# Oracle® Cloud

# Using the OpenSearch Adapter with Oracle Integration 3

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# Contents

# About This Content

This guide describes how to configure this adapter as a connection in an integration in Oracle Integration.

### Audience

This guide is intended for developers who want to use this adapter in integrations in Oracle Integration.

### Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

### Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

### Related Resources

See these Oracle resources:

- Oracle Cloud at `http://cloud.oracle.com`
- *Using Integrations in Oracle Integration 3*
- *Using the Oracle Mapper with Oracle Integration 3*
- Oracle Integration documentation on the Oracle Help Center.

### 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. |
| *italic* | 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. |

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# Understand the OpenSearch Adapter

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

**Topics:**



## OpenSearch Adapter Capabilities

The OpenSearch Adapter enables you to execute queries against an OpenSearch cluster from Oracle Integration. For instance, the OpenSearch Adapter can be used to execute queries against an OCI Search with OpenSearch cluster hosted by Oracle. OCI Search with OpenSearch is a managed service for building in-application search solutions based on OpenSearch that enables you to search large data sets and return results quickly.

OCI Search with OpenSearch handles all the management and operations of search clusters, including operations such as security updates, upgrades, resizing, and scheduled backups. This capability allows you to focus your resources on building features for your OpenSearch solutions. See OpenSearch Clusters.

The OpenSearch Adapter provides the following capabilities:

- Enables you to create and execute queries against OCI Search with OpenSearch.
- Enables you to execute queries with or without the use of agentic AI.

See OIC Search with OpenSearch and Search with OpenSearch.

You can configure the OpenSearch Adapter as an invoke connection in an integration in Oracle Integration. The OpenSearch Adapter is one of many predefined adapters included with Oracle Integration. See the Adapters page in the Oracle Help Center.

## What Application Version Is Supported?

For information about which application version is supported by this adapter, see the Connectivity Certification Matrix.

## Workflow to Create and Add an OpenSearch 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 adapter tasks and overall integration tasks, and provides links to instructions for each step.

| Step | Description | More Information |
|---|---|---|
| 1 | Decide where to work | • Work in a project (see why working with projects is preferred in *Using Integrations in Oracle Integration 3*).<br>• Work outside a project. |
| 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 OpenSearch Adapter Connection |
| 3 | Create the integration. When you do this, you add trigger (source) and invoke (target) connections to the integration. | Understand Integration Creation and Best Practices in *Using Integrations in Oracle Integration 3* and Add the OpenSearch Adapter Connection to an Integration |
| 4 | Map data between the trigger connection data structure and the invoke connection data structure. | Map Data in *Using Integrations in Oracle Integration 3* |
| 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 *Using Integrations in Oracle Integration 3* |
| 6 | Activate the integration. | Activate an Integration in *Using Integrations in Oracle Integration 3* |
| 7 | Monitor the integration on the dashboard. | Monitor Integrations During Runtime in *Using Integrations in Oracle Integration 3* |
| 8 | Track payload fields in messages during runtime. | Assign Business Identifiers for Tracking Fields in Messages and Track Integration Instances in *Using Integrations in Oracle Integration 3* |
| 9 | Manage errors at the integration level, connection level, or specific integration instance level. | Manage Errors in *Using Integrations in Oracle Integration 3* |

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# Create an OpenSearch Adapter Connection

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

**Topics:**

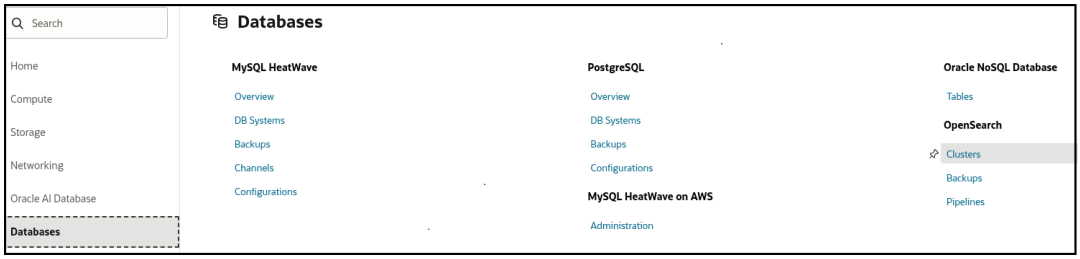


## Prerequisites for Creating a Connection

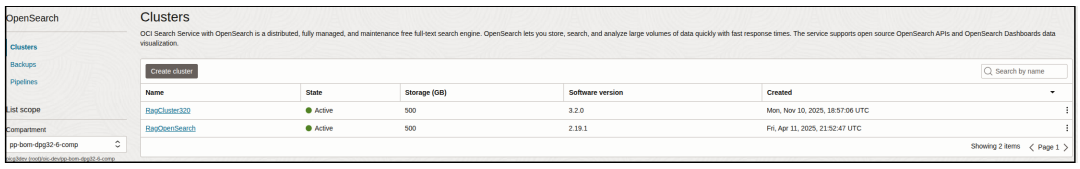
You must satisfy the following prerequisites to create a connection with the OpenSearch Adapter:

