Using the vCenter Orchestrator
AMQP Plug-In 1.0.1

vCenter Orchestrator 4.1
vCenter Orchestrator 4.2

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Using the vCenter Orchestrator AMQP Plug-In

Using the vCenter Orchestrator AMQP Plug-In provides information and instructions about configuring and using the VMware® vCenter Orchestrator AMQP plug-in.

Intended Audience

This information is intended for anyone who is installing and configuring the plug-in, using the API of the plug-in, and using the workflow library. Using the vCenter Orchestrator AMQP Plug-In is written for experienced users who are familiar with virtual machine technology, with Orchestrator workflow development, and with AMQP.

For more information about Orchestrator, see http://www.vmware.com/support/pubs/orchestrator_pubs.html.
Using the vCenter Orchestrator AMQP Plug-In is updated with each release of the product or when necessary.

This table provides the update history of Using the vCenter Orchestrator AMQP Plug-In.

<table>
<thead>
<tr>
<th>Revision</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN-000664-01</td>
<td>- Added information about the new workflow Managing SSL certificates in “Configuration Workflows,” on page 11.</td>
</tr>
<tr>
<td></td>
<td>- Updated “Add a Broker,” on page 12 with information about SSL certificates.</td>
</tr>
<tr>
<td></td>
<td>- Updated “Exporting and Importing AMQP Configuration,” on page 17 with information about exporting and importing SSL certificates.</td>
</tr>
<tr>
<td>EN-000664-00</td>
<td>First release of AMQP 1.0 plug-in.</td>
</tr>
</tbody>
</table>
Introduction to the AMQP Plug-In

The AMQP plug-in allows you to interact with Advanced Message Queuing Protocol (AMQP) servers also known as brokers. You can define AMQP brokers and queue subscriptions as inventory objects by running configuration workflows, and perform AMQP operations on defined objects.

The plug-in contains a set of standard workflows related to managing AMQP brokers and calling AMQP operations.

This chapter includes the following topics:
- “Role of vCenter Orchestrator with the AMQP Plug-In,” on page 9
- “Installing the AMQP Plug-In,” on page 9

Role of vCenter Orchestrator with the AMQP Plug-In

You must use the Orchestrator configuration interface to install the AMQP plug-in. You use the Orchestrator client to run and create workflows and access the plug-in API.

The AMQP plug-in is powered by vCenter Orchestrator. Orchestrator is a development and process-automation platform that provides a library of extensible workflows to manage the VMware vCenter infrastructure and other technologies.

Orchestrator allows integration with management and administration solutions through its open plug-in architecture. AMQP is one example of an open standard for messaging middleware that you can integrate with Orchestrator by using plug-ins.

Installing the AMQP Plug-In

You must use the Orchestrator configuration interface to install the AMQP plug-in.

AMQP Plug-In Functional Prerequisites

To be able to install and use the AMQP plug-in, your system must meet the following functional prerequisites.

vCenter Orchestrator

Verify that you have a running instance of Orchestrator. You can log in to the Orchestrator configuration interface at http://orchestrator_server:8282. Version 1.0.1 of the plug-in works with vCenter Orchestrator 4.1 and 4.2.

For information about setting up Orchestrator, see the vCenter Orchestrator Installation and Configuration Guide.
AMQP

Verify that you have access to an AMQP broker.

Install the AMQP Plug-In

To be able to use the AMQP plug-in, you must download the .vmoapp file containing the plug-in and install it by using the Orchestrator configuration interface.

Prerequisites

- Verify that you are logged in to the Orchestrator configuration interface at http://orchestrator_server:8282.
- Verify that you have downloaded the .vmoapp file from http://www.vmware.com/products/datacenter-virtualization/vcenter-orchestrator/plugins.html.

