

# Oracle® Cloud

## Connecting Oracle Analytics Cloud to Your Data



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# Preface

Learn how to connect to your data.

## Topics:

- [Audience](#)
- [Related Documents](#)
- [Conventions](#)

## Audience

This guide is intended for business intelligence analysts and administrators who use Oracle Analytics Cloud.

## Related Documents

These related Oracle resources provide more information.

- [Getting Started with Oracle Analytics Cloud](#)

## Conventions

Conventions used in this document are described in this topic.

### Text Conventions

Convention	Meaning
<b>boldface</b>	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.

### Videos and Images

Your company can use skins and styles to customize the look of the Oracle Analytics Cloud, dashboards, reports, and other objects. It is possible that the videos and images included in the product documentation look different than the skins and styles your company uses.

Even if your skins and styles are different than those shown in the videos and images, the product behavior and techniques shown and demonstrated are the same.

# Part I

## Getting Started with Connecting Oracle Analytics Cloud to Your Data

This part explains how you get started with connecting Oracle Analytics Cloud to your data.

### Chapters:

- [Get Started with Data Sources in Oracle Analytics Cloud](#)

# 1

## Get Started with Data Sources in Oracle Analytics

### Topics

- [About Data Sources](#)

### About Data Sources

You can connect to many types of data source, such as Cloud databases, on-premises databases, and many commonly used applications, such as Dropbox, Google Drive, and Amazon Hive.

You create a connection for each data source that you want to access in Oracle Analytics. Once connected, you can visualize your data to create insights.

#### Note

Your use of third-party data sources is governed by the data source vendor's terms and agreements, and you're responsible for complying with these terms and agreements.

A data source is any tabular structure. You see data source values after you load a file or send a query to a service that returns results.

A data source can contain any of the following:

- **Match columns** - These contain values that are found in the match column of another source, which relates this source to the other, for example, Customer ID or Product ID.
- **Attribute columns** - These contain text, dates, or numbers that are required individually and aren't aggregated, for example, Year, Category Country, Type, or Name.
- **Measure columns** - These contain values that should be aggregated, for example, Revenue or Miles driven.

You can analyze a data source on its own, or you can analyze two or more data sources together, depending on what the data source contains. If you use multiple sources together, then at least one match column must exist in each source. The requirements for matching are:

- The sources contain common values, for example, Customer ID or Product ID.
- The match must be of the same data type, for example, number with number, date with date, or text with text.

When you save a workbook, the permissions are synchronized between the workbook and the external sources that it uses. If you share the workbook with other users, then the external sources are also shared with those same users.

Any data that you upload (as a dataset) is stored securely in Oracle Cloud.

## Data Sources and Subject Areas

You can combine data sources with subject areas to explore and analyze the data.

A subject area either extends a dimension by adding attributes or extends facts by adding measures and optional attributes. You can't define hierarchies in data sources.

A subject area organizes attributes into dimensions, often with hierarchies, and a set of measures, often with complex calculations, that can be analyzed against the dimension attributes, for example, the measure net revenue by customer segment for the current quarter, and the same quarter a year ago.

When you use data from a source such as an Excel file, the file adds information that is new to the subject area. For example, suppose you purchased demographic information for postal areas or credit risk information for customers and want to use this data in an analysis before adding the data to the data warehouse or an existing subject area.

Using a source as standalone means that the data from the source is used independently of a subject area. It's either a single file or several files used together, and in both cases doesn't involve a subject area.

You can extend a dimension by adding attributes from a data source to a subject area:

- You can only make matches to a single dimension.
- The set of values in matched columns are unique in the data source. For example, if the data source matches on ZIP code, then ZIP codes in the source are unique.
- You make matches between one or composite columns. An example of a one column match is that product key matches product key. For composite columns, an example is that company matches company and business unit matches business unit.
- All other columns must be attributes.

You can add measures from a data source to a subject area:

- You make matches to one or more dimensions.
- The set of values in matched columns aren't necessarily unique in the data source. For example, if the data source is a set of sales matched to date, customer, and product, then you can have multiple sales of a product to a customer on the same day.
- You make matches between one or composite columns. An example of a one column match is that product key matches product key. For composite columns, an example is that city and state from separate columns creates the composite City\_State in a customers address.

A data source that adds measures can include attributes. You can use these attributes alongside external measures and not alongside curated measures in visualizations. For example, when you add a source with the sales figures for a new business, you can match these new business sales to an existing time dimension and nothing else. The data might include information about the products sold by this new business. You can show the sales for the existing business with those of the new business by time, but you can't show the old business revenue by new business products, nor can you show new business revenue by old business products. You can show new business revenue by time and new business products.

## Data Sources and Measure Columns

You can work with data sources that either include or don't include a measure column.

- You can match tables with measures to other tables with a measure, a dimension, or both.
- When you match tables to other tables with measures, the tables don't need to be at the same grain. For example, you can match a table of daily sales table to a sales by quarter table.

A table with no measures is treated as a dimension.

- Matches can be between single or composite columns. A single column match might be the product key in one table matching the product key in another. A composite column match might be where company and business unit in one table matches company and business unit in the other table.
- All other columns must be attributes.

Dimension tables can be matched to other dimensions or they can be matched to tables with measures. For example, a table with Customer attributes can be matched to a table with demographic attributes provided both dimensions have unique Customer key columns and Demographic key columns.

# Part II

## Connecting Oracle Analytics Cloud to Your Data

This part describes how to set up the connections to your data.

### Chapters:

- [Connect to On-premises Data Sources](#)
- [Connect to Data for Visualizations and Analyses](#)
- [Connect to Data for Pixel-Perfect Reports](#)

# 2

## Connect to On-premises Data Sources

You can connect to remote data sources (such as on-premises data sources) from Oracle Analytics Cloud through a private access channel or Data Gateway.

### Topics:

- [Overview to Connecting to On-premises Data Sources](#)
- [Connect to On-premises Data Sources over a Private Access Channel](#)
- [Connect to On-premises Data Sources Using Data Gateway](#)

## Overview to Connecting to On-premises Data Sources

You can connect to remote on-premises data sources from Oracle Analytics Cloud. This enables you to deploy Oracle Analytics Cloud with large on-premises datasets without migrating the data to the cloud. Users can analyze the data in data visualizations, and in reporting dashboards and analyses.



You can connect to remote on-premises data sources over a *private access channel* or use *Data Gateway*. In most cases, using a private access channel is better than using Data Gateway because it provides direct and secure connectivity without having to install agents in-between. While a private access channel offers you on-going simplicity and better performance, it does require a Virtual Private Network (VPN) or some other direct network connectivity between Oracle Cloud and your data center, which is not a requirement for Data Gateway.

Before you choose your preferred approach, use Oracle Analytics Cloud's supported data source matrix to check whether you can use a *private access channel* or *Remote Data Connectivity* to connect to your on-premises data source. See [List of Supported Data Sources in Oracle Analytics Cloud](#).

To find out how to set up a private access channel or Data Gateway, see:

- [Connect to On-premises Data Sources over a Private Access Channel](#)
- [Connect to On-premises Data Sources Using Data Gateway](#)

## Connect to On-premises Data Sources over a Private Access Channel

A private access channel enables a direct connection between Oracle Analytics Cloud and your private data sources.

Private access channels enable you to connect to private *data source* hosts. You can't use a private access channel to access any other type of private host. For example, you can't use private access channels to access private hosts that represent FTP servers, SMTP servers, printers, MapViewer configuration, or any other type of private host you might use.

You use Oracle Cloud Infrastructure Console to set up a private access channel for Oracle Analytics Cloud and configure access to your on-premises data sources. See [Connect to Private Data Sources Through a Private Access Channel](#) and [Top FAQs for Private Data Sources](#) in *Administering Oracle Analytics Cloud on Oracle Cloud Infrastructure (Gen 2)*.

### Supported Data Sources on Private Access Channels

To find out which data sources you can connect to using a private access channel, look for data sources with the connectivity option *Private access channel* in [List of Supported Data Sources in Oracle Analytics Cloud](#).

## Oracle Autonomous Data Warehouse (ADW)

You can connect Oracle Analytics to Oracle Autonomous Data Warehouse (ADW).

### Supported Versions

19c and later.

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options
Datasets	✓	<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li><input checked="" type="radio"/> Private access channel</li> <li><input type="radio"/> Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>
Semantic Modeler	✓	<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li><input checked="" type="radio"/> Private access channel</li> <li><input type="radio"/> Remote data connectivity</li> </ul> </li> </ul>
Model Administration Tool	✓	<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li><input checked="" type="radio"/> Private access channel</li> <li><input type="radio"/> Remote data connectivity</li> </ul> </li> <li>• System connection</li> </ul>

## Connect to On-premises Data Sources Using Data Gateway

You use Data Gateway to connect to remote on-premises data sources from Oracle Analytics Cloud.

### Installing Data Gateway Agent

You can install Data Gateway on Linux or Windows platforms. See [Install or Upgrade Data Gateway](#).

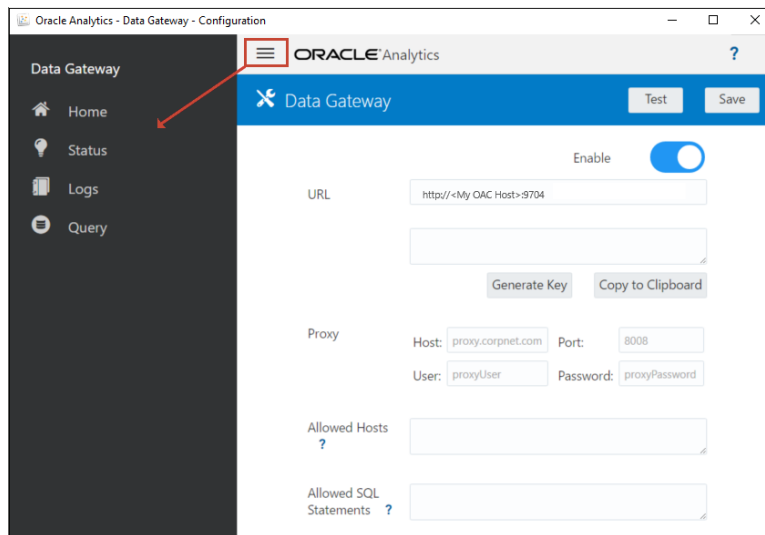
## Sizing Data Gateway

Ask your sales account team for guidance on sizing Data Gateway.

## Get Started with Data Gateway Agent

Data Gateway Agents enable you to use Oracle Analytics Cloud to visualize and model data in remote databases. You deploy Data Gateway in a subnet that gives visibility to both Oracle Analytics Cloud and the remote databases.

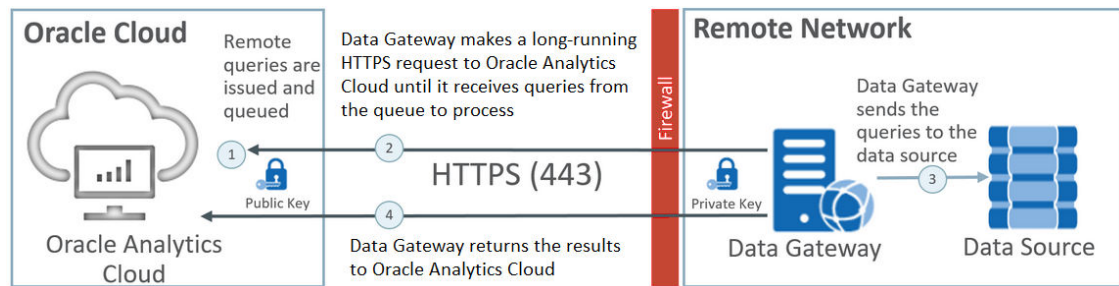
When you start a Data Gateway agent, you see the Data Gateway Home page. Click **Navigator** to access the other Data Gateway agent configuration pages using the Navigator menu.



Navigator Option	Description	Find Out More
Home	Display the Data Gateway Home page, where you can configure the agent, enable or disable the agent, and test the agent's connection.	<a href="#">Configure Data Gateway for Data Visualization</a> <a href="#">Configure and Register Data Gateway for Reporting</a>
Status	Review the status of remote connection database requests between an agent and the remote database.	<a href="#">Diagnosing Connection Issues Using The Status Page</a>
Logs	Display logging information for recent Data Gateway traffic, and enable and disable log polling.	<a href="#">Diagnosing Connection Issues Using The Logs Page</a>
Query	Execute SQL queries to test the connection between the Data Gateway agent and the remote database.	See <a href="#">Diagnosing Connection Issues Using The Query Page</a> .

## Data Gateway Architecture

This diagram shows a typical architecture for a deployment of Data Gateway with Oracle Analytics Cloud. You install Data Gateway on a machine in the network where the data source is hosted and configure the Data Gateway agent for communication with your Oracle Analytics Cloud instance.



### Data Gateway Functionality

Data Gateway agents poll Oracle Analytics Cloud for queries to run against your remote data sources. The results of these queries are returned to Oracle Analytics Cloud. For secure communication, Data Gateway traffic is signed with an encryption key and each packet is additionally encrypted by Transport Layer Security (TLS) and Secure Sockets Layer (SSL). You can use data from remote data sources in data flows. However, you can't save data to datasets using a remote connection.

### Supported Operating Systems for Data Gateway

For a list of supported operating systems, see [Download page for Oracle Analytics Cloud](#).

### Supported Data Sources for Data Gateway

Look for databases with "Remote Data Connectivity" listed under Connectivity Options for Datasets, Semantic Modeler, or Model Administration Tool in [List of Supported Data Sources in Oracle Analytics Cloud](#).

### Deploying Multiple Data Gateway Agents

You can deploy multiple Data Gateway agents so that there's no single point of failure. Deploying multiple Data Gateway agents can also improve performance. When you register an agent using the Data Gateway agent Configuration dialog, note the following:

- Configure each agent in the same way.
- Each agent is capable of serving all remote queries. You can't target specific queries at specific agents.
- If you leave the **Allowed Hosts** field blank, the agent tries to reach a data source on any host based on the connection information it retrieves from a connection in Oracle Analytics Cloud. If you specify hosts in the **Allowed Hosts** field, the agent can only address those hosts specified.

## Typical Workflow to Connecting to On-premises Data Sources with Data Gateway

Here are the common tasks for connecting to on-premises data sources with Data Gateway.

You can review frequently asked questions before you start. See [Frequently Asked Questions about Data Gateway](#).

Task	Description	More Information
Perform the prerequisite tasks	Download Data Gateway and optionally download Model Administration Tool.	<a href="#">Before You Start with Data Gateway</a>
Install Data Gateway	Install a Data Gateway agent on a local machine.	<a href="#">Install or Upgrade Data Gateway</a>
Upgrade Data Gateway	To upgrade an earlier server installation of Data Gateway on Linux, install the latest update of Data Gateway into the existing installation folder on each machine where you've deployed Data Gateway.	<a href="#">Install or Upgrade Data Gateway</a>
Configure remote data connectivity	Configure your on-premises environment and register one or more Data Gateway agents. You need administrator privileges to access the Console for this task.	<a href="#">Configure Data Gateway for Data Visualization</a>
Configure remote connectivity for reporting	(Optional) Perform additional configuration to enable remote connection from dashboards and analyses.	<a href="#">Configure and Register Data Gateway for Reporting</a>
Test Data Gateway	Test your deployment by analyzing data in your on-premises database.	To connect from BI Analytics, see <a href="#">Connect to an On-premises Database from Oracle Analytics Cloud</a>  To connect from Publisher, see <a href="#">Set Up a JDBC Connection to an On-premises Data Source</a> .
Monitor Data Gateway	Use the Status page in Data Gateway to monitor the jobs that Data Gateway uses to fetch remote data.	<a href="#">Diagnosing Connection Issues Using The Status Page</a>
Manage Data Gateway	Review installation details, adjust logging levels, or uninstall Data Gateway.	<a href="#">Maintain Data Gateway</a>
Manage Data Gateway agents	Add agents to improve performance or provide a backup, check the status of agents, and check for remote connection issues.	<a href="#">Manage Data Gateway Agents</a>

## Before You Start with Data Gateway

Download and install the required software.

- Download the latest update of Oracle Analytics Cloud Data Gateway from Oracle Technology Network. For a list of supported operating systems, see [Download page for Oracle Analytics Cloud](#).
- To upgrade an earlier server installation of Data Gateway on Linux, install the latest update of Data Gateway into the existing installation folder on each machine where you've deployed Data Gateway. See [Install or Upgrade Data Gateway](#).
- (Optional) If you're creating remote connections for analyses and dashboards, download and install Oracle Analytics Client Tools on a Windows machine to get the latest Model Administration Tool for Oracle Analytics Cloud from Oracle Technology Network. If you have a visualization-only deployment (for example, Oracle Analytics Cloud Professional Edition), you don't need Model Administration Tool.
- If you're deploying Data Gateway on Linux, unless you're performing a silent installation, make sure that you have an X server set up with the correct DISPLAY variable setting.

## Download Data Gateway

Download Data Gateway from Oracle Technology Network (OTN) to a Linux or Windows machine where you want to install Data Gateway.

To find out the supported versions of operating systems, refer to the OTN download page.

1. Navigate to the OTN download page for Oracle Analytics Cloud.

See [Download page for Oracle Analytics Cloud](#).

2. Under Oracle Data Gateway <Month Year> Update, click **Oracle Analytics Cloud Data Gateway <Month Year> Update Self-contained Installer for Linux and Windows** to display the Oracle Software Delivery Cloud page.
3. Click the **Platforms** down arrow and select the platform(s) onto which you're deploying Data Gateway, then click outside of the drop-down list or press Enter.

The ZIP files available for each Platform are selected by default.

4. If you selected "All" or "Microsoft Windows x64" in the **Platforms** option, de-select any components that you don't want to download.

For example, you might de-select Oracle Analytics Power BI Connector.

5. Accept the Oracle Cloud Service License Agreement.
6. Click **Download** to start Oracle Download Manager, and follow the on-screen instructions.
7. When the download is complete, click **Open Destination**.
8. Extract the Oracle installer from the downloaded ZIP file.

For example, for Linux, extract `DataGateway_<update>Linux64.bin`, or for Windows extract `oac_bi_rdc_client_<update>Windows.exe`.

