Cloudera Runtime 7.2.17

# Monitoring Kafka Connect using Streams Messaging Manager

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# Contents

# Kafka Connect in SMM

Get started with Kafka Connect in SMM.

Kafka Connect is a tool for streaming data between Apache Kafka and other systems in a reliable and scalable fashion. Kafka Connect makes it simple to quickly define connectors that move large collections of data into and out of Kafka. Source connectors can ingest entire databases or collect metrics from all your application servers into Kafka topics, making the data available for stream processing with low latency. Sink connectors can deliver data from Kafka topics into secondary storage and query systems or into batch systems for offline analysis.

Kafka Connect in CDP is shipped with many different Cloudera developed as well as publicly available sink and source connectors. Each of which cover a specific use case for streaming data. In addition to the connectors available by default, installing custom developed or third-party connectors is also possible. All connectors can be deployed, managed, and monitored using the Streams Messaging Manager UI (recommended), Streams Messaging Manager REST API, or Kafka Connect REST API.

The following sections walk you through the Kafka Connect related pages of the SMM UI and give an introduction to the basics of connector management and monitoring. For a comprehensive list of connectors shipped in CDP, as well as deatailed instructions on how to install connectors, see *Connectors*.

**Related Information**
Connectors

## The Kafka Connect UI

Learn about the Kafka Connect section in the SMM UI, which you can use to deploy, manage, and monitor Kafka Connect connectors.

The  **Connect** section in SMM is your main hub in CDP where you deploy, manage, and monitor Kafka Connect connectors. This section of the UI is only available if you deployed Kafka Connect role instances under your Kafka service and SMM is configured to integrate with Kafka Connect. For detailed instructions on how to set up Kafka Connect and integrate it with SMM, see *Kafka Connect Setup*.

Clicking  Connect, opens the **Connect Cluster** page with the **Connectors** tab open. This is the default page of the Kafka Connect UI. It provides a high level overview of the connectors and the connect cluster.
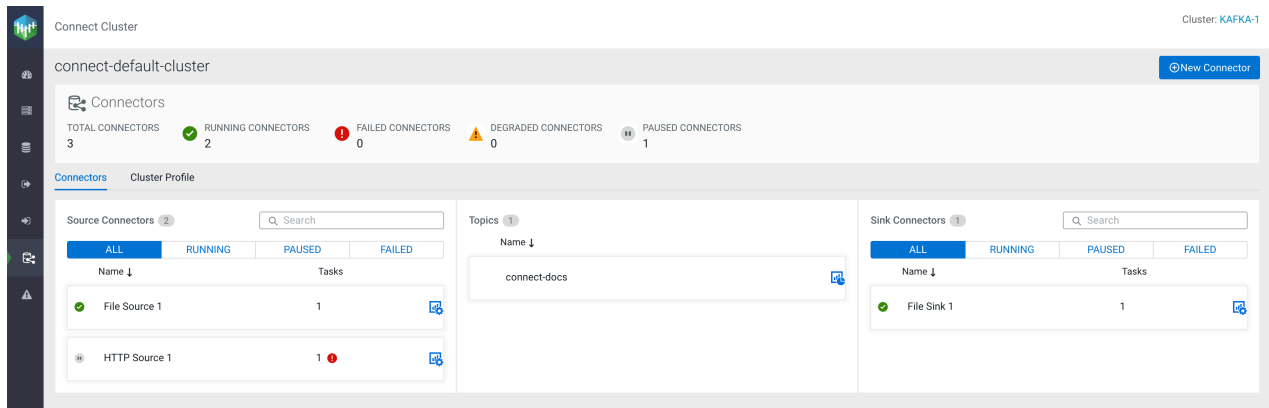


At the top-right corner of the **Connect Cluster** page, you can see the name of the cluster. The ⊕ New Connector option below the cluster name starts the **Connector Setup** wizard, which you use to deploy connectors in your cluster. For detailed steps on how to deploy a new connector, see *Deploying and Managing connectors* .

The **Connectors** section provides some basic metrics regarding Kafka Connect including total connectors, running connectors, failed connectors, degraded connectors, and paused connectors. Under the Connectors section you can find two tabs, Connectors and Cluster Profile. The two tabs enable you to monitor and manage your connectors and the connect cluster.

