

Oracle® Cloud

Using the Oracle Cloud Infrastructure Streaming Service Adapter with Oracle Integration



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Contents

Preface

Audience	v
Documentation Accessibility	v
Related Resources	v
Conventions	vi

1 Understand the Oracle Cloud Infrastructure Streaming Service Adapter

Oracle Cloud Infrastructure Streaming Service Adapter Capabilities	1-1
Oracle Cloud Infrastructure Streaming Service Adapter Restrictions	1-2
What Application Version Is Supported?	1-2
Workflow to Create and Add an Oracle Cloud Infrastructure Streaming Service Adapter Connection to an Integration	1-3

2 Create an Oracle Cloud Infrastructure Streaming Service Adapter Connection

Prerequisites for Creating a Connection	2-1
Create a Connection	2-4
Configure Connection Properties	2-5
Configure Connection Security	2-6
Configure an Agent Group	2-6
Test the Connection	2-6

3 Add the Oracle Cloud Infrastructure Streaming Service Adapter Connection to an Integration

Basic Info Page	3-1
Operations Page	3-2
Stream & Partition Page	3-2
Message Structure Page	3-3
Headers Page	3-4

4 Troubleshoot the Oracle Cloud Infrastructure Streaming Service Adapter

Troubleshoot Oracle Cloud Infrastructure Streaming Service Adapter Errors

4-1

Preface

This guide describes how to configure the Oracle Cloud Infrastructure Streaming Service Adapter as a connection in an integration in Oracle Integration.

 **Note:**

The information in this guide applies to all of your Oracle Integration instances. It doesn't matter which edition you're using, what features you have, or who manages your cloud environment. You'll find what you need here, including notes about any differences between the various flavors of Oracle Integration when necessary.

Topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Related Resources](#)
- [Conventions](#)

Audience

This guide is intended for developers who want to use the Oracle Cloud Infrastructure Streaming Service Adapter in integrations in Oracle Integration.

Documentation Accessibility

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Related Resources

See these Oracle resources:

- Oracle Cloud
<http://cloud.oracle.com>
- *Using Integrations in Oracle Integration*
- *Using the Oracle Mapper with Oracle Integration*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Understand the Oracle Cloud Infrastructure Streaming Service Adapter

Review the following conceptual topics to learn about the Oracle Cloud Infrastructure Streaming Service Adapter and how to use it as a connection in integrations in Oracle Integration. A typical workflow of adapter and integration tasks is also provided.

Topics:

- [Oracle Cloud Infrastructure Streaming Service Adapter Capabilities](#)
- [Oracle Cloud Infrastructure Streaming Service Adapter Restrictions](#)
- [What Application Version Is Supported?](#)
- [Workflow to Create and Add an Oracle Cloud Infrastructure Streaming Service Adapter Connection to an Integration](#)

Oracle Cloud Infrastructure Streaming Service Adapter Capabilities

The Oracle Cloud Infrastructure Streaming Service Adapter enables you to create an integration in Oracle Integration that connects to the Oracle Cloud Infrastructure Streaming Service.

The Oracle Cloud Infrastructure Streaming Service provides a fully managed, scalable, and durable storage solution for using continuous, high-volume streams of data that you can consume and process in real time. You can use streaming for messaging, using high-volume data such as application logs, operational telemetry, web click-stream data, or other use cases in which data is produced and processed continually and sequentially in a publish-subscribe messaging model. See [Streaming Service Overview](#).

The Oracle Cloud Infrastructure Streaming Service Adapter provides the following benefits:

- Establishes a connection to the Oracle Cloud Infrastructure Streaming Service to enable messages to be published and consumed.
- Consumes messages from a specific partition and produces messages to a specific partition.
- Supports the ability to consume records from the latest or from the beginning.
- Supports the ability to consume only a few records out of the record set.
- Supports specifying the offset from which to consume records. Along with the offset, a partition must be provided. This appears when you try to map incoming data (which contains offset, partition) to the outbound consume operation that also exposes the same variables.
- Supports headers.

