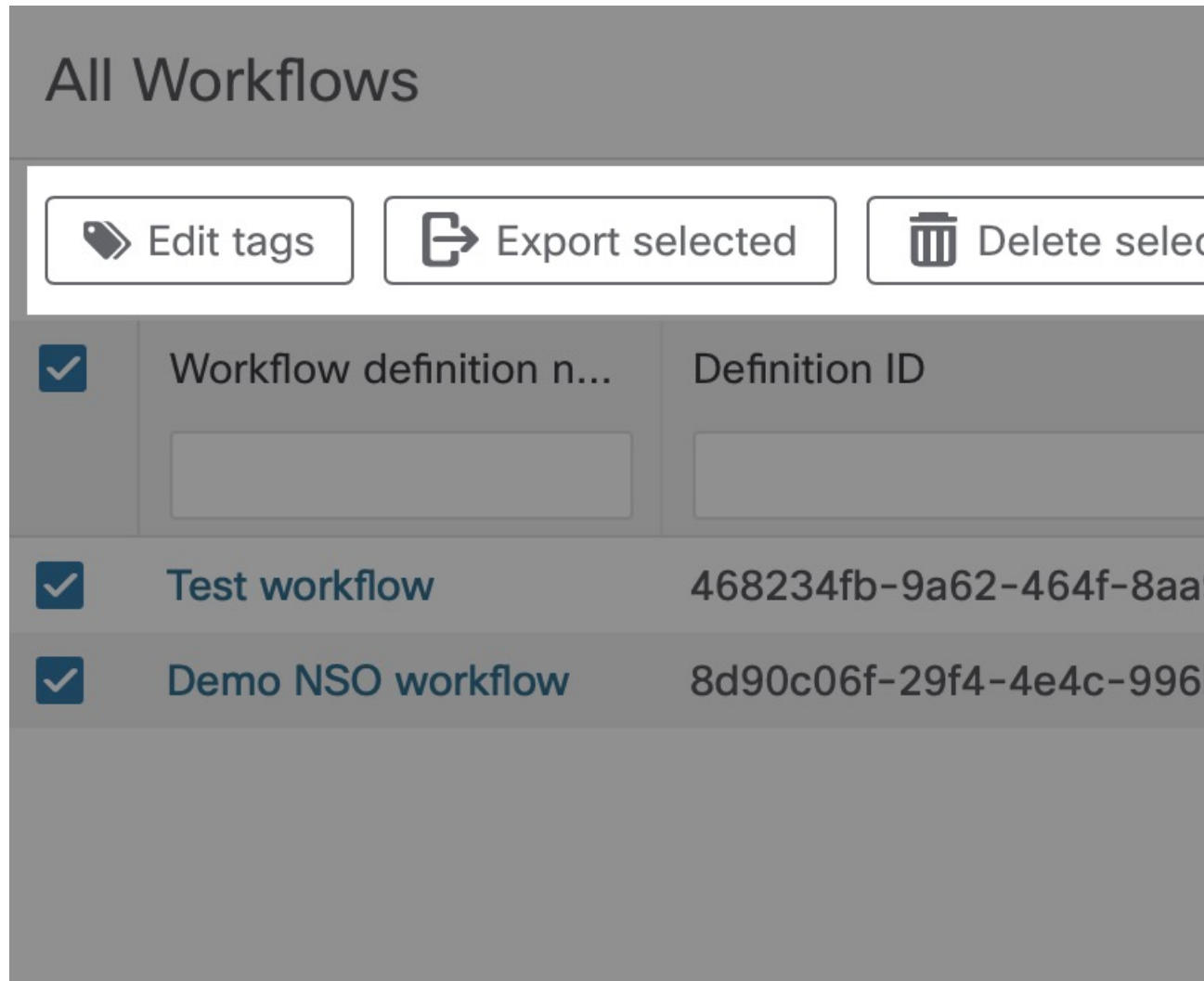


Bulk actions on workflows

You can perform bulk actions on many workflows at once. To select a workflow, tick the checkbox on the right side of the **All Workflows** table. You have three possible bulk actions:

- **Edit tags:** modifies tags for selected workflows by adding one or more or resetting them.
- **Export Selected:** exports selected workflow entries to a CSV file.
- **Delete Selected:** removes selected workflows from the list and CWM (this action is irreversible).

Figure 5: Bulk actions



Job Manager

Job Manager allows you to check the status of your jobs and rerun or cancel their execution. The main Job Manager window consists of four tabs:

Figure 6: Job Manager tabs

- A) **Active jobs**: currently running jobs.
- B) **Completed jobs**: successfully completed jobs.
- C) **Canceled jobs**: manually terminated jobs by the user and automatically failed jobs.
- D) **Scheduled jobs**: list of all schedules with details.



Note The **Scheduled jobs** view displays only schedules and their details. Particular jobs of a given schedule can be found in respective tabs according to their status (for example, completed or active).

- E) **All jobs**: all active, completed and canceled jobs.



Note The **Job Manager** view lists all workflow executions run in the last 24 hours.

You can use the filter table option to search the table for the specified value(s). While filtering based on tags, you can filter by only one tag at once.



Note You can search for jobs based on multiple job tags via API.

Bulk actions on jobs

You can perform bulk actions on many jobs at once. To select a job, tick the checkbox on the right side of the jobs table. Depending on the tab, you have different possible bulk actions:

- **Export Selected**: exports selected job entries to a CSV file.
- **Cancel Selected**: terminates currently running selected jobs (available only from the **Active jobs** tab).

Bulk actions on schedules

You can perform bulk actions on many schedules at once. To select a schedule, tick the checkbox on the right side of the Scheduled jobs table.

- **Export Selected**: exports selected schedule entries to a CSV file.
- **Delete Selected**: removes selected schedules from the list and CWM (this action is irreversible).

Job details

-
- Step 1** To check the details of a job, in the **Job Manager** choose the appropriate tab (Active, Completed, Cancelled or All).
- Step 2** In the table, click on the name of the job entry you want to check.
- Step 3** In the **Details** tab, you can check the following data for the given job:

Figure 7: Job details

- a) A) **Job name**: name of the particular workflow execution; by default, it is the workflow definition name.
 - b) B) **Run ID**: unique identifier for workflow execution.
 - c) C) **Workflow definition name**: name of the workflow definition used to run a particular job.
 - d) D) **Version**: version of the executed workflow definition.
 - e) E) **Worker**: worker assigned to the workflow definition.
 - f) F) **Job tags**: keyword(s) assigned to the job that allows filtering/sorting jobs based on them.
 - g) F) **Workflow tags**: keyword(s) assigned to the workflow definition used to run a particular job.
 - h) G) **Start time**: date and time when workflow execution started, for example 01-May-2024 02:59:25 PM CEST.
 - i) I) **Close time**: date and time when workflow execution ended, for example 05-May-2024 03:59:25 PM CEST. If the execution is still running or it was failed/canceled, the appropriate status is displayed instead.
 - j) J) **Attempts**: indicates the number of tries needed to execute the workflow successfully; the maximum number of attempts can be limited by the workflow definition.
 - k) Optionally, the **Parent Run ID** field may be displayed if your job was executed as a child workflow.
-

Job Event Log

The Job Event Log lists the series of events that the workflow engine performs while executing the workflow definition.

The **Job Event Log** table consists of the following columns:

Figure 8: Job Event Log

Job Event Log

Job Event Name A	Job Event Type B
<input type="text"/>	<input type="text"/>
<input type="checkbox"/> WorkflowExecution	WorkflowExecutionStarted
<input type="checkbox"/> WorkflowTask	WorkflowTaskCompleted
<input type="checkbox"/> MarkerRecorded	MarkerRecorded
<input type="checkbox"/> MarkerRecorded	MarkerRecorded
<input type="checkbox"/> cisco.nso.v1.0.0.restconf.P	ActivityTaskScheduled

- A) **Job Event Name:** name of an event specific to CWM, for example `WorkflowExecution`.
- B) **Job Event Type:** type of the event used by the workflow engine, for example `WorkflowExecutionStarted`.
- C) **Status:** event execution status.
- D) **Attempts:** number of attempts performed for completion of the task.
- E) **Worker:** name of the worker performing the task.
- F) **Start Time:** date and time when event execution started, for example `05-May-2023 03:59:25 PM CEST`.
- G) **Close Time:** date and time when event execution ended.



