IBM MQ Adapter for SAP Integration Suite

Version 1.4.2 – April 2026

THE BEST RUN SAP

Contents

1. Introduction

1.1 Objective

This is the official guide for the IBM MQ Adapter for SAP Integration Suite. This guide covers all relevant information for integration developers to start working with the IBM MQ adapter. Read this guide carefully before using the Adapter.

1.2 Coding Samples

Any software coding and/or code lines/strings ("Code") included in this documentation are only examples and are not intended to be used in a productive system environment. The Code is only intended to better explain and visualize the syntax and phrasing rules of certain coding. The correctness and completeness of the Code given herein are not guaranteed.

1.3 Internet Hyperlinks

The documentation may contain hyperlinks to the Internet. These hyperlinks are intended to serve as a hint about where to find related information. The availability and the correctness of this related information or the ability of this information to serve a particular purpose are not warranted.

1.4 Overview

IBM MQ is a secure and reliable messaging tool that helps different applications, systems, services, and files communicate with each other by sending messages through queues. It makes it easier and faster to connect various applications and share business data across different platforms.

IBM MQ Adapter is available as a sender and receiver adapter to streamline your message-based workflows. Further, IBM MQ Adapters are available as REST and JMS (Java Message Service) variants.

1.5 Features

REST Variant

- Supports **multiple API versions** for connecting to the IBM MQ server.
- Supports **On-Premise** and **Internet** connectivity.
- Allows reading with the sender adapter and **reading**, **deleting**, and **writing** with the receiver adapter.
- Allows multiple **post-processing** while receiving messages.
- Provides secure authentication alternatives with **basic** and **token-based** authentication.
- Allows **dynamic value assignment** using exchange headers and properties in receiver adapter.

JMS Variant

- Sender adapter supports synchronous message read via JMS **Poll** variant.
- Sender adapter facilitates automatic message delivery via JMS **Subscribe** variant.
- Supports **On-Premise** and **Internet** connectivity.
- Supports Transactional JMS Session for data consistency.
- Provides multiple actions for failed transaction handling: Keep the Message and Process Again or **Move Message to Another Queue**.
- Receiver adapter allows reliable publishing of messages to **Topics** and **Queues.**
- Supports **Persistent** and **Non Persistent** message delivery via JMS.
- Supports **Byte** and **Text** JMS messages.
- Supports multiple authentications: **Basic**, **Client Certificate**, and **None**.

2. Installation and Configuration

This section details the file(s) available as part of the installation package and the prerequisites to configure the IBM MQ adapter.

2.1 IBM MQ Adapter Installation on Cloud Foundry

Before the adapter can be used in the Cloud Foundry environment, it must be deployed to the SAP Integration Suite tenant.

2.1.1 Prerequisites

To deploy the IBM MQ adapter, you must have access to the *SAP Integration Suite* license.

2.1.2 Procedure

You can deploy the adapter using the following methods:

> The following installation procedure is compatible with Apache Camel 2, Apache Camel 3, and Edge Integration Cell (EIC) platform.

2.1.2.1 Adapter Installation by Creating a New Integration Flow

The IBM MQ adapter is available for selection in the sender and receiver adapter list and can be deployed in the **Design** tab directly as you use it in an Integration flow.

To use the adapter in the Integration flow, follow these steps:

1. Go to **Design** workspace and select the integration package where you want to create a new Integration flow.
2. Click **Edit** to make the package editable.
3. Go to the **Artifacts** tab. Click **Add** and select **Integration** Flow.
4. Enter **Name** and ID for your flow. Additionally, select **Runtime Profile** from the drop-down and choose Sender and Receiver systems from the list . Finally, click **Add** to create the integration flow.
5. Go to the newly created integration flow and click **Edit** to make it editable.

    i. For the Sender, in the integration flow add a **Connector** between the **Sender box** and the **Start**.

    ii. For the Receiver, in the integration flow, click **End** to add a **Connector** between the **End** and the **Receiver Box**.

6. A drop-down with the available adapters appears. The **IBMMQ** adapter should show up in the list.
7. Select the **IBMMQ** adapter from the list. The adapter is now imported which *triggers* an adapter deployment. Once the adapter is deployed, a success message is displayed.
   After the above steps are done, the IBM MQ Adapter is successfully deployed in your Design workspace of the SAP Integration Suite tenant.

2.1.2.2 Adapter Installation without Creating a New Integration Flow

The following procedure explains how the IBM MQ adapter is migrated from the Discover workspace to the Design workspace of the SAP Integration tenant.

This method is useful for scenarios where integration flow packages are migrated from development to a higher environment such as Production.

The IBM MQ adapter can be imported into the Design workspace without creating an integration flow. Use the Transport Management Service (TMS) to import/transport the IBM MQ adapter to a higher environment. Alternatively, If the TMS is not available in the landscape, the adapter package can be imported to the Design workspace by copying it from the Discover workspace.

To copy the integration package from the Discover workspace and import the IBM MQ adapter to the Design workspace, follow these steps:

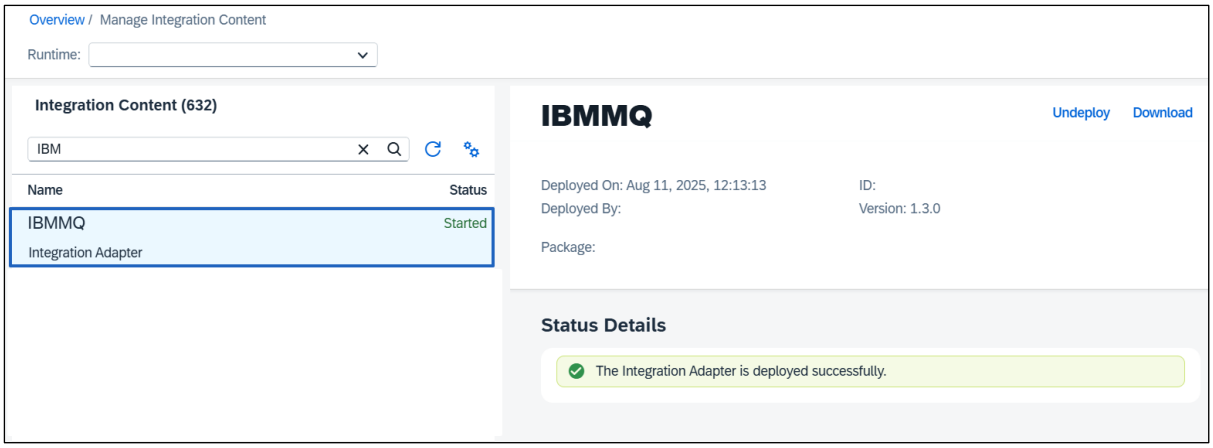
1. Go to **Discover** workspace.
2. In the search box, search for **IBM MQ Adapter for SAP Integration Suite** package.
3. Select the package and click **Copy**. This copies the package from the **Discover** workspace to the **Design** workspace.
4. Go to Design workspace and select the copied **IBM MQ Adapter for SAP Integration Suite** package.
5. In the **Actions** tab of the selected package, click **Deploy**. This completes the adapter deployment to the Design workspace.

2.2 Monitor the Deployment Status

After the adapter deployment is complete, you can check the status in the Monitor section.

To check the status of the deployed adapter:

1. Under the **Monitor tab**, click **Integrations and APIs.** This opens the **Overview** page.
2. On the **Overview** page, go to **Manage Integration Content** section and click **All**. This opens the **Integration Content** page with a list of all the deployed adapters.
3. Here, you can check and confirm the deployment status of your adapter.



3. Getting Started: IBM MQ Adapter

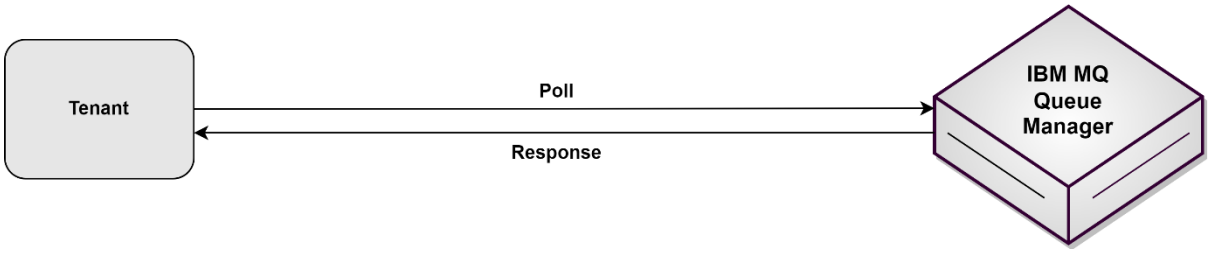
This section explains how to configure the IBM MQ adapter for SAP Integration Suite. You can find information about adapter architecture, application configuration, authentication, and supported versions for IBM MQ Adapter.

3.1 Architecture Overview

The IBM MQ adapter is designed to function as both a sender and receiver adapter.

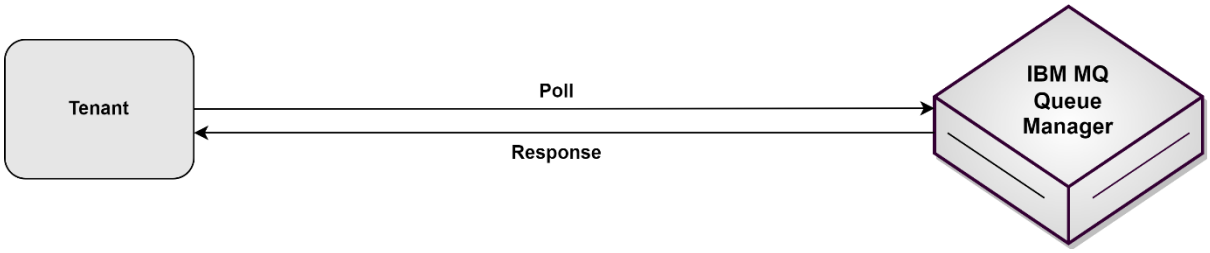
3.1.1 Sender Adapter (REST)

The IBM MQ Sender adapter (as the name suggests) is designed to function as a sender adapter. In such a scenario where the adapter is used as a sender adapter, IBM MQ acts as the initiator of the calls. IBM MQ sends the operation request to SAP Integration Suite tenant, IBM MQ Sender Adapter works on the request and sends the data using HTTPs protocol to SAP Integration Suite tenant.



3.1.2 Sender Adapter (JMS Poll)

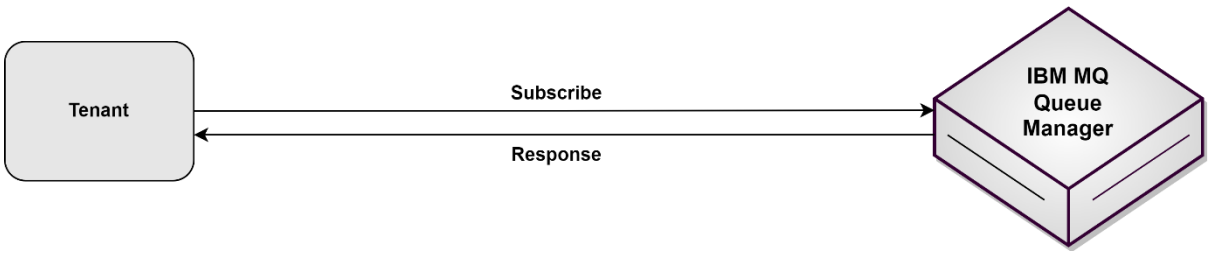
The IBM MQ Sender adapter (as the name suggests) is designed to function as a sender adapter. In such a scenario where the adapter is used as a sender adapter, IBM MQ (Poll) acts as the initiator of the calls. The JMS Poll variant actively checks for new messages at a defined interval.



3.1.3 Sender Adapter (JMS Subscribe)

The IBM MQ Sender adapter (as the name suggests) is designed to function as a sender adapter. In such a scenario where the adapter is used as a sender adapter, IBM MQ (Poll) acts as the initiator of the calls.

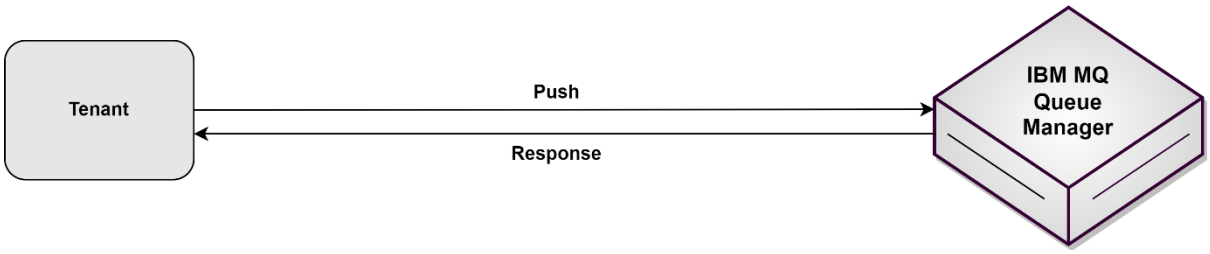
The adapter subscribes to a specific queue/topic, receiving messages as they are published.



3.1.4 Receiver Adapter (REST)

The IBM MQ Receiver adapter (as the name suggests) is designed to function as a receiver adapter. In such a scenario, where the IBM MQ Adapter is used as a receiver adapter, SAP Integration Suite acts as the initiator of the calls.

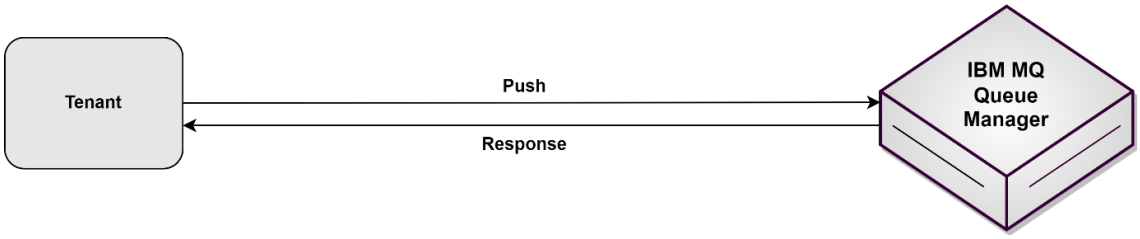
SAP Integration Suite tenant sends the operation request to IBM MQ (this is a receiver system), IBM MQ Receiver Adapter works on the request and sends the data back using HTTPS protocol to the SAP Integration Suite tenant.



3.1.5 Receiver Adapter (JMS)

The IBM MQ Receiver adapter (as the name suggests) is designed to function as a receiver adapter. In such a scenario, where the IBM MQ Adapter is used as a receiver adapter, SAP Integration Suite acts as the initiator of the calls.

SAP Integration Suite tenant sends the operation request to IBM MQ (this is a receiver system), IBM MQ Receiver Adapter works on the request and sends the data back using JMS protocol to the SAP Integration Suite tenant.