## Download, Install, and Start Oracle Analytics Client Tools

Download and install Oracle Analytics Client Tools to enable remote connections from reporting dashboards and analyses. And you can use Model Administration Tool (one of the client tools available for Microsoft Windows) to edit a semantic model (.rpd file) that contains a data source that isn't supported by Semantic Modeler.

### Note

After you've installed Oracle Analytics Client Tools, apply the latest database update patch and Web Logic Server patch set. See [Apply the Latest Patches for Oracle Analytics Client Tools](#).

You can install Oracle Analytics Client Tools on Windows or Linux platforms.

- V1048278-01.zip Oracle Analytics Client March2025-Win for (Microsoft Windows x64 (64-bit)) - For Windows, the software pack installs the graphical user-interface version of Model Administration Tool, as well as command line utilities such as `runcat.cmd` (for catalog management).
- V1048279-01.zip Oracle Analytics Client March2025-Linux for (Linux x86-64) - For Linux, the software pack installs `runcat.sh` and `datamodel.sh` command line utilities.

**Note**

Oracle updates Oracle Analytics Client Tools with each Oracle Analytics Cloud update. Make sure that you're using the latest update of Oracle Analytics Client Tools. Using mismatched versions leads to incompatibility issues.

1. Navigate to the download page for [Oracle Analytics Client Tools](#).
2. Click the latest **Oracle Analytics Client Tools Latest Update** link to display the Oracle Software Delivery Cloud page.
3. Click the **Platforms** down arrow, click **All**.
4. In the Software column of the table, select the download pack for your platform (Windows or Linux).
  - For Windows, select V1048278-01.zip Oracle Analytics Client March2025-Win for (Microsoft Windows x64 (64-bit)).
  - For Linux, select V1048279-01.zip Oracle Analytics Client March2025-Linux for (Linux x86-64).

Make sure that other components are de-selected (for example, Data Gateway and Power BI Connector).
5. In the Oracle Software Delivery Cloud page, click the license agreement checkbox.
6. Click **Download**.
7. Navigate to the downloaded installer (.exe) file on your computer.
8. Run the installer file as Administrator.
9. Start the Oracle Analytics Client Tools:
  - For Windows, go to the Windows Start menu, click **Oracle Analytics Client Tools**, and select the name of the tool you want to use. For example, to edit your semantic model, click **Model Administration Tool**.
  - For Linux, run the `runcat.sh` and `datamodel.sh` command line utilities. See [Using Oracle Analytics Client Tools on Linux](#).

## Install or Upgrade Data Gateway

Install a Data Gateway agent on a machine in the network where the data source is hosted.

**Note:** Oracle Analytics no longer supports Data Gateway agents older than the November 2023 version. If you have an earlier version of Data Gateway, upgrade your environment by installing the latest version.

You can install Data Gateway agents interactively or silently using an Oracle Universal Installer response file. To deploy Data Gateway agents on multiple machines, repeat the installation and configuration steps for each machine.

To upgrade an earlier server installation of Data Gateway on Linux, install the new version of Data Gateway into the existing installation folder. If you have an existing personal installation of Data Gateway on Windows, delete the installation and re-install using the instructions below.

1. Download Data Gateway from Oracle Technology Network (see [Download Data Gateway](#)).
2. Start the Data Gateway installer and follow the on-screen instructions.

On Linux, run `DataGateway_<update>Linux64.bin`. Make the installer file executable first. For example, using `chmod 777`.

On Windows run `oac_bi_rdc_client_<update>Windows.exe` (as administrator).

3. On the Installation Complete page, under **Next Steps**, select **Start Jetty**.
4. To start the Data Gateway agent, open a web browser and enter the URL: `<Local hostname>:<port>/obiee/config.jsp`.

For example, on Windows, enter the URL `http://localhost:8080/obiee/config.jsp`.

5. If you're using a proxy, navigate to the Home page in the Data Gateway agent, and specify the **Proxy** details for **Host**, **Port**, **User**, and **Password**.

When the installation is complete, configure Data Gateway to communicate with your Oracle Analytics Cloud instance. See [Configure Data Gateway for Data Visualization](#) or [Configure and Register Data Gateway for Reporting](#).

## Configure Data Gateway for Data Visualization

After you've installed Data Gateway, you configure your on-premises environment and register one or more Data Gateway agents for remote connectivity from visualization workbooks.

To deploy multiple Data Gateway agents, repeat steps 4 to 9 for each agent.

1. Log into Oracle Analytics Cloud as an administrator.

2. Copy your Oracle Analytics Cloud URL:
  - a. In a browser, navigate to the home page of your Oracle Analytics Cloud instance. Use the same URL that end users use to connect to Oracle Analytics Cloud.
  - b. In the browser's address bar, copy the URL up to and including *<domain>* (not the text after that).  
  
For example, if the URL is `https://oacinst-tenancy.analytics.ocp.oraclecloud.com/dv/ui`, then copy `https://oacinst-tenancy.analytics.ocp.oraclecloud.com`.  
  
You'll use this URL in Step 4 when you set up Data Gateway in Agent Configuration.
3. Enable Data Gateway in Console. You need administrator privileges in Oracle Analytics Cloud for this step.
  - a. Log into Oracle Analytics Cloud with administrator privileges.
  - b. From the Oracle Analytics Cloud Home page, click **Console**.
  - c. Click **Remote Data Connectivity**.
  - d. Enable the **Enable Data Gateway** option.  
  
Keep this browser page open as you complete the following steps.
4. On the Data Gateway installation machine, start the Jetty server if it isn't already started. For example, at the end of the installation, you might not have clicked **Start Jetty** under **Next Steps** on the Installation Complete page, or you might have rebooted the machine since the installation. See [Start and Stop a Data Gateway Agent](#).
5. For each Data Gateway agent, use the Data Gateway agent Home page to generate an authorization key for that machine:  
  
If you're asked to log in, enter the same username and password that you specified in the Credentials page of the Data Gateway installer.
  - a. To start the Data Gateway agent, open a web browser and enter the URL: `<Local hostname>:<port>/obiee/config.jsp` to display the Data Gateway agent Home page.  
  
For example, on Windows, you might enter the URL `http://localhost:8080/obiee/config.jsp`.

- b. In the **URL** field, enter the Oracle Analytics Cloud URL that you copied in Step 2.
  - c. Click **Generate Key**, then click **Copy to Clipboard**.
- Leave the other fields blank.

**Note**

Don't click **Test**, **Save**, or **Enable** yet.

6. Switch to the browser session where you have the Oracle Analytics Cloud Console page **Remote Data Connectivity** displayed, and add details of each Date Gateway agent that you've deployed.
  - a. Under **Data Gateway**, click **Add**.
  - b. In **Public Key**, paste in the key that you copied using the **Copy to Clipboard** option in Step 4.c.
 

When you paste in the key, the **Name**, **ID**, and **Host** fields are completed with the details of the on-premises machine where you've installed Data Gateway.
  - c. Click **OK** to save the details.
7. Switch to the Data Gateway agent Home page.
8. Optional: Optionally use the **Allowed Hosts** field to restrict Data Gateway access to specific host machines. Leave the field blank to enable Data Gateway to access any host machine.

You can specify host names and IP addresses with asterisk (\*) wildcards, separated with a semi-colon.

For example, `abcd*.example.com; 10.174.*`.

By default the Data Gateway agent attempts to connect to a data source on any host specified in a remote connection in Oracle Analytics Cloud. The **Allowed Hosts** field

allows you to constrain the target hosts and IP addresses that Data Gateway can connect to. However, you must configure Data Gateway so that all agents can serve all remote queries.

- Optional: Optionally use the **Allowed SQL Statements** field to restrict Data Gateway to specific SQL or data manipulation language (DML) constructs. Leave the field blank to enable Data Gateway to execute any SQL statements or DML constructs on the data source.

For example, specify `SELECT` to restrict Data Gateway to read-only access to the remote data source. Or specify `SELECT; ALTER SESSION` to restrict Data Gateway to using `SELECT` and `ALTER SESSION` operations.

Make sure that the SQL in any semantic model connect scripts (or anywhere else) doesn't contain trailing whitespace or control characters (EOL - End of line, or CR - Carriage Return).

- Click **Test**, **Save**, then **Enable**.

To deploy multiple Data Gateway agents, repeat steps 4 to 9 for each agent.

If the test fails, this means that the Data Gateway agent can't authenticate. Possible reasons include:

- The agent key hasn't been copied to the **Remote Data Connectivity** page in Oracle Analytics Cloud Console.
- The agent key has been regenerated in the agent, but the new key hasn't been copied to the **Remote Data Connectivity** page in Oracle Analytics Cloud Console.
- There's no suitable network route from the agent to Oracle Analytics Cloud.

If you also want to connect remotely from reporting dashboards and analyses, perform the additional configuration steps in [Configure and Register Data Gateway for Reporting](#).

Then you're ready to test your deployment by connecting remotely to an on-premises database.

## Configure and Register Data Gateway for Reporting

Perform these optional steps to enable remote connectivity for Classic features such as analyses and dashboards.

If you're only deploying for data visualization (for example, Oracle Analytics Cloud Professional Edition), then you don't need to follow these steps.

Before you start, follow the configuration steps in [Configure Data Gateway for Data Visualization](#).

- On the machine where you've installed a Data Gateway agent, obtain the machine name and port number.

In a server deployment:

- Execute the command `<Data Gateway install folder>/domain/bin/status.sh`.
- In the command output, note the machine name contained within the **URL** displayed under **Data Gateway Status**, and note the **Data Gateway Jetty HTTP Port** value.

In a personal deployment:

- Open the file: `%localappdata%\Temp\DataGateway\ports.properties`.
- Note the machine name and port number.

- Start the Data Gateway agent.

3. If you want to model your data before you start connecting to it remotely, use Semantic Modeler or Model Administration Tool (if the database isn't supported by Semantic Modeler) to edit your semantic model.
4. If you're using Model Administration Tool, load the Java data source metadata.
  - a. In Model Administration Tool, from the **File** menu, click **Open**, then **In the Cloud**, and use the Open in the Cloud dialog to specify the details of your semantic model.
  - b. From the **File** menu, click **Load Java Data Sources**.
  - c. At the Connect to Java Datasource Server dialog:
    - In the **Hostname** field, enter the machine name that you noted in Step 1. Fully qualify the hostname. For example, if you noted `machine` in Step 1, you might specify `machine.us.example.com`.
    - In the **Port** field, enter the port that you noted in Step 1. For example, `51811`.
    - In the **Username** and **Password** fields, enter `dummy` or any string (these credentials aren't validated because this is a public call to discover the capabilities advertised by the Data Gateway).
5. If you're using Model Administration Tool, set up a physical database connection:
  - a. In the Physical layer, create a local (not remote) connection to your data source using the standard call interface appropriate for your data source, and model the data as required.
  - b. When you're ready to make a remote connection to your semantic model and publish it back to the cloud, edit the connection that you created.
  - c. On the General tab, in the **Call interface** field select `JDBC (Direct Driver)`, and in the **Connection String** field, specify the JDBC string and credentials in the semantic model connection. See **JDBC and JNDI Templates and Examples** below for a list of supported JDBC strings and driver classes.
  - d. On the Miscellaneous tab, in the **Use SQL Over HTTP** field enter `true`, and in the **RDC Version** field enter `2`, and specify the JDBC driver class.
  - e. Publish the semantic model to the cloud.

You're now ready to test your deployment by connecting remotely to an on-premises database.

## JDBC and JNDI Templates and Examples

When you set up remote connectivity for analyses and dashboards, you might have to specify JDBC strings and driver classes, and JNDI connection details and context details.

### JDBC String Patterns and Driver Classes

```
Oracle:
  Driver Class: oracle.jdbc.OracleDriver
  jdbc string: jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)
(HOST=["host-name\"]) (PORT=["port\"]))
(CONNECT_DATA=(SERVICE_NAME=["service-name\"])))
Amazon Redshift:
  Driver Class: com.oracle.jdbc.redshift.RedshiftDriver
  JDBC String: jdbc:oracle:redshift://["host-name\"]:
["port\"];DatabaseName=["service-
name\"];EncryptionMethod=SSL;ValidateServerCertificate=false
Apache Hive
  Driver Class: com.oracle.bi.jdbc.hive.HiveDriver
```

```

    JDBC String: jdbc:oracle:hive://[\"host-name\"]:
[\"port\"];EncryptionMethod=SSL;ValidateServerCertificate=false
DB2
    Driver Class: com.oracle.bi.jdbc.db2.DB2Driver
    JDBC String: jdbc:oracle:db2://[\"host-name\"]:
[\"port\"];DatabaseName=[\"service-name\"]
Impala
    Driver Class: com.oracle.bi.jdbc.impala.ImpalaDriver
    JDBC String: jdbc:oracle:impala://[\"host-name\"]:
[\"port\"];EncryptionMethod=SSL;ValidateServerCertificate=false
MySQL
    Driver Class: com.mysql.cj.jdbc.Driver
    JDBC String: jdbc:mysql://[\"host-name\"]: [\"port\"][/database][?
properties]
SQL Server
    Driver Class: com.oracle.bi.jdbc.sqlserver.SQLServerDriver
    JDBC String: jdbc:oracle:sqlserver://[\"host-name\"]:
[\"port\"];DatabaseName=[\"service-name\"]
Teradata
    Driver Class: com.teradata.jdbc.TeraDriver
    JDBC String: jdbc:teradata://[\"host-name\"]/DBS_PORT=[\"port\"]

```

## JNDI Templates for Native Drivers

Oracle:

```

<Resource
  name="jdbc/myoracle"
  global="jdbc/myoracle"
  auth="Container"
  type="javax.sql.DataSource"
  driverClassName="oracle.jdbc.OracleDriver"
  url="jdbc:oracle:thin:@localhost:1521:orcl"
  username="my_user"
  password="my_password"
  maxActive="15"
  maxIdle="1"
  maxWait="-1"
/>

<Resource
  name="jdbc/oracleolap"
  global="jdbc/oracleolap"
  auth="Container"
  type="javax.sql.DataSource"
  driverClassName="oracle.jdbc.OracleDriver"
  url="jdbc:oracle:thin:@localhost:1522:orcl112"
  username="my_user"
  password="my_password"
  maxActive="15"
  maxIdle="1"
  maxWait="-1"
/>

<Resource
  name="jdbc/oraclenorthwind"

```

```

global="jdbc/oraclenorthwind"
auth="Container"
type="javax.sql.DataSource"
driverClassName="oracle.jdbc.OracleDriver"
url="jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)
(HOST=example.com)(PORT=1234))
(CONNECT_DATA=(SERVICE_NAME=MATSDB.EXMAPLE.COM)))"
username="my_user"
password="my_password"
maxActive="15"
maxIdle="1"
maxWait="-1"
/>

DB2
<Resource
name="jdbc/db2northdb"
global="jdbc/db2northdb"
auth="Container"
type="javax.sql.DataSource"
driverClassName="com.ibm.db2.jcc.DB2Driver"
url="jdbc:db2://example.com:58263/NORTHDB"
username="my_user"
password="my_password"
maxActive="15"
maxIdle="1"
maxWait="-1" />

SQLServer:
<Resource
name="jdbc/sqlservernorthwind"
global="jdbc/sqlservernorthwind"
auth="Container"
type="javax.sql.DataSource"

driverClassName="com.microsoft.sqlserver.jdbc.SQLServerDriver"
url="jdbc:sqlserver://
example.com:61045;DatabaseName=Northwind"
username="my_user"
password="my_password"
maxActive="15"
maxIdle="1"
maxWait="-1" />

Teradata:
<Resource
name="jdbc/teranorthwind"
global="jdbc/teranorthwind"
auth="Container"
type="javax.sql.DataSource"
driverClassName="com.teradata.jdbc.TeraDriver"
url="jdbc:teradata://99.999.99.999"
username="my_user"
password="my_password"
maxActive="15"
maxIdle="1"

```

```

maxWait="-1" />

Mysql_community
<Resource
name="jdbc/CEmysql"
auth="Container"
type="com.mysql.jdbc.jdbc2.optional.MysqlDataSource"
factory="com.mysql.jdbc.jdbc2.optional.MysqlDataSourceFactory"
username="my_user"
password="my_password"
serverName="example.com"
portNumber="3306"
databaseName="my_database" />

```

## JNDI Templates for DD Drivers

The JNDI for DD Drivers.

```

SQLServer:
<Resource
name="jdbc/DDsqlserver"
auth="Container"
type="com.oracle.bi.jdbcx.sqlserver.SQLServerDataSource"
factory="com.oracle.bi.jdbcx.sqlserver.SQLServerDataSourceFactory"
user="my_user"
password="my_password"
serverName="example.com\MSSQLSERVER16"
portNumber="61045"
databaseName="my_database" />

```

```

DB2:
<Resource
name="jdbc/DDdb2"
auth="Container"
type="com.oracle.bi.jdbcx.db2.DB2DataSource"
factory="com.oracle.bi.jdbcx.db2.DB2DataSourceFactory"
user="my_user"
password="my_password"
serverName="example.com"
portNumber="58263"
databaseName="my_database"
/>

```

```

Impala:
<Resource
name="jdbc/DDimpala"
auth="Container"
type="com.oracle.bi.jdbcx.impala.ImpalaDataSource"
factory="com.oracle.bi.jdbcx.impala.ImpalaDataSourceFactory"
user="my_user"
password="my_password"
serverName="example.com"
portNumber="21050"
databaseName="my_database"
/>

```

```
Spark:
<Resource
name="jdbc/DDspark"
auth="Container"
type="com.oracle.bi.jdbcx.sparksql.SparkSQLDataSource"
factory="com.oracle.bi.jdbcx.sparksql.SparkSQLDataSourceFactory"
user="my_user"
password="my_password"
serverName="example.com"
portNumber="10000"
databaseName="my_database"
/>
```

```
HIVE:
<Resource
name="jdbc/DDhive"
auth="Container"
type="com.oracle.bi.jdbcx.hive.HiveDataSource"
factory="com.oracle.bi.jdbcx.hive.HiveDataSourceFactory"
user="my_user"
password="my_password"
serverName="example.com"
portNumber="10000"
databaseName="my_database"
/>
```

```
MySQL:
<Resource
name="jdbc/DDmysql"
auth="Container"
type="com.oracle.bi.jdbcx.mysql.MySQLDataSource"
factory="com.oracle.bi.jdbcx.mysql.MySQLDataSourceFactory"
user="my_user"
password="my_password"
serverName="example.com"
portNumber="3306"
databaseName="my_database"
/>
```

```
MYSQL:
<Resource
name="jdbc/DDmysql"
auth="Container"
type="com.oracle.bi.jdbcx.mysql.MySQLDataSource"
factory="com.oracle.bi.jdbcx.mysql.MySQLDataSourceFactory"
user="my_user"
password="my_password"
serverName="example.com"
portNumber="3306"
databaseName="my_database"
/>
```

## Add a JDBC Driver to Data Gateway

Add a JDBC driver to your Data Gateway installation so that you can model data in an on-premises database.