Note The Job Event Log view displays all events for given job (no pagination available in CWM 1.1, but you can filter them for more relevant result).

Admin

The **Admin** area allows you to manage adapters, workers, secrets and resources through dedicated tabs.

Figure 9: Admin view

The screenshot displays the Admin view of the Cisco Crosswork Workflow Manager. The interface includes a dark blue sidebar on the left with navigation options: Workflows, Job Manager, and Admin (which is currently selected). The main content area features the Cisco logo and the title 'Crosswork Workflow Manager'. Below the title is a breadcrumb trail: Home / Administration / Adapters. A horizontal menu contains 'Adapters', 'Workers', 'Resources', and 'Secrets', with 'Adapters' being the active tab. The main heading is 'Adapters'. Below this heading are two buttons: '+ Add Adapter' and 'Export selected'. A table lists the installed adapters with columns for 'Adapter name' and 'Version'. The table contains three rows of data.

<input type="checkbox"/>	Adapter name	Version
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	netbox.rest.v1.0.0	v1.0.0
<input type="checkbox"/>	<u>cisco.dummy.v1.0.0</u>	v1.0.0
<input type="checkbox"/>	cisco.nso.v1.0.0	v1.0.0

Adapters

The **Adapters** tab displays a table listing all uploaded adapters. Above the table, there are various action buttons:

Figure 10: Adapters action buttons

Adapters



- **Add Adapter:** allows you to upload adapter to CWM and install it.
- **Export selected:** downloads the CSV file with all details of the selected adapters.

The **Adapters** table has the following columns:

Figure 11: Adapters table

<input type="checkbox"/>	Adapter name	Version
	<input type="text"/> A	<input type="text"/> B
<input type="checkbox"/>	netbox.rest.v1.0.0	v1.0.0
<input type="checkbox"/>	cisco.dummy.v1.0.0	v1.0.0
<input type="checkbox"/>	cisco.nso.v1.0.0	v1.0.0

- **A) Adapter name:** unique adapter name.
- **B) Version:** version of the added adapter.
- **C) Vendor:** vendor name, as specified in the adapter properties.

- D) **Set as default:** in this column, the adapter can have one of two possible statuses, depending on whether it is set as a default adapter to be used by workflow.
 - **True:** indicates the adapter is the default one for associated activities.
 - **False:** indicates the adapter is not set as the default one.
- E) **In Use:** in this column, the adapter can have one of two possible statuses, depending on whether it is currently in use, which determines if it can be deleted.
 - **True:** indicates the adapter is currently in use by one or more workflows and therefore cannot be deleted.
 - **False:** indicates the adapter is not in use by any workflow and can be deleted.
- F) **Actions:**
 - **Delete:** removes uploaded adapter from CWM.
 - **Install** installs already uploaded adapter to CWM.

Workers

The **Workers** tab displays a table listing all existing workers. Above the table, there are various action buttons:

Figure 12: Workers action buttons

Workers



- **Add Worker:** allows you to create a new worker and assign to it activities from already installed adapters.
- **Start Worker:** starting the worker allows it to execute assigned tasks and changes the worker's status to running.
- **Stop Worker:** stopping the worker allows it to execute pending actions but blocks its ability to accept new tasks. After clicking on the Stop Worker button, the confirmation modal Stop worker(s) appears. If the worker actively executes an ongoing task, you won't be able to stop it, unless you tick the checkbox Force stop. This action stops the worker regarding whether it performs any task and might cause the failure of ongoing jobs.
- **Delete:** removes the worker permanently (this action is irreversible). If the worker is running, it's force stopped before deleting.
- **Export selected:** downloads the CSV file with the details of the selected workers, including worker name, status and nr of activities.

The **Workers** table has the following columns:

Figure 13: Workers table

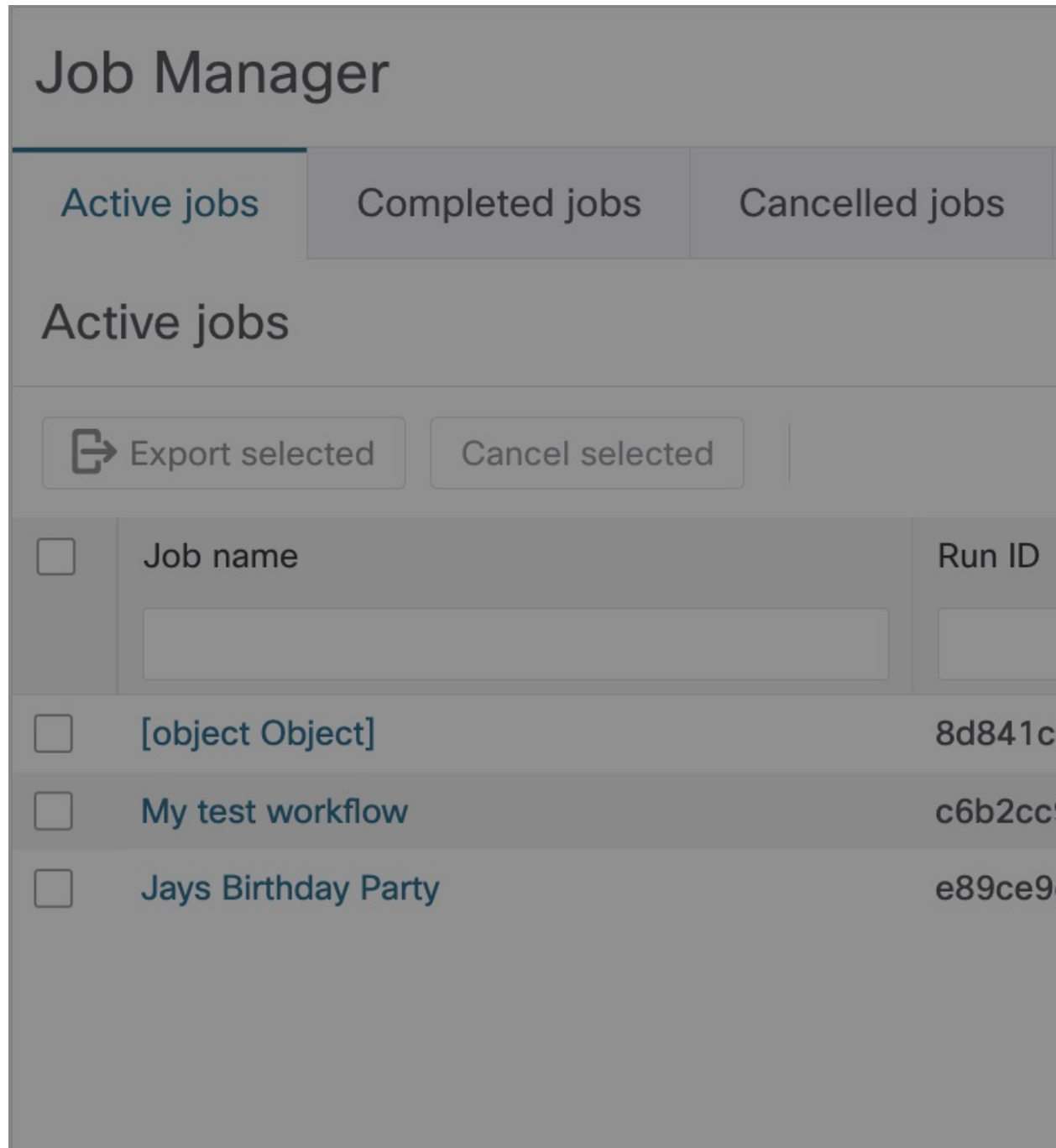
<input type="checkbox"/>	Worker Name	
<input type="checkbox"/>	generic.rest.v1.0.0	
<input type="checkbox"/>	netbox.rest.v1.0.0	
<input type="checkbox"/>	cisco.nso.v1.0.0	
<input type="checkbox"/>	NSOWorker	

- A) **Worker Name**: unique worker's name. Once created, it cannot be modified.
- B) **Status**: worker has three possible statuses visible in the CWM UI:
 - **Initialized**: worker status after creation, if you don't choose to start it immediately.
 - **Running**: indicates started worker available to execute tasks.
 - **Stopped**: indicates stopped worker unavailable for task execution.
- C) **Nr of activities**: shows how many adapters' activities are assigned to the worker.