3.2 Application Configuration

3.2.1 IBM MQ Setup

- To set up the application configuration in IBM MQ, see the IBM MQ Installation Overview and Configuring the user accounts for IBM MQ.
- For more information on configuring Client Certificate for Two-way TLS, see Client Certificate. After completing the required steps, you will have a key store file, which can be used to create a Key-Pair in SAP.

3.2.2 On-Premise Connectivity Setup

- You must ensure at least one-way SSL is enabled on your IBM MQ server for connectivity via cloud connector.
- To learn more about Cloud Connector Connectivity, see Cloud Connector Configuration.

3.3 Authentication

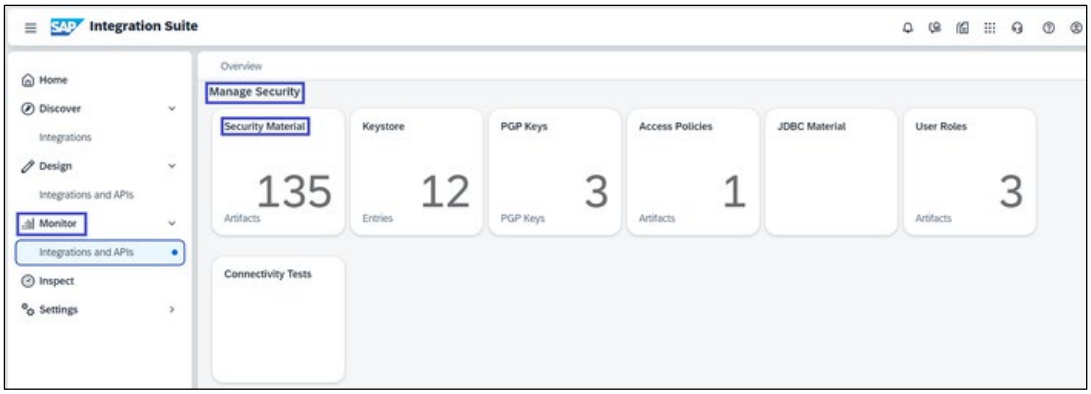
This section details the authentication mechanism supported by the IBM MQ Adapter in SAP Integration Suite.

- The IBM MQ adapter supports security artifacts like **User Credentials** used for **Basic** authentication. Before setting up the authentication, you must create the Credentials in **Security Material** in the SAP Integration Suite. For more information, see Creating Credentials in Security Material.
- IBM MQ adapter also supports **Client Certificate** authentication using Key-Pair in Keystore, which uses a public and private key to securely verify identities. For more information, see Adding Key-Pair for Client Certificate.
- IBM MQ adapter can also be configured using **None** authentication, which allows you to use the adapter without an authentication mechanism.

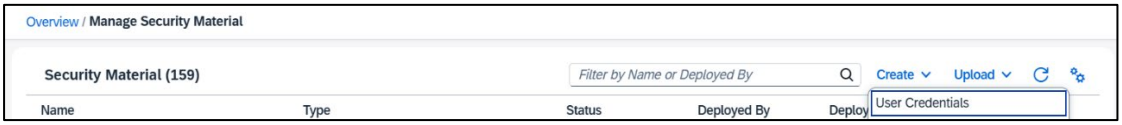
3.3.1 Creating Credentials for Basic Authentication

The creation of credentials to support the authentication mechanism can be done by the steps below:

1. In SAP Integration Suite, navigate to **Monitor** > **Integrations and APIs**. This opens the **Overview** page.
2. On the **Overview** page, go to **Manage Security** section and click **Security Material**.



3. On **Manage Security Material** page, click **Create** to select **User Credentials** from the dropdown.



4. In the **Create User Credentials** popup, provide the below details.

Parameter	Description
Name	Specify the name for the security artifact. The artifact name is used as an alias for the confidential data assigned by this parameter.
Description	Enter a description for the artifact (optional).
Type	Select **User Credentials** if creating credentials for IBM MQ. This allows you to configure a specific system to enable a connection with your integration flow artifact.
User	Specify the username used to invoke the receiver system.
Password	Specify password against which the user must be authenticated.

5. Click **Deploy** to complete the process.

When you refresh the **Manage Security Material** page, the new artifact is displayed (with Type **Credentials**) in the artifact table.

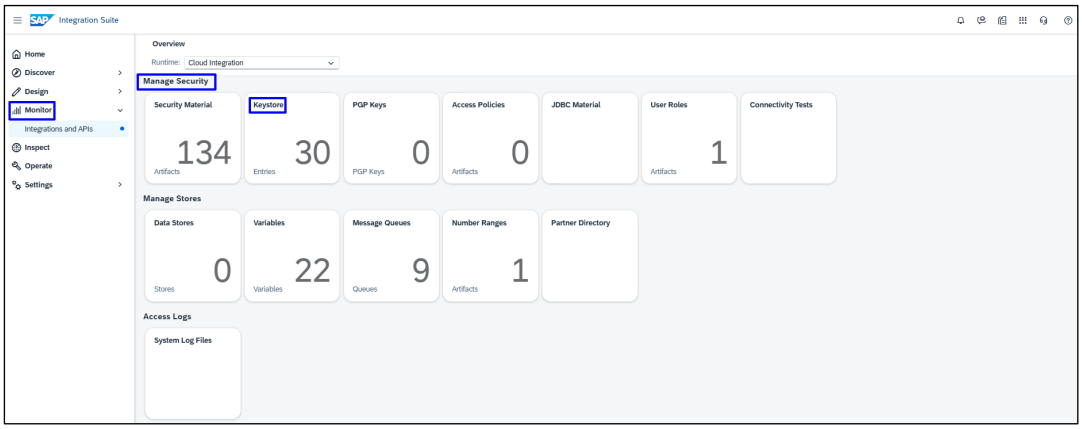
3.3.2 Adding Key-Pair for Client Certificate Authentication

Purpose

To create Key-Pair in the Keystore of SAP for Client Certificate.

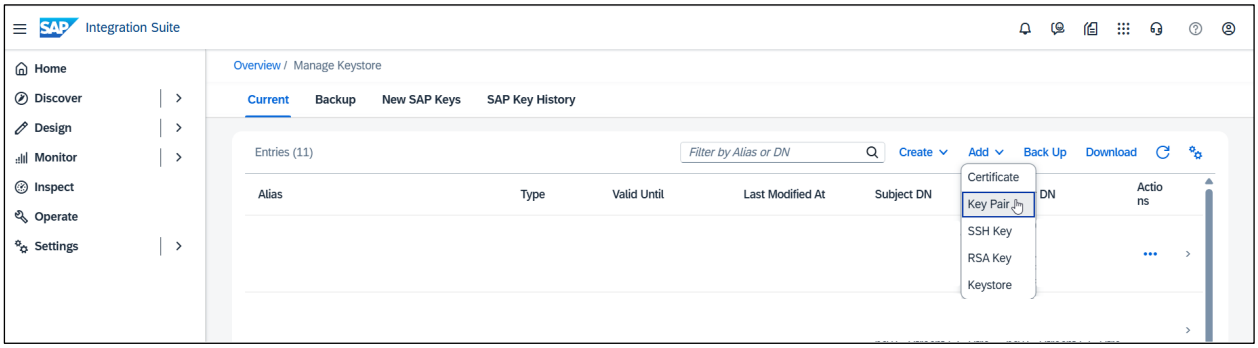
Procedure

1. In SAP Integration Suite, navigate to **Monitor** > **Integrations** and **APIs**. This opens the **Overview** page.
2. On the **Overview** page, go to **Manage** Security section and click **Keystore**.



3. On **Keystore** page, click **Add** and select **Key-Pair** from the dropdown.

4. In the **Key-Pair** popup, provide the below details.



Parameter	Description
Alias	Specify the name for the security artifact. The artifact name is used as an alias for the confidential data assigned by this parameter.
File	Select the Key-Pair file. For more information, see Application Configuration.
Password	Specify the password for the artifact used while creating the key.

5. Click **Add** to complete the process.

When you refresh the Manage Security Material page, the new artifact is displayed in the artifact table.

3.4 Supported Versions

3.4.1 IBM MQ Server Versions

For both REST and JMS variants for the adapter the following IBMMQ Servers are supported.

Version
9.2.x
9.3.x
9.4.x
IBMMQ Cloud

3.4.2 REST API Versions

For the REST variant of the adapter, REST API versions V1, V2, and V3 are supported.

4. IBM MQ Adapter Configuration

This section describes the parameters to be configured for your IBM MQ adapter. You need to configure **Connection** and **Processing** tabs. A description and example usage for every field has been added.

4.1 Sender Adapter

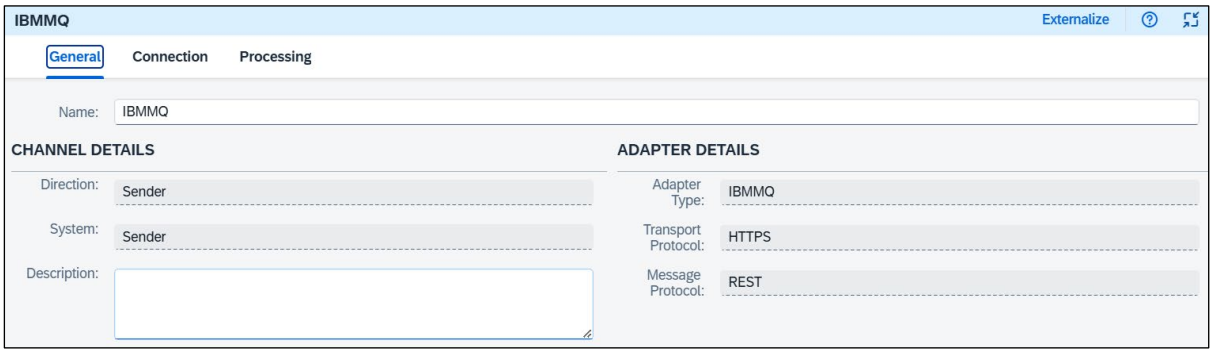
In this section, you will learn how to configure the IBM MQ sender adapter. On selecting the IBM MQ adapter from the list of adapters, you must configure **Connection**, and **Processing** tabs.

4.1.1 REST

IBM MQ REST lets you send and get messages using web requests (HTTP).

4.1.1.1 General

The General tab provides an overview of basic adapter information, including **Channel** and **Adapter** details. Only the Name and Description fields are editable.



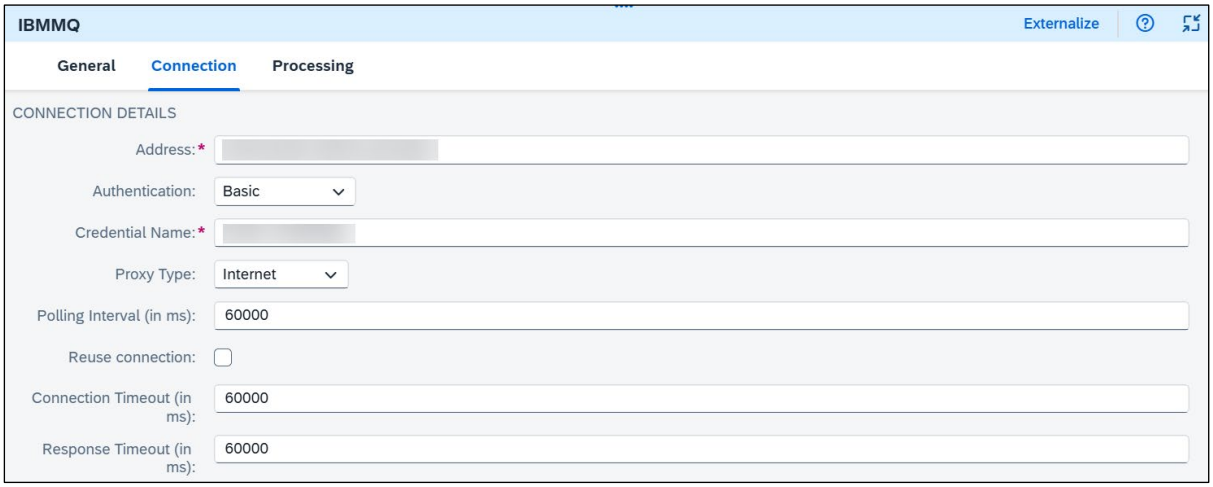
Parameter	Description
Name	Name of the adapter flow
Description	Description of the adapter

4.1.1.2 Connection

The Connection tab contains connection and authentication parameters for IBM MQ.

Using Credentials

The Security artifact created in the previous section (Creating Credentials in Security Material) should be used in the **Connection tab** of the Adapter, as shown in the Figure below.



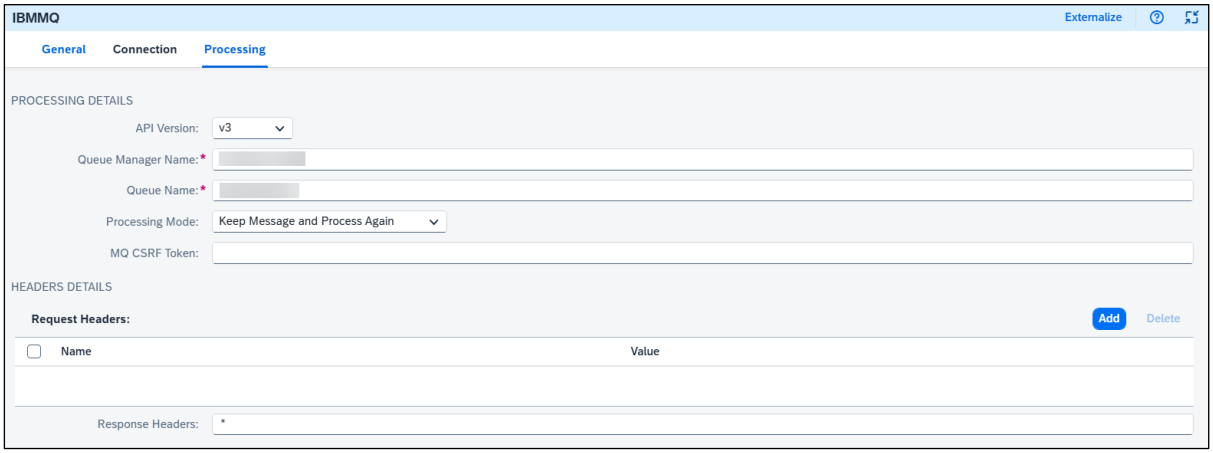
The connection tab contains the following fields:

Parameter	Description
Address	Specify the address of the IBM MQ endpoints. Example: `https://web-{hostname}`
Authentication	Select the type of authentication for connecting to the IBM MQ: • **Basic** • **Token-Based**
Credential Name	Specify the alias that refers to the user credentials (username-password pair).
Proxy Type	Select the proxy type: • **Internet** • **On-Premise**
Polling Interval (in ms)	Specify the polling interval in milliseconds to retrieve the messages.
Location ID	Specify the Location ID from the Cloud Connector.
Reuse connection	Enable this property if you want to reuse the connection.

Parameter	Description
Connection Timeout (in ms)	Specify the maximum waiting time (in milliseconds) for the connection to be established.
Response Timeout (in ms)	Specify the maximum waiting time (in milliseconds) for a response message to be received.