**Create an OCI Search with OpenSearch Cluster in the Oracle Cloud Console**

1. Sign in to the Oracle Cloud Console.
2. Under **Databases**, select **Clusters**.

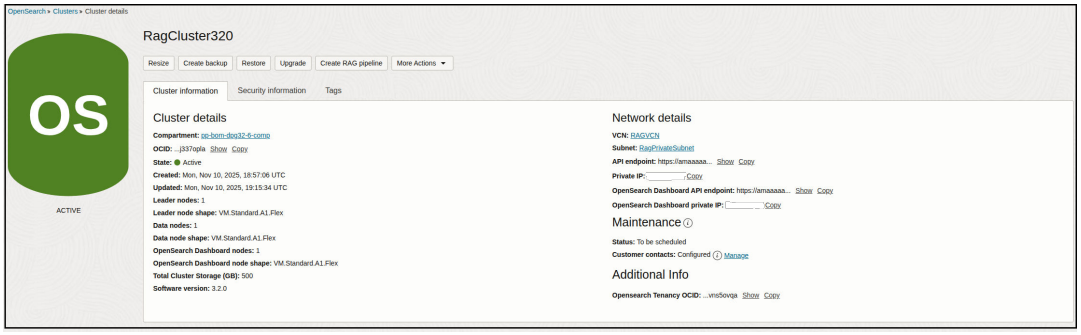



3. Click **Create Cluster**. See Creating an OpenSearch Cluster.
   You configure the OCI Search with OpenSearch cluster to be associated with a VCN and subnet of your choice. You also create admin user/password credentials. In the database world, this configuration is equivalent to creating an Oracle26*ai* instance and setting up the wallet.



> **Note**
>
> Create the OCI Search with OpenSearch cluster in a private or public subnet. Common configurations are:
>
> - Create your OpenSearch cluster in your selected VCN's private subnet and use a private endpoint to access OpenSearch in Oracle Integration. This configuration ensures that your access remains private inside the Oracle network. See Configure a Private Endpoint for Your Instance in *Provisioning and Administering Oracle Integration 3*.
> - Create your OpenSearch cluster in your selected VCN's private or public subnet and use a VM with nginx in your VCN's public subnet to forward the requests to your OpenSearch cluster. The connection URL you use in the OpenSearch Adapter must point to the virtual machine (VM) running nginx. See Access OCI OpenSearch Dashboards and REST APIs outside a VCN and nginx.

When configuration is complete, the OCI Search with OpenSearch cluster instance details are provided. For this example, the cluster is created in a private subnet, meaning your OCI Search with OpenSearch activity can remain private.




When you create an OpenSearch Adapter invoke connection on the Connections page, you specify the URL associated with the cluster and the Basic Authentication admin user/password configured while creating the cluster. See Configure Connection Properties.

# Create a Connection

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

> **Note**
>
> You can also create a connection in the integration canvas. See Define Inbound Triggers, Outbound Invokes, and Actions.

To create a connection in Oracle Integration:

1. Decide where to start:
   - Work in a project (see why working with projects is preferred).

a. In the navigation pane, click **Projects**.

b. Select the project name.

c. Click **Integrations**.

d. In the **Connections** section, click **Add** if no connections currently exist or **+** if connections already exist. The Create connection panel opens.

- Work outside a project.

  a. In the navigation pane, click **Design**, then **Connections**.

  b. Click **Create**. The Create connection panel opens.