Procedure

1. On the General tab, click Install Application.
2. Upload the AMQP plug-in.
   - Click the magnifying glass icon.
   - Select the .vmoapp file to install.
   - Click Open.
   - Click Install.
   A message appears after successful installation. The AMQP plug-in is installed without a tab in the Orchestrator configuration interface.
3. On the Startup Options tab, click Restart service to complete the plug-in installation.
Using the AMQP Plug-In

The AMQP plug-in workflow library contains workflows that allow you to manage AMQP brokers and run custom AMQP operations.

You can use the Inventory view in the Orchestrator client to manage the available AMQP resources. You can use the scripting API of the plug-in to develop custom workflows.

This chapter includes the following topics:
- “Using the AMQP Plug-In Inventory,” on page 11
- “Configuring the AMQP Plug-In,” on page 11
- “Using the AMQP Plug-In Standard Workflows,” on page 13
- “Access the AMQP Plug-In API,” on page 17
- “Exporting and Importing AMQP Configuration,” on page 17

Using the AMQP Plug-In Inventory

The AMQP plug-in exposes all objects in the connected AMQP Brokers in the Inventory view. You can use the Inventory view to add authorization elements or to run workflows on AMQP objects.

You can enable the Use contextual menu in inventory option to display the workflows that are available for an inventory object. When the option is enabled and you right-click an object in the Orchestrator inventory, all available workflows for the object are displayed.

Configuring the AMQP Plug-In

You must use the Orchestrator client to configure the AMQP plug-in.

Configuration Workflows

The Configuration workflow category contains workflows that allow you to manage AMQP brokers.

You can access these workflows from Library > AMQP > Configuration on the Workflows view in the Orchestrator client.

<table>
<thead>
<tr>
<th>Workflow Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add a broker</td>
<td>Adds an AMQP broker.</td>
</tr>
<tr>
<td>Manage SSL certificates</td>
<td>Verifies a host URL, and if required, shows a user interaction message for the approval of SSL certificates. <strong>IMPORTANT</strong> SSL connections are supported only for the RabbitMQ brokers. The QPID brokers are not supported.</td>
</tr>
</tbody>
</table>
Add a Broker

You can run a workflow to add an AMQP broker.

**Procedure**

1. Log in to the Orchestrator client as an administrator.
2. Click the Workflows view in the Orchestrator client.
3. In the hierarchical list of workflows, select Library > AMQP > Configuration and navigate to the Add a broker workflow.
4. Right-click the Add a broker workflow and select Start workflow.
5. Provide the information required for the Add a broker workflow.

<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Type the name of the broker.</td>
</tr>
<tr>
<td>Host</td>
<td>Type the address of the host.</td>
</tr>
<tr>
<td>Port</td>
<td>Type the port of the AMQP broker service. The default port is 5672.</td>
</tr>
<tr>
<td>Virtual host</td>
<td>Type the address of the virtual host. The default value provided is /.</td>
</tr>
<tr>
<td>Use SSL</td>
<td>Select whether to use SSL certificates.</td>
</tr>
<tr>
<td>Accept all certificates</td>
<td>Select whether to accept all SSL certificates without validation.</td>
</tr>
<tr>
<td>User name</td>
<td>Type the user name for the broker.</td>
</tr>
<tr>
<td>Password</td>
<td>Type the password for the broker.</td>
</tr>
</tbody>
</table>

6. Click Submit to run the workflow.

After the workflow runs successfully, the AMQP broker appears in the Inventory view.

**What to do next**

You can run a Validate a broker workflow. If an error occurs, use the Update a broker workflow to change the broker’s properties before validating again.

Subscribe to Queues

You can run a workflow to create a new subscription elements.

**Prerequisites**

- Verify that you are logged in to the Orchestrator client as an administrator.
- Verify that you have a connection to an AMQP broker from the Inventory view.
- Verify that the AMQP broker has all queues included in the subscription declared.
Procedure
1. Click the Workflows view in the Orchestrator client.
2. In the hierarchical list of workflows, select Library > AMQP > Configuration and navigate to the Subscribe to queues workflow.
3. Right-click the Subscribe to queues workflow and select Start workflow.
4. In the Name text box, type the name of the queue to display.
5. Select the broker to which you want to add the subscription.
6. Select all the queues for message subscription.
7. Click Submit to run the workflow.