- Supports trigger-based consumption of messages from Oracle Cloud Infrastructure Streaming Service based on the frequency specified.
- Supports the following message structures:
 - XML schema (XSD)
 - No schema
 - XML payload
 - JSON payload
- Supports the Security Layer (SASL) Plain over SSL security policy.
- Supports direct connectivity to an Oracle Cloud Infrastructure Streaming Service over SSL without use of the connectivity agent.
- Supports connectivity to an Oracle Cloud Infrastructure Streaming Service streaming service hosted on a private subnet.

The Oracle Cloud Infrastructure Streaming Service Adapter is one of many predefined adapters included with Oracle Integration. You can configure the Oracle Cloud Infrastructure Streaming Service Adapter as an invoke connection in an integration in Oracle Integration.

Oracle Cloud Infrastructure Streaming Service Adapter Restrictions

Note the following Oracle Cloud Infrastructure Streaming Service Adapter restrictions in Oracle Integration.

- SASL over SSL is the only security policy supported.
- Transactions are not supported (Oracle Cloud Infrastructure Streaming Service does not support transactions).
- Inbound polling works only with the connectivity agent.
- Consumption by offset (along with offset, partition) must be provided.
- When there are no messages to consume from the Oracle Cloud Infrastructure Streaming Service, the Oracle Cloud Infrastructure Streaming Service Adapter takes one minute to respond before returning with an empty message. This is the expected behavior.



Note:

There are overall service limits with Oracle Integration. A service limit is the quota or allowance set on a resource. See [Service Limits](#).

What Application Version Is Supported?

For information about which application version is supported by this adapter, see the [Connectivity Certification Matrix](#).

See [Connectivity Certification Matrix](#).

Workflow to Create and Add an Oracle Cloud Infrastructure Streaming Service Adapter Connection to an Integration

You follow a very simple workflow to create a connection with an adapter and include the connection in an integration in Oracle Integration.

This table lists the workflow steps for both the adapter tasks and the overall integration tasks, and provides links to instructions for each step.

Step	Description	More Information
1	Access Oracle Integration.	Go to https://instance_URL/ic/home/
2	Create the adapter connections for the applications you want to integrate. The connections can be reused in multiple integrations and are typically created by the administrator.	Create an Oracle Cloud Infrastructure Streaming Service Adapter Connection
3	Create the integration. When you do this, you add trigger (source) and invoke (target) connections to the integration.	Create Integrations in <i>Using Integrations in Oracle Integration</i> and Add the Oracle Cloud Infrastructure Streaming Service Adapter Connection to an Integration
4	Map data between the trigger connection data structure and the invoke connection data structure.	Map Data in <i>Using Integrations in Oracle Integration</i>
5	(Optional) Create lookups that map the different values used by those applications to identify the same type of object (such as gender codes or country codes).	Manage Lookups in <i>Using Integrations in Oracle Integration</i>
6	Activate the integration.	Activate Integrations in <i>Using Integrations in Oracle Integration</i>
7	Monitor the integration on the dashboard.	Monitor Integrations in <i>Using Integrations in Oracle Integration</i>
8	Track payload fields in messages during runtime.	Assign Business Identifiers for Tracking Fields in Messages and Manage Business Identifiers for Tracking Fields in Messages in <i>Using Integrations in Oracle Integration</i>
9	Manage errors at the integration level, connection level, or specific integration instance level.	Manage Errors in <i>Using Integrations in Oracle Integration</i>

2

Create an Oracle Cloud Infrastructure Streaming Service Adapter Connection

A connection is based on an adapter. You define connections to the specific cloud applications that you want to integrate. The following topics describe how to define connections.

Topics:

- [Prerequisites for Creating a Connection](#)
- [Create a Connection](#)

Prerequisites for Creating a Connection

You must satisfy the following prerequisites to create a connection with the Oracle Cloud Infrastructure Streaming Service Adapter.

This information is required when configuring the Oracle Cloud Infrastructure Streaming Service Adapter on the Connections page.