**Connectors tab**

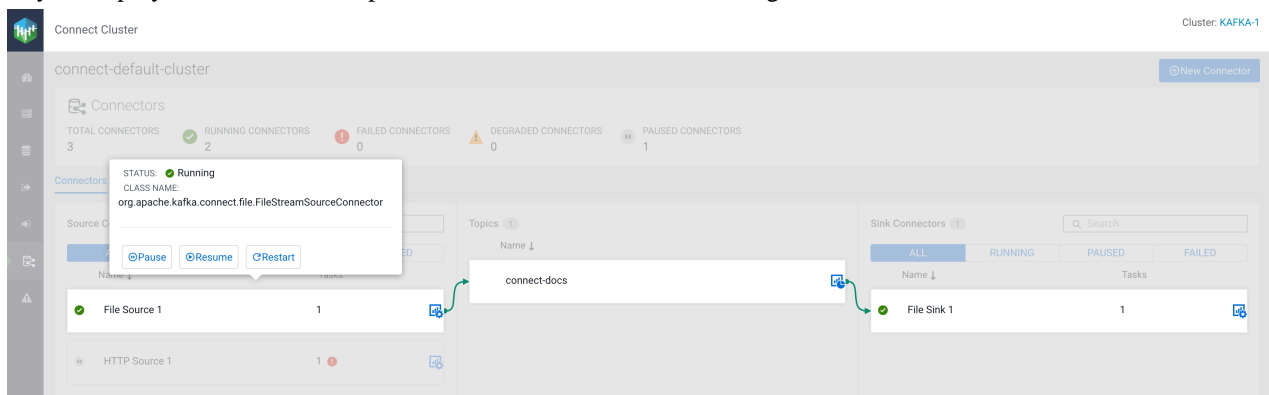In the Connectors tab, you can view details of the source connectors, topics, and sink connectors in the cluster. The Source Connectors and Sink Connectors sections show all, running, paused, and failed connectors with connector name and associated task details. Both Source Connectors and Sink Connectors sections contain a Search option that enables you to search for particular connector details. The Topics section shows the Kafka topics where data is read from or written to.

Hovering over a specific connector displays a context menu where you can view the class name and status of the connector. The context menu also provides quick options to pause, resume, and restart the connector. Clicking on any of your deployed connectors or topics visualizes how the data is flowing into or out of the selected entities.



**Cluster Profile tab**

In the Cluster Profile tab, you can view details of the connect cluster and the workers. The tab includes information regarding your cluster such as the Cloudera Manager URL, the number of workers deployed in the cluster, as well as an uptime counter. Additionally, the **Workers** section lists all worker hosts available in the cluster. This section includes basic worker-level information, such as how many connectors are deployed on a worker, success and failure rates, and more.

If you click the ✛ option found next to each host, additional details and metrics are displayed that are specific to the worker host you selected. The information includes a list of connectors assigned to the worker, as well detailed connector, task, and worker rebalance metrics. Using the Search by host field, you can search for worker details by host. Additionally, you can filter the list of connectors deployed on the worker host based on their status.



## The Connector Profile

After you deploy a connector, you can monitor the details of the connector, modify its configuration, and carry out various management actions.

To monitor or manage a specific connector, click 🖳 (Connector Profile) next to the connector's name. Clicking the icon redirects you to the **Connector Profile** page of the selected connector. The **Connector Profile** page enables you

to monitor the details of the connector, monitor and manage its tasks, and edit its configuration. The page consists of two tabs **Connector Profile** and **Connector Settings**.

### Connector Profile tab

The Connector Profile tab enables you to monitor details of the connector and its tasks. Additionally, a few basic management options are also available.



This tab is organized into multiple sections. The various sections enable you to do the following:

- The **Connector Profile** section provides you with details regarding the Classname, Assigned Worker, Status, Total Tasks, Running Tasks, Failed Tasks, and Paused Tasks.
- In the **Tasks** section, you can view and monitor Status, Worker ID, Task ID, and various other details regarding connector tasks.

  Clicking ✛ next to a task displays detailed information and metrics about the selected task. In addition to viewing status and metrics, the **Tasks** section also allows you to restart a particular task. This can be done by selecting the task you want to restart and clicking the Restart option found within the **Tasks** section. The Search by host option enables you to search for particular task details by host.