2. 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.
3. Enter the information that describes this connection.

| Element | Description |
|---|---|
| **Name** | Enter a meaningful name to help others find your connection when they begin to create their own integrations. |
| **Identifier** | Automatically displays the name in capital letters that you entered in the **Name** field. If you modify the identifier name, don't include blank spaces (for example, `SALES OPPORTUNITY`). |
| **Role** | Select the role (direction) in which to use this connection.<br>**Note**: *Only* the roles supported by the adapter you selected are displayed for selection. Some adapters support all role combinations (trigger, invoke, or trigger and invoke). Other adapters support fewer role combinations.<br>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.<br>For example, assume 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. |
| **Keywords** | Enter optional keywords (tags). You can search on the connection keywords on the Connections page. |
| **Description** | Enter an optional description of the connection. |

| Element | Description |
|---|---|
| **Share with other projects** | **Note**: This field only appears if you are creating a connection in a project.<br>Select to make this connection publicly available in other projects. Connection sharing eliminates the need to create and maintain separate connections in different projects.<br>When you configure an adapter connection in a different project, the **Use a shared connection** field is displayed at the top of the Connections page. If the connection you are configuring matches the same type and role as the publicly available connection, you can select that connection to reference (inherit) its resources.<br>See Add and Share a Connection Across a Project. |

4. Click **Create**.

   Your connection is created. You're now ready to configure the connection properties, security policies, and (for some connections) access type.

5. Follow the steps to configure a connection.
   The connection property and connection security values are specific to each adapter. Your connection may also require configuration with an access type such as a private endpoint or an agent group.

6. Test the connection.

# Configure Connection Properties

Enter connection information so your application can process requests.

1. Go to the **Properties** section.
2. In the **Base URL** field, enter the URL defined when you created an OCI Search with OpenSearch cluster. You have two options:
   - If using a private endpoint you configured in Oracle Cloud Infrastructure to keep your OCI Search with OpenSearch activities private, specify the URL as follows:

     `https://IP_address_in_private_subnet.private_endpoint:port`

     For example:

     `https://host-123-0-1-11.myprivatesubnet.myvcn.oraclevcn.com:9200`

     The keyword `host` is followed by the OpenSearch cluster private IP address (`-123-0-1-11`). Note the use of the dash (`-`).
   - If accessing through a VCN public subnet VM running nginx (that is, you want to make OCI Search with OpenSearch activities public), specify the URL as follows:

     `https://IP_address_vm_in_public_subnet:port`

For example:

```
https://101.154.279.79:9200
```

You must upload the certificate setup in nginx to Oracle Integration for this base URL to work.

See Prerequisites for Creating a Connection.

# Configure Connection Security

Configure security for your OpenSearch Adapter connection.

1. Go to the **Security** section.

   Only Basic Authentication security is supported.

2. Enter the user name and password credentials you configured when creating the OCI Search with OpenSearch cluster. See Prerequisites for Creating a Connection.

   Once the connection is configured and successfully tested, you can perform any operations on OCI Search with OpenSearch. In the database world, this is equivalent to a database adapter connection that enables you to execute SQL statements against a target Oracle 26*ai* instance.

# Configure the Endpoint Access Type

Configure access to your endpoint. Depending on the capabilities of the adapter you are configuring, options may appear to configure access to the public internet, to a private endpoint, or to an on-premises service hosted behind a fire wall.

- Select the Endpoint Access Type
- Ensure Private Endpoint Configuration is Successful

### Select the Endpoint Access Type

1. Go to the **Access type** section.
2. Select the option for accessing your endpoint.

| Option | This Option Appears If Your Adapter Supports ... |
|---|---|
| **Public gateway** | Connections to endpoints using the public internet. |
| **Private endpoint** | Connections to endpoints using a private virtual cloud network (VCN).<br>**Note**: To connect to private endpoints, you must complete prerequisite tasks in the Oracle Cloud Console. Failure to do so results in errors when testing the connection. See Connect to Private Resources in *Provisioning and Administering Oracle Integration 3* and Troubleshoot Private Endpoints in *Using Integrations in Oracle Integration 3*. |

### Ensure Private Endpoint Configuration is Successful

- To connect to private endpoints, you must complete prerequisite tasks in the Oracle Cloud Console. Failure to do so results in errors when testing the connection. See Connect to Private Resources in *Provisioning and Administering Oracle Integration 3*.
- When configuring an adapter on the Connections page to connect to endpoints using a private network, specify the fully-qualified domain name (FQDN) and *not* the IP address. If you enter an IP address, validation fails when you click **Test**.

## 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 adapter connection uses a Web Services Description Language (WSDL) file. Only some adapter connections use WSDLs.

| 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:<br>• **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.<br>• **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 and verify URLs and credentials. Continue to test until the connection is successful.
3. When complete, click **Save**.

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# Add the OpenSearch Adapter Connection to an Integration

When you drag the OpenSearch Adapter into the invoke area of an integration, the Adapter Endpoint Configuration Wizard is invoked. This wizard guides you through configuration of the OpenSearch Adapter endpoint properties.

The following sections describe the wizard pages that guide you through configuration of the OpenSearch Adapter as an invoke in an integration.