- [Assign the Correct Permissions](#)
- [Know the Bootstrap Server Host](#)
- [Know the SASL Username and Password](#)
- [Know the Trust Store](#)

Assign the Correct Permissions

Assign the correct permissions to the Oracle Cloud Infrastructure Streaming Service group in the Oracle Cloud Interface Console. This group must contain the SASL user that you enter when creating a connection on the Connections page.

```
Allow group StreamUsers to manage streams in tenancy
```

```
Allow group StreamUsers to manage stream-pull in tenancy
```

```
Allow group StreamUsers to manage stream-push in tenancy
```

Policy details about letting users publish messages to and a specific stream and consume messages from streams are described in the Oracle Cloud Infrastructure documentation. See [Common Policies](#) and [Details for the Streaming Service](#).

Know the Bootstrap Server Host Name and Port

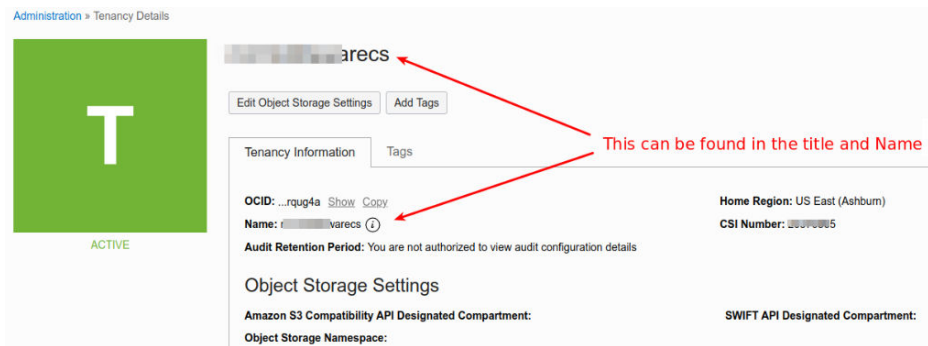
Know the host and port of the bootstrap server to use to connect to a list of Oracle Cloud Infrastructure Streaming Services.

Know the SASL Username and Password

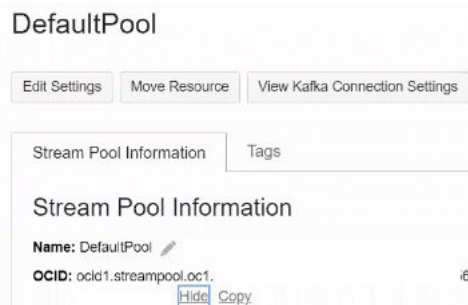
Know the SASL username and password for the Simple Authentication and Security Layer (SASL) over SSL security policy. The username is a combination of the tenancy name, stream user name, and stream pool OCID separated by forward slashes (/). For example:

```
xxxtenant/abcuser/yyystreampoolocid
```

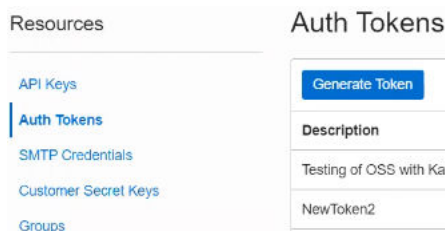
1. Obtain the tenancy name in the Oracle Cloud Infrastructure Console.
 - a. Select your username and then **Tenancy**. The name is displayed in the title and the **Name** field.



2. Know the stream user name. This is a user with authorization to publish or consume messages from the stream.
3. Obtain the stream pool OCID by navigating to the streaming instance you are using in the left navigation pane of the Oracle Cloud Infrastructure Console.
 - a. Select **Analytics > Streaming > Stream Pools > Default Pool** (or the specific pool name you are using).
 - b. Copy the **OCID** value.



4. Generate the SASL password to access the Oracle Cloud Infrastructure Streaming Service. This is an authorization token generated for the streams user. The password can be generated from the streaming instance.
 - a. Select **Identity Users > User Details > Auth Tokens**.
 - b. Click **Generate Token**.

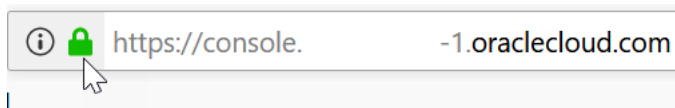


- c. Use this token as the password.