4.1.1.3 Processing

The Processing tab lists all the operations that can be performed on the database through the adapter.



Parameter	Description
API Version	Select an API Version.
Queue Manager Name	Specify the name of the queue manager to connect to for messaging.
Queue Name	Specify the name of the queue from where the message is read.

Parameter	Description
Processing Mode	Select the action to be performed after processing the message in the queue: • **Delete Message after iFlow Execution :** Deletes the message from the queue once the iFlow is executed. In case of iFlow failure, the message may either be retained (not deleted) or moved to the dead letter queue, removing it from the main queue for further action. • **Keep Message and Process Again :** Retrieves the first available message from the queue but leaves it in the queue for potential reprocessing. • **Read and Delete Message :** Reads and deletes the message from the queue after processing, with the maximum number of messages per node specified.
Behavior on Failure	Select the behavior on iFlow failure: • **Move to Dead Letter Queue** • **Do Not Delete**
Max Number of Messages Per Node	Specify the maximum number of messages to be retrieved per node. The recommended values are 1-5000.
Max Number of Messages	Specify the maximum number of messages to be retrieved per poll. The recommended values are 1-5000.
Dead Letter Queue Name	Specify the name of the Dead Letter Queue to which the message should be moved.
MQ CSRF Token	Specify the CSRF protection header. The value can be any valid string, including a blank string.
HEADERS DETAILS	
Request Headers	**Name**: Specify the custom header name to be passed in the request to IBM MQ. **Value**: Specify the custom header value to be passed in the request to IBM MQ.

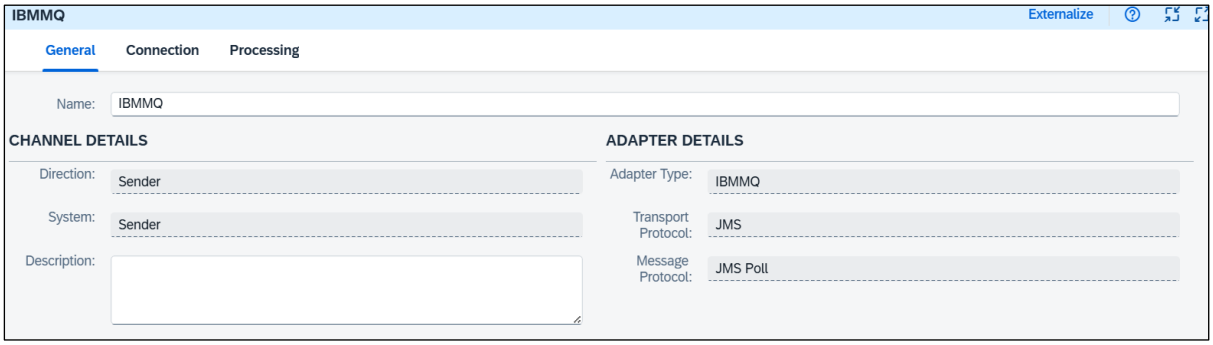
Parameter	Description
Response Headers	Enter a list of headers coming from the target system's response, separated by a pipe (|), to be received in the message. Use an asterisk(*) to receive all the headers from the target system, which is also the default value.

4.1.2 JMS (Poll)

Polling in JMS is the synchronous process where a message consumer repeatedly checks a queue or topic for new messages.

4.1.2.1 General

The General tab provides an overview of basic adapter information including **Channel** and **Adapter** details. Only the Name and Description fields are editable.



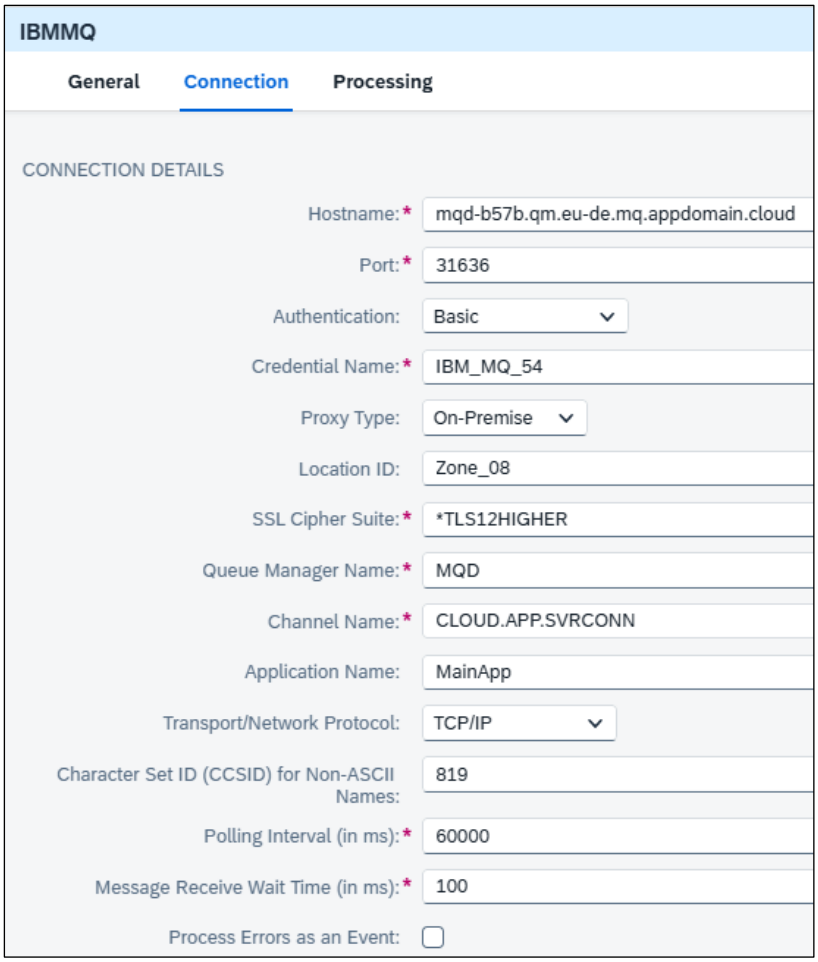
Parameter	Description
Name	Name of the adapter flow
Description	Description of the adapter

4.1.2.2 Connection

The Connection tab contains connection and authentication parameters for IBM MQ.

Using Credentials

The Security artifact created in the previous section (Creating Credentials in Security Material) should be used in the **Connection tab** of the Adapter as shown in the Figure below.



The Connection tab contains the following fields:

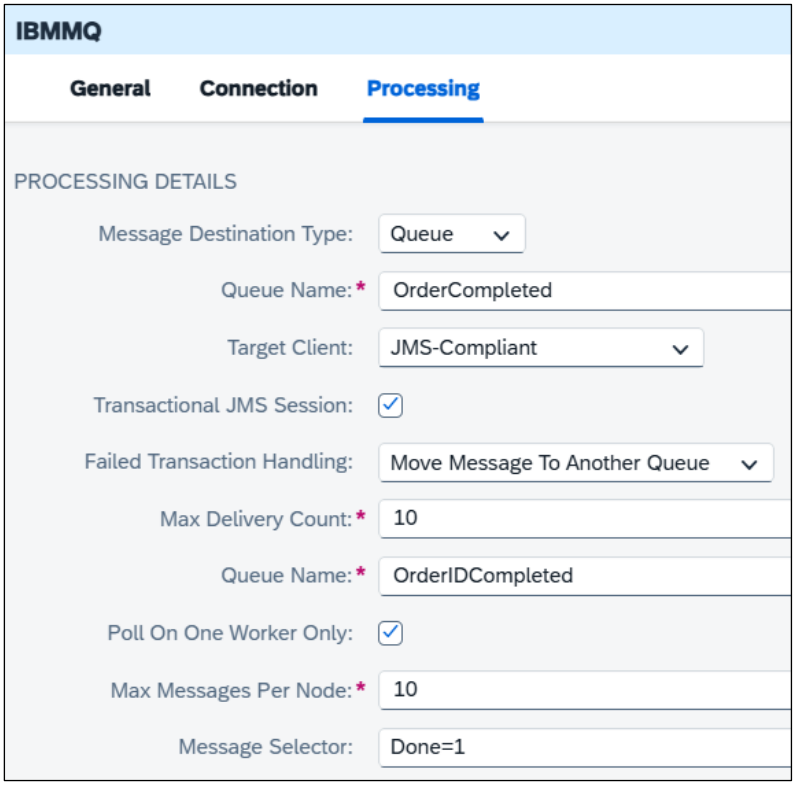
Parameter	Description
Hostname	Specify the hostname to connect to IBM MQ. Example: `mqd-b57b.qm.eu-de.mq.appdomain.cloud`
Port	Specify the port number to connect to IBM MQ. Example: `31636`
Authentication	Select the type of authentication for connecting to IBM MQ. • **Basic:** Provides authentication using User Credentials. • **Client Certificate:** The server authenticates the client by receiving the client's certificate during the SSL handshake and verifying the certificate is valid. • **None:** Direct connection can be made without User Credentials.

Parameter	Description
Private Key Alias (only available when **Client Certificate** is selected)	Specify the alias that stores the private key to communicate with IBM MQ servers. Example: `IBM_MQ_KeyAlias` For more information, see the Application Configuration.
Credential Name	Specify the User Credential artifact that stores the username-password pair. Example: `IBM_MQ_54`
Proxy Type	Specify the proxy type: • **Internet** • **On-Premise** • **Basic** Authentication is only supported when **Proxy Type** is set to **Internet** (includes Edge integration Cell also). • When using the Cloud Connector setup, only **Client Certificate** authentication is supported.
Location ID (Only available when **Proxy Type** is set to **On-Premise**).	Specify the Location ID from Cloud Connector. Example: `Zone_08` For more information, see On Premise Connectivity Setup.
SSL Cipher Suite	Specify the SSL Cipher Suite value. Example: `*TLS12HIGHER`
Queue Manager Name	Specify the name of the queue manager to connect for messaging. Example: `MQD`
Channel Name	Specify the Channel Name in IBM MQ. Example: `CLOUD.APP.SVRCONN`
Application Name	Specify the Application Name for the connection. Example: `MainApp`

Parameter	Description
Transport/Network Protocol	Select the type of protocol for connecting to IBM MQ: • **TCP/IP** • **WebSphereMQ**
Character Set ID (CCSID) for Non-ASCII Names	Specify the Character Set ID to ensure proper encoding of non-ASCII characters when connecting to IBM MQ. Example: `819`
Polling Interval (in ms)	Specify the poll interval in milliseconds. Example: `60000`
Message Receive Wait Time (in ms)	Specify the maximum waiting time (in milliseconds) for a message to be received from IBM MQ. Example: `100`
Process Errors as an Event	Enable to write error events in the exchange. If disabled, issues connecting to event streams are only be written to the logs.

4.1.2.3 Processing

The **Processing** tab lists all the operations that can be performed.



Parameter	Description
Message Destination Type	Select the Message Destination Type for which operation needs to be performed: • **Queue** • **Topic**
Queue Name (only available when **Message Destination Type** is set to **Queue**)	Specify the name of the queue from where the message is read.
Topic String (only available when **Message Destination Type** is set to **Topic**)	Specify the string of the Topic from which the message will be read.
Client ID (only available when **Message Destination Type** is set to **Topic**)	Specify the Client ID for connection.

Parameter	Description
Subscription ID (only available when **Message Destination Type** is set to **Topic**)	Specify the Subscription ID for connection.
Target Client	Select the target client type: • **JMS-Compliant**: JMS message properties and headers are accessible. • **WebSphereMQ (Non-JMS)**: JMS message properties and headers are excluded.
Transactional JMS Session	Enable to utilize a transactional JMS session. Enabling is recommended to ensure data consistency.
Failed Transaction Handling	Select the action to be performed when a transaction fails: • **Keep Message And Process Again** • **Move Message To Another Queue**
Max Delivery Count (only available when **Failed Transaction Handling** set to **Move Message To Another Queue)**	Specify the count for maximum JMS message delivery. ⓘ This value refers to JMS header JMSXDeliveryCount. Message excess of this value is moved to the Another Queue.
Queue Name (only available when **Failed Transaction Handling** set to **Move Message To Another Queue)**	Specify the name of the Another Queue to which the message should be moved if JMS message delivery backout threshold is reached on transaction failure.
Max Message Per Node	Specify the maximum number of messages to be retrieved per worker node. It is recommended to keep this value under 5000. Example: 10
Max Number of Messages	Specify the maximum number of messages to be retrieved. ⓘ The recommended values are 1-5000.

Parameter	Description
Message Selector	Specify a **string expression** that filters messages based on header fields and custom message properties. Example: `Department=HR`

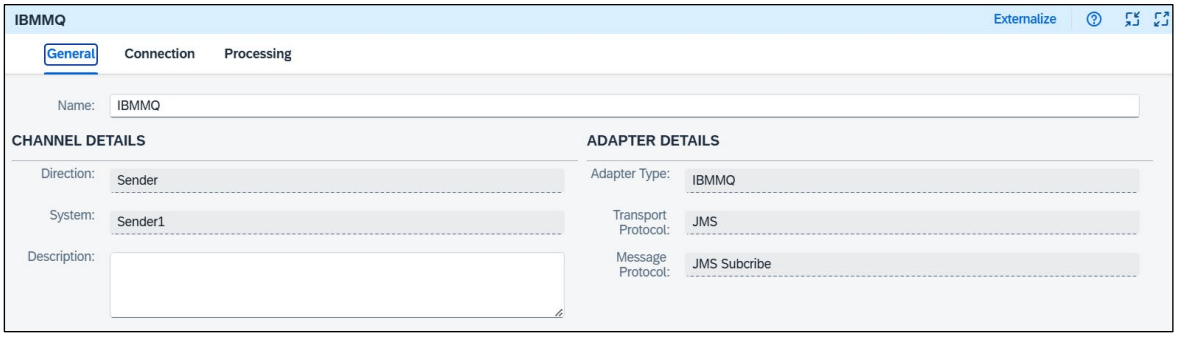
- The Adapter performs duplicate checks to suppress message processing based on JMS message ID.
- Suppressing duplicate message processing is only done within the same poll.
- If you want to suppress the processing of the same JMS message ID across different polls, you can leverage the idempotent process call.

4.1.3 JMS (Subscribe)

A subscription enables automatic receipt of messages when you subscribe to a specific message destination type.

4.1.3.1 General

The General tab provides an overview of basic adapter information, including **Channel** and **Adapter** details. Only the Name and Description fields are editable.