Before you start, ensure that Data Gateway and Model Administration Tool are installed on the same Windows computer in your on-premises environment.

1. Download the JDBC driver that you want to deploy.

For example, to model data in a Snowflake database, download the latest Snowflake JDBC driver (for example, in file `snowflake-jdbc-3.9.0.jar`).

2. Copy the downloaded JDBC JAR file to the Data Gateway installation folder.

- In a server deployment, copy the JAR file into: `<Data Gateway install_location>/domain/jettybase/thirdpartyDrivers`.
- In a personal deployment on Windows, copy the JAR file into: `<Data Gateway_extract_path>\thirdpartyDrivers`.
- In a personal deployment on MacOS, copy the JAR file into: `<Application->Show Package Contents>Resources->app.nw-> thirdpartyDrivers`.

3. Re-start Data Gateway. See Maintain Data Gateway.

## DSN Formats for Specifying Data Sources

In Oracle Analytics you can model your on-premises data for many database types. Oracle Analytics supports direct access to some on-premises data sources through the semantic model. When you create the database connection using Model Administration Tool, in the **Data source name** field on the Connection Pool dialog (General tab) you use the appropriate DSN format for the database type you're connecting to.

Amazon Redshift:

```
DRIVER=Oracle 7.1 Amazon Redshift Wire Protocol;HOST=["host-
name"];PORT=["port"];DB=["service-name"]
SSL: DRIVER=Oracle 7.1 Amazon Redshift Wire Protocol;HOST=["host-
name"];PORT=["port"];DB=["service-name"];EM=6;CPV=TLsv1.2,TLsv1.1,TLsv1,
SSLv3, SSLv2;VSC=0
```

Apache Drill:

```
DRIVER=MapR Drill ODBC Driver;Host=["host-
name"];Port=["port"];CastAnyToVarchar=true;ExcludedSchemas=sys, INFORMATION_SCH
EMA;AuthenticationType=Basic
Authentication;ConnectionType=Direct
```

Aster:

```
DRIVER=Aster ODBC Driver;SERVER=["host-
name"];PORT=["port"];DATABASE=["service-name"]
DB2:
```

```
DRIVER=Oracle 7.1 DB2 Wire Protocol;IpAddress=["host-
name"];PORT=["port"];DB=["service-name"]
SSL: DRIVER=Oracle 7.1 DB2 Wire Protocol;IpAddress=["host-
name"];PORT=["port"];DB=["service-name"];EM=1;VSC=0
```

Greenplum:

```
DRIVER=Oracle 7.1 Greenplum Wire Protocol;HOST=["host-
name"];PORT=["port"];DB=["service-name"]
```

Hive:

```
DRIVER=Oracle 8.0 Apache Hive Wire Protocol;HOST=["host-
```

```

name"];PORT=["port"]
    SSL: DRIVER=Oracle 8.0 Apache Hive Wire Protocol;HOST=["host-
name"];PORT=["port"];EM=1;VSC=0
Impala:
    DRIVER=Oracle 7.1 Impala Wire Protocol;HOST=["host-name"];PORT=["port"]
    SSL: DRIVER=Oracle 7.1 Impala Wire Protocol;HOST=["host-
name"];PORT=["port"];EM=1;VSC=0
Informix:
    DRIVER=Oracle 7.1 Informix Wire Protocol;HOSTNAME=["host-
name"];PORTNUMBER=["port"];DATABASE=["service-name"]
MongoDB:
    DRIVER=Oracle 8.0 MongoDB;HOST=["host-
name"];PORT=["port"];DB=["service-name"]
MySQL:
    DRIVER=Oracle 7.1 MySQL Wire Protocol;HOST=["host-
name"];PORT=["port"];DB=["service-name"]
PostgresSql:
    DRIVER=Oracle 7.1 PostgreSQL Wire Protocol;HOST=["host-
name"];PORT=["port"];DB=["service-name"]
Spark:
    DRIVER=Oracle 8.0 Apache Spark SQL;HOST=["host-name"];PORT=["port"]
    SSL: DRIVER=Oracle 8.0 Apache Spark SQL;HOST=["host-
name"];PORT=["port"];EM=1;VSC=0
SQL Server:
    DRIVER=Oracle 7.1 SQL Server Wire Protocol;HOST=["host-
name"];PORT=["port"];DB=["service-name"]
    SSL: DRIVER=Oracle 7.1 SQL Server Wire Protocol;HOST=["host-
name"];PORT=["port"];DB=["service-
name"];EM=1;VSC=0;CryptoProtocolVersion=TLSv1.2,TLSv1.1,TLSv1,SSLv3,SSLv2
Sybase:
    DRIVER=Oracle 7.1 Sybase Wire Protocol;NA=["host-name"],
["port"];DB=["service-name"]
Teradata:
    DRIVER=Oracle 7.1 Teradata;DBCName=["host-name"];port_name=["port"]

```

## Connect to an On-premises Database from Oracle Analytics Cloud

After you've installed and deployed Data Gateway, you can start analyzing data in your on-premises database.

If you don't see a **Use Remote Data Connectivity** option on the Create Connection dialog, ask the Oracle Analytics administrator to enable one of the remote connectivity options in Console on the Remote Data Connectivity page.

1. Create a connection to your on-premises database:
  - a. From the Home page, click **Create**, then **Connection**.
  - b. Click a connection type that supports remote connectivity. For example, Oracle AI Database.
  - c. Use the Create Connection dialog to specify the connection details of your on-premises database.

For example, for on-premises Oracle AI Database, specify the Host, Port, Service Name, and credentials.
  - d. Enable the **Use Remote Data Connectivity** option.

2. Create a workbook using the connection that you created in the Step 1.
  - a. At the Oracle Analytics home page, click **Create**, then click **Workbook**.
  - b. At the Add Dataset dialog, select the on-premises database and add columns from it to a visualization.
3. If you've also configured remote connection for reporting, in Classic Home, create an analysis based on the connection that you created in Step 1.
  - a. At the Oracle Analytics home page, from the **Page menu**, then click **Open Classic Home**.
  - b. From the top toolbar, click **Create**, then click Analysis. In the Select Subject Area drop-down list, select a subject area in the on-premises database and add columns from it to a visualization.

## Maintain Data Gateway

Administrators maintain Data Gateway agents using these tasks. If you have multiple Data Gateway agents deployed, then repeat the task for each agent.

### Maintenance Tasks for Data Gateway

Task	More Information
Manage one or more agents	See <a href="#">Manage Data Gateway Agents</a> .
Find out the Data Gateway agent URL and port.	Use the DOMAIN_HOME/bin/status.sh script to display the installation status and connection details. For example:  Data Gateway Jetty Home: <Jetty home> Data Gateway Domain Home: <Domain home> Data Gateway Jetty HTTP Port: <Port> Data Gateway Status: <Data Gateway status> (For example, UP.) URL: <URL for Data Gateway Agent Configuration page> (For example, http://example.com:8080/obiee/config.jsp.)
Start and stop a Data Gateway agent.	See <a href="#">Start and Stop a Data Gateway Agent</a> .
Change how much logging information is recorded for a Data Gateway agent.	See <a href="#">Adjust the Data Gateway Logging Level</a> .
Upgrade or patch a Data Gateway agent	To upgrade an existing Data Gateway agent, install the new version of Data Gateway into the existing installation folder on each machine where you've deployed Data Gateway. See <a href="#">Install or Upgrade Data Gateway</a> .
Review the auditing and diagnostics information that a Data Gateway agent has logged.	On the machine where you installed the Data Gateway agent, review the files in /domain/jettybase/logs.
Remove a Data Gateway agent from a machine.	Delete the Data Gateway installation folder.

## Start and Stop a Data Gateway Agent

Start a Data Gateway agent so that you can connect a remote on-premises data source to Oracle Analytics Cloud.

On the machine where the Data Gateway agent is installed:

1. Start the Jetty server.  
On Linux, run the script `domain/bin/startjetty.sh`.  
On Windows, run the script `domain\bin\startjetty.cmd`.
2. To stop a Data Gateway agent, run the script `domain/bin/stopJetty.sh` or `domain/bin/stopJetty.cmd`.
3. To restart a Data Gateway agent, run the script `stopJetty` followed by `startjetty`.

## Adjust the Data Gateway Logging Level

Increase or decrease the amount of logging information recorded by Data Gateway.

In a Server Deployment

1. Stop the Jetty server using `domain/bin/stopJetty.sh`.
2. In the folder `jetty/modules/log4j2-impl/resources/`, edit the file `log4j2.xml`.
3. In the file `log4j2.xml`, make these changes:
  - Line no. 2 - Change the configuration status to debug ---> `<Configuration status="debug" name="Jetty" >`
  - Line no. 7 - Change the root level to debug --> `<Root level="debug">`
  - Line no. 34 -Change the root level to debug --> `<Root level="debug">`
4. In the `startJetty.sh` file located in the `domain/bin` folder, add a property - `Dlog4j.configurationFile="<Full Path of the log4j2.xml>"` as shown.

```
java -DSTOP.PORT=34954 -DSTOP.KEY=stop_jetty -DDOMAIN_HOME=$DOMAIN_HOME -
DPUBLIC_KEY_FOLDER=/scratch/sunraj/Oracle/Middleware/Oracle_Home_RDG/
domain/r dc_keys -DRDC_VERSION=V2 -Djetty.home=$JETTY_HOME
Djetty.base=$JETTY_BASE -Djetty.http.port=8080 -Djetty.ssl.port=8443 -
Dlog4j.configurationFile="<Full Path of the log4j2.xml>" -jar start.jar
```


For example, if the `log4j2.xml` path is `/scratch/user/Oracle/Middleware/Oracle_Home_RDG/jetty/modules/log4j2-impl/resources/log4j2.xml`, the format is `Dlog4j.configurationFile="/scratch/user/Oracle/Middleware/Oracle_Home_RDG/jetty/modules/log4j2-impl/resources/log4j2.xml"`

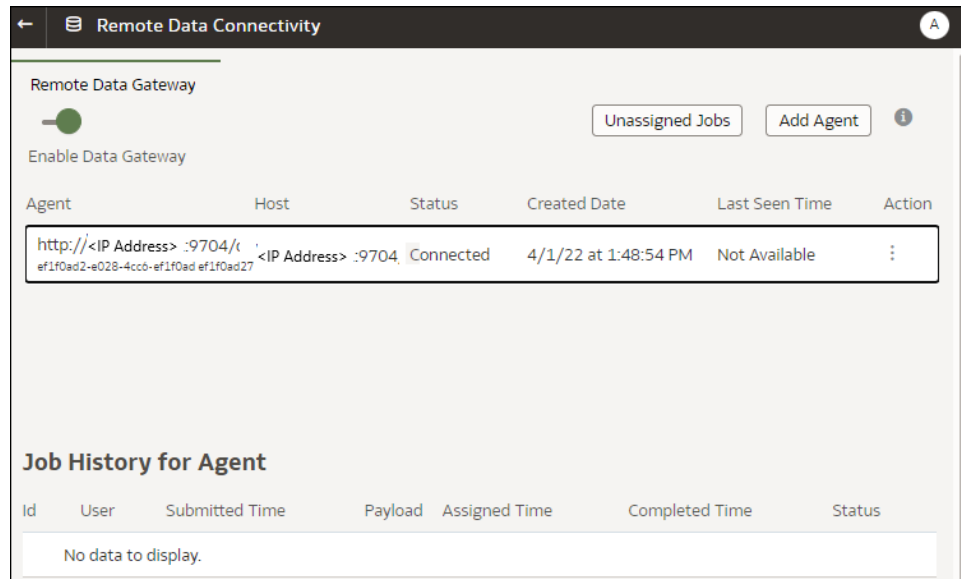
5. Start the Jetty server using `domain/bin/startJetty.sh`.

## Manage Data Gateway Agents

Use the Console to manage Data Gateway agents. For example, you might add agents to improve performance or provide a backup, check the status of agents, and check for remote connection issues.

Data Gateway Agents enable you to use Oracle Analytics Cloud to visualize and model data in remote databases. You deploy Data Gateway in a subnet that gives visibility to both Oracle Analytics Cloud and the remote databases.

1. On the Home page, click **Navigator** , then **Console**, then **Remote Data Connectivity**.



2. Use the Remote Data Connectivity page to manage agents.
  - To enable remote connection traffic between your Oracle Analytics Cloud instance and remote databases, enable the **Enable Data Gateway** option.
  - To enable or disable a specific agent, click the **Action** option for the agent (⋮), and select either **Enable Agent** or **Disable Agent**. If you disable an agent, in-progress jobs for the disabled agent are halted, and future connection jobs for the instance are automatically reassigned to other agents, if available.
  - To add an agent, click **Add Agent**. See [Configure Data Gateway for Data Visualization](#).
  - To view remote connection traffic handled by an agent, select the agent to display a **Job History** list.
  - To check for remote queries that haven't been processed or assigned to an agent, click **Unassigned Jobs**.

# 3

## Connect to Data

As an Oracle Analytics user with DV Content Author access, you can connect to the data sources used by your organization.

### Topics

- [Manage Connections to Data Sources](#)
- [Connect to Oracle AI Database](#)
- [Connect to Oracle AI Data Platform](#)
- [Connect to Oracle Analytic Views](#)
- [Connect to Oracle Autonomous AI Lakehouse](#)
- [Connect to Oracle Autonomous AI Transaction Processing](#)
- [Connect to Analytic Views in Oracle Autonomous AI Lakehouse](#)
- [Connect to Oracle Fusion Cloud Applications Suite](#)
- [Connect to Oracle Fusion Cloud Enterprise Performance Management \(EPM\)](#)
- [Connect to Essbase](#)
- [Connect to NetSuite](#)
- [Connect to Oracle Talent Acquisition Cloud](#)
- [Connect to a Database Using Delta Sharing](#)
- [Connect to Dropbox](#)
- [Connect to Google Analytics](#)
- [Connect to Google BigQuery](#)
- [Connect to Google Drive](#)
- [Connect to NetSuite](#)
- [Connect to Snowflake Data Warehouse](#)
- [Connect to OCI Data Flow SQL Endpoints](#)
- [Connect to Data from REST Endpoints](#)
- [Connect to Remote Data Using Generic JDBC](#)
- [Connect to a Remote Databricks Data Source](#)
- [Connect to a Remote Trino Data Source](#)
- [Connecting to Data Sources Using Kerberos Authentication](#)
- [Connect to Oracle Service Cloud](#)

## Manage Connections to Data Sources

You can create, update, remove, and share connections to data sources. As an Oracle Analytics user with DV Content Author access, you can perform these actions.

**Topics:**

- [Create a Connection to a Data Source](#)
- [Edit a Data Source Connection](#)
- [Delete a Data Source Connection](#)
- [Share a Data Source Connection](#)
- [Database Connection Options](#)
- [Connect to Data with Upper, Lower, or Mixed-case Characters](#)

## Create a Connection to a Data Source

You can create a connection to enable you to analyze data in that data source.

1. On your home page, click **Create**, and then click **Connection**.
2. In the Select Connection Type dialog box, click the icon for the connection type that you want. For example, **Oracle AI Database**.
3. Enter the required connection information such as host, port, username, password, and service name.
4. Optional: Select an **Authentication** option for your connection..
  - **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
  - **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
  - (Displayed if Oracle Analytics supports impersonation for this database type) **Use the active user's credentials** - Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source.
5. If you're connecting to a remote data source, click **Use Remote Data Connectivity**.  
The **Remote Data Connectivity** option is only displayed if the data source type supports remote connections. Check with your administrator if you're not sure.
6. If you want to use these connection details in Semantic Modeler or Model Administration Tool, click **System connection**. See [Database Connection Options](#).

The **System connection** option is only displayed if Semantic Modeler or Model Administration Tool support the data source type. Check with your administrator if you're not sure.

**Note**

Don't select the **System connection** option if you're creating a connection to use with datasets. Connections with **System connection** selected can't be used for datasets.


7. Click **Save**.

You can now create workbooks and datasets or model data using this connection. For example, to create a dataset based on this data source, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

## Edit a Data Source Connection

You can update a data source's connection details.

If you're editing an SSL connection to Oracle AI Database and you need to use a new `cwallet.sso` file, in the **Client Wallet** field, click **Select** to browse for the `cwallet.sso` file. Ask your administrator for the location of the `cwallet.sso` file.

1. On the Home page, click **Navigator** , select **Data**, and then click **Connections**.
2. Hover over the connection that you want to edit. To the right of the highlighted connection, click **Actions**, then select **Inspect**.
3. In the Inspect dialog, edit the connection details.

You can't see the current password or Logical SQL for connections. If you need to change these, create a new connection.

4. Click **Save**.

## Delete a Data Source Connection


You can remove a data source connection from Oracle Analytics Cloud. For example, you must delete a database connection and create a new connection when the database's password has changed.

If the connection contains any datasets, then you must delete the datasets before you can delete the connection.

1. Go to the Data page and select **Connections**.
2. Hover over the connection that you want to delete. To the right of the highlighted connection, click **Actions**, then select **Delete**.
3. Click **Yes**.

## Share a Data Source Connection

You can assign access permissions to the data source connections that you create or administer.