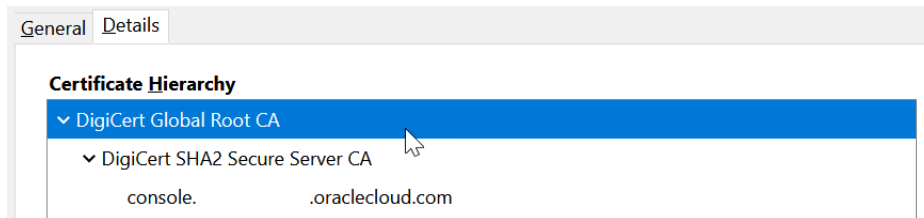
Know the Trust Store

Know the trust store. You generate the trust store from the certificate given for the Oracle Cloud Infrastructure Streaming Service. The steps for obtaining the certificate vary from browser to browser. You can also create the certificate from the command prompt. The following examples are provided:

- From Mozilla Firefox:
 1. Click the security icon in the Oracle Cloud Infrastructure Console:



2. Select **Connection > More Information**.
3. Click **View Certificate**.
4. Click the **Details** tab.
5. Select the top level root certificate and click **Export**.



6. Export the root certificate and use it to generate the trust store using the `keytool` utility found in the `/oracle/jdk/bin` directory of your host. You must have Oracle Java installed on your host. You *cannot* use OpenJDK.

For example, you can generate the trust store with the following command:

```
keytool -keystore oss_server_truststore2.jks -alias CARoot1 -  
import -file D:\temp\DigiCertGlobalRootCA1.crt
```

Where:

- *filename.jks* is any name you want to use.
- *CARoot1* is anything you want to use.
- *filename.crt* is the file you exported earlier from the security link in your browser.

This creates the *jks* file that you upload on the Connections page.

- From the command prompt:
 - Enter the following command:

```
echo -n | openssl s_client -connect HOST:PORT | sed -ne '/-  
BEGIN CERTIFICATE-/,/-END CERTIFICATE-/p' > cert_file_name  
keytool -keystore jks_file_name -alias alias_name -import -file  
cert_file_name
```

For example:

```
echo -n | openssl s_client -connect  
streaming.region-1.oci.oraclecloud.com:9092 | sed -ne '/-BEGIN  
CERTIFICATE-/,/-END CERTIFICATE-/p' > ociStreaming.cert  
keytool -keystore Streaming_truststore.jks -alias OSSStream -  
import -file ociStreaming.cert
```

Where *region* is your instance's region.

This creates the *jks* file that you upload on the Connections page.

Create a Connection

Before you can build an integration, you have to create the connections to the applications with which you want to share data.

To create a connection in Oracle Integration:

1. In the left navigation pane, click **Home > Integrations > Connections**.
2. Click **Create**.

 **Note:**

You can also create a connection in the integration canvas of:

- An orchestrated integration (See Define Inbound Triggers and Outbound Invokes.)
- A basic routing integration (See Add a Trigger (Source) Connection.)

3. In the Create Connection — Select Adapter dialog, select the adapter to use for this connection. To find the adapter, scroll through the list, or enter a partial or full name in the **Search** field and click

**Search.**

4. In the Create Connection dialog, enter the information that describes this connection.
 - a. Enter a meaningful name to help others find your connection when they begin to create their own integrations. The name you enter is automatically added in capital letters to the **Identifier** field. If you modify the identifier name, don't include blank spaces (for example, SALES OPPORTUNITY).
 - b. Enter optional keywords (tags). You can search on the connection keywords on the Connections page.
 - c. Select the role (direction) in which to use this connection (trigger, invoke, or both). Only the roles supported by the adapter are displayed for selection. When you select a role, only the connection properties and security policies appropriate to that role are displayed on the Connections page. If you select an adapter that supports both invoke and trigger, but select only one of those roles, you'll get an error when you try to drag the adapter into the section you didn't select. For example, let's say you configure a connection for the Oracle Service Cloud (RightNow) Adapter as only an **invoke**. Dragging the adapter to a **trigger** section in the integration produces an error.
 - d. Enter an optional description of the connection.
5. Click **Create**.

Your connection is created. You're now ready to configure the connection details, such as connection properties, security policies, connection login credentials, and (for certain connections) agent group.

Configure Connection Properties

Enter connection information so your application can process requests.