Resources

The **Resources** tab displays a table listing all added resources. Above the table, there are various action buttons:

Figure 14: Resources action buttons



- **Add Resource:** allows you to add resource to CWM.
- **Export selected:** downloads the CSV file with all details of the selected resources.

The **Resources** table has the following columns:

Figure 15: Resources table

<input type="checkbox"/>	Resource name A	Resource t
<input type="checkbox"/>	Test resource NSO	cisco.nso.r
<input type="checkbox"/>	Cisco resource test	cisco.dumr

- A) **Resource name**: unique resource name.
- B) **Resource type**: resource type specified in the adapter files.
- C) **Secret ID**: associated secret ID.
- D) **Actions**:
 - **Delete**: removes resource from CWM

Secrets

The **Secrets** tab displays a table listing all added secrets. Above the table, there are various action buttons:

Figure 16: Secrets action buttons


Secrets



- **Add Secret**: allows you to add secret to CWM.
- **Export selected**: downloads the CSV file with all details of the selected secrets.

The **Secrets** table has the following columns:

Figure 17: Secrets table

<input type="checkbox"/>	Secret ID	
<input type="checkbox"/>	Cisco basic secret	
<input type="checkbox"/>	NSO auth secret	
<input type="checkbox"/>	NSO secret test	

- A) **Secret ID**: unique secret name.
- B) **Secret type**: secret type specified in the adapter files.
- C) **Actions**:
 - **Delete**: removes secret from CWM



CHAPTER 2

Initial setup

This sections contains the following topics:

- [Initial setup, on page 21](#)

Initial setup

Under this chapter, you will find a set of instructions to guide you through the first steps in the CWM application. This initial setup allows you to prepare your workplace and start executing workflows.

Use these guidelines to accomplish the following:

-
- Step 1** **Install adapters and create workers:** First, you would need to add and install adapters that allow workflows to interact with external systems. In this guide, it's assumed that you will use the default adapters shipped with CWM, or that you have custom adapter(s) developed and ready to use. For execution of your adapter activities and code, you need workers. You can create a worker directly during adapter installation.
- Step 2** **...configure secrets and resources:** Adapters mostly communicate with external entities via APIs, and they need to have connection data, like port or host, and authentication data, like username with password. This information is kept in secrets and resources. The structure and schema for each resource and secret type are defined in the adapter files. As an operator, you can add secrets and resources to the CWM. Once created, they can be reused by different workflow definitions and passed on when needed.
- Step 3** **...and finally, add your workflow definition:** Workflow definitions, in CWM shortly referred to as workflows, are a piece of code intended to automate operations, written in JSON or YAML and follow the Serverless Workflow Specification. Before workflows can be executed, they need to be added to the CWM application.

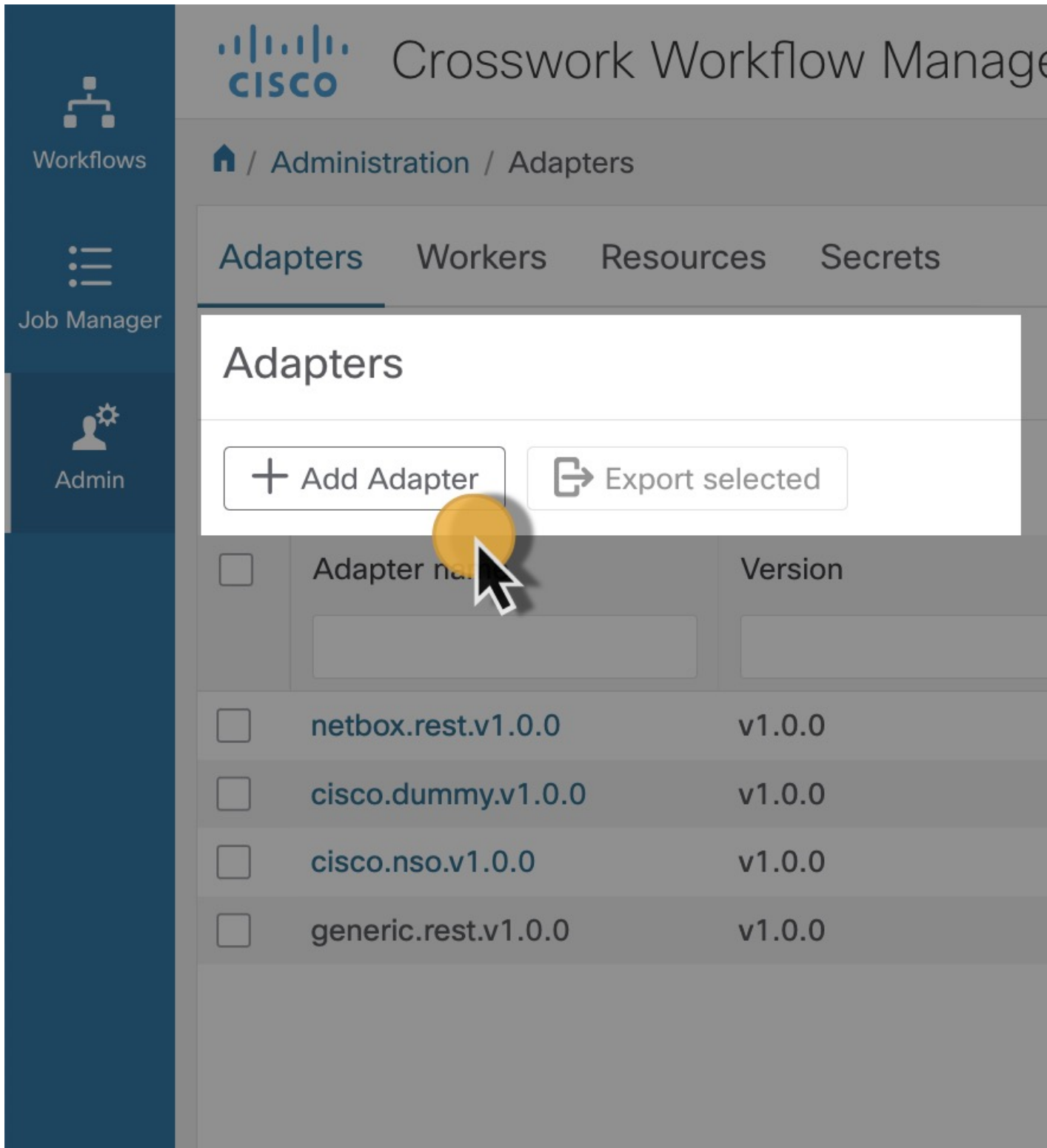
When you complete this setup you are ready to run your first job.

Install adapter

This section explains how to upload an adapter file in the CWM and then install (deploy) it.

- Step 1** In CWM, go to the **Admin** -> **Adapters** tab.
- Step 2** Click the **Add Adapter** button.

Figure 18: Add adapter



The screenshot shows the Cisco Crosswork Workflow Manager Admin console. The left sidebar contains navigation options: Workflows, Job Manager, and Admin. The main content area is titled 'Adapters' and includes a breadcrumb path: Administration / Adapters. Below the breadcrumb are tabs for Adapters, Workers, Resources, and Secrets. The 'Adapters' tab is active, displaying a table of installed adapters. A yellow circle highlights the '+ Add Adapter' button, with a mouse cursor pointing to it.

CISCO Crosswork Workflow Manager

Workflows

Job Manager

Admin

Administration / Adapters

Adapters Workers Resources Secrets

Adapters

+ Add Adapter Export selected

<input type="checkbox"/>	Adapter name	Version
<input type="checkbox"/>	netbox.rest.v1.0.0	v1.0.0
<input type="checkbox"/>	cisco.dummy.v1.0.0	v1.0.0
<input type="checkbox"/>	cisco.nso.v1.0.0	v1.0.0
<input type="checkbox"/>	generic.rest.v1.0.0	v1.0.0

Step 3 In the **Install a new adapter** modal, click on the file uploader to select an installable adapter file from your local machine and click **Upload**. You can find adapter files in the CWM software package.