1. On your home page, click **Navigator** , then click **Data**, then **Connections**.
2. Hover over the connection that you want to share, click **Actions**, then select **Inspect**.
3. Click **Access**, and use the tabs to grant access:
  - **All** - Share the connection with individual users or roles.
  - **Users** - Share the connection with individual users.
  - **Roles** - Share the connection with application roles (for example, BI Consumer), so that all users with those roles can use the connection.
4. Use the **Add** box to search for and select a user or role.

The user or role is displayed in the list below with the default privileges **Read-Only**.
5. To change the default privileges, select one of the following:

- **Full Control** - The user or role can use the connection to create datasets, and modify, rename, or delete the connection. They can also change the privileges for the connection.
- **Read-Write** - The user or role can use the connection to create datasets, and modify or rename the connection (but not delete it).
- **Read-Only** - The user or role can use the connection to create datasets, but not change the connection details.

6. Click **Save**.

When users next log in, they can use connections that you've shared to visualize data from this database.

## Database Connection Options

When you specify connection details using the Create Connection dialog or Inspect dialog, some database types have extra configuration options.

### General Options

- When you create connections to Oracle databases, you can connect in two ways using the **Connection Type** option:
  - **Basic** - Specify the **Host**, **Port**, and **Service Name** of the database.
  - **Advanced** - In the **Connection String** field specify the Single Client Access Name (SCAN) ID of databases running in a RAC cluster. For example:
 

```
sales.example.com =(DESCRIPTION= (ADDRESS_LIST= (LOAD_BALANCE=on)
(FAILOVER=ON) (ADDRESS=(PROTOCOL=tcp)(HOST=123.45.67.111)(PORT=1521))
(ADDRESS=(PROTOCOL=tcp)(HOST=123.45.67.222)(PORT=1521))
(ADDRESS=(PROTOCOL=tcp)(HOST=123.45.67.333)(PORT=1521)))
(CONNECT_DATA=(SERVICE_NAME= saleservice.example.com)))
```
- **Enable Bulk Replication** - If you're loading a dataset for a workbook, then this option should be turned off and you can ignore it. This option is reserved for data analysts and advanced users for replicating data from one database to another database.

**Location** - The catalog folder where the connection details are stored. Use the **Browse** option to change the default folder (that is, My Folders). If you want to other users to be able to use the connection, save the connection in the Shared Folders area.

### Authentication Options

- **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
- **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
- (Displayed if Oracle Analytics supports impersonation for this database type) **Use the active user's credentials** - Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source.

### System connection

Select **System connection** if you want to use these connection details in Semantic Modeler or Model Administration Tool.

- If you're modeling data using Semantic Modeler, choosing this option enables Semantic Modeler to connect to the data source. To find out which databases Semantic Modeler supports, look for a Yes in the 'Use in Semantic Modeler' column in the supported data sources list. See Supported Data Sources.
- If you're modeling data using Model Administration Tool, you can connect to some data sources by copying connection details from Oracle Analytics Cloud into Model Administration Tool. To find out which data sources support this, look for System Connection in the Connectivity Options in the Use in Model Administration Tool in Supported Data Sources. Click **Copy**, to copy the connection's **Object ID**. Business modelers can paste in the **Object ID** to identify and use a data connection in the Model Administration Tool (Connection Pool dialog).

**Note:** If you don't click **System connection** when you initially create the connection, if you later want data modelers to use the connection details, then you have to create a new connection and select **System connection**. In other words, you can't edit the connection later and select this option.

## Database Connection Limits


Understand your database connection requirements before you create the database connection.

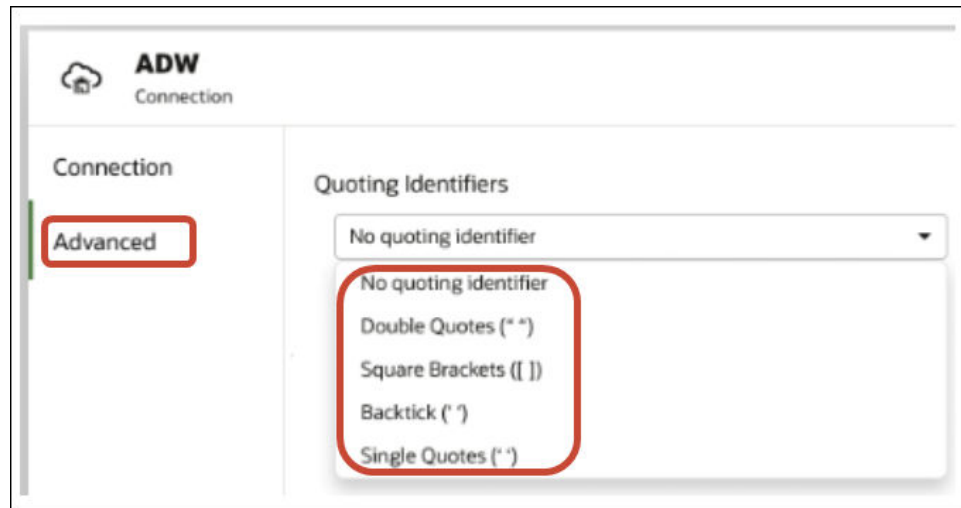
The maximum number of database tables displayed in Oracle Analytics is 10,000. If you need additional tables, Oracle recommends that you ask your database administrator to create a database user with access to the specific objects you want to analyze and specify that user's credentials when you create the database connection.

## Connect to Data with Upper, Lower, or Mixed-case Characters

If you're connecting to an Oracle database, Oracle Autonomous AI Lakehouse, Oracle Autonomous AI Transaction Processing, Snowflake, SQL Server, or My SQL, you can change the default quoting identifier so that you can read data with upper, lower, or mixed-case characters in table or column names.

For example, you might choose double quotes as the quoting identifier. Oracle Analytics then adds double quotes to the underlying SQL statement `select "EfG_Field" from "AbCd";` instead of issuing `select EfG_Field from AbCd;` (which would fail).

1. On your home page, click **Create** and then click **Connection**.
2. Click one of the database types that support advanced properties.  
Supported databases are Oracle, Oracle Autonomous AI Lakehouse, Oracle Autonomous AI Transaction Processing, Snowflake, SQL Server, and My SQL.
3. Specify the connection details then save the connection.
4. On the home page, click **Navigator** , then click **Data**, then **Connections**.
5. Hover over the connection that you saved in Step 2 and click **Actions** then click **Inspect**.
6. Click **Advanced**, then use the Quoting Identifiers option to select the quoting identifiers used in the database.



For example, you might select **Double Quotes (" ")**. Oracle Analytics adds double quotes to the underlying SQL statement `select "EfG_Field" from "AbCd";` instead of issuing `select EfG_Field from AbCd;`

#### **Note**

You won't see the **Advanced** option if the connection was created with the **System connection** option selected. Advanced options aren't supported for system connections.

7. Click **Save**.

## Manage Connections Using REST APIs

You can use Oracle Analytics Cloud REST APIs to programmatically manage connections to a range of data sources. For example, you might want to create a script that creates (or modifies) the same set of connections in both your test and production Oracle Analytics Cloud environments.

- [About Connection REST APIs](#)
- [Typical Workflow for Managing Connections Using REST APIs](#)
- [How to Use REST APIs to Manage Data Source Connections](#)
- [Sample JSON Payloads for Data Sources](#)

## About Connection REST APIs

You can create, update, and delete connections for a range of data sources using REST APIs. This topic lists the types of data source connections you can manage with REST APIs.

#### **Note**

*REST API for Oracle Analytics Cloud* provides detailed information about each REST API. See [Connection REST Endpoints](#).

### Supported Data Sources

- Oracle Database and Oracle AI Database
- Oracle Autonomous AI Lakehouse
- Oracle Essbase
- MySQL
- PostgreSQL
- Snowflake
- SQL Server
- Vertica

### Connection Parameters

The connection parameters required for each data source are different. If you want to use the REST API to create or update a connection, you must know the JSON payload format required for your data source. See [Sample JSON Payloads for Data Sources](#).

## Typical Workflow for Managing Connections Using REST APIs

Here are the common tasks to start using Oracle Analytics Cloud REST APIs to programmatically manage connections. If you're using the REST APIs for the first time, follow these tasks as a guide.

Task	Description	REST API Documentation
Understand prerequisites	Understand and complete several prerequisite tasks.  You must have permissions to create workbooks and connect to data in Oracle Analytics Cloud to manage data connections using REST APIs ( <b>DV Content Author</b> ).	<a href="#">Prerequisites</a>
Understand OAuth 2.0 token authentication	Authentication and authorization in Oracle Analytics Cloud is managed by Oracle Identity Cloud Service. To access the Oracle Analytics Cloud REST APIs, you need an OAuth 2.0 access token to use for authorization.	<a href="#">OAuth 2.0 Token Authentication</a>
Understand supported data sources	Read the topic that describes the types of data connections you can manage with REST APIs.	<a href="#">Supported Data Sources</a>
Determine JSON payload formats	Read the topic that describes the JSON payload format for your data source and obtain the required connection parameters.	<a href="#">Sample JSON Payloads for Data Sources</a>
Create a connection	Create a data connection for use in workbooks, reports, and dashboards.	<a href="#">Create a connection</a>
Update a connection	Update one or more properties of an existing data connection.	<a href="#">Update a connection</a>
Delete a connection	Delete a data connection.	<a href="#">Delete a connection</a>

## How to Use REST APIs to Manage Data Source Connections

Use these samples and examples to help you manage data source connections with REST API requests using cURL.

- [Sample cURL Format](#)
- [Examples](#)

### Sample cURL Format

Use the following cURL command format to create or update data source connections using REST APIs:

- **Simple JSON**

```
curl
--header "Authorization: Bearer <token>"
--header "Content-Type: application/json"
--request POST|PUT https://<hostname>/api/20210901/catalog/connections
--data "<data source connection payload>"
```

- **Multi-part/Form data**

```
curl
--header "Authorization: Bearer <token>"
--request POST|PUT https://<hostname>/api/20210901/catalog/connections
--form "cert=<security wallet file>"
--form "connectionParams=<data source connection payload>"
```

Where:

- **<token>** - OAuth 2.0 bearer token required to authenticate calls to Oracle Analytics Cloud REST APIs. See [OAuth 2.0 Token Authentication](#).
- **<hostname>** - Host where Oracle Analytics Cloud is running.
- **<data source connection payload>** - Data source-specific connection information. See [Sample JSON Payloads for Data Sources](#).
- **<security wallet file>** - Stores SSL-related information such as authentication and signing credentials, private keys, certificates, and trusted certificate. Required for some connection types, such as Oracle AI Database with SSL and Oracle Autonomous AI Lakehouse (Mutual TLS).

### Examples

The following examples show you how to create a connection to Oracle Autonomous AI Lakehouse (ALK).

- Example 1 - Create a wallet-less (TLS) connection to Oracle ALK
- Example 2 - Create a connection to Oracle ALK that uses a credentials wallet file `cwallet.sso` (Mutual TLS)

**Note**

The JSON payloads in these examples are specific to Oracle ALK. The JSON payload format is different for other data sources. See [Sample JSON Payloads for Data Sources](#).

**Example 1 Create a wallet-less (TLS) connection to Oracle Autonomous AI Lakehouse**

In this example, you create a connection named `oracle_ALK_walletless`. The request body includes simple JSON `application/json`.

```
curl
--header "Authorization: Bearer <token>"
--header "Content-Type: application/json"
--request POST https://example.com/api/20210901/catalog/connections
--data "{
  "version": "2.0.0",
  "type": "connection",
  "name": "oracle_ALK_walletless",
  "description": "Sample Oracle ALK connection without a wallet created using
Connections API",
  "content": {
    "connectionParams": {
      "connectionType": "oracle-autonomous-data-warehouse",
      "connectionString": "(description= (retry_count=20)(retry_delay=3)
(address=(protocol=tcps)(port=1521)(host=adb.us-ashburn-1.oraclecloud.com))
(connect_data=(service_name=abcdefghijklm_ALKwalletless_high.adb.oraclecloud.com))
(security=(ssl_server_dn_match=yes)))",
      "username": "ADMIN",
      "password": "<<password>>",
      "systemConnection": false,
      "remoteData": false,
      "sslType": "ServerSideSSL"
    }
  }
}"
```

**Response Body**

```
{"connectionID": "J0FkbWluJy4nb3JhY2xlX2Fkd193YWxsZXRsZXNzJw=="}
```

Make a note of the Base64 encoded `connectionId` in the response body. Later on, you can use this value to update or delete the connection.

**Example 2 Create a connection to Oracle ALK that uses a wallet file (Mutual TLS)**

In this example, you create a connection named `oracle_ALK_with_wallet`. The request body includes `multipart/form-data`, that is, requires both a wallet file from Oracle ALK (`cwallet.sso`) and Oracle ALK connection parameters.

```
curl
--header "Authorization: Bearer <token>"
--request POST https://<hostname>/api/20210901/catalog/connections
--form "cert=@"/Users/scott/Downloads/Wallet_ALK/cwallet.sso"
--form "connectionParams= "{
  "version": "2.0.0",
  "type": "connection",
  "name": "oracle_ALK_with_wallet",
  "description": "Sample Oracle ALK connection with a wallet created using Connections
API",
```

```
"content": {
  "connectionParams": {
    "connectionType": "oracle-autonomous-data-warehouse",
    "connectionString": "(description= (retry_count=20)(retry_delay=3)
(address=(protocol=tcps) (port=1522)(host=adb.us-ashburn-1.oraclecloud.com))
(connect_data=(service_name=abcdefghijklm_walletALK_high.ALKc.oraclecloud.com/))
(security=(ssl_server_dn_match=yes)))",
    "username": "ADMIN",
    "password": "<<password>>",
    "remoteData": "false",
    "systemConnection": false,
    "sslType": "ClientSideSSL"
  }
}
```

### Response Body

```
{"connectionID": "J2FkbWluJy4nb3JhY2xlX2Fkd193aXRoX3dhbGxldCc="}
```

Make a note of the Base64 encoded `connectionId` in the response body. Later on, you can use this value to update or delete the connection.

Additional examples are available in *REST API for Oracle Analytics Cloud*. See [Create a connection](#), [Update a connection](#) and [Delete a connection](#).

## Sample JSON Payloads for Data Sources

To connect to data source you provide connection parameters. When you use the Connections REST API, you specify connection parameters in a JSON payload format. Use this table to determine the JSON payload for the data source you want to connect to.

Data Source	Request Type	Input Payload
<b>Oracle AI Database</b> (Non-SSL)	<b>application/json</b>	<p><b>Basic Connection Type</b></p> <pre>{   "version": "2.0.0",   "type": "connection",   "name": "oracle_db_non_ssl_basic",   "description": "Sample non-SSL Oracle AI Database connection created using Connections API",   "content": {     "connectionParams": {       "connectionType": "oracle-database",       "host": "example.com",       "port": "1521",       "serviceName": "orcl",       "username": "admin",       "password": "&lt;password&gt;",       "remoteData": false,       "systemConnection": false     }   } }</pre> <p><b>Advanced Connection Type</b></p> <pre>{   "version": "2.0.0",   "type": "connection",   "name": "oracle_db_non_ssl_advanced ",   "description": " Sample non-SSL Oracle AI Database connection created with the advanced connection string format using Connections API",   "content": {     "connectionParams": {       "connectionString": "(DESCRIPTION= (ADDRESS_LIST= (LOAD_BALANCE=on)(FAILOVER=ON) (ADDRESS=(PROTOCOL=tcp)(HOST=example.com) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=ORCLPDB1)))",       "username": "admin",       "password": "&lt;password&gt;",       "connectionType": "oracle-database",       "remoteData": false,       "systemConnection": false     }   } }</pre>

Data Source	Request Type	Input Payload
		} }
<b>Oracle AI Database with SSL</b>	<b>multi-part/form-data</b>	cwallet.sso (client credentials file)

### Basic Connection Type

```
cert: <cwallet.sso file location>
connectionParams: {
  "version": "2.0.0",
  "type": "connection",
  "name": "oracle_db_ssl",
  "description": "Sample Oracle AI Database
connection with SSL created using Connections API",
  "content": {
    "connectionParams": {
      "connectionType": "oracle-database",
      "host": "example.com",
      "port": "2484",
      "serviceName": "ORCLPDB1",
      "username": "admin",
      "password": "<password>",
      "systemConnection": false,
      "remoteData": false
    }
  }
}
```

Data Source	Request Type	Input Payload
Oracle Autonomous AI Lakehouse - Wallet-less (TLS)	application/json	<pre> Basic Connection Type {   "version": "2.0.0",   "type": "connection",   "name": "oracle_ALK_walletless_basic",   "description": "Sample Oracle ALK connection without a wallet created using Connections API",   "content": {     "connectionParams": { "connectionType": "oracle- autonomous-data-warehouse",       "connectionString": "(description= (retry_count=20)(retry_delay=3) (address=(protocol=tcps)(port=1521) (host=example.com)) (connect_data=(service_name=example.com)) (security=(ssl_server_dn_match=yes)))",       "username": "admin",       "password": "&lt;password&gt;",       "systemConnection": false,       "remoteData": false,       "sslType": "ServerSideSSL"     }   } } </pre>

Data Source	Request Type	Input Payload
Oracle Autonomous AI Lakehouse - Wallet (Mutual TLS)	multipart/form-data	<p>cwallet.sso (client credentials file)</p> <p><b>Basic Connection Type</b></p> <pre> cert: &lt;cwallet.sso file location&gt;  connectionParams: {   "version": "2.0.0",   "type": "connection",   "name": "oracle_ALK_with_wallet",   "description": "Sample Oracle ALK connection with wallet created using Connections API",   "content": {     "connectionParams": {       "connectionType": "oracle-autonomous-data- warehouse",       "connectionString": "(description= (retry_count=20)(retry_delay=3) (address=(protocol=tcps) (port=1522) (host=example.com)) (connect_data=(service_name=example.com)) (security=(ssl_server_dn_match=yes)))",       "username": "admin",       "password": "&lt;password&gt;",       "remoteData": "false",       "systemConnection": false,       "sslType": "ClientSideSSL"     }   } } </pre>