1. Go to the **Connection Properties** section.
2. In the **Bootstrap Servers** field, specify the host and port to use to connect to the Oracle Cloud Infrastructure Streaming Service. For example:

```
streaming.region_location.oci.oraclecloud.com:port
```

Where the *region_location* is found in the URL when you log in to the Oracle Cloud Infrastructure Console and *port* is 9092.

 **Note:**

Do *not* include `https://` in the **Bootstrap Servers** field.

Configure Connection Security

Configure security for your Oracle Cloud Infrastructure Streaming Service Adapter connection.

1. Go to the **Security** section.
2. Enter the following credentials:

Element	Description
SASL Username	Enter the user name to access the Oracle Cloud Infrastructure Streaming Service. This is a combination of the tenancy name, stream user name, and stream pool OCID separated by forward slashes (/). For example: xxxtenant/abcuser/ yyystreampoolocid See Prerequisites for Creating a Connection .
SASL Password	Enter the password. See Prerequisites for Creating a Connection .
TrustStore	Enter the trust store you generated. See Prerequisites for Creating a Connection .

Configure an Agent Group

Configure an agent group for accessing the service hosted on your premises behind the fire wall.

1. Click **Configure Agents**.
The Select an Agent Group page appears.
2. Click the name of the agent group.
3. Click **Use**.

To configure an agent group, you must download and install the on-premises connectivity agent. See [Download and Run the Connectivity Agent Installer and About Connectivity Agents and Integrations Between On-Premises Applications and Oracle Integration in *Using Integrations in Oracle Integration*](#).

Test the Connection

Test your connection to ensure that it's configured successfully.

1. In the page title bar, click **Test**. What happens next depends on whether your connection uses a Web Services Description Language (WSDL) file.

If Your Connection...	Then...
Doesn't use a WSDL	The test starts automatically and validates the inputs you provided for the connection.
Uses a WSDL	A dialog prompts you to select the type of connection testing to perform: <ul style="list-style-type: none">• Validate and Test: Performs a full validation of the WSDL, including processing of the imported schemas and WSDLs. Complete validation can take several minutes depending on the number of imported schemas and WSDLs. No requests are sent to the operations exposed in the WSDL.• Test: Connects to the WSDL URL and performs a syntax check on the WSDL. No requests are sent to the operations exposed in the WSDL.

2. Wait for a message about the results of the connection test.
 - If the test was successful, then the connection is configured properly.
 - If the test failed, then edit the configuration details you entered. Check for typos, verify URLs and credentials, and download the diagnostic logs for additional details. Continue to test until the connection is successful.
3. When complete, click **Save**, then click



.

3

Add the Oracle Cloud Infrastructure Streaming Service Adapter Connection to an Integration

When you drag the Oracle Cloud Infrastructure Streaming Service Adapter into the trigger or invoke area of an integration, the Adapter Endpoint Configuration Wizard is invoked. This wizard guides you through configuration of the Oracle Cloud Infrastructure Streaming Service Adapter endpoint properties.

The following sections describe the wizard pages that guide you through configuration of the Oracle Cloud Infrastructure Streaming Service Adapter as a trigger or an invoke in an integration.

Topics:

- [Basic Info Page](#)
- [Operations Page](#)
- [Stream & Partition Page](#)
- [Message Structure Page](#)
- [Headers Page](#)
- [Summary Page](#)

Basic Info Page

You can enter a name and description on the Basic Info page of each adapter in your integration.

Element	Description
What do you want to call your endpoint?	Provide a meaningful name so that others can understand the responsibilities of this connection. You can include English alphabetic characters, numbers, underscores, and hyphens in the name. You can't include the following characters: <ul style="list-style-type: none">• No blank spaces (for example, My Inbound Connection)• No special characters (for example, #;83& or righ(t)now4) except underscores and hyphens• No multibyte characters
What does this endpoint do?	Enter an optional description of the connection's responsibilities. For example: <code>This connection receives an inbound request to synchronize account information with the cloud application.</code>

Operations Page

Select the operation to perform.

Element	Description
What operation do you want to perform on the OCI Stream	<ul style="list-style-type: none"> • Publish messages to Stream • Consume messages from Stream • Consume messages from Stream by specifying offset

Stream & Partition Page

Select the stream and partition on which to perform the stream operation and optionally specify the message and header structure.