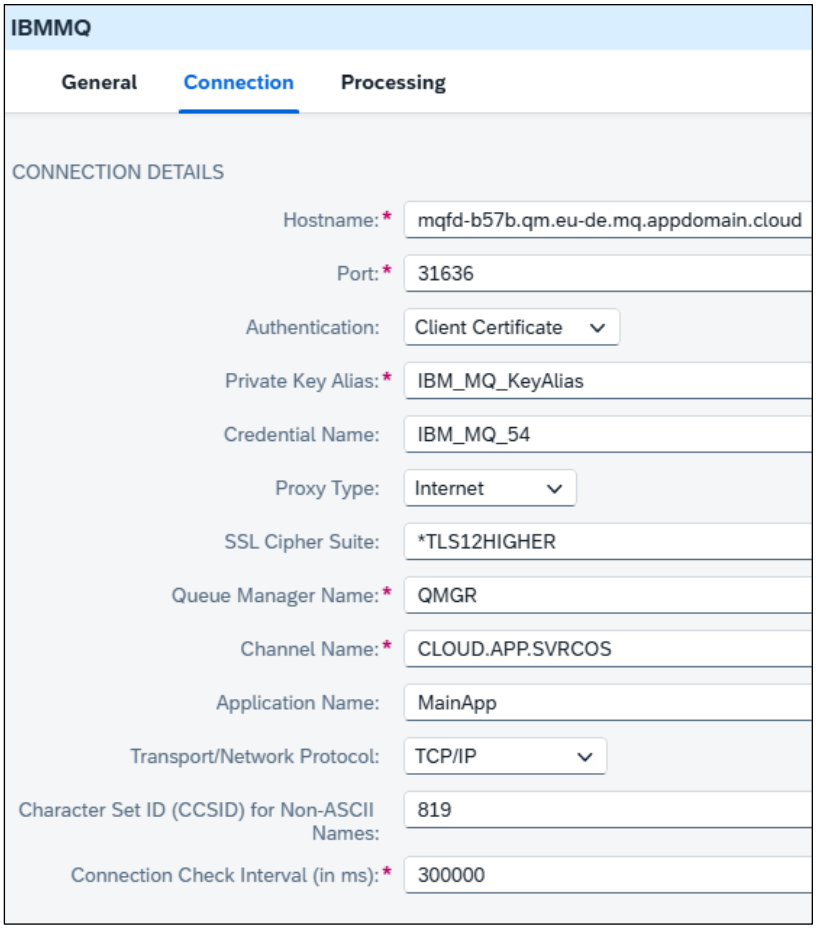
Parameter	Description
Name	Name of the adapter flow
Description	Description of the adapter

4.1.3.2 Connection

The Connection tab contains connection and authentication parameters for IBM MQ.

Using Credentials

The Security artifact created in the previous section (Creating Credentials in Security Material) should be used in the **Connection tab** of the Adapter, as shown in the Figure below.



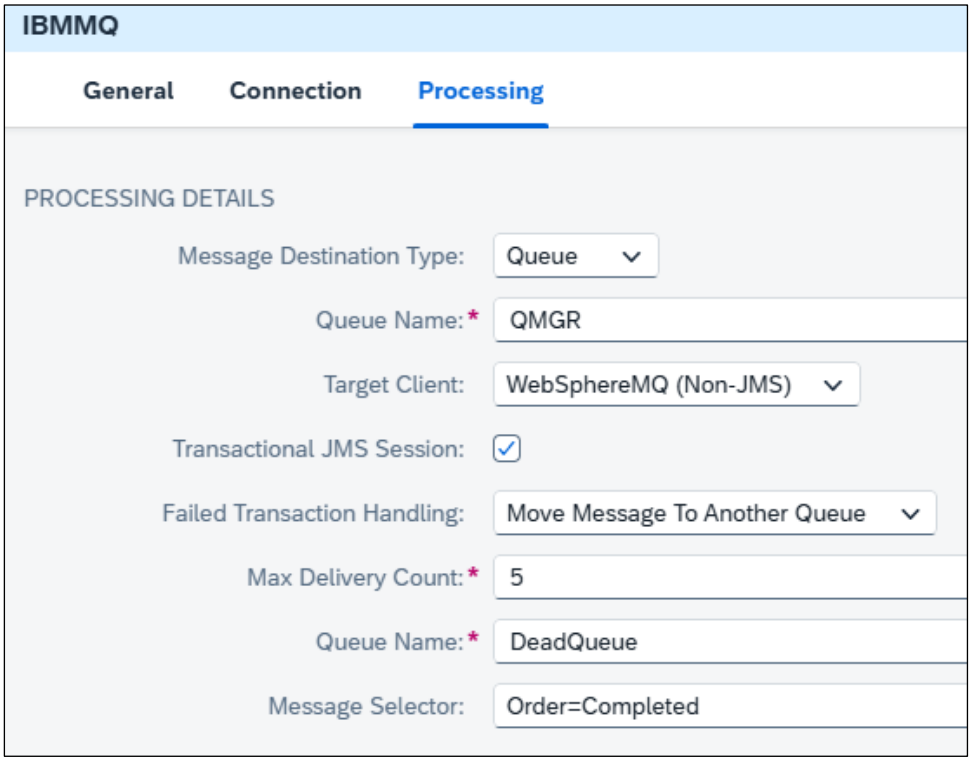
Parameter	Description
Hostname	Specify the hostname to connect to IBM MQ. Example: `qmqfd-b57b.qm.eu-de.mq.appdomain.cloud`
Port	Specify the port number to connect to IBM MQ. Example: `31636`
Authentication	Select the type of authentication for connecting to IBM MQ. • **Basic:** Provides authentication using User Credentials.

Parameter	Description
	• **Client Certificate:** The server authenticates the client by receiving the client's certificate during the SSL handshake and verifying the certificate is valid. • **None:** Direct connection can be made without User Credentials.
Private Key Alias (only available when **Client Certificate** is selected)	Specify the alias that stores the private key to communicate with IBM MQ servers. Example: `IBM_MQ_KeyAlias` For more information, see the Application Configuration.
Credential Name	Specify the User Credential artifact that stores the username-password pair. Example: `IBM_MQ_54`
Proxy Type	Specify the proxy type: • **Internet** • **On-Premise**
Location ID (only available when **Proxy Type** is set to **On-Premise**).	Specify the Location ID from Cloud Connector. Example: `Zone_08` For more information, see On Premise Connectivity Setup.
SSL Cipher Suite	Specify the SSL Cipher Suite value. Example: `*TLS12HIGHER`
Queue Manager Name	Specify the name of the queue manager to connect for messaging. Example: `QMGR`
Channel Name	Specify the Channel Name in IBM MQ. Example: `CLOUD.APP.SVRCOS`
Application Name	Specify the Application Name for the connection. Example: `MainApp`

Parameter	Description
Transport/Network Protocol	Select the type of protocol for connecting to IBM MQ: • **TCP/IP** • **WebSphereMQ**
Character Set ID (CCSID) for Non-ASCII Names	Specify the Character Set ID to ensure proper encoding of non-ASCII characters when connecting to IBM MQ. Example: `819`
Connection Check Interval (in ms)	Specify the interval in milliseconds to verify the connection validity to IBM MQ. Example: 300000

4.1.3.3 Processing

The Processing tab lists all the operations that can be performed on the database through the adapter.



Parameter	Description
Message Destination Type	Select the Message Destination Type for reading messages: • **Queue** • **Topic**
Queue Name	Specify the name of the queue from which the message will be read.
Topic String (only available when **Message Destination Type** is set to **Topic**)	Specify the string of the Topic from which the message will be read.
Client ID (only available when **Message Destination Type** is set to **Topic**)	Specify the Client ID for connection.
Subscription ID (only available when **Message Destination Type** is set to **Topic**)	Specify the Subscription ID for connection.
Target Client	Select the target client type: • **JMS-Compliant**: JMS message properties and headers are accessible. • **WebSphereMQ (Non-JMS)**: JMS message properties and headers are excluded.
Transactional JMS Session	Enable to utilize a transactional JMS session. Enabling is recommended to ensure data consistency.
Failed Transaction Handling (only available when **Transactional JMS Session** is enabled**)**	• **Keep Message And Process Again** • **Move Message To Another Queue**

Parameter	Description
Max Delivery Count (only available when **Failed Transaction Handling** set to **Move Message To Another Queue)**	Specify the count for maximum JMS message delivery. This value refers to JMS header JMSXDeliveryCount. Message excess of this value is moved to the Another Queue.
Queue Name (only available when **Failed Transaction Handling** set to **Move Message To Another Queue)**	Specify the name of the Another Queue to which the message should be moved if JMS message delivery backout threshold is reached on transaction failure.
Message Selector	Specify the value for the properties to be selected. Example: `Order=Completed`

If the same JMS Message ID is expected to be delivered multiple times to the queue and you want to prevent duplicates of that message, you can handle it using an idempotent process call.

4.2 Receiver Adapter

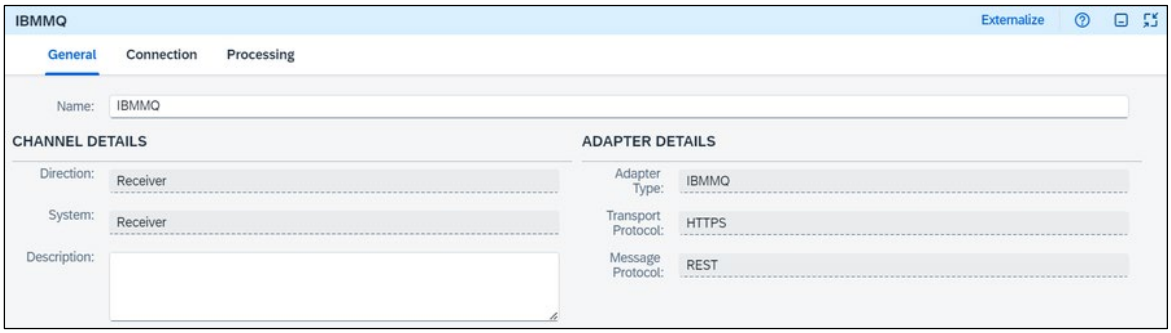
In this section, you will learn how to configure the IBM MQ receiver adapter. On selecting the IBM MQ adapter from the list of adapters, you must configure the **General**, **Connection**, and **Processing** tabs.

4.2.1 REST

IBM MQ REST lets you send and get messages using web requests (HTTP).

4.2.1.1 General

The General tab provides an overview of basic adapter information, including **Channel** and Adapter details. Only the Name and Description fields are editable.



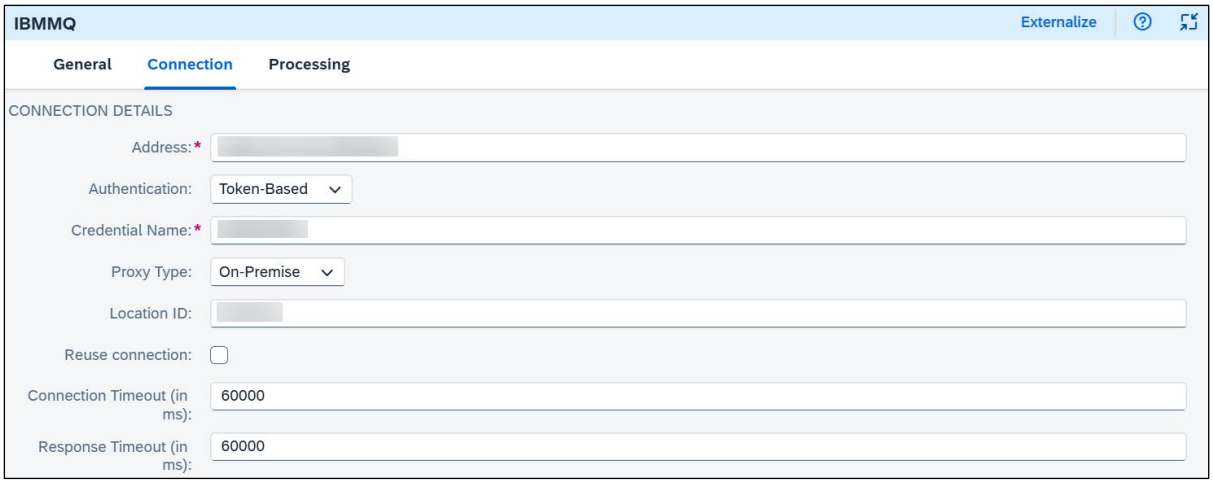
Parameter	Description
Name	Name of the adapter flow
Description	Description of the adapter

4.2.1.2 Connection

The Connection tab contains connection and authentication parameters for IBM MQ.

Using Credentials

The Security artifact created in the previous section (Creating Credentials in Security Material) should be used in the **Connection tab** of the Adapter, as shown in the Figure below.

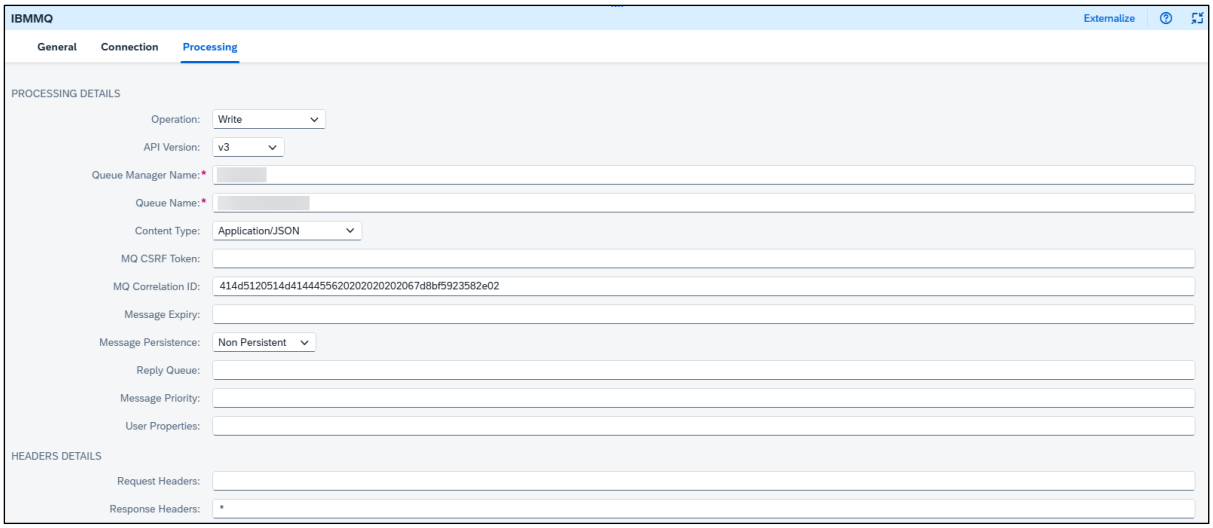


The connection tab contains the following fields:

Parameter	Description
Address	Specify the address of the IBM MQ endpoints. Example: `https://web-{hostname}`
Authentication	Select the type of authentication for connecting to the IBM MQ: • **Basic** • **Token-Based**
Credential Name	Specify the alias that refers to the user credentials (username-password pair).
Proxy Type	Select the proxy type: • **Internet** • **On-Premise**
Location ID	Specify the Location ID from the Cloud Connector.
Reuse connection	Enable this property if you want to reuse the connection.
Connection Timeout (in ms)	Specify the maximum waiting time (in milliseconds) for the connection to be established.
Response Timeout (in ms)	Specify the maximum waiting time (in milliseconds) for a response message to be received.

4.2.1.3 Processing

The Processing tab lists all the operations that can be performed on the database through the adapter.