Figure 19: Upload adapter file

Install a new adapter

 Click to select adapter package to upload

Install Ada

Note The only supported file format is tar.gz.

Step 4 After the adapter file is uploaded to the CWM database, optionally tick **Automatically create worker for this adapter** checkbox if you want to create one, then click **Install Adapter** to finish the installation process.

Figure 20: Install adapter

Install a new adapter

 cwm.v1.0.netbox.rest.v1.0.0.tar.gz

Automatically create worker for this adapter

Install Adapter

Note If the installation is interrupted or you chose **Cancel** in the modal, the adapter will be added to the CWM database and visible in the adapters list, but not installed and unusable by workflows. If you canceled the installation intentionally and want to remove the adapter from the list, click **Delete** under the Actions column.

Step 5 If your adapter was installed, you should see the successful message on the modal "*Your_adapter's_name* has been fully installed!". Click **Done**.

Figure 21: Adapter installed

Install a new adapter

netbox.rest.v1.0.0 has been fully installed!

Note "Adapter not installed" If the process was interrupted or failed, you can finalize it later by clicking the **Install** button under the Actions column.

Figure 22: CWM_install_button_01.jpg

The screenshot displays the Cisco Crosswork Workflow Manager Admin interface. The left sidebar contains navigation icons for Workflows, Job Manager, and Admin. The main content area shows the 'Adapters' page, with a breadcrumb trail 'Administration / Adapters' and tabs for 'Adapters', 'Workers', 'Resources', and 'Secrets'. Below the tabs, there are two buttons: '+ Add Adapter' and 'Export selected'. A table lists the installed adapters with columns for 'Adapter name' and 'Version'.

<input type="checkbox"/>	Adapter name	Version
<input type="checkbox"/>	netbox.rest.v1.0.0	v1.0.0
<input type="checkbox"/>	cisco.dummy.v1.0.0	v1.0.0
<input type="checkbox"/>	cisco.nso.v1.0.0	v1.0.0
<input type="checkbox"/>	generic.rest.v1.0.0	v1.0.0

Set adapter as default for associated activities

You can set which adapter should be the default one for associated activities. To do so, follow the steps below.

- Step 1** In CWM, go to the **Admin** -> **Adapters** tab.
- Step 2** In the adapters list, click the name of the chosen adapter to open the adapter's details view.
- Step 3** Tick the checkbox **Use as default version for associated activities**.

Figure 23: Set default adapter

cisco.dummy.v1.0.0

✔ This adapter is in use by one or several workflows and therefore can't

Description

-

Use as default version for associated activities



Adapter Name

cisco.dummy.v1.0.0

Vendor

cisco

Installed

06 / 10 / 2023 14:28

Activities in this adapter

MyActivity

MyActivity

Step 4 Click **Save Changes**.

Note After setting the adapter as the default one, you should see a relevant status under Set as default column on the adapters list.

Delete adapter

You can delete the adapter from CWM only if it has the status *Not in use* under the In Use column in the adapters list.



Note Adapters already used by running workflow(s) with the status *In use* cannot be deleted.

Step 1 In CWM, go to the **Admin** -> **Adapters** tab.

Step 2 Find the adapter you want to remove from the adapters list and click the **Delete** button in the same row under the Actions column.

Step 3 In the **Delete Adapter** modal, confirm by clicking the **Delete Adapter** button.

Figure 24: Delete adapter

Delete Adapter

Are you sure you want to delete the selected adapter?

Adapter Id

cisco.nso.v1.0.0

Cancel

In case the delete option is disabled, you need first to terminate the running workflow(s) using this adapter and remove associated workers.

Add worker

This section explains how to create a worker in CWM.

Prerequisites: You should have added and deployed adapter(s).

Step 1 In CWM, click the **Admin** tile from the navigation menu on the left. In the **Workers** view, click **Add Worker**.

Step 2 In the **Create new worker** modal, provide the required input:

- a) **Worker name:** type a name for your worker, for example, `MyNewWorker`. Once created, it cannot be modified.
- b) **Start worker after creation:** tick the checkbox to automatically start the worker.
- c) **Activities:** tick the checkboxes for selected adapter activities you want to assign to your worker. In our example, a worker for the Generic Rest adapter's activities is created.

Figure 25: Create new worker



Create new workflow

Step 3 Click **Create worker**.

Create secrets and resources

This section explains how to add secrets and resources to CWM.

Prerequisites: Uploaded adapter(s) with workers.



Note It's recommended to add secrets to CWM before creating resources, as resources utilize secrets.

Add secret

Step 1 In CWM, go to the **Admin** -> **Secrets** tab. In the **Secrets** view, click **Add Secret**.

Workflows

Job Manager

Admin

CISCO Crosswork Workflow Manager

Administration / Secrets

Adapters Workers Resources Secrets

Secrets

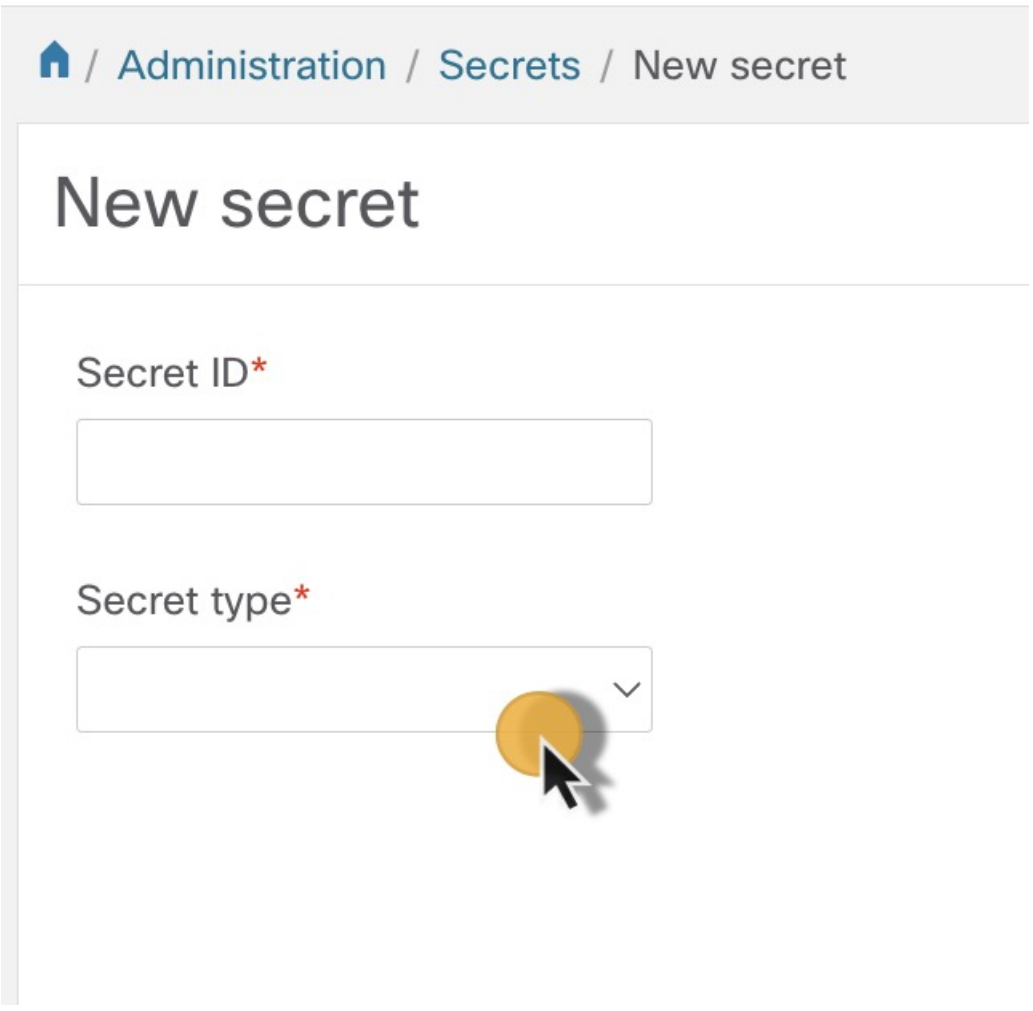
+ Add Secret Export selected

<input type="checkbox"/>	Secret ID	<input type="text"/>
<input type="checkbox"/>	My new secret	
<input type="checkbox"/>	Cisco basic secret	

Step 2 In the opened **New secret** view, provide the required input:

- Secret ID:** type a unique name for your secret.