- Using the buttons in the top right-hand corner you can pause, resume, restart, and delete the connector, or deploy a new connector.

### Connector Settings tab

The Connector Settings tab enables you to review and edit the configuration of the connector. By default editing the connector configuration is disabled. To enabled editing, click ✎ Edit in the bottom left-hand corner. In addition to reconfiguring the connector, you can pause, resume, restart, and delete the connector, or deploy a new connector with the buttons in the top right-hand corner of the page.

> **Tip:** The **Connector Settings** tab is identical in functionality to the **Connector Configuration** page in the **Connector Setup** wizard. For detailed information on the various options and features available related to configuration, see *Connector configuration features in SMM*.

Kafka Connect Setup

Connectors

Deploying and managing Kafka Connect connectors in SMM

Connector configuration features in SMM

# Deploying and managing Kafka Connect connectors in SMM

Learn how to use the SMM UI to deploy new Kafka Connect connectors using the Connector Setup wizard, as well as how to reconfigure, pause, resume, restart, and delete existing connectors. Additionally, learn about the various features and options SMM provides for editing connector configurations.

## Deploying a Kafka Connect connector in SMM

Kafka Connect connectors are deployed in SMM using the Connector Setup wizard. Learn how to deploy a new connector using the wizard.

### Before you begin
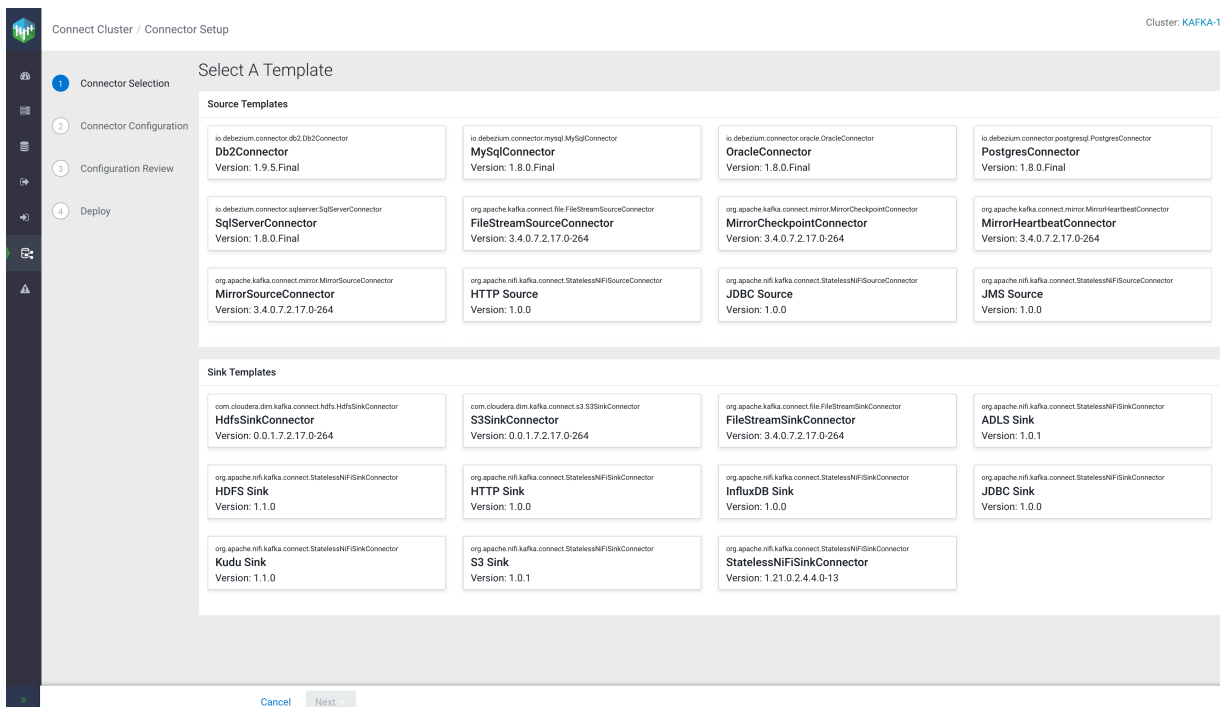
- By default, you can use the Connector Setup wizard to deploy any connector that is shipped with Cloudera Runtime. The only exceptions are the FileStream example connectors (FileStreamSourceConnector and FileStreamSinkConnector). Although these connectors are part of the Kafka distribution and are shipped with Cloudera Runtime, they are not available by default in the Connector Setup wizard. This is because neither connector is considered production ready. If you want to deploy an instance of these connectors, you must install them first. For more information, see Installing Kafka Connect connectors.
- Third-party connectors can be deployed using the wizard, but must be installed first. For more information, see Installing Kafka Connect connectors.