Parameter	Description
Operation	Select the Operation to be performed.
API Version	Select an API Version.
Queue Manager Name	Specify the name of the queue manager to connect to for messaging.
Queue Name	Specify the name of the queue from where message is read.
Content Type	Select the Parameter Content Type. • **Application/JSON** • **Application/XML** • **Text/HTML** • **Text/Plain** • **Text/XML** This field is editable and can be used for any other content types supported by IBM MQ.
MQ CSRF Token	Specify the CSRF protection header. The value can be any valid string, including a blank string.

Parameter	Description
MQ Correlation ID	Specify the correlation ID which is a 48 character hexadecimal encoded string, representing 24 bytes. Example: "414d5120514d4144455620202020202067d8bf5923582e02". In case of API Version V3, prefix hex-string with "ID:", for example "ID:414d5120514d4144455620202020202067d8bf5923582e02" or application-specific value can also be specified, for example "My-Custom-CorrelId". This sets the correlation ID of the created message.
Message ID	Specify the message ID which is a 48 character hexadecimal encoded string, representing 24 bytes.
Message Expiry	Specify the maximum time to keep the message on the queue, in milliseconds (Limited to the range 0-99999999900). The default value is 'unlimited' which specifies that the message does not expire.
Message Persistence	Select the message persistence. The default value is 'nonPersistent' which specifies that the message does not survive system failures or queue manager restarts.
Reply Queue	Specify the reply-to destination for the created message. The format of the header uses the standard notation of supplying the reply-to queue and an optional queue manager: replyQueue[@replyQmgr].
Message Priority	Specify the message priority between the range 0-9. The default value is 'asDestination' which specifies that the message uses the priority specified in the DEFPRTY attribute of the underlying IBM MQ queue object.
User Properties	Specify the user defined properties for the message in the format property_name; user_value; user_type. For multiple user properties use comma separator. Example: myA;5;byte,myB;-10;integer.
HEADERS DETAILS	

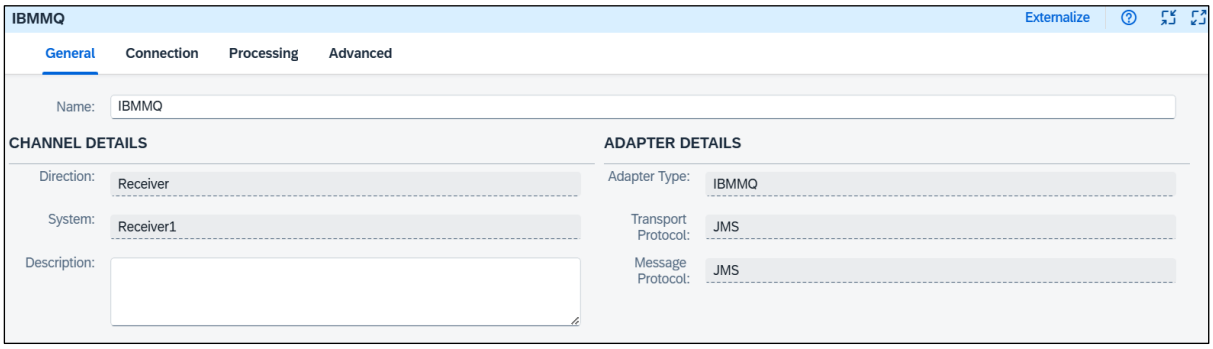
Parameter	Description
Request Headers	Enter a list of custom headers, separated by a pipe (|), to send to the target system. By default, no custom headers are sent. Use an asterisk(*) to send all custom headers to the target system. Alternatively, you can dynamically pass on the values by defining a property that includes a list of headers.
Response Headers	Enter a list of headers coming from the target system's response, separated by a pipe (|), to be received in the message. Use an asterisk(*) to receive all the headers from the target system, which is also the default value.

4.2.2 JMS

IBM MQ JMS Receiver Adapter provides the ability to publish messages seamlessly from IBM MQ using Java Message Service.

4.2.2.1General

The General tab provides an overview of basic adapter information including **Channel** and **Adapter** details. Only the Name and Description fields are editable.



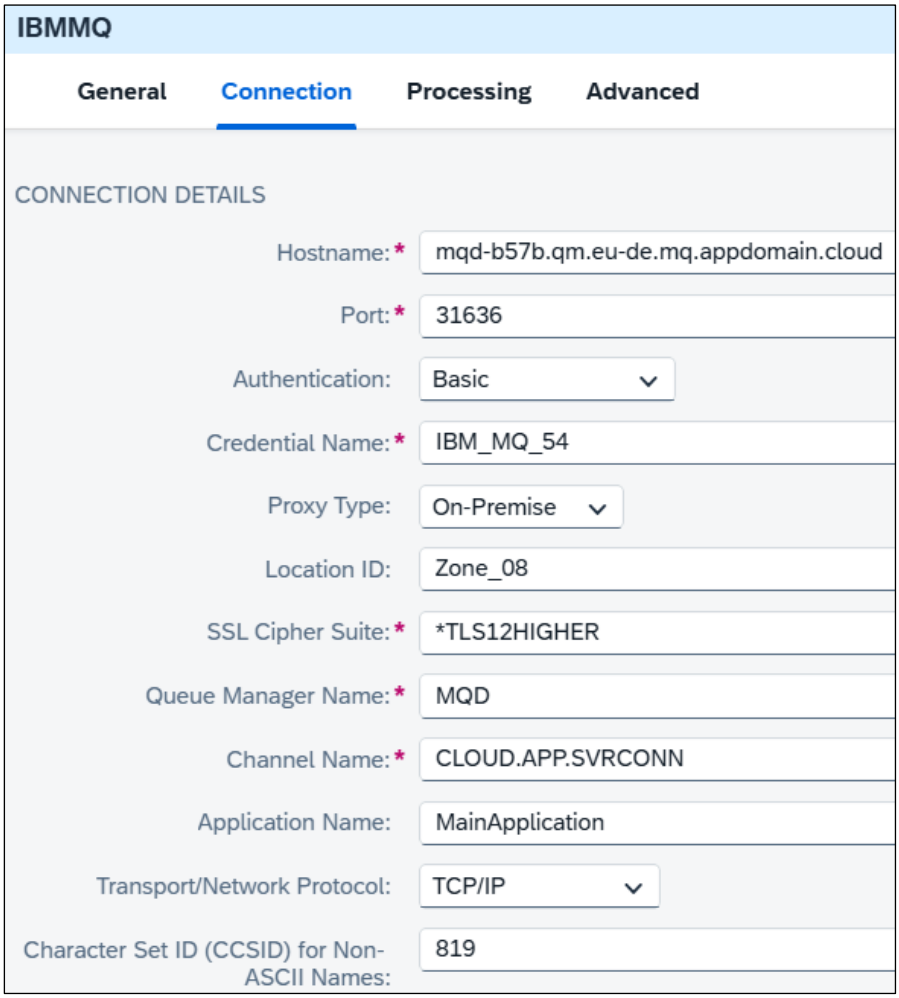
Parameter	Description
Name	Name of the adapter flow
Description	Description of the adapter

4.2.2.2 Connection

The Connection tab contains connection and authentication parameters for IBM MQ.

Using Credentials

The Security artifact created in the previous section (Creating Credentials in Security Material) should be used in the **Connection tab** of the Adapter as shown in the Figure below.



The connection tab contains the following fields:

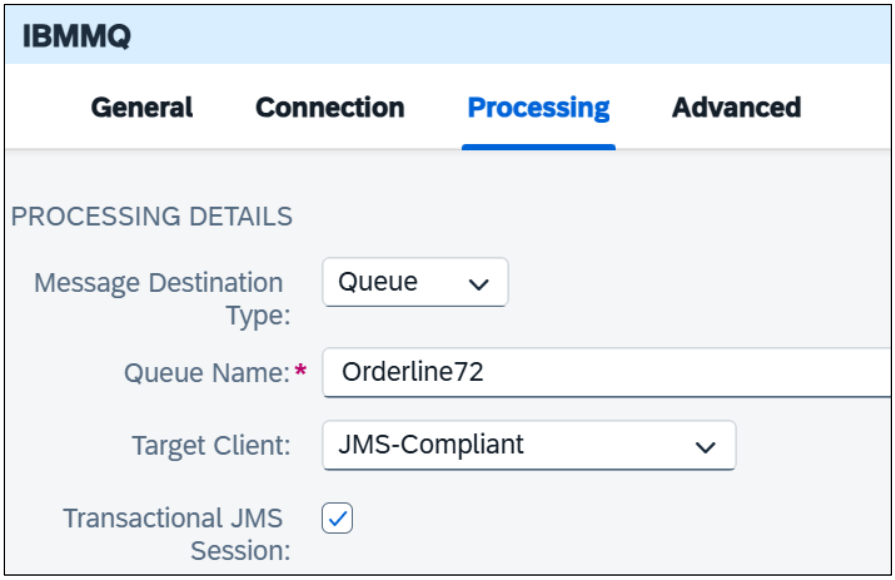
Parameter	Description
Hostname	Specify the hostname to connect to IBM MQ. Example: `mqd-b57b.qm.eu-de.mq.appdomain.cloud`
Port	Specify the port number to connect to IBM MQ. Example: `31636`
Authentication	Select the type of authentication for connecting to IBM MQ. • **Basic:** Provides authentication using User Credentials. • **Client Certificate:** The server authenticates the client by receiving the client's certificate during the SSL handshake and verifying the certificate is valid.

Parameter	Description
	• **None:** Direct connection can be made without User Credentials.
Private Key Alias (Only available when **Client Certificate** is selected)	Specify the alias to identify the private key to communicate to servers. Example: `IBM_MQ_KeyAlias` For more information, see the Application Configuration.
Credential Name	Specify the User Credential artifact that stores the username-password pair. Example: `IBM_MQ_54`
Proxy Type	Specify the proxy type: • **Internet** • **On-Premise**
Location ID (Only available when **Proxy Type** is set to **On-Premise**).	Specify the Location ID from Cloud Connector. Example: `Zone_08` For more information, see On Premise Connectivity Setup.
SSL Cipher Suite	Specify the SSL Cipher Suite value. Example: `*TLS12HIGHER`
Queue Manager Name	Specify the name of the queue manager to connect for messaging. Example: `MQD`
Channel Name	Specify the Channel Name in IBM MQ Example: `CLOUD.APP.SVRCONN`
Application Name	Specify the Application Name for the connection. Example: `MainApplication`
Transport/Network Protocol	Select the type of protocol for connecting to IBM MQ: • **TCP/IP** • **WebSphereMQ**

Parameter	Description
Character Set ID (CCSID) for Non-ASCII Names	Specify the Character Set ID to ensure proper encoding of non-ASCII characters when JMS connection to IBM MQ. Example: `819` To override CCSID at Message Level, use JMS Message Property (JMS_IBM_Character_Set), the message property will have higher precedence than the CCSID specified here in the Connection Tab. For more information, see JMS Message Property.

4.2.2.3 Processing

The Processing tab lists all the operations that can be performed through the adapter.

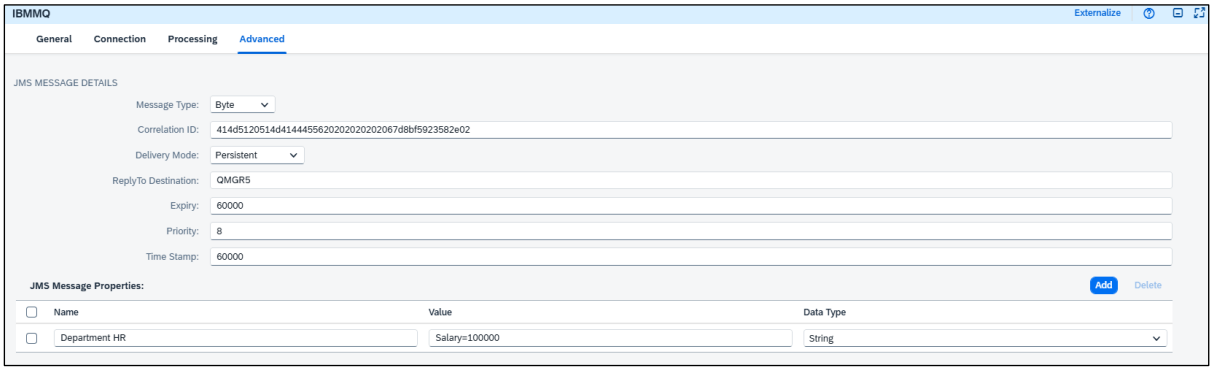


Parameter	Description
Message Destination Type	Select the Message Destination Type for which operation needs to be performed. • **Queue** • **Topic**

Parameter	Description
Queue Name (Only available when **Message Destination Type** is set to **Queue**)	Specify the name of the Queue to which the message will be written.
Topic String (Only available when **Message Destination Type** is set to **Topic**)	Specify the Topic string where the message will be written.
Client ID (Only available when **Message Destination Type** is set to **Topic**)	Specify the Client ID for the connection.
Target Client	Select the target client type for messages sent to IBM MQ. • **JMS-Compliant**: JMS message properties and headers will be accessible. • **WebSphereMQ (Non-JMS)**: JMS message properties and headers will be excluded.
Transactional JMS Session	Enable to utilize a transactional JMS session. Enabling is recommended to ensure data consistency.

4.2.2.4 Advanced

The Advanced tab is used to specify additional properties and headers for the message.



Parameter	Description
Message Type	Select the Message Type: • **Text** • **Byte**
Correlation ID	Specify the correlation ID which is a 48 character hexadecimal encoded string, representing 24 bytes. Example: `"414d5120514d4144455620202020202067d8bf5923582e02"`. You can also specify application-specific values, as `My Custom CorelID`. This sets the correlation ID of the created message.
Delivery Mode	Select the message delivery mode for the message producer: • **Non Persistent** • **Persistent**
ReplyTo Destination	Specify the destination to which the current message should be sent.
Expiry	Specify the message expiration time in milliseconds. Example: `60000`
Priority	Specify the priority of message. Range should be (0-9). Example: `5`
Time Stamp	Specify the message time stamp in milliseconds. Example: `60000`
JMS Message Properties	Specify JMS Message Properties using **Name**, **Value**, and **Data Type**.

5. IBM MQ Supported Operations

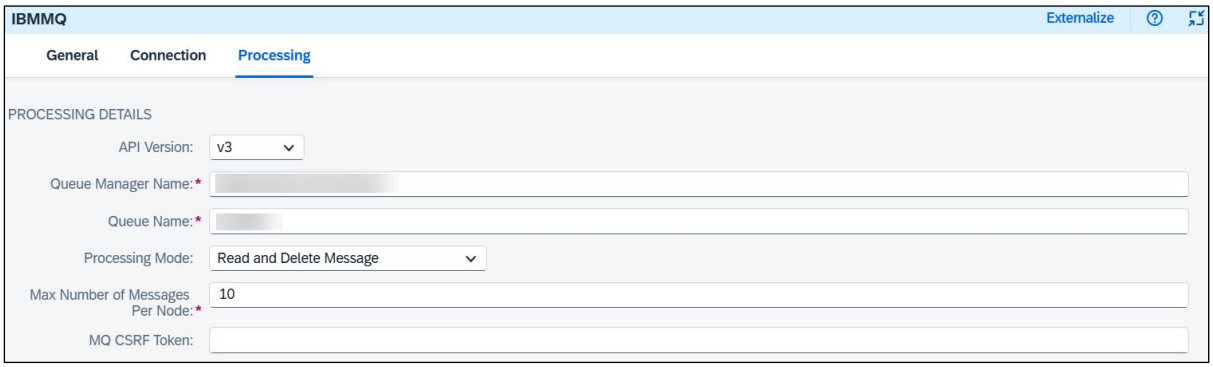
This section lists and describes some of the operations supported by the IBM MQ adapter.