Data Source	Request Type	Input Payload
PostgreSQL (Non-SSL)	application/json	<pre> <b>Basic Connection Type</b>  {   "version": "2.0.0",   "type": "connection",   "name": "postgres_non_SSL",   "description": "Sample PostgreSQL connection created using Connections API",   "content": {     "connectionParams": {       "connectionType": "postgresql-database",       "host": "example.com",       "port": "5432",       "serviceName": "postgres",       "username": "admin",       "password": "&lt;password&gt;",       "remoteData": false,       "systemConnection": false     }   } } </pre>
PostgreSQL with SSL	application/json	<pre> <b>Basic Connection Type</b>  {   "version": "2.0.0",   "type": "connection",   "name": "postgres_SSL_Conn",   "description": "Sample PostgreSQL connection with SSL created using Connections API",   "content": {     "connectionParams": {       "connectionType": "postgresql-database",       "host": "example.com",       "port": "5432",       "serviceName": "postgres",       "username": "admin",       "password": "&lt;password&gt;",       "sslType": "ServerSideSSL",       "remoteData": false,       "systemConnection": false     }   } } </pre>

Data Source	Request Type	Input Payload
SQL Server (Non-SSL)	application/json	<pre> Basic Connection Type  {   "version": "2.0.0",   "type": "connection",   "name": "SqlServer_non_ssl",   "description": "Sample non-SSL SQL Server connection created using Connections API",   "content": {     "connectionParams": {       "connectionType": "sqlserver-database",       "host": "example.com",       "port": "1400",       "serviceName": "sqlserver1",       "username": "admin",       "password": "&lt;password&gt;",       "remoteData": false,       "systemConnection": false     }   } } </pre>
SQL Server with SSL	application/json	<pre> Basic Connection Type  {   "version": "2.0.0",   "type": "connection",   "name": "SqlServer_ssl",   "description": "Sample SQL Server connection with SSL created using the Connections API",   "content": {     "connectionParams": {       "connectionType": "sqlserver-database",       "host": "example.com",       "port": "60190",       "serviceName": "sqlserver1",       "username": "admin",       "password": "&lt;password&gt;",       "sslType": "ServerSideSSL",       "remoteData": false,       "systemConnection": false     }   } } </pre>

Data Source	Request Type	Input Payload
MySQL (Non-SSL)	application/ json	<pre> <b>Basic Connection Type</b>  {   "version": "2.0.0",   "type": "connection",   "name": "MySQL_no_SSL",   "description": "Sample MySQL connection created using the Connections API",   "content": {     "connectionParams": {       "connectionType": "mysql-database",       "host": "example.com",       "port": "3307",       "serviceName": "mysql1",       "username": "admin",       "password": "&lt;password&gt;",       "remoteData": false,       "systemConnection": false     }   } } </pre>
MySQL with SSL	application/ json	<pre> <b>Basic Connection Type</b>  {   "version": "2.0.0",   "type": "connection",   "name": "MySQL_ssl",   "description": "Sample MySQL connection with SSL created using Connections API",   "content": {     "connectionParams": {       "connectionType": "mysql-database",       "host": "example.com",       "port": "3306",       "serviceName": "mysql1",       "username": "admin",       "password": "&lt;password&gt;",       "sslType": "ServerSideSSL",       "remoteData": false,       "systemConnection": false     }   } } </pre>

Data Source	Request Type	Input Payload
Oracle Essbase	application/json	<pre> Basic Connection Type  {   "version": "2.0.0",   "type": "connection",   "name": "Oracle_Essbase",   "description": "Sample Oracle Essbase connection created using Connections API",   "content": {     "connectionParams": {       "connectionType": "oracle-essbase",       "dsn": "example.com",       "username": "admin",       "password": "&lt;password&gt;",       "remoteData": false,       "systemConnection": false,       "authentication": "current"/"private"/"sso"     }   } } </pre>

## Connect to Oracle AI Database

You can create a connection to Oracle AI Database and use the connection to access data, build a dataset, and visualize data.



[Video](#)

You can't use remote connections to save a dataset from a Data Flow.

1. On your home page, click **Create**, then click **Connection**.
2. In Create Connection dialog, click the connection type, for example, **Oracle Database**.
3. Enter a unique name for the connection, and specify database connection details.
  - If you're not creating an SSL connection, specify the connection information for the database, such as the hostname, port, credentials, service name and so on.
  - If you're creating an SSL connection, in the **Client Wallet** field, click **Select** to browse for the `cwallet.sso` file. Ask your administrator for the location of the `cwallet.sso` file.
4. Use the **Connection Type** option to specify how you'd like to connect.
  - When you create connections to Oracle databases, you can connect in two ways using the **Connection Type** option:
    - **Basic** - Specify the **Host**, **Port**, and **Service Name** of the database.
    - **Advanced** - In the **Connection String** field specify the Single Client Access Name (SCAN) ID of databases running in a RAC cluster. For example:  

```

sales.example.com =(DESCRIPTION= (ADDRESS_LIST= (LOAD_BALANCE=on)
(FAILOVER=ON) (ADDRESS=(PROTOCOL=tcP)(HOST=123.45.67.111) (PORT=1521))
(ADDRESS=(PROTOCOL=tcP)(HOST=123.45.67.222) (PORT=1521))

```

```
(ADDRESS=(PROTOCOL=tcp)(HOST=123.45.67.333)(PORT=1521))  
(CONNECT_DATA=(SERVICE_NAME= salesservice.example.com))
```

- **Enable Bulk Replication** - If you're loading a dataset for a workbook, then this option should be turned off and you can ignore it. This option is reserved for data analysts and advanced users for replicating data from one database to another database.
5. If you're connecting to an on-premises database, click **Use Remote Data Connectivity**. Check with your administrator that you can access the on-premises database.
  6. If you want data modelers to be able to use these connection details, select **System connection**. See [Database Connection Options](#).
  7. Under **Authentication**, specify how you'd like to authenticate the connection:
    - **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
    - **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
  8. Click **Save**.
  9. Use the connection to connect to your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

## Connect to Oracle AI Data Platform

Connect to an Oracle AI Data Platform data source to visualize data.

1. In OCI Console, obtain a private API key file for a user with access to Oracle AI Data Platform. See [Get an API Key from OCI](#).
2. In Oracle AI Data Platform, download a connection configuration file `config.json` for the cluster you want Oracle Analytics Cloud to connect to. See [Get an Oracle Analytics Cloud Connection Configuration File](#).
3. Copy fingerprint information from API key file to the connection configuration file `config.json`. See [Create an Oracle Analytics Cloud Connection File](#).
4. In Oracle Analytics, create a connection to Oracle AI Data Platform using the configuration file you modified in step 3. See [Connect Oracle AI Data Platform to Oracle Analytics Cloud](#).

## Connect to Oracle Analytic Views

You can create a connection to Analytic Views in Oracle AI Database to access data, model data, build a dataset, and visualize data.

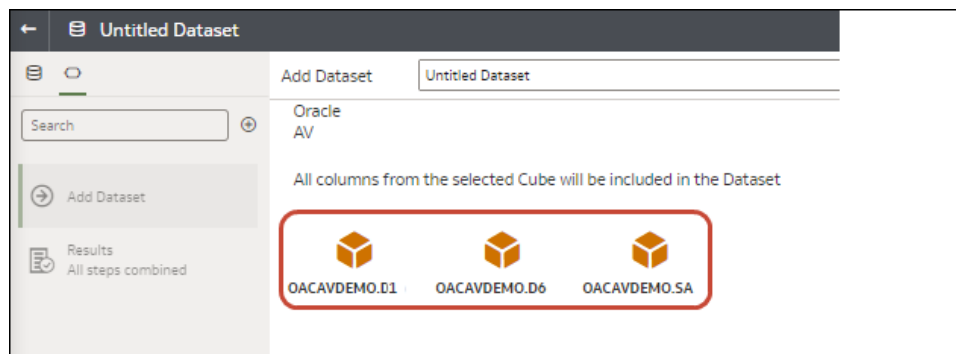
Dataset authors can use this connection type to consume Oracle Analytic Views data, including multi-dimensional objects, without having to understand the complexities of Java database connectivity (JDBC).

1. On your home page, click **Create**, then click **Connection**.
2. Click **Oracle Analytic Views** and enter the connection details.
  - For **Connection Type**, select **Basic** to connect by specifying **Host** as an Internet Protocol (IP) address, **Port**, and Service Name for Oracle AI Database. For example, **Host** = `<IP address>`, **Port** = 9018, and **Service Name** = `PDBORCL`.

- Alternatively, select **Advanced** to connect by specifying a **Connection String**. For example, (DESCRIPTION =(ADDRESS\_LIST =(ADDRESS = (PROTOCOL = TCP) (HOST = <IP address>)(PORT = 9018))) (CONNECT\_DATA = (SERVICE\_NAME = PDBORCL)))
- If you want data modelers to be able to use these connection details, select **System connection**. See [Database Connection Options](#).
  - Under **Authentication**, specify how you'd like to authenticate the connection:
    - Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
    - Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
  - Click **Save**.

You can now create datasets using the connection and build workbooks.

When you create a dataset using the connection, select one of the cubes listed in the database. Then build a workbook using that dataset and start visualizing your data.



## Connect to Oracle Autonomous AI Lakehouse

You can create a connection to Oracle Autonomous AI Lakehouse and use the connection to access data.

Before you start, ask your Oracle Autonomous AI Lakehouse administrator to allow access from Oracle Analytics Cloud. The configuration steps that administrators follow are different for public and private types of connection:

- For public connections, see [Enable Access to Oracle Autonomous AI Lakehouse Prerequisites](#).
- For private connections, see [How do I connect to a private Oracle Autonomous AI Lakehouse in a customer VCN?](#)

You can connect to Oracle Autonomous AI Lakehouse using security certificates downloaded from Oracle Autonomous AI Lakehouse to a wallet (known as mTLS, or Mutual Transport Layer Security), or without a wallet (known as TLS, or Transport Layer Security). See [About TLS Authentication](#). The credentials wallet file secures communication between Oracle Analytics and Oracle Autonomous AI Lakehouse. The wallet file (for example, wallet\_ALKCl.zip) that you upload must contain SSL trusted certificates, to enable SSL on your Oracle AI Database connections.

 [Tutorial](#)

1. To connect using a credentials wallet file, (known as **Mutual TLS** connection), download the SSL certificates from Oracle Autonomous AI Lakehouse.

See [Download Client Credentials \(Wallets\) in Using Oracle Autonomous Database Serverless](#).

The credentials wallet file secures communication between Oracle Analytics and Oracle Autonomous AI Lakehouse. The wallet file (for example, `wallet_ALKC1.zip`) that you upload must contain SSL certificates.

To connect without using a credentials wallet file (known as **TLS** connection), skip Step 1 and go straight to the Step 2.

2. On your home page, click **Create** then click **Connection**.
3. Click **Oracle Autonomous Data Warehouse**.
4. For **Connect Using**, select Basic or Resource Principal.

For information about using Resource Principal, see topic "Use Resource Principal to Access Oracle Cloud Infrastructure Resources" on [Oracle Autonomous AI Database Serverless](#) or [Autonomous Database on Dedicated Exadata Infrastructure](#).

5. Enter a user-friendly **Connection Name** and **Description**.

6. For **Encryption Type**:

- To connect without a credentials wallet file, select **TLS** as the **Encryption Type**, enter a **Connection String**, then enter a **Username** and **Password** of a user in Oracle Autonomous AI Lakehouse.
- To connect using a credentials wallet file, select **Mutual TLS** as the **Encryption Type**, then click **Select** and browse for and select the Client Credentials wallet file that you downloaded from Oracle Autonomous AI Lakehouse (for example, `wallet_ALKC1.zip`), then enter a **Service Name**. The **Client Credentials** field displays the `cwallet.sso` file. See [Selecting a Service Name for Oracle Autonomous AI Lakehouse](#).  
**Tip:** If you define the Oracle Autonomous AI Lakehouse connection using an instance wallet, the high service name is selected by default. Change the name to low or medium to avoid limiting the number of concurrent connections.

7. In **Client Credentials**, then click **Select** to navigate to and select your client credentials ZIP file.
8. If you're connecting to a remote database, click Use Remote Data Connectivity.  
Check with your administrator that you can access the remote database.
9. If you want data modelers to be able to use these connection details, select **System connection**. See [Database Connection Options](#).
10. Under **Authentication**, specify how you'd like to authenticate the connection:
  - **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
  - **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
11. Click **Save**.

You can now create datasets from the connection.

## Selecting a Service Name for Oracle Autonomous AI Lakehouse

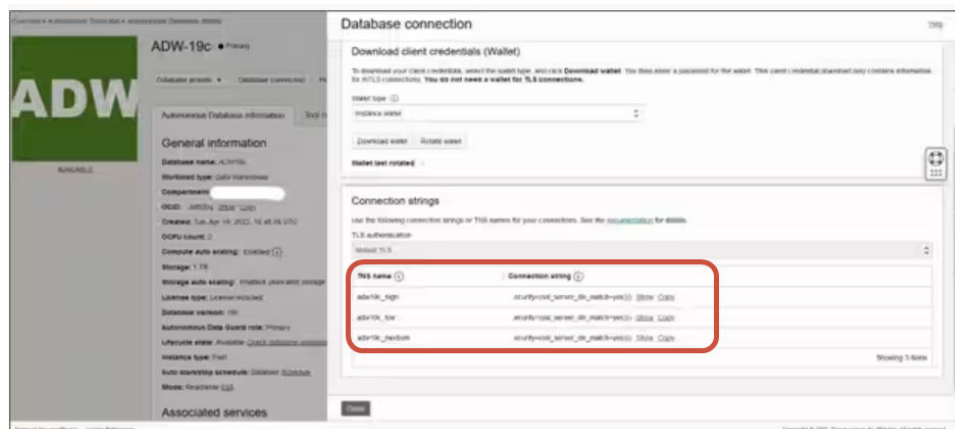
Selecting the correct prebuilt database service name is key to connecting to Oracle Autonomous AI Lakehouse (Oracle ALK). Learn about the different prebuilt database service names and which one you should choose.

### What are the prebuilt database service names?

Oracle Autonomous AI Lakehouse provides three database service names for connections in the following format:

- `databasename_high` - Highest resources, lowest concurrency. Queries run in parallel.
- `databasename_medium` - Fewer resources, higher concurrency. Queries run in parallel.
- `databasename_low` - Least resources, highest concurrency. Queries run serially.

These names are contained in the `tnsnames.ora` file in the Oracle wallet. Click **Database Connections** in the Oracle Cloud Infrastructure Console to see the strings.



### About Consumer Groups in Oracle Resource Manager

The database service names are mapped to consumer groups in the Resource Manager that limit the number of simultaneous connections and queries that can run in Oracle Autonomous AI Lakehouse at the same time (concurrency) and the maximum number of parallel processes that are allowed per query (`parallel_degree_limit`). These limits are based on the number of ECPU or OCPU licensed and whether auto-scaling is enabled.

The following table shows sample concurrent connection values for a database with 32 ECPU with ECPU auto-scaling disabled and enabled.

Database Service Name	Number of Concurrent Queries with ECPU Auto Scaling Disabled	Number of Concurrent Queries with ECPU Auto Scaling Enabled
high	3	9
medium	20 (.63 x number of ECPU)	60 (1.89 x number of ECPU)
low	Up to 4800 (150 x number of ECPU)	Up to 4800 (150 x number of ECPU)

## Choosing the Optimal Database Service Name for Oracle Analytics

The largest number of simultaneous queries that can run for the high database service is three without auto-scaling and nine with auto-scaling enabled. This limit can be reached by three users connected to the high database service name running one query each or three reports in one Oracle Analytics dashboard for a single user.

The low service name works well for most Oracle Autonomous AI Lakehouse workloads with Oracle Analytics, but to utilize parallel queries, select the medium service name. The parallel degree limit for the low service name is one, meaning no parallelism. If you're connected to the low service name, even if the parallel degree is specified at the table or index level, the degree of parallelism is reduced to one and the query doesn't run in parallel. The parallel degree limit (per query) for medium and high equals two times the number of licensed CPUs.

**Note:** Connecting to a database that's part of Oracle Fusion Analytics Warehouse (Fusion Analytics) requires using the low service name to allow for the maximum number of concurrent queries.

### Monitoring queued statements

If the maximum number of concurrent queries limit is reached, the excess queries are queued. Oracle Autonomous AI Lakehouse provides a metric to check for queued statements.

Select **Database Actions** and **Database Dashboard** in the Oracle Autonomous AI Lakehouse page of Oracle Cloud Infrastructure Console.

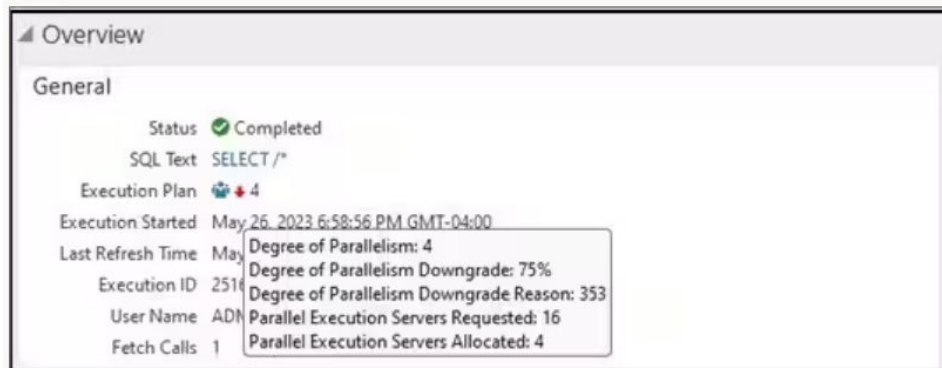


Select **Performance Hub**, and select **SQL Monitor Tab** to see the queued statement status, which is displayed as a grey clock. In this example, three queries are running with the high service name, one is queued, and one query is running with the medium service name. The queued statement executes when one of the three queries running with the high service name completes.

Status	Duration	SQL ID	SQL Plan Hash	User Name	Parallel
	8.00 sec	harrs5r2ddnk	396151021	ADMIN	
	5.00 sec	harrs5r2ddnk	396151021	ADMIN	4
	12.00 sec	harrs5r2ddnk	396151021	ADMIN	4
	29.00 sec	harrs5r2ddnk	396151021	ADMIN	4
	32.00 sec	harrs5r2ddnk	396151021	ADMIN	4
	31.00 sec	harrs5r2ddnk	396151021	ADMIN	4

### Monitoring parallelism

If the parallel degree limit is exceeded, you see the degree of parallelism (DOP) downgrade in the SQL monitor report. The degree of parallelism downgrade reason of 353 means that the Resource Manager downgraded the statement due to the maximum degree of parallelism limit.