- b) Select a **Secret type** from the drop-down menu. Secret types are defined inside adapters and are added to CWM upon



adapterinstallation.

- Step 3** After selecting the secret type, a set of additional fields is displayed under the **Secret type details** section. Fill in the fields (for example, username and password) with values. These fields can vary among the secret types and are specified

in the adapter files.

[Home](#) / [Administration](#) / [Secrets](#) / [New secret](#)

New secret

Secret ID*

Secret type*

Secret type details

password*

username*

Note You can change the secret type and its details later.

Step 4 Click the **Create Secret** button.

Once you've added a secret and its details, create a resource in CWM and associate it with the secret.

Add resource

Prerequisites: You should have added secret(s).

Step 1 In CWM, go to the **Admin** -> **Resources** tab. In the **Resources** view, click **Add Resource**.

The screenshot displays the Cisco Crosswork Workflow Manager interface. On the left is a dark blue sidebar with navigation options: Workflows, Job Manager, and Admin. The main header area shows the Cisco logo and the title 'Crosswork Workflow Manager'. Below the header is a breadcrumb trail: Administration / Resources. A horizontal menu contains 'Adapters', 'Workers', 'Resources' (which is selected and highlighted with a blue border), and 'Secrets'. The main content area is titled 'Resources' and features two buttons: '+ Add Resource' and 'Export selected'. A yellow circular callout with a mouse cursor is positioned over the '+ Add Resource' button. Below the buttons is a table with columns for checkboxes, resource names, and other details. The visible rows are:

<input type="checkbox"/>	Resource name	
<input type="checkbox"/>	My new resource	ge
<input type="checkbox"/>	My test resource	cis

Step 2

In the opened **New resource** view, provide the required input:

- a) **Resource name**: type a unique name for your resource. Once created, it cannot be modified.
- b) Select a **Resource type** from the drop-down menu. Resource types are defined inside adapters and are added to CWM upon adapter

Home / Administration / Resources / New resource

New resource

Name and type

Resource name*

Resource type*

Secret ID

installation.

Step 3

After selecting the resource type, a set of additional fields is displayed under the **Connection** section. Fill in the fields (for example, host or port) with configuration details. These fields can vary among the resource types and are specified in the adapter files.

Step 4 Select a **Secret ID** from the drop-down menu to associate a previously created secret with this resource.

Note Although the Secret ID and Connection details are not mandatory fields to fill while creating a resource, and you may insert proper values later, they are necessary to make a resource work properly.

Step 5 Click the **Create resource** button.

Once created, your resource is displayed on the list in the main **Resources** view.

Add workflow

This section explains how to add a workflow definition to CWM.

- Step 1** In CWM, go to the **Workflows** -> **All Workflows** tab.
- Step 2** Click the **Create new workflow** button.

Figure 26: Create New Workflow button

The screenshot displays the Cisco Crosswork Workflow Manager interface. On the left is a dark blue sidebar with three menu items: 'Workflows' (with a tree icon), 'Job Manager' (with a list icon), and 'Admin' (with a person and gear icon). The main content area has a light gray background. At the top left of the main area is the Cisco logo and the text 'Crosswork Workflow M'. Below this is a breadcrumb path: a home icon followed by '/ Workflows'. The main heading is 'Workflows'. Below the heading is a filter box containing the text 'All workflows'. Underneath is the section title 'All Workflows'. There are three action buttons: 'Edit tags' (with a tag icon), 'Export selected' (with a share icon), and 'Delete' (with a trash icon). Below the buttons is a table with two columns: 'Workflow definition n...' and 'Definition ID'. The table contains three rows, each with a checkbox on the left. The second row is highlighted in gray and contains the text 'Test workflow' and the ID '468234fb-9a62-'. The third row contains the text 'Demo NSO workflow' and the ID '8d90c06f-29f4-4'.

Workflows

Job Manager

Admin

CISCO Crosswork Workflow M

Home / Workflows

Workflows

All workflows

All Workflows

Edit tags Export selected Delete

<input type="checkbox"/>	Workflow definition n...	Definition ID
<input type="checkbox"/>		
<input type="checkbox"/>	Test workflow	468234fb-9a62-
<input type="checkbox"/>	Demo NSO workflow	8d90c06f-29f4-4

- Step 3** In the **Create new workflow** modal, provide the required input:
- Workflow definition name** – type the name for your workflow definition, for example, `MyFirstWorkflow`.
 - Version** – type your workflow definition version, for example, `1.0`.
- Step 4** Click **Create Workflow**. The steps above create a workflow entry in CWM with dummy code that needs further editing. In the next section, you can check how to insert your workflow definition and replace the pre-defined code.

Figure 27: Create workflow

Create new workflow

Workflow definition name*

Version*



Workflow editing

- Step 1** To edit an existing workflow, from the **All Workflows** tab, click on the chosen workflow definition name to open the **Detail** tab. You can add there a description, edit a version or workflow definition name, or assign tags to the workflow definition.

Note To add more workflow tags, separate them with a comma.

Note Workflow tags are separate from job tags, and are passed to every single execution of this workflow definition (job run). You can edit workflow tags from the workflow definition details level, but once they are added to the already executing run, they cannot be changed.

Figure 28: Workflow details

Step 2 Go to the **Code** tab to edit a workflow definition. By default, after creating a new workflow in CWM, the **Code** tab contains a dummy piece of code that you need to replace with the actual developed workflow definition in JSON or YAML, based on Serverless Workflow Specification.

Step 3 After inserting the desired changes, there are several actions you can take by using the buttons on the right:

- Done:** rejects any changes and takes you to the previous page.
- Save as new workflow:** creates a new workflow definition with inserted changes and keeps the previously saved version of the workflow definition (do not overwrite the changes on the same workflow definition, but create a separate, new workflow definition).
- Delete:** removes the workflow definition from CWM.
- Save Changes:** saves the inserted changes for the current workflow definition.
- Run:** executes the workflow definition as a single job.

Figure 29: Workflow details buttons



Note You can update the workflow definition and up-version it without affecting the currently running job.

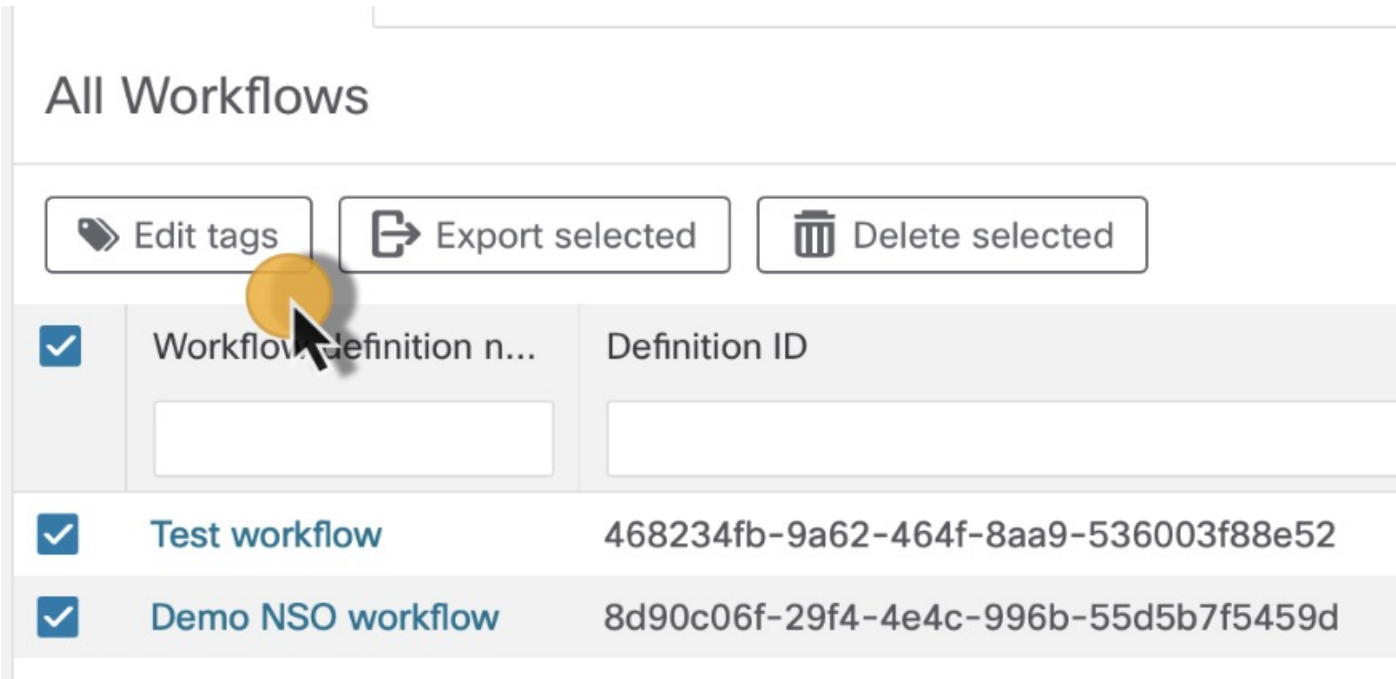
Bulk tags editing

You can edit tags for many workflow definitions at once. You can add a tag(s) to all selected workflows or remove all tags by resetting them.