5.1 Sender Adapter (REST)

You can perform read operations with the sender adapter in IBM MQ.

The response header **Status** provides information about the operation, for example:

- **204 status code**: No messages are available in the queue; hence no content is retrieved.



Parameter	Description
API Version	Select an API Version as `v3`.
Queue Manager Name	Specify the name of the queue manager to connect to for messaging.
Queue Name	Specify the name of the queue from where the message is read.
Processing Mode	Select the action to be performed after processing the message in the queue: `Read and Delete Message`
Max Number of Messages Per Node	Specify the maximum number of messages to be retrieved per node. The recommended values ranging from 1 to 5000.
MQ CSRF Token	Specify the CSRF protection header. The value can be any valid string, including a blank string.

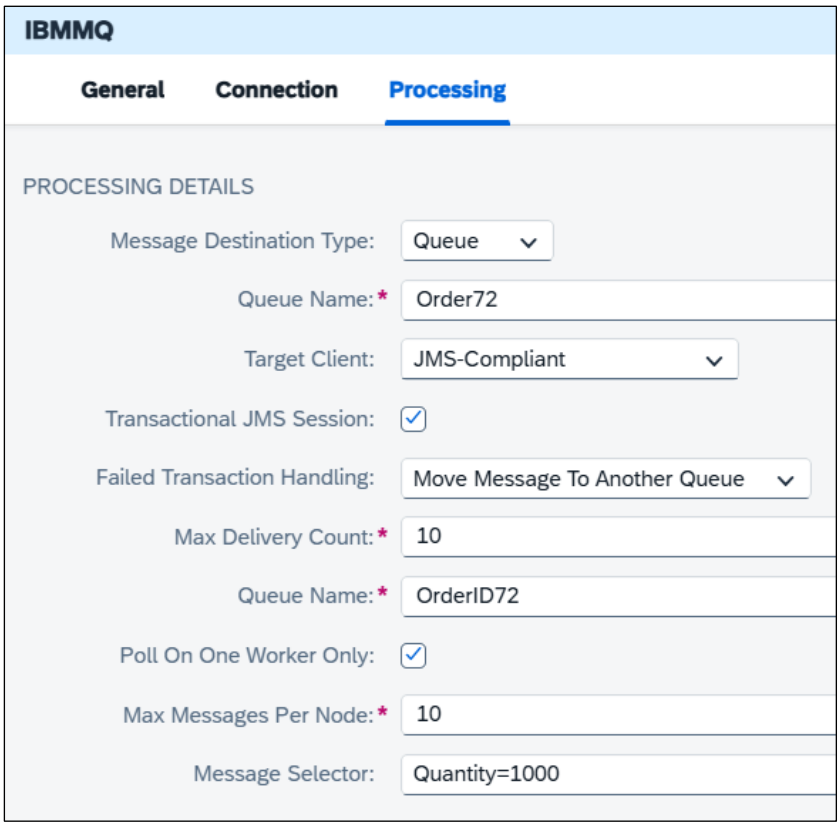
5.2 Sender Adapter (JMS - Poll)

The following are operations supported by IBM MQ Sender (Poll) adapter.

Polling is used in messaging systems where a consumer checks for new messages in specific time interval from a source.

5.2.1 Queue

You can perform read operations with the sender adapter in IBM MQ.

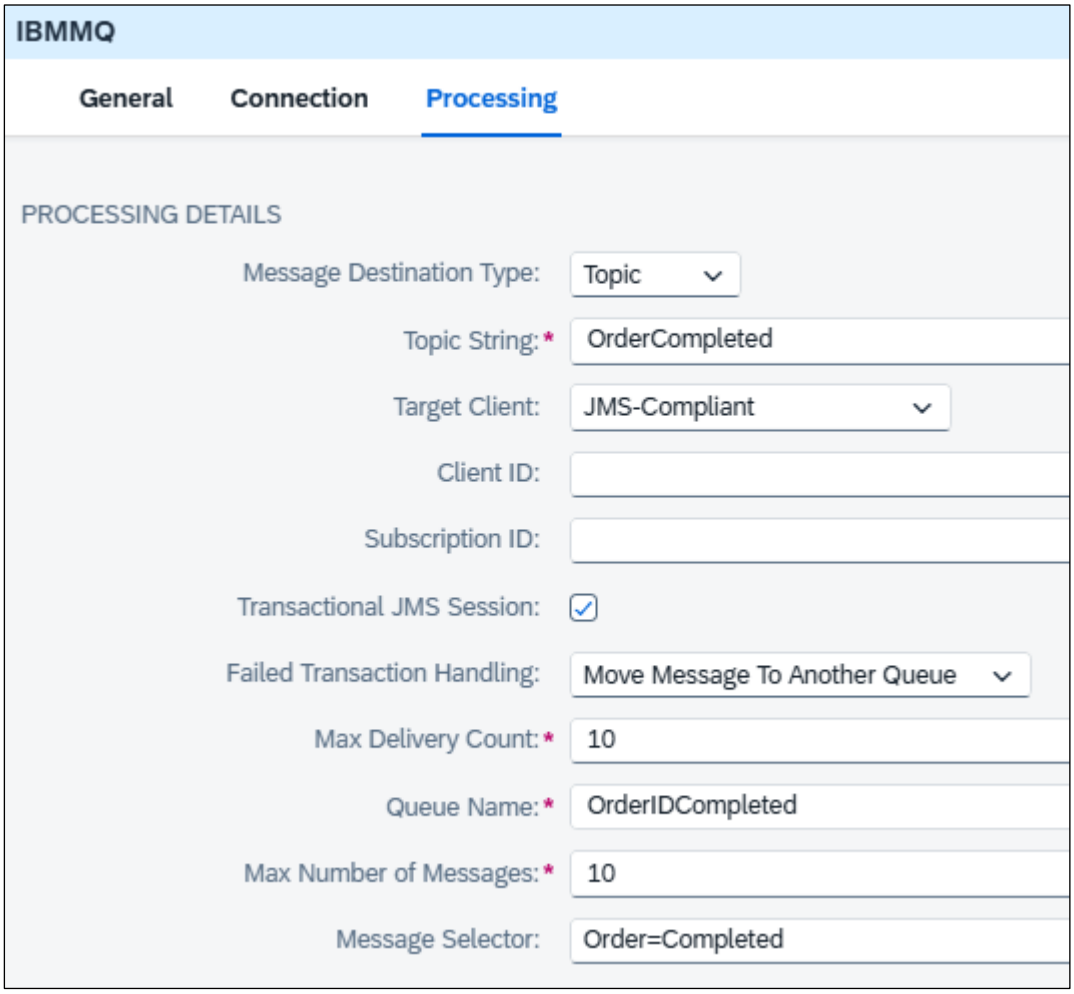


Parameter	Values
Message Destination Type	Select a message destination type as **Queue**.
Queue Name	Specify the name of the queue name as `Order72`.
Target Client	Select as **JMS-Compliant**.
Transactional JMS Session	Enable this for transactional JMS session.
Failed Transaction Handling	Select **Move Message To Another Queue**.
Max Delivery Count	Set as `10`.
Queue Name	Specify as `OrderID72`.

Parameter	Values
Poll On One Worker Only	Enable poll on single worker only.
Max Message Per Node	Set as `10`.
Message Selector	Specify as `Quantity=100000`.

5.2.2 Topic

You can perform read operations with the sender adapter in IBM MQ.



Parameter	Values
Message Destination Type	Select a message destination type as **Topic**.
Topic String	Specify as `OrderCompleted`.
Target Client	Select as **JMS-Complaint**.
Client ID	Specify the Client ID for connection.
Subscription ID	Specify the Subscription ID for connection.

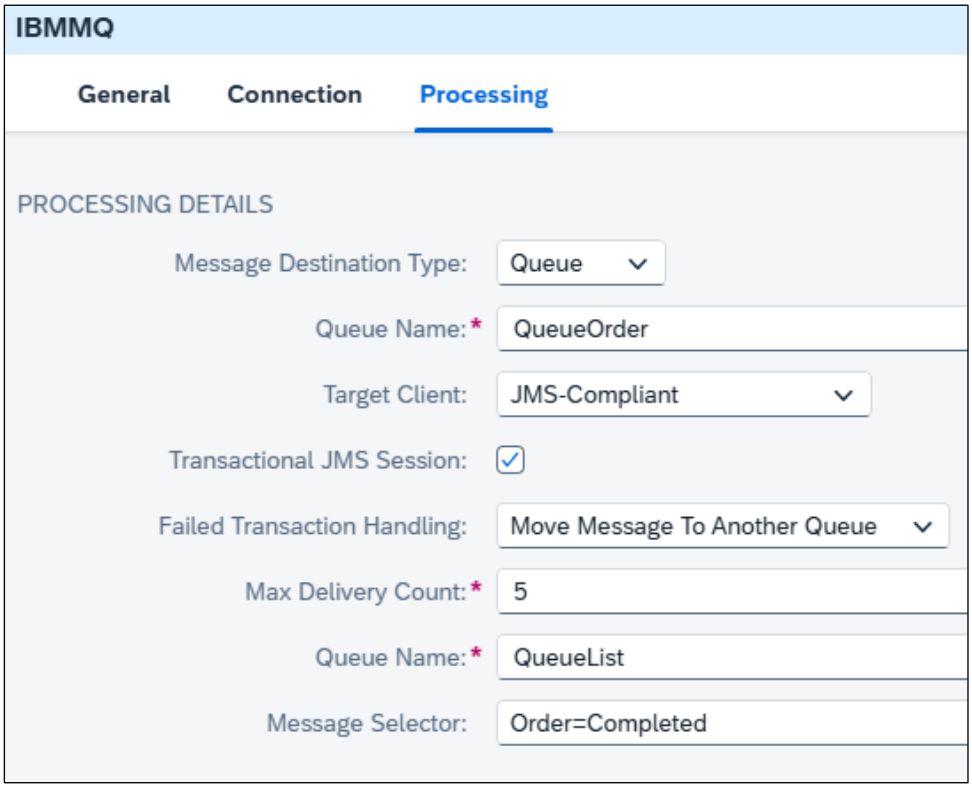
Parameter	Values
Transactional JMS Session	Enable the transactional JMS session.
Failed Transaction Handling	Select as **Move Message To Another Queue**.
Queue Name	Specify as `OrderIDCompleted`
Max Number of Messages	Specify as `10`
Message Selector	Specify as `Completed`

5.3 Sender Adapter (JMS - Subscribe)

A subscription in messaging systems allows a consumer to automatically receive messages from a specific destination.

5.3.1 Queue

You can perform read operations with the sender adapter in IBM MQ.

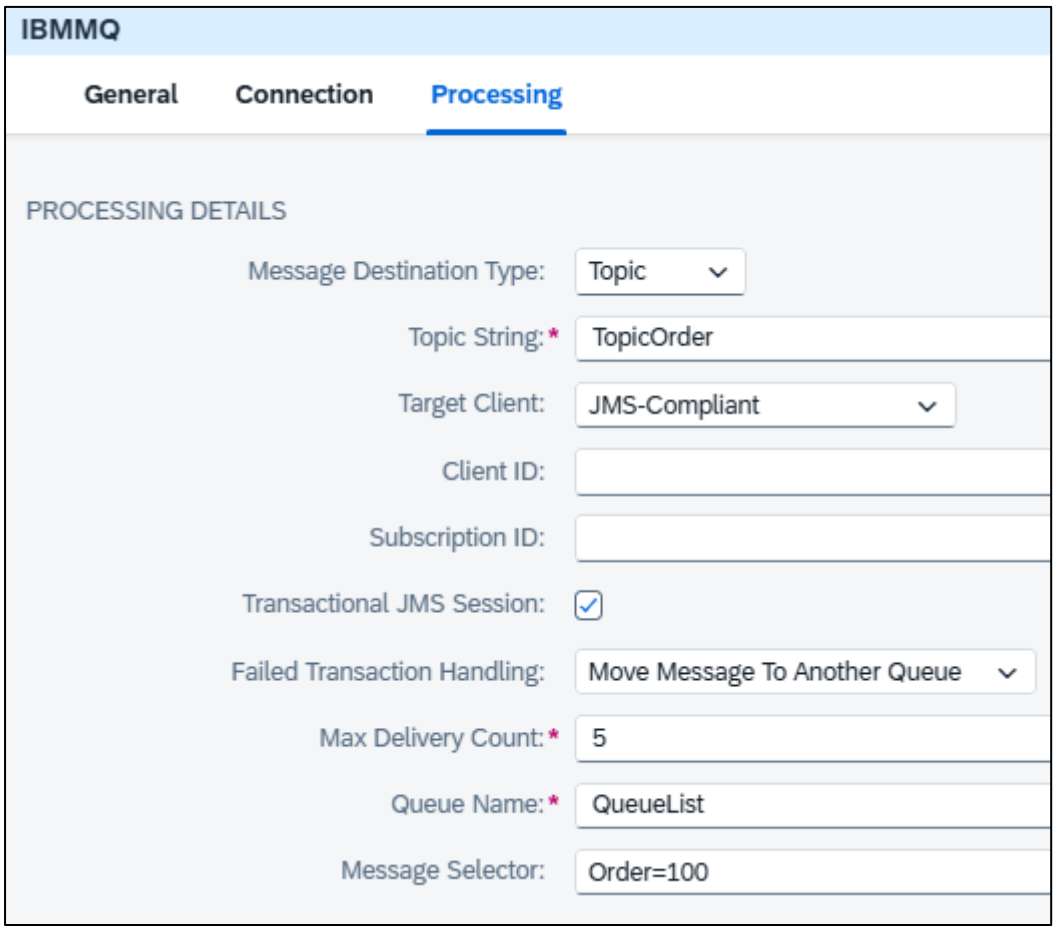


Parameter	Values
Message Destination Type	Select a message destination type as **Queue**
Queue Name	Specify the name of the queue as `QueueOrder`
Target Client	Select as **JMS-Compliant**.

Parameter	Values
Transactional JMS Session	Enable the transactional JMS session.
Failed Transaction Handling	Select as **Move Message to Another Queue**
Max Delivery Count	Specify as `5`
Queue Name	Specify as `QueueList`
Message Selector	Specify as `Order=Complete`

5.3.2 Topic

You can perform read operations with the sender adapter in IBM MQ.