For Oracle Database version 18 and higher, the downgrade reason codes are described in the following table:

ID	Reason Codes
352	DOP downgrade due to adaptive DOP.
353	DOP downgrade due to resource manager max DOP.
354	DOP downgrade due to insufficient number of processes.
355	DOP downgrade because slaves failed to join.

### Resource Manager CPU Wait Event

A session waiting to be allocated CPU by the Resource Manager increments the resmgr:cpu quantum wait event. To reduce the occurrence of this wait event, verify that the low or medium service name is being used for the OAC connection or increase the number of CPUs allocated to Oracle ALK.

To see the number of waits and the average wait time, review Foreground Wait Events in the Automatic Workload Repository (AWR) report for the resmgr:cpu quantum wait event.

In this example, there were a total of 272 waits, waiting on average 588.91 milliseconds each for a total wait time of 160 seconds. It was determined that the reason was that the high database service name was being used for the OAC connection. These wait periods disappeared once the customer switched to the medium service, and the periodic slowness of their dashboard was resolved.

Event	Waits	%Time-outs	Total Wait Time (s)	Avg wait	Waits /txn	% DB time
resmgr:cpu quantum	272		160	588.91ms	0.01	0.26

### Tip When Creating a Connection to Oracle Autonomous AI Lakehouse in Oracle Analytics

In Oracle Analytics, when you define the Oracle Autonomous AI Lakehouse connection using the instance wallet, the high service name is selected by default. Change the name to low or medium to avoid limiting the number of concurrent connections.



The screenshot shows the 'Create Connection' dialog for an Oracle Autonomous Data Warehouse. The fields are as follows:

- Connection Name:** adw19c
- Description:** (empty)
- Encryption Type:** Mutual TLS
- Client Credentials:** cwallet.sso (with a 'Select...' button)
- Username:** reporting
- Password:** (masked with dots)
- Service Name:** adw19c\_high (highlighted with a red box, with a dropdown menu showing options: adw19c\_high, adw19c\_low, and adw19c\_medium)

## Connect to Oracle Autonomous AI Transaction Processing

You can create a connection to Oracle Autonomous AI Transaction Processing (ATP) and use the connection to access data.

Before you start, ask your database administrator to configure Oracle Autonomous AI Transaction Processing to allow access from Oracle Analytics Cloud. The configuration steps that administrators follow are different for public and private types of connection:

- For public connections, see [Enable Access to Oracle Autonomous AI Lakehouse Prerequisites](#).
- For private connections, see [How do I connect to a private Oracle Autonomous Ahouse in a customer VCN?](#).
- 1. To connect using a credentials wallet file, (known as **Mutual TLS** connection), download the SSL certificates from Oracle Autonomous AI Lakehouse.

See [Download Client Credentials \(Wallets\) in Using Oracle Autonomous Database Serverless](#).

To connect without using a credentials wallet file (known as **TLS** connection), skip Step 1 and go straight to the Step 2.

A credentials wallet file secures communication between Oracle Analytics and Oracle Autonomous AI Lakehouse. The wallet file (for example, `wallet_ATP.zip`) that you upload must contain SSL certificates.

2. On your home page, click **Create** then click **Connection**.
3. Click **Oracle Autonomous Transaction Processing**.
4. Enter a user-friendly **Connection Name** and **Description**.
5. For **Connect Using**, select Basic or Resource Principal.

For information about using Resource Principal, see topic "Use Resource Principal to Access Oracle Cloud Infrastructure Resources" on [Oracle Autonomous AI Database Serverless](#) or [Autonomous Database on Dedicated Exadata Infrastructure](#).

6. For **Encryption Type**:

To connect without a credentials wallet file, select **TLS**, then skip to the next step.

To connect using a credentials wallet file, select **Mutual TLS**, then click **Select** and browse for and select the Client Credentials wallet file that you downloaded from Oracle Autonomous AI Transaction Processing (for example, `wallet_ATP1.zip`). The **Client Credentials** field displays the `cwallet.sso` file.

7. For the **TLS** connection type (without a wallet), enter a **Connection String**, the **Username** and **Password** of a user in Oracle Autonomous AI Transaction Processing.
8. If you want data modelers to be able to use these connection details, select **System connection**. See [Database Connection Options](#).
9. In **Client Credentials**, then click **Select** to navigate to and select your client credentials ZIP file.
10. Under **Authentication**, specify how you'd like to authenticate the connection:
  - **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
  - **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
11. Click **Save**.
12. Use the connection to connect to your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

## Connect to Analytic Views in Oracle Autonomous AI Lakehouse

Connect to analytic views to visualize data in Oracle Autonomous AI Lakehouse.

Before you start, ask your Oracle Analytics Cloud administrator to make analytic views available through a local subject area (semantic model).

1. On your home page, click **Create** and then click **Dataset**.
2. Click **Local Subject Area**.
3. Select a subject area that's based on an analytic view.
4. Select the facts and measures that you want to analyze and add to the dataset.

You can now visualize data in this dataset.


## Connect to Oracle Fusion Cloud Applications Suite

You can connect to Oracle Fusion Cloud Applications Suite and create datasets that help you visualize, explore, and understand your applications data.

### Topics:

- [About the Oracle Applications Connector](#)
- [Connect to an Application in Oracle Fusion Cloud Applications Suite](#)
- [Configure Impersonate User for the Use Active User's Credentials Option](#)

## About the Oracle Applications Connector

The "Oracle Applications" connection type (  ) enables you to use Oracle Analytics to visualize data from applications in Oracle Fusion Cloud Applications Suite. For example, Oracle Fusion Cloud Financials. You can also use the "Oracle Applications" connection type to connect to your on-premises Oracle BI Enterprise Edition deployments (if patched to an appropriate level) or connect to another Oracle Analytics service.

You can connect to these applications in Fusion Applications Suite:

- Oracle Fusion Cloud Financials
- Oracle Fusion Cloud Human Capital Management
- Oracle Fusion Cloud Loyalty
- Oracle Fusion Cloud Procurement
- Oracle Fusion Cloud Project
- Oracle Fusion Cloud Supply Chain Planning
- Oracle Sales Automation

### Note

When you connect to applications in Fusion Applications Suite, you access the data from an Oracle Transactional Business Intelligence report. These reports are cached in Oracle Transactional Business Intelligence, and the data available in Oracle Analytics is based on the cached data. You can't control the cache behavior in Oracle Transactional Business Intelligence from Oracle Analytics.

## Connect to an Application in Oracle Fusion Cloud Applications Suite

Create a connection to an application in Oracle Fusion Cloud Applications Suite to visualize data from that application. For example, you can connect to Oracle Fusion Cloud Financials with Oracle Transactional Business Intelligence. You can also connect to Oracle BI Enterprise Edition.

1. On your home page, click **Create**, then click **Connection**.
2. Click **Oracle Applications**. 

3. Enter the connection details.
  - For **Connection Name**, specify a user-friendly name to identify the connection details in Oracle Analytics.
  - For **Host**, enter the URL for Fusion Applications Suite with Oracle Transactional Business Intelligence or Oracle BI EE.

#### Note

Don't enter the URL of the Oracle Analytics application that you're currently logged in to. If you want to visualize the data used in a local analysis, create a dataset based on the analysis (local subject area). See [Create a Dataset from a Subject Area in Your Instance](#).

- For **Username** and **Password**, specify the credentials for the 'native' administrator user specified in Identity and Access Management (IAM) in the Oracle Applications source system.
4. Under **Authentication**, select **Always use these credentials**.

Using this option means that analytics users won't be prompted to log in.

Alternatively, you can use the **Use the active user's credentials** option if in Oracle Analytics you an administrator account setup with exactly the same username as the native administrator username (the password can be different).
  5. Click **Save**.

Analytics users can now create datasets from the connection.

## Configure Impersonate User for the Use Active User's Credentials Option

You can configure "impersonate user" to enable the active user's credentials option when you use the Oracle Applications connection type.

You can implement "impersonate user" for connections to Oracle Fusion Cloud Applications Suite with Oracle Transactional Business Intelligence, and Oracle BI EE. When you use "impersonate user", users can access data allowed for the active user's permissions, privileges, and role assignments. Users aren't prompted to enter their user name and password.

### Tips on setting up impersonation

- Provision one administrator user in the Oracle Fusion Cloud Enterprise Performance Management (EPM) identity domain with the necessary roles and permissions to impersonate other users.
- Specify the credentials for this EPM administrator user when you import the metadata using the Model Administration Tool. The credentials are stored in the connection pool of the RPD data model created by the Model Administration Tool.
- In addition, the SSO checkbox must be checked on the Planning server connection pool in the RPD.
- With this setup, only one native user needs to be provisioned in the EPM identity domain. Other end users log into Oracle Analytics using their SSO credentials, and Oracle Analytics passes the SSO username to Planning and Budgeting Cloud Service when connecting, along with the credentials of the native EPM administrator user that has impersonation permissions.

- **Note:** Logging into EPM using SSO credentials isn't supported by the REST API or the Planning ADM driver.

## Provision Impersonate User for Connection to Oracle Fusion Cloud Applications Suite

You can provision the impersonate user functionality in Oracle Fusion Cloud Applications Suite when your connection target is an application in Oracle Fusion Cloud Applications Suite with Oracle Transactional Business Intelligence.

1. Log in to Oracle Fusion Applications as an administrator with privileges to create or modify a role.
2. Display the Security Console dialog, and display the **Users** tab.
3. Click **Add User Account** to create a user. For example, create a user called DV Admin.
4. Display the **Roles** tab, and click **Create Role**.
5. Enter a role name in the **Role Name** field. For example, enter `DV Access`.
6. Enter a code for the role name in the **Role Code** field. For example, enter `DV_ACCESS`.
7. Select `BI - Abstract Roles` in the **Role Category** field.
8. Skip the steps Function Security Policies and Data Security Policies.
9. In the Role Hierarchy step, click (+) **Add Role** and select the existing `BIImpersonator` role in the Add Role Membership dialog.
10. Select the user that you created (for example, DV Admin).
11. Click **Add User to Role** in the Add User dialog.
12. Click **Save and Close**.

The DV Admin user is added to the BI Impersonator role, and you can use the DV Admin user in Oracle Analytics in conjunction with the **Use Active User's Credentials** option in the Create Oracle Application Connection dialog.

You can now test the impersonate functionality.

## Provision Impersonate User for Connections to Oracle BI EE On-Premises

You can provision the impersonate user functionality in Oracle Fusion Middleware when your Oracle Application connection target is an on-premises installation of Oracle BI EE.

1. Log in to Oracle Fusion Middleware Control for your Oracle BI EE instance using an administrator account.
2. Click the **Weblogic Domain** option, and select **Security** and **Application Policies**.
3. Click **Create** to display the Create Application Grant dialog.
4. Click (+) **Add** in the Permissions area.
5. Select **Resource Types**.
6. Select `oracle.bi.user` from the drop-down list.
7. Click **Continue**.
8. Enter an asterisk (\*) in the **Resource Name** field.
9. Select "impersonate" in **Permission Actions**.
10. Click **Select**.
11. Click (+) **Add** in the Grantee section.

12. Select **User** from the **Type** drop-down list.  
You grant the newly created permission to either an application role or user.
13. Select **Includes** from the **Principal Name** drop-down list and enter an asterisk (\*) into the field.
14. Click the > arrow to display a list of users.
15. Select the user that you want to give the permission to and click **OK**.  
You can now test the impersonate functionality.

## Connect to Oracle Fusion Cloud Enterprise Performance Management (EPM)

You can create a connection to Oracle Fusion Cloud Enterprise Performance Management (EPM) and use the connection to access data.

Before you start, make sure that your product is supported. See [Which Oracle EPM Business Processes Does Oracle Analytics Support?](#).

1. On your home page, click **Create** and then click **Connection**.
2. Click **Oracle EPM Cloud** and enter the connection details.
3. For **URL**, enter the URL for the Oracle Fusion Cloud Enterprise Performance Management (EPM) data source.

Specify the URL without the application context (epmcloud or Hyperion).

For example, if the URL is:

```
https://epm-99999-plan.hap.fra.demoservices999.oraclepdemos.com/epmcloud
```

Then specify:

```
https://epm-99999-plan.hap.fra.demoservices999.oraclepdemos.com
```

4. If you want data modelers to be able to use these connection details, select **System connection**. See [Database Connection Options](#).
5. Under **Authentication**, click **Use the active user's credentials**.

Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source. Make sure that the Oracle Analytics user exists in Oracle Fusion Cloud Enterprise Performance Management (EPM).

See [Configure Impersonate User for the Use Active User's Credentials Option](#).

6. Click **Save**.

You can now create datasets from the connection and visualize the data.

Visualize Data From Oracle Enterprise Performance Management (Oracle EPM)

## Which Oracle EPM Business Processes Does Oracle Analytics Support?

When you integrate Oracle Analytics with Oracle Enterprise Performance Management, make sure that you're connecting to one of the supported business processes:

### Oracle Analytics supports:

- Financial Consolidation and Close

- FreeForm
- Planning and Planning Modules
- Profitability and Cost Management
- Tax Reporting

**Oracle Analytics doesn't support:**

- Account Reconciliation
- Enterprise Data Management Cloud
- Narrative Reporting

## Connect to Essbase

You can create, edit, and delete a connection to Essbase and use the connection to create datasets from Essbase cubes.

**Topics:**

- [Create a Connection to Oracle Essbase](#)
- [Create a Connection to Oracle Essbase Data on a Private Network Using Data Gateway](#)
- [Enable Users to Visualize Oracle Essbase Cubes Using Single Sign-on](#)

You can also connect to private Essbase data sources via Private Access Channel. See [Connect to Private Data Sources Through a Private Access Channel](#).

## Create a Connection to Oracle Essbase

You can create a connection to Oracle Analytics Cloud – Essbase to access source data.

1. On your home page, click **Create**, and then click **Connection**.
2. Click **Oracle Essbase**.
3. Enter the connection details.
4. For **DSN** (data source name), enter the agent URL for your data source.

For Oracle Analytics Cloud – Essbase use the format:

```
https://fully_qualified_domain_name/essbase/agent
```

For example: `https://my-example.analytics.ocp.oraclecloud.com/essbase/agent`.

With this URL, you can connect without having to open any ports or performing additional configuration. Oracle Analytics Cloud – Essbase must have a public IP address and use the default port.

5. For **Username** and **Password**, enter user credentials with access to the Essbase data source.
6. If you want data modelers to be able to use these connection details, select **System connection**. See [Database Connection Options](#).
7. Under **Authentication**, specify how you'd like to authenticate the connection:
  - **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.

- **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
  - (Displayed if Oracle Analytics supports impersonation for this database type) **Use the active user's credentials** - Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source.
8. Click **Save**.

You can now create datasets from the connection.

## Create a Connection to Oracle Essbase Data on a Private Network Using Data Gateway

You can create a connection to Oracle Essbase data on a private network and use the connection to access data.

You secure a connection to Oracle Essbase data held on a private network by using Data Gateway or Private Access Channel (for datasets or semantic models). For Data Gateway, your Administrator installs Data Gateway in your private network. Data Gateway then redirects queries to the Essbase host. For Private Access Channel, see [Connect to Private Data Sources Through a Private Access Channel](#).

Before you start, make sure that your Oracle Essbase Marketplace instance has signed certificates.

1. On your home page, click **Create**, and then click **Connection**.
2. Click **Oracle Essbase**.
3. Enter the connection details.
4. For **DSN** (data source name), enter the URL for your data source.

These are the connectivity options to access Oracle Essbase on your private network:

**Note:** When you specify the URL for your data source, <hostname>:<port> specify the hostname and port of the host accessible on the public internet that forwards traffic to your Data Gateway host.

- The basic URL syntax:

```
http(s)://<hostname>:<port>/essbase/capi/<private essbase host
address>/<Oracle Essbase Agent port on the
specified host>
```

For example,

```
https://myproxyhost.example.com:1234/essbase/capi/mylocalhost/1423
```

- When Oracle Essbase is running on a secure port:

```
http(s)://<hostname>:<port>/essbase/capi/<private essbase host
address>/<Oracle Essbase Agent Secure port on the specified host>/secure
```

- When Oracle Essbase is running on a secure port, with a self-signed certificate:

```
http(s)://<hostname>:<port>/essbase/capi/<private essbase host
address>/<Oracle Essbase Agent Secure port on the specified host>/
secure/selfsigned
```

5. Under **Authentication**, specify how you'd like to authenticate the connection:
  - **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
  - **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
  - (Displayed if Oracle Analytics supports impersonation for this database type) **Use the active user's credentials** - Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source.
6. If you're connecting to an on-premises database, click **Use Remote Data Connectivity**. Check with your administrator that you can access the on-premises database.
7. Click **Save**.  
You can now create datasets from the connection.


## Enable Users to Visualize Oracle Essbase Cubes Using Single Sign-on

With an Oracle Essbase data source, you can use impersonation to enable multiple users to visualize data in Oracle Essbase cubes without having to log in twice.

1. In Oracle Essbase, create a user with permissions to impersonate other users (using the *EssLoginAs* functionality).
2. (In Oracle Analytics) On your home page, click **Create**, then **Connection**, and click **Oracle Essbase**.
3. In the Create Connection page:
  - a. In **DSN**, specify the agent URL for your Oracle Essbase data source.
  - b. For **Username** and **Password**, enter the credentials for the user that you created in Step 1.
  - c. Under **Authentication**, click **Use the active user's credentials**.
4. Share this connection with the multiple users who need to visualize data. See task below.  
If they've already logged in with their Single Sign-on credentials, they can access the cubes without having to log in again.

## Share a Data Source Connection

You can assign access permissions to the data source connections that you create or administer.