Step 1 In CWM, go to the **Workflows** -> **All Workflows** tab.

Step 2 Select chosen workflows by ticking the checkbox on the right side of the **All Workflows** table, then click on the **Edit tags** button.

Figure 30: Bulk edit tags



- Step 3** In the **Edit tags** modal, under the **Select action** section, click on the chosen radio button depending on whether you plan to add tag(s) or reset them:
- Add tags to all:** assign one or more tags (separated by a comma) to all selected workflows.
 - Reset tags for all:** remove all tags for selected workflows.

Figure 31: Edit tags

Edit tags

Are you sure you want to edit tags for the selected workflow

Workflow(s)

Test workflow

Demo NSO workflow

Select action

Add tags to all

Tags *

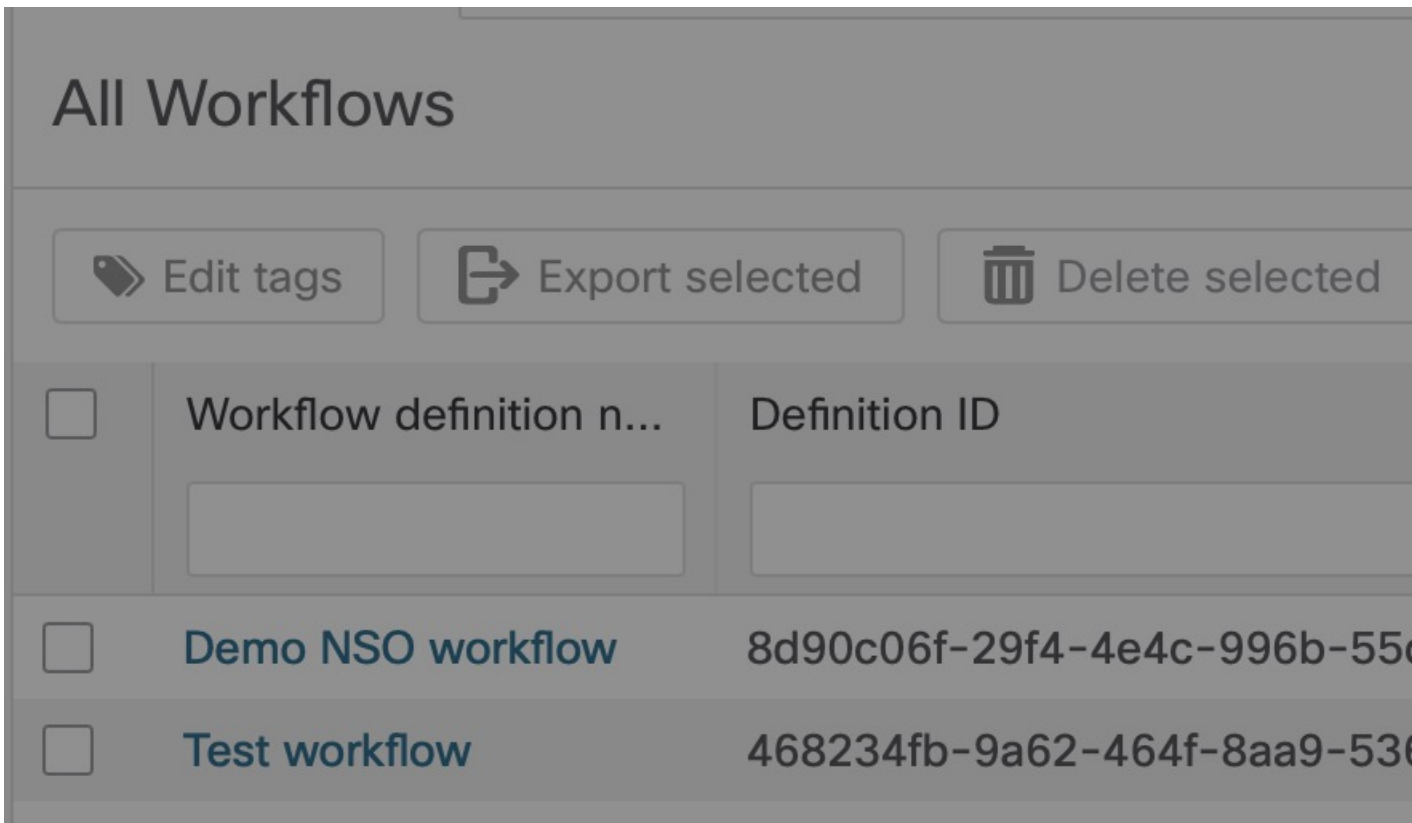
new_tag

Reset tags for all

Step 4 Click **Save**.

Step 5 The result will be visible under the Workflow tags column.

Figure 32: Bulk edit tags





CHAPTER 3

Jobs

This sections contains the following topics:

- [Jobs, on page 53](#)

Jobs

After completing the instructions described in Initial setup, you are ready to start executing workflows.

In the CWM application, a particular execution of workflow definition is called a job, and by following guidelines in this chapter, you can:

- start a job immediately, or
- create a schedule to run planned jobs in the future.

Run job

This section explains how to run a job (workflow execution) via CWM.

Prerequisites: A workflow definition stored in CWM and listed in the **All Workflows** tab; uploaded adapter(s) with workers.

-
- Step 1** In CWM, go to the **Workflows** -> **All Workflows** tab. Select the workflow you want to execute and click **Run** under the Actions column.

Figure 33: Run job button

The screenshot displays the Cisco Crosswork Workflow Manager interface. On the left is a dark blue sidebar with three menu items: 'Workflows' (with a tree icon), 'Job Manager' (with a list icon), and 'Admin' (with a person and gear icon). The main content area has a light gray background. At the top left of the main area is the Cisco logo and the text 'Crosswork Workflow M'. Below this is a breadcrumb 'Home / Workflows'. The main heading is 'Workflows'. A filter dropdown menu is open, showing 'All workflows' selected. Below the heading is another section titled 'All Workflows'. This section contains three buttons: 'Edit tags' (with a tag icon), 'Export selected' (with a share icon), and 'Delete' (with a trash icon). Below the buttons is a table with two columns: 'Workflow definition n...' and 'Definition ID'. The table contains three rows, each with a checkbox on the left. The first row is partially obscured. The second row shows 'Test workflow' with ID '468234fb-9a62-'. The third row shows 'Demo NSO workflow' with ID '8d90c06f-29f4-4'.

Workflows

Job Manager

Admin

CISCO Crosswork Workflow M

Home / Workflows

Workflows

All workflows

All Workflows

Edit tags Export selected Delete

<input type="checkbox"/>	Workflow definition n...	Definition ID
<input type="checkbox"/>		
<input type="checkbox"/>	Test workflow	468234fb-9a62-
<input type="checkbox"/>	Demo NSO workflow	8d90c06f-29f4-4

- Step 2** In the **Run job** modal, insert the initial workflow data input in the Input variables field.
- Step 3** By default, your job's name is the same as your workflow definition, but you can change it in the Job name field.
- Step 4** Optionally, you can assign tags to your job. To insert more than one tag, separate them with a comma.
- Note** Tags are case-sensitive. Once added to the job, you cannot edit them.
- Step 5** Leave the radio button *Start directly* selected to run your job immediately. If you want to create a schedule for the future run, follow the Schedule Job instructions.
- Step 6** Click **Run job** to start the workflow execution.