Parameter	Values
Message Destination Type	Select a message destination type as **Topic**
Topic String	Specify the string of the topic as `TopicOrder`

Parameter	Values
Client ID	Specify the Client ID for connection.
Subscription ID	Specify the Subscription ID for the connection.
Target Client	Select as **JMS-Compliant**.
Transactional JMS Session	Enable the transactional JMS session.
Failed Transaction Handling	Select as **Move Message to Another Queue**
Max Delivery Count	Specify as `5`
Queue Name	Specify as `QueueList`
Message Selector	Specify as `Order=100`

5.4 Receiver Adapter (REST)

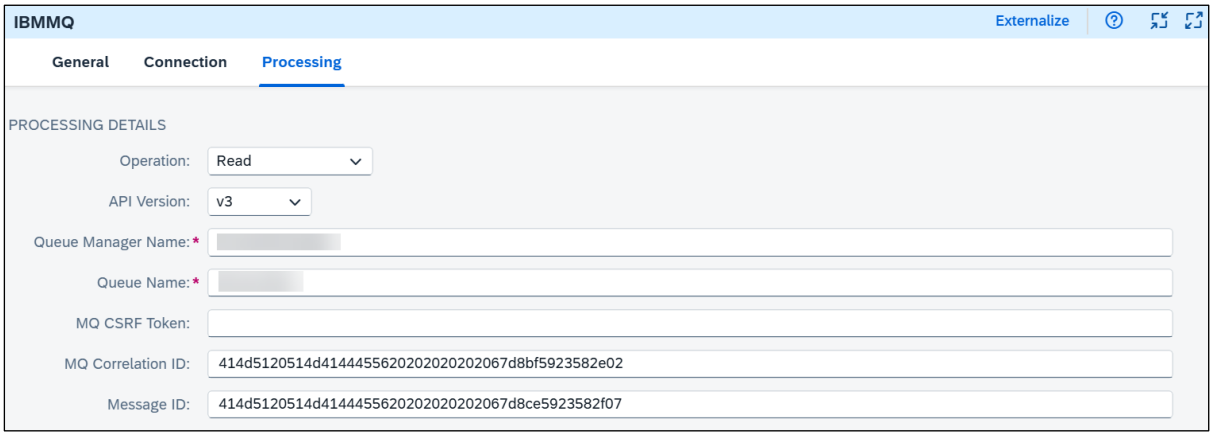
The following are operations supported by IBM MQ Receiver adapter.

The response header **Status** provides information about the operation, for example:

- **204 status code**: No messages are available in the queue; hence no content is retrieved.
- **201 status code:** The message is successfully created.

5.4.1 Read

The Read operation allows a message to be retrieved from a queue without removing it. This means that the message remains in the queue and is still available to read.

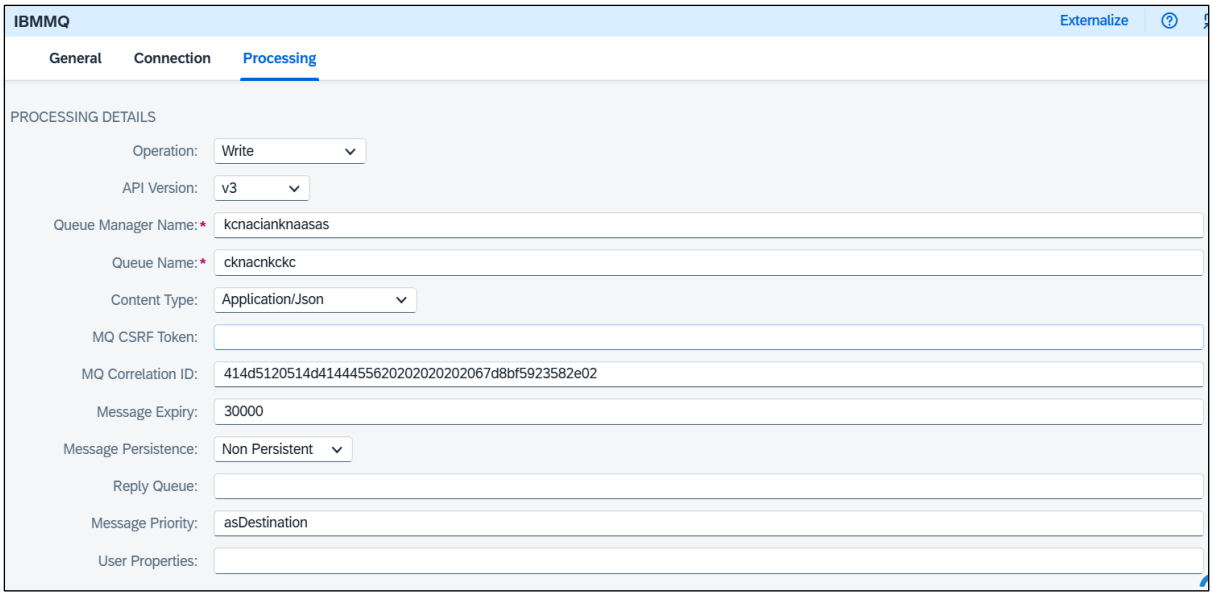


Parameter	Description
Operation	Select the Operation as `Read`.

Parameter	Description
API Version	Select an API Version as `v3`.
Queue Manager Name	Specify the name of the queue manager to connect to for messaging.
Queue Name	Specify the name of the queue from which the message will be read.
MQ CSRF Token	Specify the CSRF protection header. The value can be any value, including a blank string.
MQ Correlation ID	Specify the correlation ID which is a 48-character hexadecimal encoded string, representing 24 bytes. Example `"414d5120514d414445562020202020202067d8bf5923582e02"`. In the case of API Version V3, prefix hex-string with "ID:". Example: `"ID:414d5120514d414445562020202020202067d8bf5923582e02"`. Or application-specific value can also be specified. Example: `"My-Custom-CorrelId"`. This sets the correlation ID of the created message.
Message ID	Specify the message ID which is a 48 character hexadecimal encoded string, representing 24 bytes.

5.4.2 Write

This operation involves sending a message to a queue. The message is added to the end of the queue, making it available for subsequent retrieval.

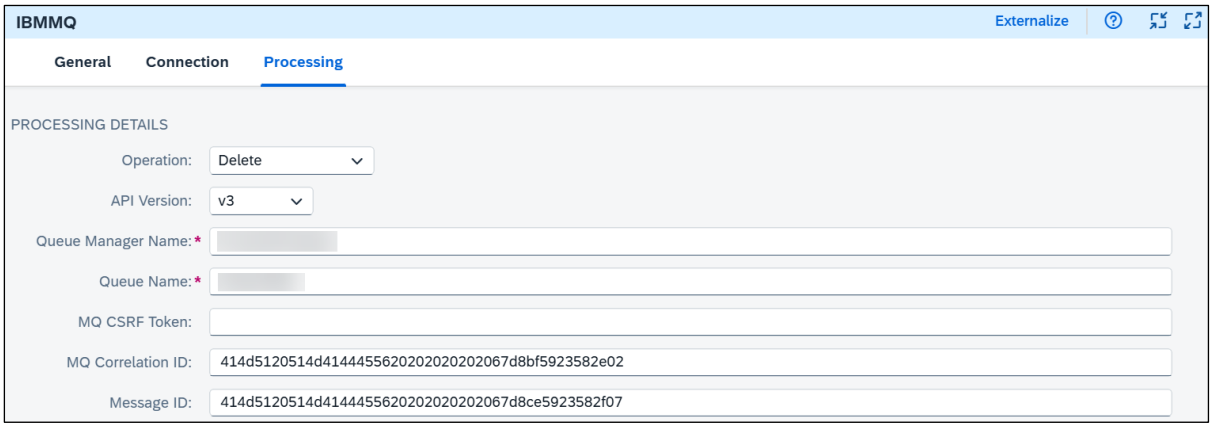


Parameter	Description
Operation	Select the Operation as `Write`.
API Version	Select an API Version as `v3`.
Queue Manager Name	Specify the name of the queue manager to connect to for messaging.
Queue Name	Specify the name of the queue from which the message will be read.
Content Type	Select the Parameter content type.
MQ CSRF Token	Specify the CSRF protection header. The value can be any valid string, including a blank string.
MQ Correlation ID	Specify the correlation ID which is a 48-character hexadecimal encoded string, representing 24 bytes. Example "414d5120514d414445562020202020067d8bf5923582e02". In the case of API Version V3, prefix hex-string with "ID:". Example "ID:414d5120514d414445562020202020067d8bf5923582e02". Or application-specific value can also be specified. Example "My-Custom-CorrelId". This sets the correlation ID of the created message.

Parameter	Description
Message Expiry	Specify the maximum time to keep the message on the queue, in milliseconds (Limited to the range 0-99999999900). Default value is 'unlimited' which specifies that message does not expire.
Message Persistence	Select the message persistence. Default value is 'nonPersistent' which specifies that message does not survive system failures or queue manager restarts.
Reply Queue	Specify the reply-to destination for the created message. The format of the header uses the standard notation of supplying the reply-to queue and an optional queue manager: replyQueue[@replyQmgr].
Message Priority	Specify the message priority between the range 0-9. Default value is 'asDestination' which specifies that the message uses the priority specified in the DEFPRTY attribute of the underlying IBM MQ queue object.
User Properties	Specify the user defined properties for the message in the format property_name; user_value; user_type. For multiple user properties use comma separator e.g. myA;5;byte,myB;-10;integer.

5.4.3 Delete

The Delete operation removes a message from the queue. Once deleted, the message is permanently removed from the queue and cannot be retrieved further.

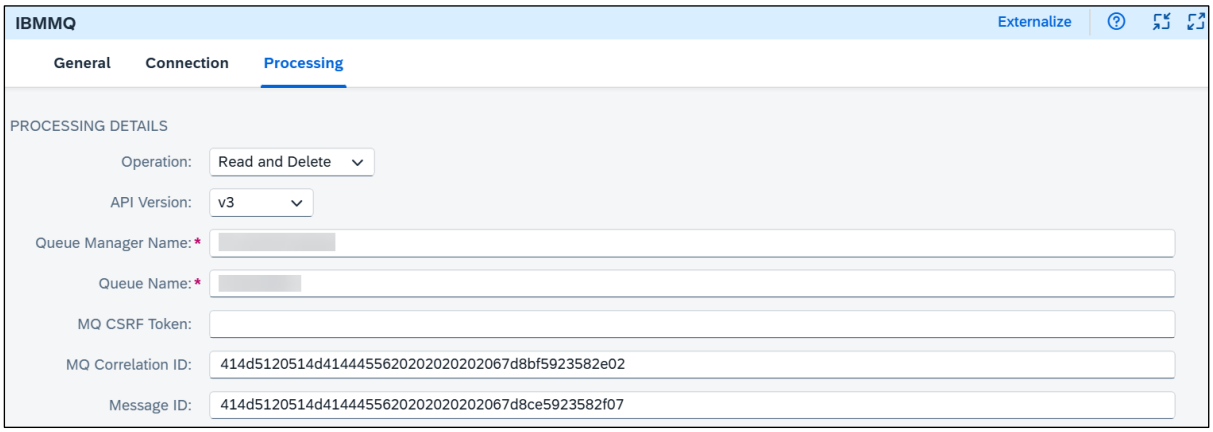


Parameter	Description
Operation	Select the Operation as `Delete`.

Parameter	Description
API Version	Select an API Version as `v3`.
Queue Manager Name	Specify the name of the queue manager to connect to for messaging.
Queue Name	Specify the name of the queue from which the message will be read.
MQ CSRF Token	Specify the CSRF protection header. The value can be any valid string, including a blank string.
MQ Correlation ID	Specify the correlation ID which is a 48 character hexadecimal encoded string, representing 24 bytes. Example "414d5120514d4144455620202020202067d8bf5923582e02". In case of API Version V3, prefix hex-string with "ID:". Example "ID:414d5120514d4144455620202020202067d8bf5923582e02". Or application-specific value can also be specified. Example "My-Custom-CorrelId". This sets the correlation ID of the created message.
Message ID	Specify the message ID which is a 48 character hexadecimal encoded string, representing 24 bytes.

5.4.4 Read and Delete

The Read and Delete operation combines both retrieving and removing a message from the queue in one single operation. The message is fetched from the queue and then immediately deleted, ensuring that it cannot be read or consumed further.



Parameter	Description
Operation	Select the Operation as `Read and Delete`.
API Version	Select an API Version as `v3`.
Queue Manager Name	Specify the name of the queue manager to connect to for messaging.
Queue Name	Specify the name of the queue from which the message will be read.
MQ CSRF Token	Specify the CSRF protection header. The value can be any valid string, including a blank string.
MQ Correlation ID	Specify the correlation ID which is a 48 character hexadecimal encoded string, representing 24 bytes. Example "414d5120514d414445562020202020067d8bf5923582e02". In case of API Version V3, prefix hex-string with "ID:". Example "ID:414d5120514d414445562020202020067d8bf5923582e02". Or application-specific value can also be specified. Example "My-Custom-CorrelId". This sets the correlation ID of the created message.
Message ID	Specify the message ID which is a 48 character hexadecimal encoded string, representing 24 bytes.

5.5 Receiver Adapter (JMS)

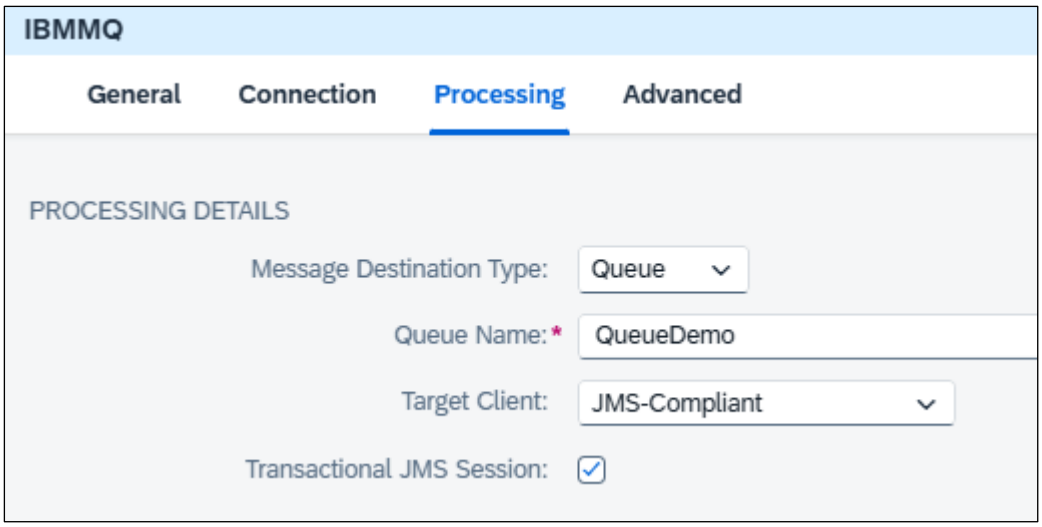
The following Message Destination Types are supported by IBM MQ Receiver adapter JMS variant.

5.5.1 Queue

In the IBM MQ Receiver Adapter, select the **Message Destination Type** as Queue. Specify the **Queue Name** where the message will be sent on the IBM MQ server and select Target Client to controls whether messages use JMS or native MQ format for compatibility. The **Queue** allows a message to be sent to a single point of source and can used by polling.