- [Configure the Oracle Cloud Infrastructure Streaming Service Adapter as a Trigger \(Inbound\)](#)
- [Configure the Oracle Cloud Infrastructure Streaming Service Adapter as an Invoke \(Outbound\)](#)

Configure the Oracle Cloud Infrastructure Streaming Service Adapter as a Trigger (Inbound)

Element	Description
Select a Stream	Select the stream in which to perform the operation. You can also enter the beginning letters of the topic to filter the display of streams. A stream is a category in which applications can add, process, and reprocess messages. You subscribe to messages in streams.
Specify the Partition	Specify the partition to which to push the selected stream. Oracle Cloud Infrastructure Streaming Service streams are divided into partitions that enable you to split data across multiple brokers. If you do not select a specific partition and use the Default selection, Oracle Cloud Infrastructure Streaming Service considers all available partitions and decides which one to use.
Consumer Group	Specify the consumer group to attach. Consumers join a group by using the same group ID. The Oracle Cloud Infrastructure Streaming Service assigns the partitions of a stream to the consumers in a group. You can use a consumer group as a load balancer by specifying a single consumer group to prevent message duplication. You can also specify multiple consumer groups separated by commas to ensure that all groups receive the same messages.
Polling Frequency (sec)	Specify the frequency to poll for records in seconds.
Maximum Number of Records to be fetched	Specify the maximum number of records to fetch.
Do you want to specify the message structure?	Select Yes if you want to define the message structure to use on the Message Structure page of the wizard. Otherwise, select No .

Element	Description
Do you want to specify the headers for the message?	Select Yes if you want to define the message headers to use on the Headers page of the wizard. Otherwise, select No .

Configure the Oracle Cloud Infrastructure Streaming Service Adapter as an Invoke (Outbound)

Element	Description
Select a Stream	Select the stream in which to perform the operation. You can also enter the beginning letters of the topic to filter the display of streams. A stream is a category in which applications can add, process, and reprocess messages. You subscribe to messages in streams.
Specify the Partition	Specify the partition to which to push the selected stream. Oracle Cloud Infrastructure Streaming Service streams are divided into partitions that enable you to split data across multiple brokers. If you do not select a specific partition and use the Default selection, Oracle Cloud Infrastructure Streaming Service considers all available partitions and decides which one to use. Note: This field is not displayed if you selected Consume messages from Stream by specifying offset on the Operations page.
Consumer Group (This field is only displayed if you select Consume messages from Stream .)	Specify the consumer group to attach. Consumers join a group by using the same group ID. The Oracle Cloud Infrastructure Streaming Service assigns the partitions of a stream to the consumers in a group. You can use a consumer group as a load balancer by specifying a single consumer group to prevent message duplication. You can also specify multiple consumer groups separated by commas to ensure that all groups receive the same messages.
Specify the option for consuming messages (This field is only displayed if you select Consume messages from Stream .)	<ul style="list-style-type: none"> • Read latest: Reads the latest messages starting at the time at which the integration was activated. • Read from beginning: Select to read messages from the beginning. As an example, if you select to read from the beginning and have activated the integration, the first scheduled run picks up 20 records and the next scheduled run picks up the next 20 records. If the integration is then deactivated, edited, and reactivated, the next 20 records are picked up.
Do you want to specify the message structure?	Select Yes if you want to define the message structure to use on the Message Structure page of the wizard. Otherwise, select No .
Do you want to specify the headers for the message?	Select Yes if you want to define the message headers to use on the Headers page of the wizard. Otherwise, select No .

Message Structure Page

Select the message structure to use. This page is displayed if you selected **Yes** for the **Do you want to specify the message structure?** field on the Stream & Partition page.

Element	Description
How would you like to specify the message structure?	<ul style="list-style-type: none">• XML Schema (XSD) document• Sample XML document• Sample JSON document• No schema
Select File	Click Browse to select the file. Once selected, the file name is displayed in the File Name field.
Element	Select the element if you specified an XSD file.

Headers Page

Define the message headers structure to attach to the message. This page is displayed if you selected **Yes** for the **Do you want to specify the headers for the message?** field on the Stream & Partition page.