After the workflow runs successfully a child of the broker appears in the Inventory view.

What to do next
You can create a policy.

Update a Broker
You can run a workflow to update the broker properties.

Prerequisites
- Verify that you are logged in to the Orchestrator client as an administrator.
- Verify that you have a connection to an AMQP broker from the Inventory view.

Procedure
1. Click the Workflows view in the Orchestrator client.
2. In the hierarchical list of workflows, select Library > AMQP and navigate to the Update a broker workflow.
3. Right-click the Update a broker workflow and select Start workflow.
4. Select the broker that you want to update.
   Current properties of the broker appear.
5. Edit the properties that you want.
6. Click Submit to run the workflow.

Using the AMQP Plug-In Standard Workflows
The AMQP workflow category contains workflows that allow you to run AMQP operations.

You can access these workflows from Library > AMQP on the Workflows view in the Orchestrator client.

<table>
<thead>
<tr>
<th>Workflow Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bind</td>
<td>Creates a binding in a specified broker.</td>
</tr>
<tr>
<td>Declare a queue</td>
<td>Adds a queue to a specified broker.</td>
</tr>
<tr>
<td>Declare an exchange</td>
<td>Adds an exchange to a specified broker.</td>
</tr>
<tr>
<td>Delete a queue</td>
<td>Deletes a queue from a specified broker.</td>
</tr>
<tr>
<td>Delete an exchange</td>
<td>Deletes an exchange from a specified broker.</td>
</tr>
<tr>
<td>Receive a text message</td>
<td>Receives a text message from a specified broker.</td>
</tr>
<tr>
<td>Workflow Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Send a test message</td>
<td>Sends a text message using a specified broker.</td>
</tr>
<tr>
<td>Unbind</td>
<td>Unbinds binding in a specified broker.</td>
</tr>
</tbody>
</table>

**Declare a Binding**

You can run a workflow to create a binding in a specified broker.

**Prerequisites**

- Verify that you are logged in to the Orchestrator client as an administrator.
- Verify that you have a connection to an AMQP broker from the **Inventory** view.

**Procedure**

1. Click the **Workflows** view in the Orchestrator client.
2. In the hierarchical list of workflows, select **Library > AMQP** and navigate to the Bind workflow.
3. Right-click the Bind workflow and select **Start workflow**.
4. Select a broker in which you want create a binding.
5. Provide information about the binding.

<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queue name</td>
<td>Type the name of the queue.</td>
</tr>
<tr>
<td>Exchange name</td>
<td>Type the name of the exchange.</td>
</tr>
<tr>
<td>Routing key</td>
<td>Type the routing key.</td>
</tr>
</tbody>
</table>

6. Click **Submit** to run the workflow.

**Declare a Queue**

You can run a workflow to add a queue to a specified broker.

**Prerequisites**

- Verify that you are logged in to the Orchestrator client as an administrator.
- Verify that you have a connection to an AMQP broker from the **Inventory** view.

**Procedure**

1. Click the **Workflows** view in the Orchestrator client.
2. In the hierarchical list of workflows, select **Library > AMQP** and navigate to the Declare a queue workflow.
3. Right-click the Declare a queue workflow and select **Start workflow**.
4. Select a broker to which you want to add the queue.
5. In the **Name** text box, type the name of the queue to display.
6. Select whether the queue is durable.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>The queue is removed after a broker restart.</td>
</tr>
<tr>
<td>No</td>
<td>The queue remains after a broker restart.</td>
</tr>
</tbody>
</table>
7 Select whether an exclusive client is set for the specific queue.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Sets one client for this specific queue.</td>
</tr>
<tr>
<td>No</td>
<td>Sets more clients for this specific queue.</td>
</tr>
</tbody>
</table>

8 Select whether to automatically delete the queue with activated subscription.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Automatically deletes the queue when no more clients are connected to it. The queue remains until at least one client subscribes to it.</td>
</tr>
<tr>
<td>No</td>
<td>Does not automatically delete the queue.</td>
</tr>
</tbody>
</table>

9 Click Submit to run the workflow.

**Declare an Exchange**

You can run a workflow to add an exchange in a specified broker.