**Topics:**



## Basic Info Page

| Element | Description |
|---|---|
| **Name** | 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:<br>• No blank spaces (for example, `My Inbound Connection`)<br>• No special characters (for example, `#;83&` or `righ(t)now4`) except underscores and hyphens<br>• No multibyte characters |
| **What does this endpoint do?** | Enter an optional description of the connection's responsibilities. For example:<br>`This connection executes queries against OpenSearch.` |
| **Action** | **Open Search Action** is automatically selected for your use and cannot be deselected. |

# Summary Page

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

| Element | Description |
|---|---|
| **Summary** | Displays a summary of the configuration values you defined on previous pages of the wizard.<br>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.<br>To return to a previous page to update any values, click the appropriate tab in the left panel or click **Go back**.<br>To cancel your configuration details, click **Cancel**. |

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# Implement Common Patterns Using the OpenSearch Adapter

You can use the OpenSearch Adapter to implement the following common pattern.

**Topics:**



## Ingest Data into OCI Search with OpenSearch

This use case demonstrates how to use the OpenSearch Adapter to ingest JSON payload data into OCI Search with OpenSearch.

The use case described in this section (with the configured payload/relative URL/HTTP POST method) is equivalent to executing the following curl command against OCI Search with OpenSearch.

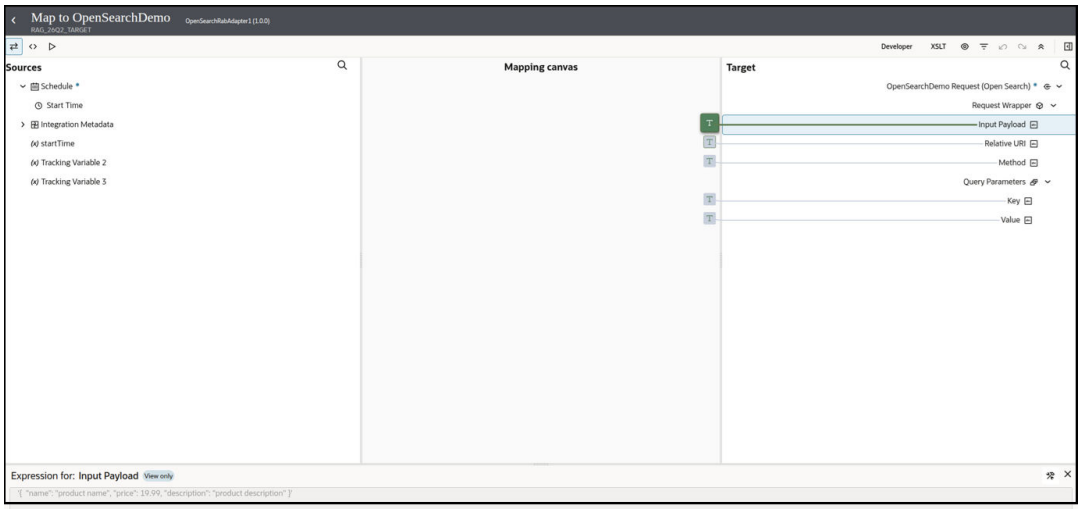
```
curl "Username:Password" -X POST "https://localhost:9200/test_index/_doc?
pretty=true" -H "Content-Type: application/json" -d '
{
  "name": "product name",
  "price": 19.99,
   "description": "product description"
}'
```

The curl command ingests a new document whose payload is passed as a parameter in the `test_index` index and returns the new document `id` if successful.

1. Configure an OpenSearch Adapter invoke connection. See Create an OpenSearch Adapter Connection.
2. Create a schedule integration.
3. Drag the OpenSearch Adapter invoke connection into the integration canvas and configure it as follows.
   a. On the Basic Info page, select **Open Search Action**.
   b. On the Summary page, view your selection.
4. Open the mapper.
5. Right-click the following target elements, and select **Create target node**.
6. Define the following values in the Expression Builder.

| Target Element | Expression Builder Value |
|---|---|
| **Input Payload** | The following payload is ingested into OCI Search with OpenSearch as escaped JSON string content:<br><br>`'{ "name": "product name", "price": 19.99,`<br>`"description": "product description" }'`<br><br>The payload can include any contents you want. However, you must ensure that the content to pass is correctly defined. Otherwise, an error occurs. |
| **Relative URI** | The URI to call relative to the base URL you specified on the Connections page.<br>For this use case, this setting ingests a new document named `doc` into the `test` index:<br><br>`"/test_index/_doc"` |
| **Method** | The HTTP method to call:<br><br>`"POST"` |
| **Query Parameters** | Optional HTTP query parameters. For example:<br>• **Key** = `"pretty"`<br>• **Value** = `"true"` |