1. On your home page, click **Navigator**  then click **Data**, then **Connections**.
2. Hover over the connection that you want to share, click **Actions**, then select **Inspect**.
3. Click **Access**, and use the tabs to grant access:

- **All** - Share the connection with individual users or roles.
  - **Users** - Share the connection with individual users.
  - **Roles** - Share the connection with application roles (for example, BI Consumer), so that all users with those roles can use the connection.
4. Use the **Add** box to search for and select a user or role.  
The user or role is displayed in the list below with the default privileges **Read-Only**.
  5. To change the default privileges, select one of the following:
    - **Full Control** - The user or role can use the connection to create datasets, and modify, rename, or delete the connection. They can also change the privileges for the connection.
    - **Read-Write** - The user or role can use the connection to create datasets, and modify or rename the connection (but not delete it).
    - **Read-Only** - The user or role can use the connection to create datasets, but not change the connection details.
  6. Click **Save**.

When users next log in, they can use connections that you've shared to visualize data from this database.

## Connect to NetSuite

Connect to a NetSuite (NetSuite2.com) data source to visualize ERP and CRM data.

1. On your home page, click **Create** and then click **Connection**.
2. Click **Oracle Netsuite**.
3. Enter the connection details.

To obtain the connection details for your NetSuite application, go to the NetSuite Portal home page, and navigate to **Settings** then **Set up SuiteAnalytics Connect**.

In **Role ID**, make sure that you specify the ID for a role name that doesn't contain spaces or special characters. Role names containing spaces or special characters can cause data flows to fail with an internal or syntax error.

4. Click **Save**.
5. Use the connection to connect to your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

## Connect to Oracle Talent Acquisition Cloud

You can create a connection to Oracle Talent Acquisition Cloud and use the connection to access data.

1. On your home page, click **Create** and then click **Connection**.
2. Click **Oracle Talent Acquisition** and enter the connection details.
3. For **Host**, enter the URL for the Oracle Talent Acquisition data source.

For example, if the Oracle Talent Acquisition URL is `https://example.taleo.net`, then the connection URL that you must enter is `https://example.taleo.net/smartorg/Bics.jss`.

4. Select an **Authentication** option.
  - Select **Always use these credentials**, so that the login name and password you provide for the connection are always used and users aren't prompted to log in.
  - Select **Require users to enter their own credentials** when you want to prompt users to enter their user name and password to use the data from the Oracle Talent Acquisition Cloud data source. Users are required to log in see only the data that they have the permissions, privileges, and role assignments to see.
5. Click **Save**.
6. Use the connection to connect to your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

## Connect to a Database Using Delta Sharing

You can connect to some databases using the Delta Sharing protocol, for example, Oracle Autonomous AI Lakehouse, and visualize the data.

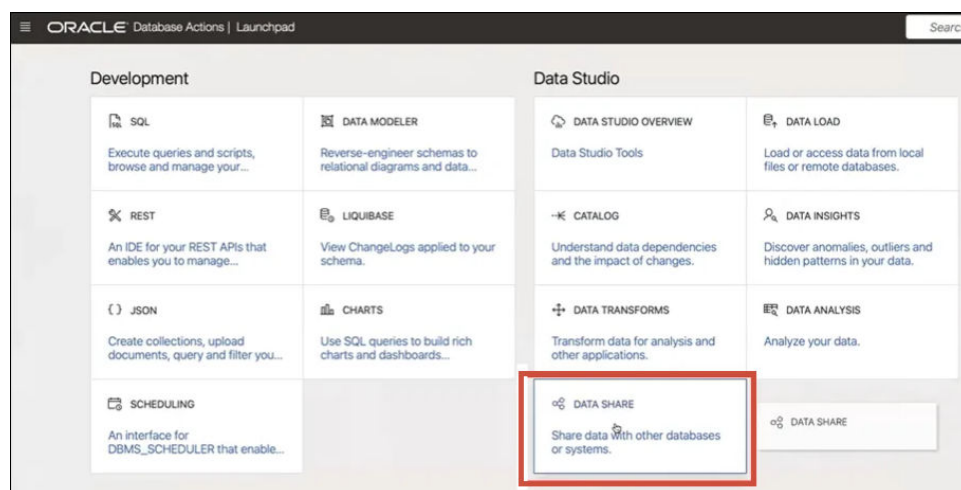
The Delta Sharing protocol provides secure data access without direct access to the source.

For a list of databases that support Delta Sharing, see [List of Supported Data Sources in Oracle Analytics Cloud](#).

Use the connection to create a dataset and build workbooks. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created. Save the dataset and use it to build workbooks.

Before you start:

- Ask the target database administrator to set up a delta sharing area and share it with you. For example, in Oracle Autonomous AI Lakehouse, an administrator creates a Data Share area, and shares it with you so that you receive a email containing an activation link. The link enables you to download a JSON file containing profile details required to create a connection in Oracle Analytics.



- If you're connecting to Databricks, make sure that your database uses a supported timestamp type. See [Delta Share](#).
1. Contact the database administrator to request a data share.

- In the activation email that you receive from the database administrator, click the activation link.
- In the activation dialog, click **Get Profile Information**.  
A credentials file for the target database is downloaded to your local area in JSON format.
- (In Oracle Analytics) On your home page, click **Create**, and then click **Connection**.
- In Create Connection, click **Delta Share**.
- Enter a **Connection Name** and optional **Description**.
- In **Connection Type**, select a type suitable for your data source. For example:
  - For Oracle Autonomous AI Lakehouse, select **Client Credentials**.
  - For DataBricks, select **Bearer Token**.
- Click **Import File** then select the JSON file containing connection details.  
Oracle Analytics populates the rest of the input fields with values from the import file.
- Click **Save**.

You're now ready to create a workbook and start visualizing your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created and create a workbook.

## Connect to Dropbox

You can create a connection to Dropbox and use the connection to access data.



[LiveLabs Sprint](#)

Before you start, set up a Dropbox application. See the Dropbox documentation.

- Ask your Oracle Analytics administrator to allow connections to Dropbox.  
Your Oracle Analytics administrator must register the following domains as safe:  
`api.dropboxapi.com`  
`*.dropbox.com`  
See Register Safe Domains.
- On your home page, click **Create**, and then click **Connection**.
- Click **Dropbox**.
- Enter a **Connection Name** and optional **Description**.
- Copy the URL displayed in the **Redirect URL** field.
- In the Dropbox application, sign-in, and paste the **Redirect URL** URL into the Dropbox **OAuth 2 Redirect URIs** field, then click **Add**.
- In Dropbox, copy the key in the **App Key** field.
- In Oracle Analytics, paste the **App Key** key into the **Client ID** field.
- In Dropbox, locate the **App Secret** field, then click **Show** and copy the value.
- In Oracle Analytics, paste the **App Secret** value into the **Client Secret** field, then click **Authorize**.
- In the Dropbox prompt to authorize the connection, click **Allow**.

The Create Connection dialog refreshes and displays the name of the Dropbox account and associated email account.

12. Click **Save**.
13. Use the connection to connect to your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

## Connect to Google Analytics

In Oracle Analytics, you can connect to a Google Analytics data source and analyze Google Analytics data. For example, you might analyze the number of hits to website landing pages over time.

Before you start, set up a Google Analytics application. See the Google documentation. To analyze historical data, obtain a JSON file from your Google Analytics V4 environment that specifies the custom tables to analyze. See [Specifying Google Analytics Custom Tables in a JSON File](#).

1. Ask your Oracle Analytics administrator to allow connections to Google.  
Your Oracle Analytics administrator must register the following domains as safe:  
`api.google.com`  
`*.google.com`  
See Register Safe Domains.
2. On your home page, click **Create**, then click **Connection**.
3. Click **Google Drive** or **Google Analytics** to display the Create Connection dialog.
4. Enter a **Connection Name** and optional **Description**.
5. Copy the URL displayed in the **Redirect URL** field.
6. In the Google application, on the Credentials page, paste the **Redirect URL** value into the Google "Authorized redirect URIs" field, then click **Add**.
7. In Google, on the Credentials page copy the "Client secret" value and the "Client ID" value.
8. In Oracle Analytics, paste the Google "Client secret" value into the **Client Secret** field.
9. In Oracle Analytics, paste the Google "Client ID" into the **Client ID** field.
10. In the Google application, copy the "Account ID" from the Account details and copy the "Property ID" from the Property details.  
In the Google administration settings, navigate to Account, then Account details to obtain the "Account ID", and navigate to Property details to obtain the "Property ID".
11. In Oracle Analytics, use the "Account ID" and "Property ID" that you copied in the previous step to specify the **Account ID** value and the **Property ID** value.
12. Optional: If you want to analyze historical data from Google Analytics, click **Import File**, and select a JSON file that specifies the Google Analytics V4 custom tables to analyze.  
See [Specifying Google Analytics Custom Tables in a JSON File](#).
13. Click **Authorize** if you're creating a connection or **Re-Authorize** if you're updating a connection.
14. In the Google prompt to authorize the connection, click **Allow**.

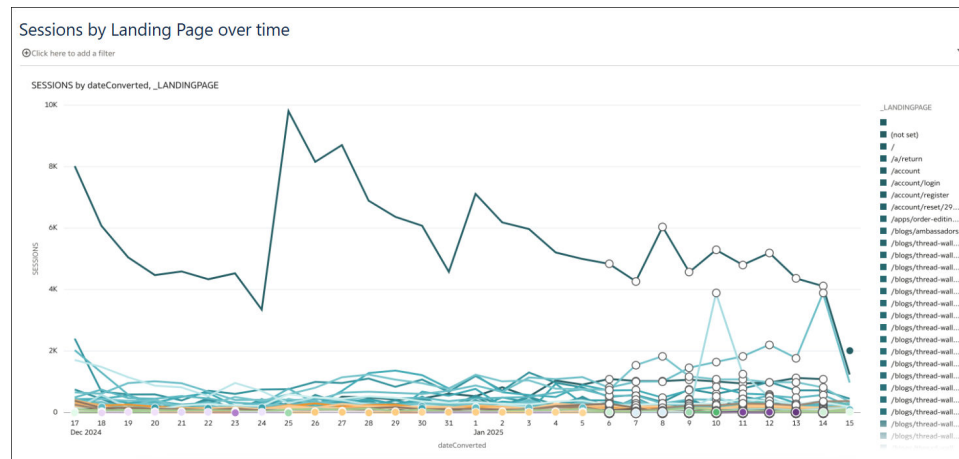
The Create Connection dialog refreshes and displays the name of the Google account, and its associated email account.

15. Click **Save**.
16. Use the connection to connect to your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

## Specifying Google Analytics Custom Tables in a JSON File

In Oracle Analytics, you can specify custom tables to analyze historical web-usage data from Google Analytics and generate reports that are similar to Google Analytics reports. For example, you might analyze the number of hits to landing pages over time.

This example Oracle Analytics report visualizes the number of hits to website landing pages over time.



Before you connect to Google Analytics, you need a JSON file that specifies the Google Analytics historical tables to analyze. You can obtain a ready-made JSON file from the Google Analytics V4 website, in the Dimensions & Metrics Explorer area under Demos & Tools.

You can also download sample JSON files from the Oracle Analytics Public Library. See [Connector Templates](#).

### Example JSON File With Historical Tables for Website Landing Pages

```
{ "LandingPage": [ "_landingPage", "_dateHourMinute", "averageSessionDuration",
"keyEvents", "newUsers", "sessions", "totalRevenue", "totalUsers" ] }
```

### Changing the Default Date Range

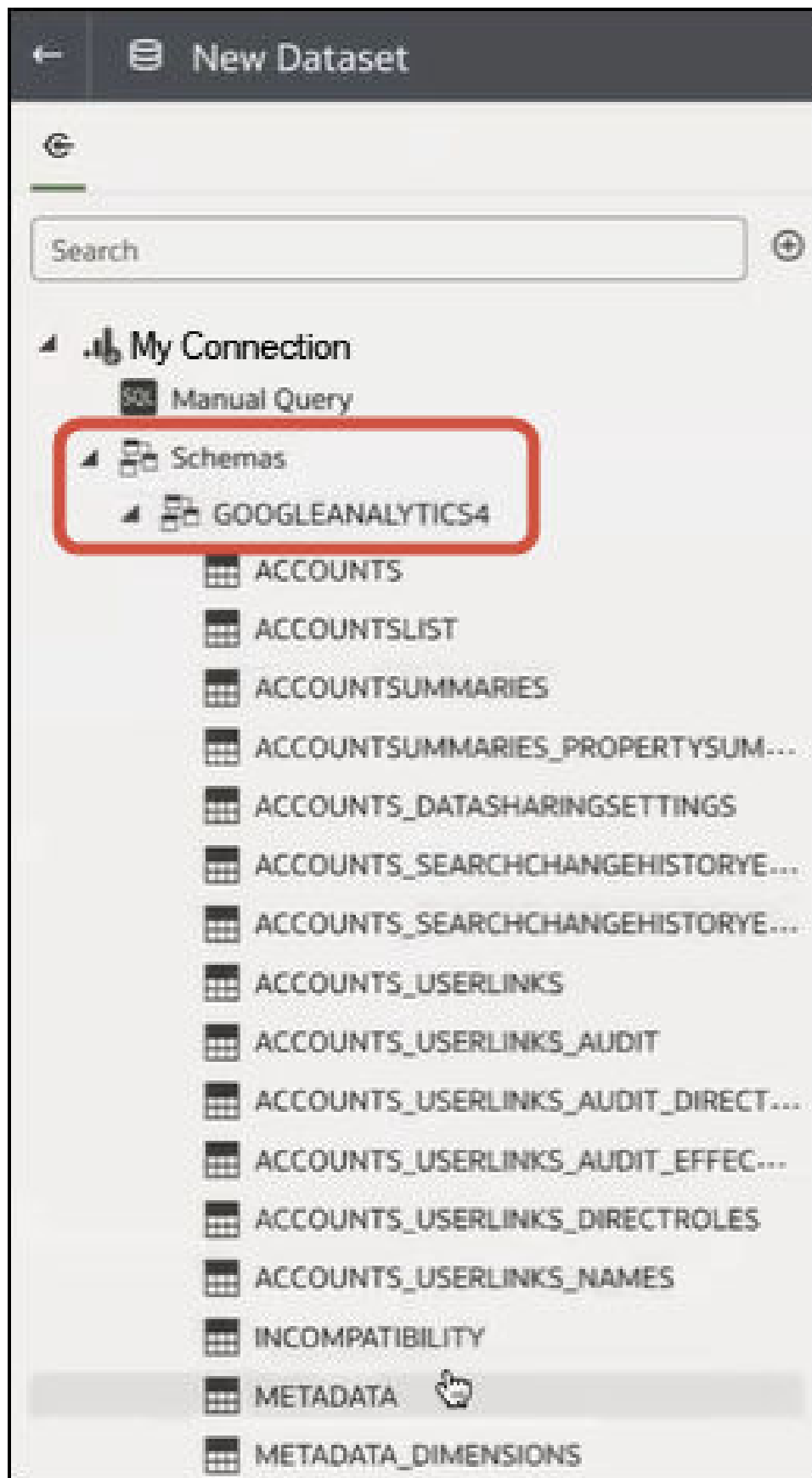
By default, data from the last 30 days is retrieved for analysis. Append a `dateRanges` tag to specify a different time range. For example, to retrieve data from the last 100 days specify `"dateRanges": [ { "startDate": "100daysAgo", "endDate": "today" } ]`

```
{ "User": [ "_audienceName", "_deviceCategory", "_yearMonth", "_country",
"userAgeBracket", "firstTimePurchaserRate", "activeUsers",
"active1DayUsers", "active28DayUsers", "active7DayUsers", "engagedSessions" ],
"dateRanges": [ { "startDate": "100daysAgo", "endDate": "today" } ] }
```

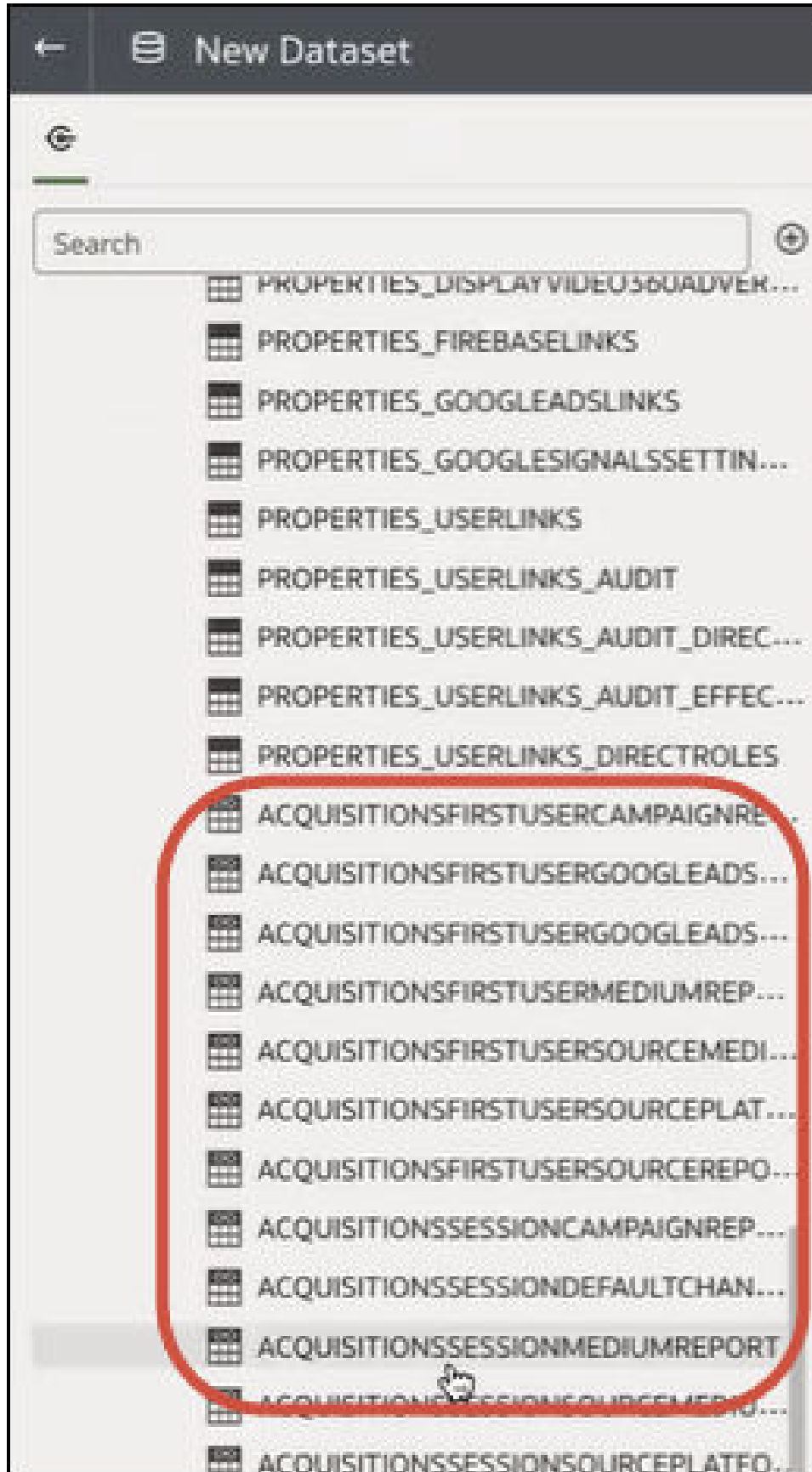
### Locating Custom Tables When You Create a Dataset

When you create a connection to Google Analytics, use the **Import File** option under **Add Custom Tables** to specify the Google Analytics historical tables to analyze.