- Before deploying any connector, Cloudera recommends that you review the documentation of the connector. For more information regarding each connector shipped in CDP, see Connectors.

## Procedure

1. Click  **Connect** in the navigation sidebar.

2. Click the  New Connector option.

   This option is available on all Kafka Connect related pages of the SMM UI. Clicking this option starts the **Connector Setup** wizard and redirects you to the **Select A Template** page. This page contains all connectors available for deployment in the form of selectable cards.



Each card includes the following information about the connector:

- The connector's fully qualified class name.
- The connector's display name. If no display name is available, the card includes the unqualified classname.
- The version of the connector.

By default, the page includes all connectors shipped with Cloudera Runtime. Third-party connectors that you install manually are also visible on this page following installation.

**3.** Select a connector from the **Source Templates** or **Sink Templates** section.

The Connector Configuration page appears.



Most connectors shipped with Cloudera Runtime come with a default configuration template to ease configuration. If a template is available for a specific connector, the property keys and values are automatically populated when you select the connector. The properties and values included in the templates depend on the selected connector. In general, the templates include all mandatory properties that are required for successful deployment. However, most connectors also have a number of additional properties that might not be part of the template. As a result, Cloudera recommends that you always review the documentation for the specific connector that you want to deploy.

**4.** Configure the properties of the connector.

The Connector Configuration page includes various features and options that you can use to configure your connector. Each row in the **Properties** section represents the key and value of a property. Using the different buttons and other options available, you can add, delete, import, or otherwise modify the configuration. For more details on the configuration features available on this page, see *Connector configuration features in SMM*.

**5.** Click Validate after you are done configuring the connector.

Validating the configuration is mandatory when you deploy or modify a connector. If SMM finds any errors in the configuration, the properties that contain errors are highlighted in red, and an error message with the details regarding the configuration issue is displayed. Resolve any errors until validation passes.

**6.** Click Next.

The Next option is disabled until validation passes. After you click Next, the **Configuration Review** page appears.



**7.** Review your connector configuration.

The **Configuration Review** page allows you to review the connector configuration. Use this page to ensure that all properties are correctly configured for your use case.

Most configuration options are disabled on this page. However, you can use the search and filtering options to search for properties. Additionally, you can export the connector configuration for later use with  Actions Export . If you find any errors, go back to the **Connector Configuration** page, make any necessary changes, and revalidate the configuration before continuing.

**8.** Click Deploy to deploy the connector.

After you click Deploy, the **Connector Deployment Status** modal is displayed that shows the status of the deployment.

> **Note:** Connector deployment is not instantaneous. You might need to wait a few seconds for deployment to finish.

Connector Deployment Status

⟳ Deploying...

Your connector is being deployed, you can visit the Connector Overview Page until it is deployed.

Connector Overview Page

Connector Deployment Status

✅ Deployment Successful!

Your connector was successfully deployed and is now available

View Connector Profile

**What to do next**
After the connector is deployed, you can monitor the connector on the Connect Cluster page or the connector's profile page. For more information, see *The Kafka Connect UI*.
**Related Information**
Connectors

Streams Messaging Reference

The Kafka Connect UI

Connector configuration features in SMM

# Pausing, resuming, restarting, and deleting a Kafka Connect connector in SMM

Learn how to pause, resume, restart, or delete an existing Kafka Connect Connector in SMM.

**Procedure**

**1.** Click 🔗 **Connect** in the navigation sidebar.

**2.** Identify the connector you want to manage.

**3.**
    Click ⚙ (Profile) beside the connector.

**4.**
    Click ⏸ Pause, ▶ Resume, ↻ Restart, or 🗑 Delete.

If you select 🗑 Delete, you must confirm the action in a pop-up window.

**Tip:** The ⏸ Pause, ▶ Resume, and ↻ Restart options are also available if you hover over the connector on the **Connect Cluster** page.