**Prerequisites**

- Verify that you are logged in to the Orchestrator client as an administrator.
- Verify that you have a connection to an AMQP broker from the **Inventory** view.

**Procedure**

1 Click the **Workflows** view in the Orchestrator client.

2 In the hierarchical list of workflows, select **Library > AMQP** and navigate to the Declare an exchange workflow.

3 Right-click the Declare an exchange workflow and select **Start workflow**.

4 Select a broker to which you want to add the exchange.

5 In the **Name** text box, type a name for the exchange.

6 Select the exchange type.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>direct</td>
<td>Makes a direct match between the routing key provided in the message and the routing criteria used when a queue is bound to this exchange.</td>
</tr>
<tr>
<td>fanout</td>
<td>Forwards any message sent to this exchange to all queues bound to it. Queues that are bound to this exchange contain no arguments.</td>
</tr>
<tr>
<td>headers</td>
<td>Queues are bound to this exchange with a table of arguments that can contain headers and values. A special argument named x-match determines the matching algorithm.</td>
</tr>
<tr>
<td>topic</td>
<td>Performs a wildcard match between the routing key and the routing pattern specified in the binding.</td>
</tr>
</tbody>
</table>

7 Select whether the exchange is durable.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>The exchange remains after a broker restart.</td>
</tr>
<tr>
<td>No</td>
<td>The exchange is removed after a broker restart.</td>
</tr>
</tbody>
</table>
Select whether to automatically delete the exchange with activated subscription.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Automatically deletes the exchange when no more queues are bound to it. The exchange remains until at least one queue is bound to it.</td>
</tr>
<tr>
<td>No</td>
<td>Does not automatically delete the exchange.</td>
</tr>
</tbody>
</table>

Click **Submit** to run the workflow.

**Send a Text Message**

You can run a workflow to send a text message using a specified broker.

**Prerequisites**

- Verify that you are logged in to the Orchestrator client as an administrator.
- Verify that you have a connection to an AMQP broker from the Inventory view.

**Procedure**

1. Click the Workflows view in the Orchestrator client.
2. In the hierarchical list of workflows, select **Library > AMQP** and navigate to the Send a text message workflow.
3. Right-click the Send a text message workflow and select **Start workflow**.
4. Select a broker from which you want to send a message.
5. In the **Exchange name** text box, specify the name of the exchange.
6. In the **Routing key** text box, specify the routing key.
7. In the **Content** text box, type the message you want to send.
8. Click **Submit** to run the workflow.

**Delete a Binding**

You can run a workflow to delete a binding in a specified broker.

**Prerequisites**

- Verify that you are logged in to the Orchestrator client as an administrator.
- Verify that you have a connection to an AMQP broker from the Inventory view.

**Procedure**

1. Click the Workflows view in the Orchestrator client.
2. In the hierarchical list of workflows, select **Library > AMQP** and navigate to the Unbind workflow.
3. Right-click the Unbind workflow and select **Start workflow**.
4. Select a broker to remove the binding from.
5 Provide information about the binding.

<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queue name</td>
<td>Specify the name of the queue.</td>
</tr>
<tr>
<td>Exchange name</td>
<td>Specify the name of the exchange.</td>
</tr>
<tr>
<td>Routing key</td>
<td>Specify the routing key.</td>
</tr>
</tbody>
</table>

6 Click Submit to run the workflow.

**Access the AMQP Plug-In API**

Orchestrator provides an API Explorer to allow you to search the AMQP plug-in API and see the documentation for JavaScript objects that you can use in scripted elements.