The completed mapper looks as follows:




The end result of this mapping is as follows:

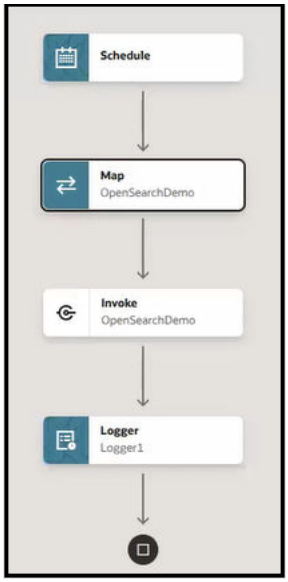
- A new document containing the above JSON payload is ingested into the `test_index` index.

- The corresponding document ID is returned with the `_id` attribute as part of the response from OCI Search with OpenSearch.

7. Define a log action to capture the response payload returned by the invoke connection in the activity stream.


8. Specify a business identifier and activate the integration.

   The completed integration looks as follows:

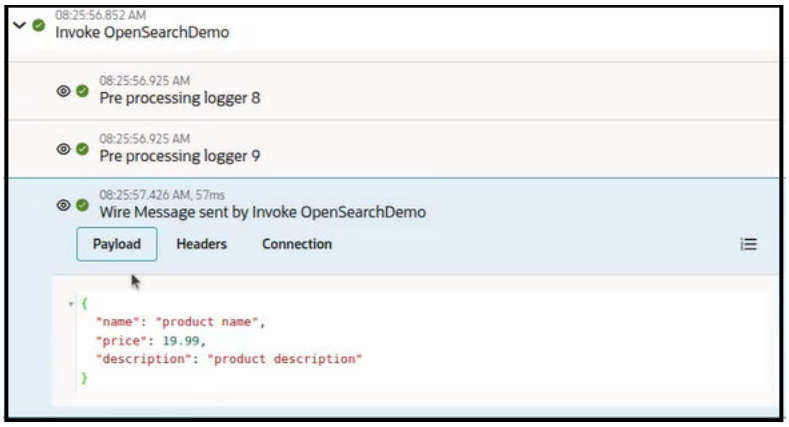



9. From the **Actions** ... menu, select **Run**.

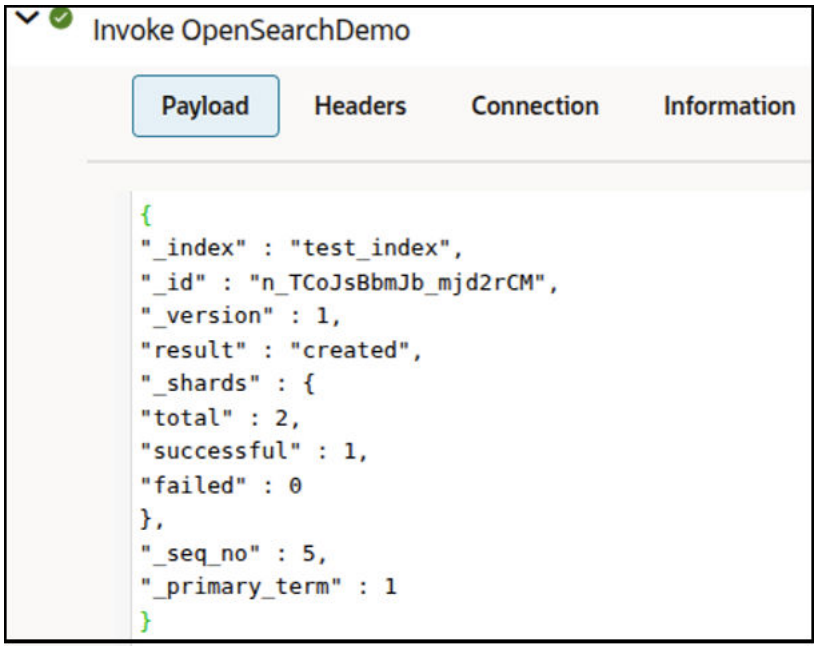
   The Configure and run page appears.

10. In the **Request type** section, select **Ad hoc request**, then click **Run**.
11. Once complete, expand the invoke connection in the activity stream.
12. View the message sent to the OpenSearch Adapter invoke connection to begin this integration.


13. View the wire message payload sent to OCI Search with OpenSearch.




14. View the wire message payload received back from OCI Search with OpenSearch.



15. Expand the logger to view more details about the response. An `_id` value is provided for the new data indexed in OCI Search with OpenSearch.