**Related Information**

Connectors

Streams Messaging Reference

The Kafka Connect UI


# Reconfiguring Kafka Connect connectors in SMM

Learn how to edit the configuration of a running Kafka Connect connector using the SMM UI.

**Procedure**

**1.**
    Click 🔗 **Connect** in the navigation sidebar.

**2.** Identify the connector you want to modify.

**3.**
    Click ⚙ (Profile) beside the connector.

**4.** Go to the Connector Settings tab.

**5.**
    Click ✏ Edit at the bottom-left corner of the page.

All properties except connector name become editable.

6. Configure the properties of the connector.

   The Connector Settings page includes various features and options that you can use to configure your connector. Each row in the **Properties** section represents the key and value of a property. Using the different buttons and other options available, you can add, delete, import, or otherwise modify the configuration. For more details on the configuration features available on this page, see *Connector configuration features in SMM*.

7. Click Validate after you are done configuring the connector.

   Validating the configuration is mandatory when you deploy or modify a connector. If SMM finds any errors in the configuration, the properties that contain errors are highlighted in red, and an error message with the details regarding the configuration issue is displayed. Resolve any errors until validation passes.

8. Click Update ⬆.

**Related Information**

Connectors

Streams Messaging Reference

The Kafka Connect UI

Connector configuration features in SMM

# Connector configuration features in SMM

Learn about the various configuration features and options that you can use when configuring Kafka Connect connectors in SMM.

The SMM UI includes two pages where you configure Kafka Connect connector properties. The **Connector Configuration** step of the **Connector Setup** wizard and the Connector Profile Connector Settings tab. Both pages include various features and options that are designed to help you with connector configuration. The following sections go over each of the configuration options available on the UI.

> **Note:** The only difference between **Connector Configuration** and **Connector Settings** is that the former is used to configure new connectors, the latter is used to reconfigure already running connectors. Otherwise, the two pages are identical in functionality.

## Configuring properties

Each row on the **Connector Configuration** page represents the key (name) and configuration value of a specific property. You can use the icons next to each property to add or remove properties. Clicking ⋮ next to a property opens a context menu that includes additional configuration options. The options available in the ⋮ context menu depend on the property. For example, you can edit and reset the connector.class property, but you cannot configure its type.

**Adding properties**

Click ⊕ to add a new property. An empty row appears for the new property. Enter property keys in the left field and property values in the right field. When you select a key field, a list of suggested properties appear that are valid for the connector. The list is automatically filtered when you start typing.

**Deleting properties**

Click 🗑 to delete a property. Use  Actions Remove  to remove all properties from the configuration with the exception of connector.class.

**Editing properties**

Click ✎ Edit to edit the configuration value of a property in a separate window. Use this option if the value you add is long, complex, or consists of multiple lines.

If you are deploying a NiFi Stateless Sink or Source connector, the modal that opens with ✎ for the flow.snapshot property is unique and includes the Browse... and Save and Enhance options. Browse... enables you to upload a flow definition JSON from your machine, Save and Enhance adds the parameters specified in your flow definition to the connector configuration. For more information on flow.snapshot configuration, see *Configuring flow.snapshot for Stateless NiFi connectors*.

**Resetting properties**

You can use ↺ Reset value to reset the value of a single property. Alternatively, you can use Actions Reset  to reset the full configuration. The reset options behave uniquely depending on the configuration page that you use them on.

When deploying new connectors using the **Connector Configuration** page of the wizard:

- ↺ Reset value resets the value to the default value set in the configuration template. This option is not available for properties that are not part of the template.

- Actions Reset resets all configuration properties and reverts the configuration to the default configuration template.

When editing the configuration of existing connectors on the Connector Profile Connector Settings page:

- ↺ Reset value resets the value to the last value that the connector was deployed with. This option is not available for new properties that you add to the configuration while editing the configuration.
- Actions Reset resets all configuration properties and reverts to the configuration that the connector was last deployed with.

**Type configuration**

The **ABC** String , ⬭ Boolean, **123** Number, and 👁̸ Password options enable you to set the type of the property. Setting the type of a property changes the property's value field depending on the type you select.

- **ABC** String sets the type of the property to string and changes the input field to a single line text box.
- **123** Number sets the type to number and changes the input field to a text box that only allows negative and positive whole numbers and decimals.
- ⬭ Boolean sets the type of the property to boolean and changes the input field to a checkbox.
- 👁̸ Password sets the type of the property to password.