**Procedure**

1 Log in to the Orchestrator client as an administrator.
2 Access the API Explorer from either the Orchestrator client or from the Scripting tabs of the workflow, policy, and action editors.

   - To access the API Explorer from the Orchestrator client, click **Tools > API Explorer** in the Orchestrator client toolbar.
   - To access the API Explorer from the Scripting tabs of the workflow, policy, and action editors, click **Search API** on the left.
3 To expand the hierarchical list of AMQP plug-in API objects, double-click the **AMQP** module in the left pane.

**What to do next**

You can copy code from API elements and paste it into scripting boxes. For more information about API scripting, see the *vCenter Orchestrator Developer’s Guide*.

**Exporting and Importing AMQP Configuration**

You can transfer the configuration of the AMQP plug-in from one Orchestrator instance to another by creating a configuration package. You can export all plug-in elements, such as hosts and custom workflows, or select the plug-in elements that you want to export.

**Note** You can transfer only the plug-in configuration. The SSL certificates of the hosts and the brokers are not transferred. You can import the SSL certificates manually by starting an update workflow on the host or broker. This starts the certificate import on the new Orchestrator instance.

**Export AMQP Configuration as a Package**

You can export elements of the AMQP plug-in configuration as an Orchestrator package.

**Prerequisites**

Verify that you are logged in to the Orchestrator client as an administrator.

**Procedure**

1 Click the **Packages** view in the Orchestrator client.
2 From the **Packages** drop-down menu, select **Add package**.
3 Type the name of the package and click **Ok**.
4 Right-click the package that you added and select Edit.

5 From the Resources tab, select Insert Resource Element (tree browsing).

<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add all available AMQP brokers</td>
<td>In the hierarchical list, select Library &gt; AMQP and click Select.</td>
</tr>
<tr>
<td>Add a specific AMQP broker</td>
<td>Expand the hierarchical list to Library &gt; AMQP, select an AMQP broker, and click Select.</td>
</tr>
</tbody>
</table>

6 (Optional) From the Workflows tab, add custom AMQP plug-in workflows.

7 (Optional) From the General tab, provide a description of the package.

8 Click Save and close.

9 Right-click the edited package and select Export package.

10 Type the file name, select a location, and click Save.

**Import AMQP Configuration from a Package**

You can import elements of the AMQP plug-in configuration from an Orchestrator package.

**Prerequisites**

- Verify that you are logged in to the Orchestrator client as an administrator.
- Verify that the AMQP plug-in is installed on the Orchestrator instance.

**Procedure**

1 Click the Packages view in the Orchestrator client.

2 From the Packages drop-down menu, select Import package.

3 Browse to select the package to import and click Open.

   Certificate information about the exporter appears.

4 Review the package import details and select Import or Import and trust provider.

   The Import package view appears. If the version of the imported package element is later than the server version, the system selects the element for import.

5 Click Import checked elements.

   The imported package appears in the list of packages.

6 Click the Workflows view in the Orchestrator client.

7 In the hierarchical list of workflows, select Library > AMQP > Configuration to navigate to the Reload plug-in configuration workflow.

8 Right-click the Reload plug-in configuration workflow and select Start workflow to refresh the list of AMQP brokers.

   The imported AMQP broker appear in the Inventory view.
Index

A
adding an AMQP broker 12
AMQP broker 12
API access 17
audience 5

C
configuration
  exporting 17
  importing 18
configuration transfer 17
creating new subscription elements 12

D
declare a bidning 14
declare a queue 14
declare an exchange 15
delete a binding 16

F
functional prerequisites 9

I
installation 9
installation process 10
introduction 9
Inventory 11

O
Orchestrator 9

S
send a text message 16

U
update a broker 13
updated information 7

W
workflow library 11
workflows, configuration 11, 13