Sample Payload:

```
{
  "messageId": "ORD123456",
  "timestamp": "2023-11-15T14:30:00Z",
  "type": "OrderRequest",
  "payload": {
    "customerId": "CUST789",
    "items": [
      { "productId": "P100", "quantity": 2 },
      { "productId": "P200", "quantity": 1 }
    ],
    "totalAmount": 150.99
  },
  "status": "PENDING"
}
```



Parameter	Values
Message Destination Type	Select as **Queue**.

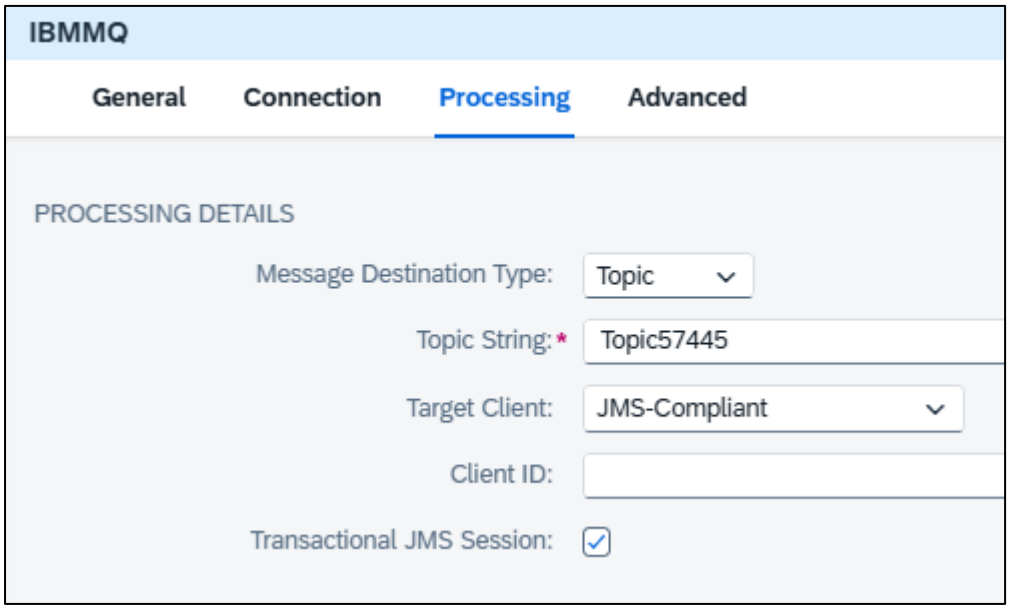
Parameter	Values
Queue Name	Specify as `QueueDemo`.
Target Client	Select as **JMS-Compliant**.
Transactional JMS Session	Enable the transactional JMS session.

5.5.2 Topic

In the IBM MQ Receiver Adapter, select the **Message Destination Type** as Topic and specify the **Topic String** where the message will be sent on the IBM MQ server and **Client ID** for interacting with the IBM MQ server. Select **Target Client** to controls whether messages use JMS or native MQ format for compatibility.

Sample Payload:

```
{
  "messageId": "TOPIC_MSG_123",
  "timestamp": "2024-02-20T14:35:00Z",
  "eventType": "OrderCreated",
  "data": {
    "orderId": "ORD500",
    "customerId": "CUST789",
    "amount": 99.99
  }
}
```

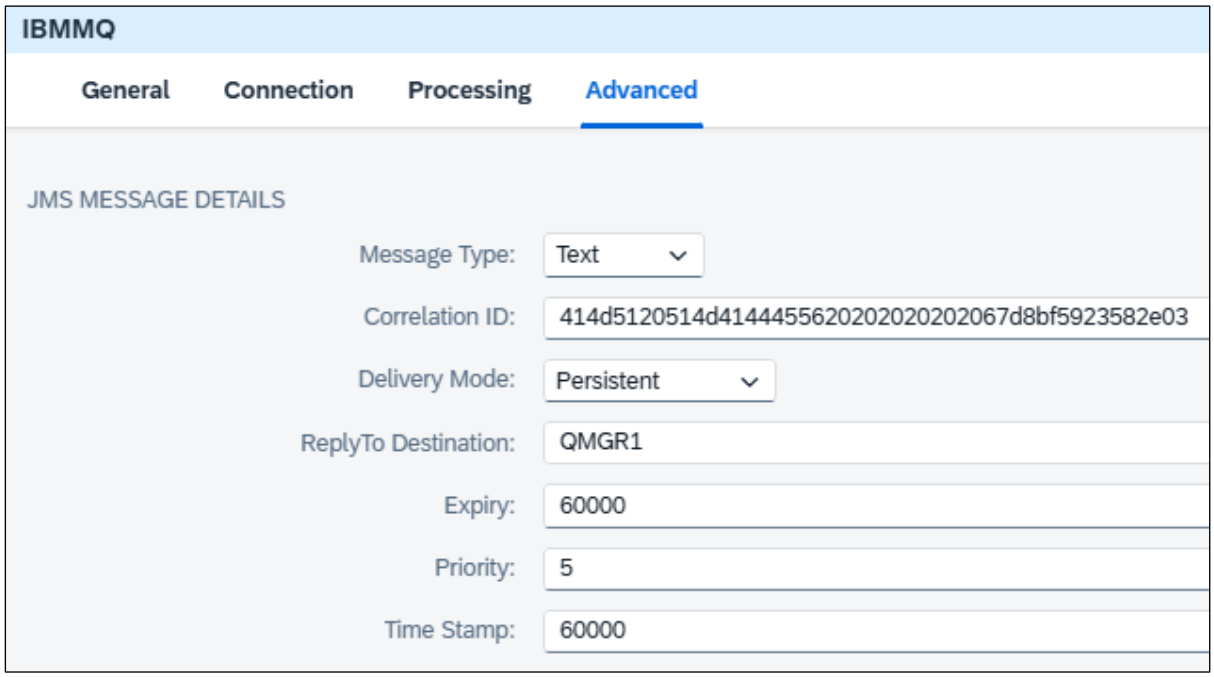


Parameter	Values
Message Destination Type	Specify as **Topic**.
Topic String	Specify as `TopicTest`.
Target Client	Specify as **JMS-Compliant**.
Client ID	Specify the Client ID.
Transactional JMS Session	Enable the transactional JMS session.

5.5.3 Advanced (JMS)

5.5.3.1Text

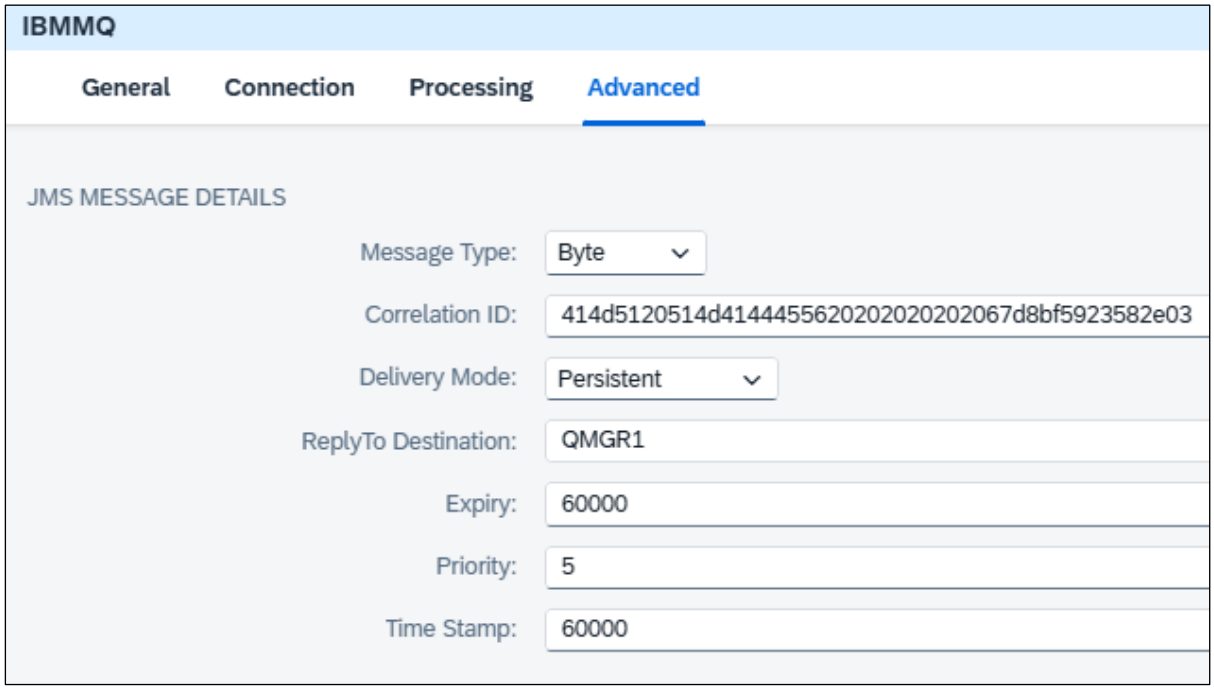
Text message used in IBM MQ that contains a single text string. This text can be plain text, XML, JSON, or any other textual data format.



Parameter	Values
Message Type	Select as **Text**
Correlation ID	Specify as `414d5120514d4144455620202020202067d8bf5923582e03`
Delivery Mode	Select as **Persistent**
ReplyTo Destination	Specify as `QMGR1`
Expiry	Specify as `60000`.
Priority	Specify as `5`.
Time Stamp	Specify as `60000`.

5.5.3.2 Byte

Byte messages contain a stream of uninterpreted bytes used for binary data, such as images, files.



Parameter	Values
Message Type	Select as **Byte**.
Correlation ID	Specify as `414d5120514d414445562020202020202067d8bf5923582e03`
Delivery Mode	Select as **Persistent**.
ReplyTo Destination	Specify as `QMGR1`.
Expiry	Specify as `60000`.
Priority	Specify as `5`.
Time Stamp	Specify as `60000`.

6. Support

6.1 Tips

You can monitor, debug, and analyze errors or issues by changing the Log level of your integration flow to Traces. For more information, see Tracing.

6.1.1 Troubleshooting

A few issues that you might encounter and possible solutions for them have been documented below.

Refer to Queue Manager error logs to get more specific details for an error.

Error Message	Error Reason	Possible Solution
`org.apache.camel.CamelException: Error message: An error occurred while receiving the JMS message. Reason: JMSCMQ0001: IBM MQ call failed with compcode '2' ('MQCC_FAILED') reason '2025' ('MQRC_MAX_CONNS_LIMIT_REACHED')..`	While deploying an IFlow, if any worker node fails to create connection and other worker nodes successfully create connection to the IBM MQ server, the IFlow enters in an error state due to the failed connection by one worker node. However, the connected worker nodes are still able to receive messages from the IBM MQ server.	If all worker nodes are successfully able to create a connection with the IBM MQ server during the next connection check interval, the iFlow will transition to Started state.
`org.apache.camel.CamelException: Error message: An error occurred while receiving the JMS message. Reason: JMSCMQ0001: IBM MQ call failed with compcode '2' ('MQCC_FAILED') reason '2273' ('MQRC_CONNECTION_ERROR')..`	While deploying an IFlow if any worker node fails to create connection and other worker nodes successfully create connection to the IBM MQ server, the IFlow enters in an error state due to the failed	If all worker nodes are successfully able to create a connection with the IBM MQ server during the next connection check interval, the iFlow will transition to Started state.

Error Message	Error Reason	Possible Solution
	connection by one worker node. However, the connected worker nodes are still able to receive messages from the IBM MQ server.	
`org.apache.camel.CamelException: Error message: An error occurred while starting or stopping JMS Connection. Reason: JMSCMQ0001: IBM MQ call failed with compcode '2' ('MQCC_FAILED') reason '2035' ('MQRC_NOT_AUTHORIZED')`	In general, this error means that the credentials provided are not accepted by the IBM MQ server. Here are some possible reasons: **Option 1**: The adapter is configured with Basic Authentication, whereas the MQ server expects Certificate-based authentication. **Option 2**: The adapter is configured with Certificate-based Authentication, whereas the MQ server expects Basic Authentication. **Option 3**: The configured user in the adapter does not have the needed permissions to interact with the Queue Manager or Queue. Note that the above list does not represent a complete list of possibilities, but rather a subset. Refer to the IBM MQ official documentation for further details about this error code.	Change the authentication type in the adapter configuration or change the permission on the IBM MQ side depending on the most applicable option to your situation.

Error Message	Error Reason	Possible Solution
`org.apache.camel.CamelException: Error message: An error occurred while starting or stopping JMS Connection. Reason: JMSCMQ0001: IBM MQ call failed with compcode '2' ('MQCC_FAILED') reason '2059' ('MQRC_Q_MGR_NOT_AVAILABLE')`	This error might occur due to various reasons. Here are some of the possible reasons: **Option 1**: The public key used in Cloud Integration does not match the key in IBM. Or simply does not exist in IBM MQ server. It needs to be imported. Check and compare the Subject of the public key in CPI and the one in IBM MQ. **Option 2**: The MQ manager is not available. Note that the above list does not represent a complete list of possibilities, but rather a subset. Refer to the IBM MQ official documentation for further details about this error code.	Use the correct public key or ensure that the queue manager is up and running on IBM MQ side.
`org.apache.camel.CamelException: Error message: An error occurred while starting or stopping JMS Connection. Reason: JMSCMQ0001: IBM MQ call failed with compcode '2' ('MQCC_FAILED') reason '2397' ('MQRC_JSSE_ERROR')`	This error might occur due to SSL/TLS layer failure during MQ Connection setup. Here are some of the possible reasons: **Option 1**: Truststore or Keystore misconfiguration **Option 2**: Cipher Spec mismatch	Validate your SSL specific configuration.

Error Message	Error Reason	Possible Solution
`org.apache.camel.CamelException: Error message: An error occurred while producing the JMS message. Reason: JMSCMQ1049: The character set '819(ISO-8859-1) Unmappable Action: REPORT,Unmappable Replacement: 63, spaceByte: 32' cannot convert some or all of the string '{ "text": "₹ € ñ +X"`	This error might occur in case unsupported characters are encountered in certain scripts such as Euro symbol, Non-Western scripts (Indian, Chinese) etc.	Ensure that your message does not contain characters that don't comply with the MQ CCSID being used. In case of this error, IBM MQ server also logs the payload as part of exception message which may result in the payload being exposed to MPL (Message Processing Log). To avoid sensitive information exposure, handle gracefully using an Exception Handling Block.
`org.apache.camel.CamelException: Error message: An error occurred while starting or stopping JMS Connection. Reason: JMSCMQ0001: IBM MQ call failed with compcode '2' ('MQCC_FAILED') reason '2397' ('MQRC_JSSE_ERROR')`	If you are using the OMS system for IBM MQ, it expects a JVM level property `Dcom.ibm.mq.cfg.SSL.outboundSNI=Hostname` without which successful TLS handshake is not established between SAP CI and the IBM MQ OMS system.	Configuring JVM is currently not supported or recommended for SAP Cloud Integration. However, as an alternative solution, you can use Edge Integration Cell where you can modify JAVA Options to provide the required JVM configuration in the Runtime parameter.