Figure 34: Run job

Check job status

Step 1 Go to the **Job Manager** -> **All Jobs** tab.

Step 2 In the **All jobs** table, find your job and check the status of the workflow execution in the Status column.

- a) If the workflow was executed correctly, a green round icon with the tick and the status *Completed* is displayed.
- b) If the workflow execution is still in progress or the workflow engine is retrying an action, a blue round icon with three dots and the status *Running* is displayed.
- c) If the workflow execution fails, a red round icon with the exclamation mark and the status *Failed* is displayed.

Check job result

Step 1 Click the job name to enter its details.

Step 2 In the **Job Event Log** table, you can expand every event entry by clicking on the `material-plus-box-outline` icon.

Step 3 To check the result of the execution, expand the **WorkflowExecution** entry at the bottom of the table. Depending on the result, the Job Event Type may differ, for example: `WorkflowExecutionCompleted` or `WorkflowExecutionFailed`.

Check parent-child workflow relation

Identify child workflow runs

If a job run has been triggered as a child workflow, its job name is created following the schema below:

parent_job_run_name. + *child_workflow_def_name*. + *child_workflow def_version*.

For example, if a parent job run name is "Parent", and the child workflow definition name is "Child", the job run executed as child workflow is named "Parent.Child.1.0".

Find child workflow runs from the Job Event Log

If a given job run triggers child workflow executions, you can check them under the **Job Even Log** table of the parent run.

Step 1 Click the job name to enter its details.

Step 2 In the **Job Event Log** table, under the Job Event Type entry, search for the `ChildWorkflowExecutionStarted` or `ChildWorkflowExecutionCompleted` entry. Click on its Job Event Name – you will get redirected to the job details page of this child workflow execution.

Figure 35: Child workflow event log

Job Event Log

Job Event Name	Job Event Type
<input type="text"/>	<input type="text"/>
+ WorkflowExecution	WorkflowExecutionStarted
+ WorkflowTask	WorkflowTaskCompleted
+ MarkerRecorded	MarkerRecorded
+ UpsertWorkflowSearchAttribute	UpsertWorkflowSearchAttribute
+ MarkerRecorded	MarkerRecorded
+ Parent.Child.1.0 (sync)	StartChildWorkflowExecutionIn
+ Parent.Child.1.0 (sync)	ChildWorkflowExecutionStarte
+ WorkflowTask	WorkflowTaskCompleted
+ Parent.Child.1.0 (sync)	ChildWorkflowExecutionComp
+ WorkflowTask	WorkflowTaskCompleted
+ WorkflowExecution	WorkflowExecutionCompleted

Step 3 On the child job **Details** page, besides standard fields, you can find the Parent Run ID that redirects to the details of the parent job run.

Figure 36: Parent run ID

Note Child workflow runs do not inherit the parent job run tags.

Rerun job

Step 1 Go to the **Job Manager** -> **All jobs** tab.

Step 2 In the **All jobs** table, find a job that you want to rerun and click the **Rerun** button in the same row under the Actions column.

Figure 37: Rerun job button

The screenshot shows the 'Job Manager' interface with the 'Active jobs' tab selected. Below the tab are two buttons: 'Export selected' and 'Cancel selected'. A table lists active jobs with columns for 'Job name' and 'Run ID'.

<input type="checkbox"/>	Job name	Run ID
<input type="checkbox"/>	[object Object]	8d841c56-ce4c
<input type="checkbox"/>	My test workflow	c6b2cc92-d8d7
<input type="checkbox"/>	Jays Birthday Party	e89ce9d0-1ef8

Step 3 In the **Rerun job** modal, you can edit the Job name, Tags and Input variables (data input) or use the same values from the previous run.

Figure 38: Rerun job

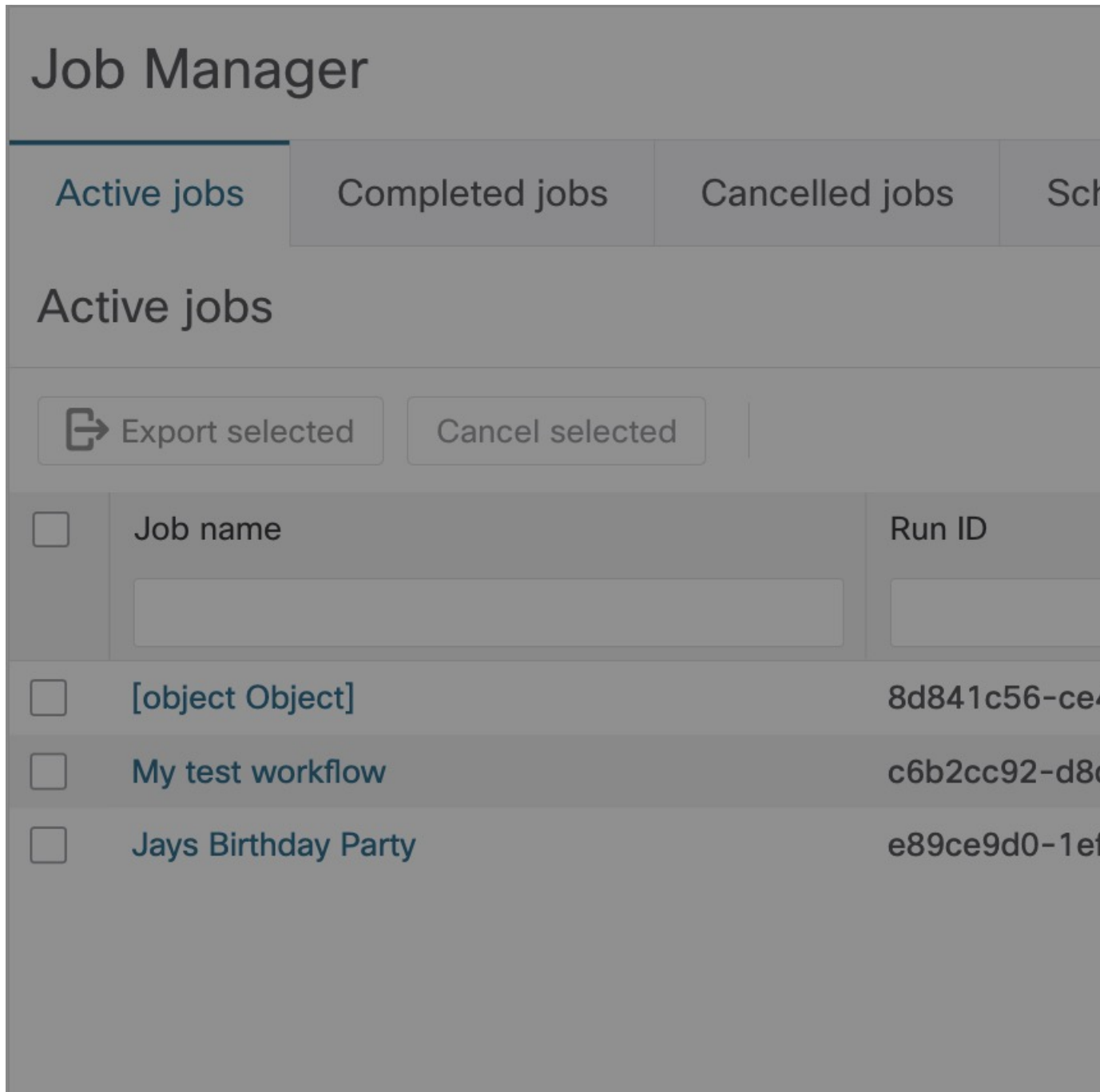
Step 4 Click **Run job**.

Cancel job

Step 1 Go to the **Job Manager** -> **Active jobs** tab.

Step 2 In the **Active jobs** table, find a job that you want to cancel and click the **Cancel** button in the same row under the Actions column.

Figure 39: Cancel job button



Step 3 In the **Cancel job** modal, you can enter an optional Reason for cancelling.