Element	Description
Specify Message Headers	Specify headers and optional descriptions.

Summary Page

You can review the specified adapter configuration values on the Summary page.

Element	Description
Summary	<p>Displays a summary of the configuration values you defined on previous pages of the wizard.</p> <p>The information that is displayed can vary by adapter. For some adapters, the selected business objects and operation name are displayed. For adapters for which a generated XSD file is provided, click the XSD link to view a read-only version of the file.</p> <p>To return to a previous page to update any values, click the appropriate tab in the left panel or click Back.</p> <p>To cancel your configuration details, click Cancel.</p>

4

Troubleshoot the Oracle Cloud Infrastructure Streaming Service Adapter

Review the following topics to learn about troubleshooting issues with the Oracle Cloud Infrastructure Streaming Service Adapter.

Topics:

- [Troubleshoot Oracle Cloud Infrastructure Streaming Service Adapter Errors](#)

Additional integration troubleshooting information is provided. See *Troubleshoot Oracle Integration of Using Integrations in Oracle Integration*.

Troubleshoot Oracle Cloud Infrastructure Streaming Service Adapter Errors

Note the following errors and troubleshooting actions when using the Oracle Cloud Infrastructure Streaming Service Adapter.

Number	Error	Error Occurrence Scenario	Verification Steps
1	Testing the connection fails with the following exception: <code>java.util.concurrent.TimeoutException</code>	Wrong port of bootstrap server.	Verify that the bootstrap server port provided on the Connections page is correct.
2	Testing the connection fails with the following exception: OSS-004 : Unable to test connection. Verify Bootstrap Server and Trust store details.	Wrong host name of bootstrap server.	Verify that the hostname of the bootstrap server provided on the Connections page is correct.

Number	Error	Error Occurrence Scenario	Verification Steps
3	<p>Testing the connection fails with the following exception:</p> <p>OSS-003 : Unable to test connection. Verify Username and Password.</p>	<ol style="list-style-type: none"> 1. Wrong tenant ID. 2. Wrong user name. 3. Wrong stream pool ID. 4. Wrong password (authentication token). 	<p>Verify that the inputs entered on the Connections page are correct.</p>
4	<p>Testing the connection fails with the following exception:</p> <p>OSS-004 : Unable to test connection. Verify Bootstrap Server and Trust store details.</p>	<p>Trust store was not provided (left blank).</p>	<p>The trust store on the Connections page cannot be blank.</p>
5	<p>Testing the connection fails with the following exception:</p> <p>OSS-005 : Unable to test connection. Provide valid Trust store.</p>	<p>Invalid trust store provided. The trust store file does not match the one that contains the public key to connect to the server on the Connections page.</p>	<p>Verify that the trust store provided on the Connections page is correct.</p>

Number	Error	Error Occurrence Scenario	Verification Steps
6	<p>In the Adapter Endpoint Configuration Wizard, the following exception is displayed:</p> <p>OSS-006: Unable to find valid Partition or Stream. Verify the OCI Streaming Service that you are trying to connect has got valid partition and stream available while configuring the adapter.</p>	<p>Provided a file that is not a trust store (for example, you provided a certificate or any text file) or provided an incorrect partition (nonexistent).</p>	<p>Verify that you are providing the trust store details or the partition. You must pick up the available stream and partition and have no option to enter any value. However, if the stream and partition that were available at the time of design no later exist, you receive an exception about the nonexisting stream or partition.</p>
7	<p>In the tracking instance, the following exception appears:</p> <pre>{http:// schemas.oracle.c om/bpel/ extension}runtime Fault: Error sending bytes: oracle.cloud.con nector.api.Remot eApplicationExce ption: java.util.concur rent. ExecutionExcepti on: org.apache.kafka .common.errors.T imeoutException: Topic OSS_DEMO31 not present in metadata after 60000 ms.</pre>	<p>Stream or partition may have been deleted or is inactive.</p>	<p>Verify that the stream or partition exists and is active. You may have designed a valid stream or partition, but it may have been deleted later. Therefore, when messages are sent to this integration that was designed with the now nonexistent stream or partition, a runtime exception error is displayed.</p>