Selecting 👁̸ Password hides (locks) the value on the UI and stores it in a secure manner. Once the connector is deployed, properties marked as passwords are encrypted and stored securely in an internal Kafka topic. The actual values only resolve at runtime. These values cannot be retrieved or otherwise read from the configuration of the connector. In most cases, you use this option to hide passwords or other types of sensitive credentials found in connector configurations, however, you can use this option for any property value that your organization considers sensitive.

> **Tip:** The password option is the UI implementation of the Kafka Connect Secrets storage feature. For more information on the feature, and how Kafka Connect handles values you mark as sensitive data, see *Kafka Connect Secrets Storage*.

## Property search and filtering

At the top of the page you can find a search bar that you can use to search and filter for connector properties. Search only works for property keys, values are disregarded. When you search for a string, the **Properties** section of the page is automatically filtered and only the relevant properties are shown. The number of matches is displayed next to **Properties**.

In addition to searching, you can filter properties based on their group and importance. To do so, click the filter icon and select the relevant group and importance that you want to search for. To clear all applied filters, click Reset Filters.

## Viewing property help

Hovering over ⦷ (Help), found next to some property values, displays information about that property. What information is displayed is property dependent, but at minimum you are presented with a description of the property.

If available, the group, importance, and expected type of a property is also displayed. The ⦷ icon is only available for properties that have their metadata (description, type, group, and so on) defined.



**Tip:** The information displayed in the help context menu is the property metadata defined with `ConfigDef`. If you are developing your own connector and want help information to be available in SMM, ensure that you define pro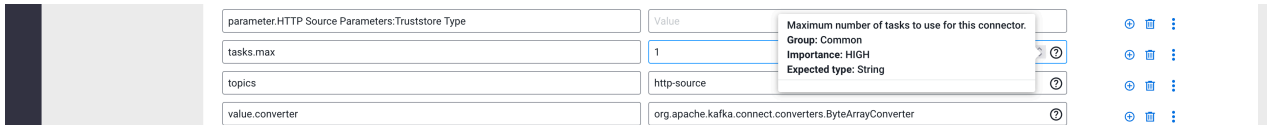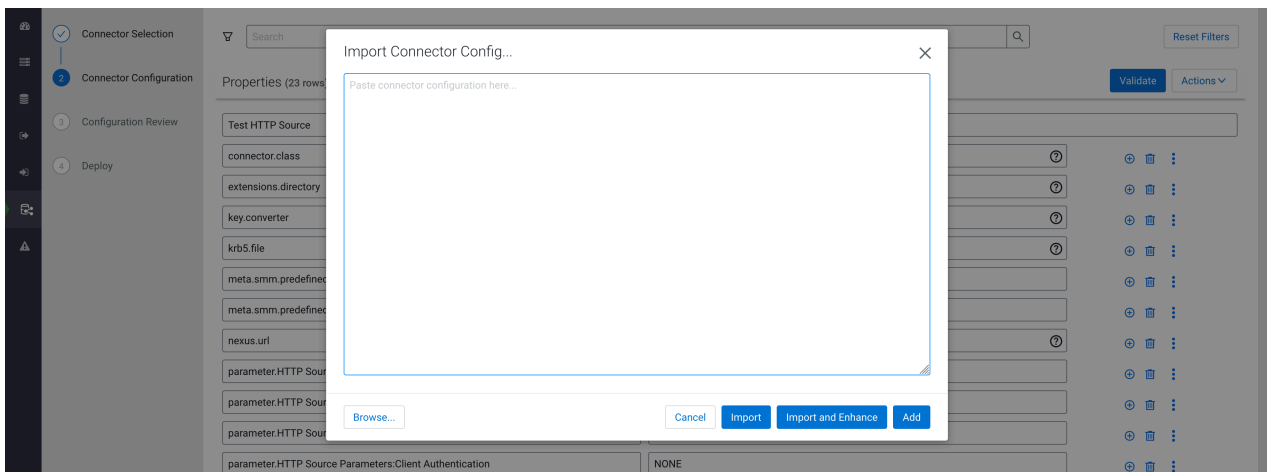perty metadata in your connector code using the `ConfigDef` class. Additionally, if you specify a display name for the property in `ConfigDef`, SMM will print the display name above the key field of the property.