Step 4 Tick **Force terminate** checkbox if you want to cancel the running job immediately. If you leave this checkbox unticked, the workflow worker will complete the ongoing task execution from the workflow definition and then cancel the job.

Figure 40: Cancel Job

Step 5 Click **Cancel Job**. **Details** tab.

Note You can cancel the job also from the job's **Details** tab.

Schedule job

This section explains how to schedule a single job run (workflow execution) or recurring runs that are invoked in the future.

Prerequisites: A workflow definition added to CWM and listed in the **All Workflows** tab; uploaded adapter(s) with workers.

Step 1 In CWM, go to the **Workflows** -> **All Workflows** tab. Select the workflow you want to schedule and click **Run** under the Actions column.

Figure 41: Run Job Button

CISCO Crosswork Workflow M

Workflows

Home / Workflows

Workflows

All workflows

All Workflows

Edit tags Export selected Delete

<input type="checkbox"/>	Workflow definition n...	Definition ID
<input type="checkbox"/>	Test workflow	468234fb-9a62-
<input type="checkbox"/>	Demo NSO workflow	8d90c06f-29f4-4

- Step 2** In the **Run job** modal, insert the initial workflow data input in the Input variables field. Each scheduled run of a workflow receives identical input variables.
- Step 3** By default, your job name is the same as your workflow definition name, but you can change it in the Job name field.
- Step 4** Optionally, you can assign tags to your scheduled job(s). To insert more than one tag, separate them with a comma. All jobs in the schedule will have the same tags set.
- Step 5** Choose one scheduling option depending on whether you planned a single run in the future or a recurring series of runs.
- A) **Schedule for specific date and time**: pick a specific time and date for a single run.
 - B) **Cron**: set recurring runs based on cron expressions.

Figure 42: Schedule type

When *


Start directly

Schedule for specific date and time

Schedule ID *

My First Schedule

Time **Date**

05:15  Oct 27, 2023

Frequency

Cron

Note Schedule type based on frequency is disabled in the CWM 1.1 UI, but it's available via CWM API.

Step 6 Type a unique name for your schedule in the Schedule ID field.

Step 7 Click **Schedule Job** to schedule the workflow execution(s).

Figure 43: Schedule job

Note "Overlap policy": By default, the schedule overlap policy prevents overlapping runs in one schedule. If the previous job from a given schedule is still executed when it is time to start the next scheduled job, the next run will be skipped. If you want to allow overlapping runs, you can change the overlap policy via CWM API.

Check scheduled jobs

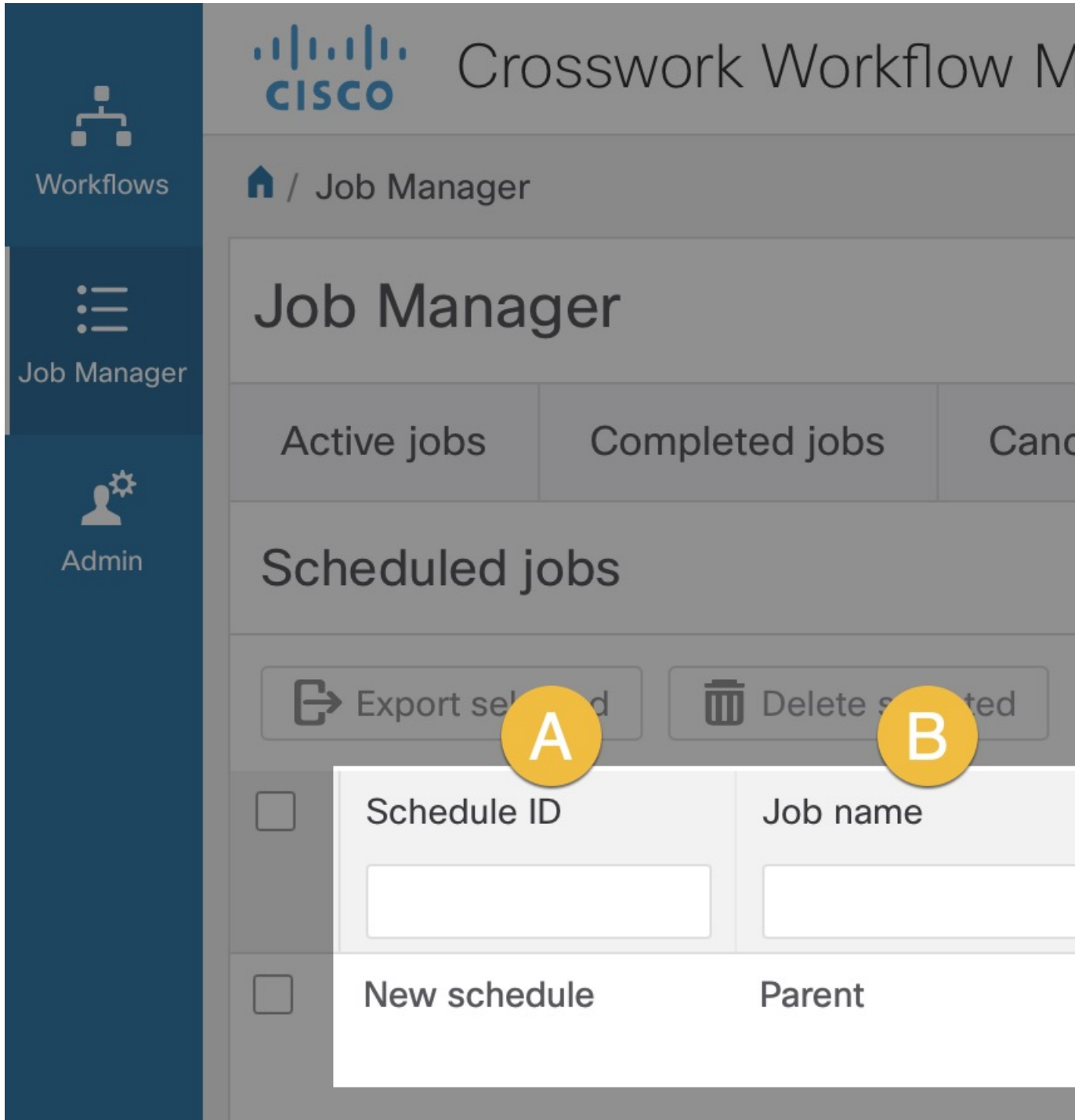
All schedules are displayed under the **Scheduled jobs** tab.

Step 1 Go to the **Job Manager** -> **Scheduled jobs** tab.

Step 2 In the **Scheduled jobs** table, you can find all the schedules with details:

- a) A) **Schedule ID**: unique identifier for every schedule
- b) B) **Job Name**: name of the scheduled workflow execution; shared between all runs in a schedule
- c) C) **Workflow Definition**: name of the workflow definition used to run a scheduled job(s)
- d) D) **Next scheduled run**: the date and time of the next upcoming run in the schedule, for example 05-May-2023 03:59:25 PM CEST
- e) E) **Type**: indicates whether the scheduled run is planned once in the future (*Specific date and time*), whether there are recurring runs (*Cron*) or recurring runs based on frequency (*Frequency*).
- f) F) **Job tags**: keyword(s) assigned to the scheduled job run
- g) G) **Workflow tags**: keyword(s) assigned to the workflow definition used for that planned run plus its version
- h) H) **Actions**: displays possible actions for the schedule - in CWM 1.1, only **Delete** is available in CWM UI When the scheduled job is executed, it will show in the **Active jobs** tab; when completed, it will display in the **Completed jobs** tab.

Figure 44: Schedule jobs tab



Note A created schedule does not have an expiration date. It means that you can update the schedule anytime and retrieve some of its details. A schedule is displayed on the **Scheduled job** table even if it contains only one scheduled job for a specific date and time that has already been executed. If you don't want the schedule to be displayed anymore in the list, you need to delete it.

Delete schedule

You can delete a whole schedule via CWM UI. This process will delete all future planned jobs in a schedule, but will not terminate or affect a job that is already in execution. Already started scheduled workflow execution can be canceled using the Cancel Job action.

Step 1 Go to the **Job Manager** -> **Scheduled Jobs** tab.

Step 2 In the **Scheduled Jobs** table, find a schedule that you want to delete and click the **Delete** button in the same row under the Actions column.

Figure 45: Delete schedule