## Importing configurations

To import a configuration, click  Actions Import . Clicking Import opens the **Connector Config…** modal.



Using the modal you can:

- Type or paste your configuration.
- Use Browse… to upload the contents of a file from your machine.

The configuration that you add can be a full configuration that contains all properties necessary for the connector. Alternatively, it can be a partial configuration that contains a select number of properties that you want to add to the configuration. The configuration you include in the text box must be in JSON format. For example:

```
{
  "tasks.max": 1,
  "key.converter": "org.apache.kafka.connect.storage.StringConverter",
  "value.converter": "com.cloudera.dim.kafka.connect.converts.AvroConvert
er",
  "value.converter.passthrough.enabled": true,
  "value.converter.schema.registry.url": "http://schema-registry:9090/api/v1
",
  "topics": "avro_topic",
  .
  .
  .
```

```
}
```

After adding properties, you can use the Import, Import and Enhance, or Add options to import the configuration. Each option imports the properties in a different way.

- Import

  This option populates the **Properties** section with the keys and values you added in the **Import Connector Config...** modal. This option overwrites all existing properties in the configuration.

- Import and Enhance

  This option populates the **Properties** section with the keys and values you added in the **Import Connector Config...** modal. Additionally, properties that are most likely needed for the respective connector are also added.

  Import and Enhance is used specifically for the NiFi Stateless Source and NiFi Stateless Sink connectors. When this option is used, SMM parses the dataflow specified in flow.snapshot, extracts all parameters that are available in the dataflow, and adds them to the connector configuration. This option overwrites all existing properties in the configuration.

- Add

  This option amends the existing configuration with the properties from the **Import Connector Config...** modal. Use this option if you want to batch import additional properties to your configuration. For example, you can use this option to batch add security properties.

## Exporting Configurations

To export a configuration, click  Actions  Export . Clicking Export opens the **Configuration of the connector** modal.

- Click Copy to Clipboard to copy the configuration to the clipboard.
- Click Export to file to download the configuration as a JSON file.
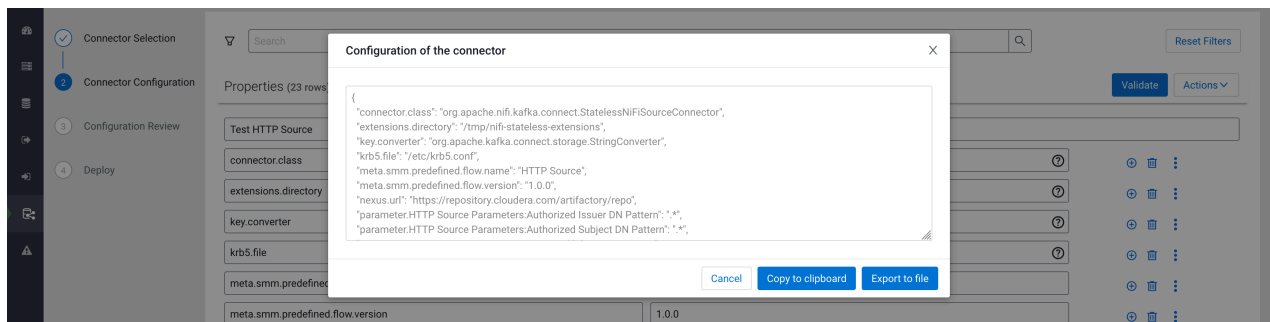


## Validating configurations

Before you can deploy or redeploy a connector, you must validate the configuration. This is done using Validate. If SMM finds any errors in the configuration, the properties that contain errors are highlighted in red, and an error message with the details regarding the configuration issue is displayed.

If the configuration is missing a mandatory property, the name of the missing property is displayed in an **Errors** section on the top of the page. You can add missing mandatory properties by clicking Add missing configurations.

If the connector configuration is filtered when you run the validation and SMM finds errors with properties that are filtered, an error message is displayed on the top of the page notifying you that not all validation errors are visible. In a case like this, click Reset Filters to view all validation errors.

## Related Information

[Connectors](#)

[Streams Messaging Reference](#)

[The Kafka Connect UI](#)

[Kafka Connect Secrets Storage](#)

[Configuring flow.snapshot for Stateless NiFi connectors](#)