When you create a dataset based on a Google Analytics connection created with historical tables, navigate to the `GOOGLEANALYTICSV4` schema.



Then scroll down to locate the historical tables.



## Connect to Google BigQuery

You can create a connection to a Google BigQuery database and use the connection to visualize data in a BigQuery project.

Before you start, note the following:

- Creating a connection to Google BigQuery is resource-intensive. It's best to create one connection and share it with other users, rather than having multiple users create their own connection.
  - Oracle Analytics builds a cache of tables and schemas for each project in Google BigQuery. You should limit the projects, tables, and schemas to only those required for the analysis.
  - Depending on the amount of Google BigQuery data, creating a connection can take up to several hours, so allow time for this process to complete.
  - After the connection is created, allow time before you use the connection to start analyzing your data.
  - A connection to Google BigQuery is defined explicitly to a single project. If you require data from multiple projects, then the connection must be created by a service user that has access to the projects and datasets. Dataset outputs can be blended.
1. In Google BigQuery, create a Service Account.
    - a. Add a role (for example, BigQuery User) with the permission `bigquery.jobs.create` to the Service Account.
    - b. Add Users to the role.
    - c. Add a JSON key.
  2. (In Oracle Analytics) On your home page, click **Create**, and then click **Connection**.
  3. Click **BigQuery**.
  4. Enter the connection details.
    - In **Connection Name**, specify a user-friendly name to identify the connection details in Oracle Analytics.
    - In **Project**, specify the BigQuery project you want to analyze using the name exactly as defined in Google BigQuery (case-sensitive).
    - In **Service Account Email**, specify the email address used to log into Google BigQuery.
    - In **Service Account Private Key**, upload the Service Account Private Key (JSON format).
  5. If you want data modelers to be able to use these connection details, select **System connection**. See [Database Connection Options](#).
  6. Click **Save**.

You can now create analytics dataset workbooks based on your Google BigQuery data. When you create a dataset, you navigate to BigQuery tables and select the data facts and measures to analyze. Alternatively, you can use a SQL Query to get the data directly.

## Connect to Google Drive

You can create a connection to Google Drive and use the connection to access data.

Before you start, set up a Google Drive application. See the Google documentation.

Use the latest Google Analytics connector, which supports column-listing.

1. Ask your Oracle Analytics administrator to allow connections to Google.

Your Oracle Analytics administrator must register the following domains as safe:

api.google.com

\*.google.com

See Register Safe Domains.

2. On your home page, click **Create**, then click **Connection**.
3. Click **Google Drive** or **Google Analytics** to display the Create Connection dialog.
4. Enter a **Connection Name** and optional **Description**.
5. Copy the URL displayed in the **Redirect URL** field.
6. In the Google application, on the Credentials page, paste the **Redirect URL** value into the Google "Authorized redirect URIs" field, then click **Add**.
7. In Google, on the Credentials page copy the "Client secret" value and the "Client ID" value.
8. In Oracle Analytics, paste the Google "Client secret" value into the **Client Secret** field.
9. In Oracle Analytics, paste the Google "Client ID" into the **Client ID** field, then click **Authorize**.
10. In the Google prompt to authorize the connection, click **Allow**.  
The Create Connection dialog refreshes and displays the name of the Google account, and its associated email account.
11. Click **Save**.
12. Use the connection to connect to your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

## Connect to Snowflake Data Warehouse

You can create a connection to Snowflake Data Warehouse and use the connection to access data for visualization and data-modeling.

Before you start, create a key-pair by following the steps in [Set Up Key-Pair Authentication for Snowflake Data Warehouse](#)

See format guidelines, <https://docs.snowflake.net/manuals/user-guide/connecting.html>.

1. On your home page, click **Create**, and then click **Connection**.
2. Click **Snowflake Data Warehouse**.
3. Enter a Connection Name.
4. In **Authentication Type**, select **Key Pair**.

If you've been using single-factor (basic) authentication, switch to key-pair authentication. Single factor password authentication in Snowflake is desupported from November 2025.

5. In **Hostname**, enter the host account name using one of the following formats:
  - For Amazon Web Services US West, use `<account>.snowflakecomputing.com`
  - For all other regions on Amazon Web Services, use `<account>.<region>.snowflakecomputing.com`
  - For all regions on Microsoft Azure, use `<account>.<region>.azure.snowflakecomputing.com`

Where `account` is the Snowflake account name that you want to use to access the data, for example: `exampleaccountname.snowflakecomputing.com`.
6. For **Database Name**, enter the name of the database containing the schema tables and columns that you want to connect to.
7. For **Username**, enter a user ID with access to the Snowflake data source.
8. In **Private API Key**, click **Select** and select the private key that you created when you set up key-pair authentication.
9. For **Warehouse**, enter the name of the warehouse containing the database, schema tables and columns that you want to connect to. For example, `My Snowflake Warehouse`.
10. If you want data modelers to be able to use these connection details. click **System connection**. See [Database Connection Options](#).
11. Click **Save**.

## Set Up Key-Pair Authentication for Snowflake Data Warehouse

You can create a key-pair to authenticate a connection to Snowflake Data Warehouse.

1. Open a local terminal window.
2. Create a private key using this command:

```
openssl genrsa 2048 | openssl pkcs8 -topk8 -inform PEM -out rsa_key.p8 -nocrypt
```
3. Create a public key using this command:

```
openssl rsa -in rsa_key.p8 -pubout -out rsa_key.pub
```
4. Log into your Snowflake account and create a SQL worksheet.
5. Assign the public key to a Snowflake user.

```
ALTER USER <user> SET RSA_PUBLIC_KEY = <public key>;
```
6. Verify the assigned public key of the Snowflake user using this command:

```
DESCRIBE USER <user>;
```

## Connect to OCI Data Flow SQL Endpoints

OCI Data Flow SQL Endpoints enables business analysts and data scientists to analyze both structured and unstructured data in object storage with high performance and scalability.

OCI Data Flow SQL Endpoints enable you to analyze large volumes of event and time-series data in-place on the data lake without having to move and summarize it for performance.

### Topics:

- [Overview to Analyzing OCI Data Flow SQL Endpoints](#)

- [Download JDBC Connection Details for Data Flow SQL Endpoints to a JSON File](#)
- [Create a Connection to OCI Data Flow SQL Endpoints](#)

For general information about OCI Data Flow SQL Endpoints, see [SQL Endpoints](#) in the Oracle Cloud Infrastructure documentation.

## Overview to Analyzing OCI Data Flow SQL Endpoints

You use Oracle Analytics Cloud to analyze data from OCI Data Flow SQL Endpoints in object storage, data lakes, and applications.

Data Flow SQL Endpoints are designed for developers, data scientists, and advanced analysts to interactively query data directly where it lives in a data lake.

### Benefits of Using OCI Data Flow SQL Endpoints

- You can analyze large volumes of event and time-series data in-place on the data lake without having to move and summarize it for performance.
- You can consolidate data from multiple applications and data stores (for example, in Enterprise Resource Planning) into object storage and perform ad hoc queries regardless of where the data originates.
- You can dispense with extracts and pre-aggregation and work on live data at any level of granularity. So not only can you save the time and effort when preparing the data, you have more powerful analysis capabilities.

### Best Practices for Performance

- 

PROD_ID	PROD_NAME	PROD_DESC	PROD_SUBCATEGORY	PROD_SUBCAT	PROD_SUBCATEGO...
13	SMP Telephoto Digital Camera	SMP Telephoto Digital Camera	Cameras	2,044	Cameras
14	17" LCD w/built-in HDTV Tuner	17" LCD w/built-in HDTV Tuner	Monitors	2,035	Monitors
15	Envoy 250MB - 40GB	Envoy 250MB - 40GB	Desktop PCs	2,021	Desktop PCs
16	Y Box	Y Box	Game Consoles	2,011	Game Consoles
17	Mini DV Camcorder with 3.5" Swivel LCD	Mini DV Camcorder with 3.5" Swivel LCD	Camcorders	2,041	Camcorders
18	Envoy Ambassador	Envoy Ambassador	Portable PCs	2,022	Portable PCs
19	Laptop carrying case	Laptop carrying case	Accessories	2,051	Accessories
20	Home Theatre Package with DVD-Audio/Video Play	Home Theatre Package with DVD-Audio/Video Play	Home Audio	2,012	Home Audio
21	18" Flat Panel Graphics Monitor	18" Flat Panel Graphics Monitor	Monitors	2,035	Monitors
22	Envoy External Keyboard	Envoy External Keyboard	Accessories	2,031	Accessories
23	External 101-key keyboard	External 101-key keyboard	Accessories	2,051	Accessories
24	PCMCIA modem/fax 28800 baud	PCMCIA modem/fax 28800 baud	Modems/Fax	2,034	Modems/Fax
25	SIMM- 5MB PCMCIA(I) card	SIMM- 5MB PCMCIA(I) card	Memory	2,033	Memory
26	SIMM- 16MB PCMCIA(I) card	SIMM- 16MB PCMCIA(I) card	Memory	2,033	Memory
27	Multimedia speakers- 3" cones	Multimedia speakers- 3" cones	Accessories	2,031	Accessories
28	Unix/Windows 1-user pack	Unix/Windows 1-user pack	Operating Systems	2,052	Operating Systems
29	8.3 Minitower Speaker	8.3 Minitower Speaker	Home Audio	2,012	Home Audio
30	Mouse Pad	Mouse Pad	Accessories	2,051	Accessories

To take advantage of the indexing and caching at the Spark Cluster tier, create a dataset based on a single table or view. Datasets based on multi-table joins are supported, but not recommended.

- When you configure the OCI Data Flow SQL Endpoints cluster, set `incrementalCollect` to `true`, for example:  

```
spark.sql.thriftServer.incrementalCollect=true;
```

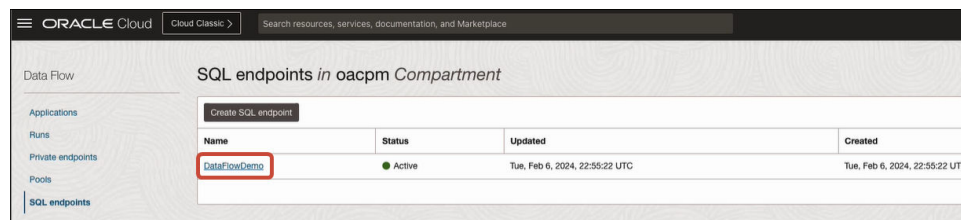
## Visualizing Data From OCI Data Flow SQL Endpoints

In the Oracle Analytics Cloud workbook editor, add multiple OCI Data Flow SQL Endpoints tables or cubes. When you select a table or cube, you can add dimension columns and measure columns to your datasets for analysis.

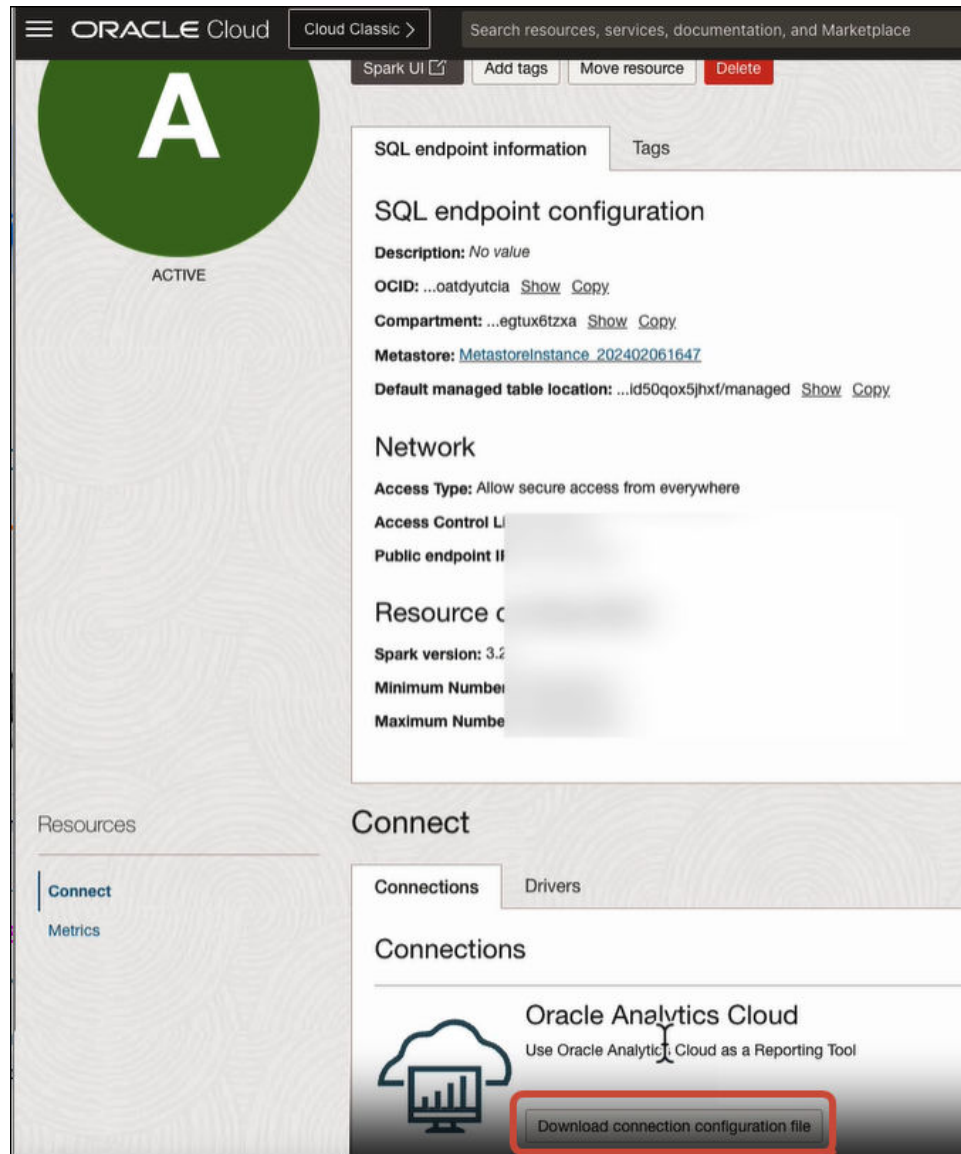
## Download JDBC Connection Details for Data Flow SQL Endpoints to a JSON File

Download and configure JDBC connection details in a JSON file to use when you connect to OCI Data Flow SQL Endpoints from Oracle Analytics Cloud.

1. In OCI, navigate to Data Flow, SQL endpoints, and click the name of your data flow SQL endpoint.



2. Scroll down to the Connect area, and under Connections - Oracle Analytics Cloud, click **Download connection configuration file**.



The connection configuration file is downloaded and saved to your local area.

You're now ready to connect to your OCI Data Flow SQL Endpoints data source in Oracle Analytics. See [Create a Connection to OCI Data Flow SQL Endpoints](#).

## Create a Connection to OCI Data Flow SQL Endpoints

You can create a connection to a OCI Data Flow SQL Endpoints and use the connection to visualize data.

Before you start, in OCI Console download a JSON file containing connection details for the OCI tenancy where the OCI data flow is located. See [Download JDBC Connection Details for Data Flow SQL Endpoints to a JSON File](#). In addition, copy an API Key from the User Tenancy area (in a Privacy Enhanced Mail (PEM) file).

1. On your home page, click **Create**, and then click **Connection**.
2. Click **OCI Data Flow**.

3. In **Connection Name**, specify a user-friendly name to identify the connection in Oracle Analytics.
4. In **Connection Details**, click **Select**, navigate to your JDBC connection JSON file that you downloaded, then click **Open**.

Oracle Analytics uses the JSON file to populate the **Host**, **Database**, **User OCID**, **Tenancy OCID**, and **Region** fields.

5. In **Private API Key**, click **Select**, navigate to your PEM file containing the API Key, then click **Open**.

Oracle Analytics uses the PEM file to populate the **API Key Fingerprint** field.

6. Click **Save**.

You're now ready to create a workbook and start visualizing your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created and create a workbook.

## Connect to Data from REST Endpoints

You can connect to data sources with REST endpoints in JSON format and analyze the data. For example, connect to SaaS or PaaS applications or government data such as weather, spatial, or census data.

Connecting to data via REST endpoints enables you to analyze data from many transactional SaaS or PaaS applications without having to understand the internal format or structure of the data.

Before you start, make sure that the data source can output data in JSON format.

1. Store the data source's REST endpoint connection details in a JSON file. See [Specifying REST Endpoint Connection Details in a JSON File](#).

You can download example JSON files from the Oracle Analytics Public Library. See [JSON Examples for Common Data Sources with REST Endpoints](#).

2. Create a connection in Oracle Analytics by uploading the zipped JSON file. See [Create a Connection to a Data Source with REST Endpoints](#).
3. Use the connection. For example, from the Home page, click **Create**, then **Dataset**, then select the connection that you created in Step 2.

See [Troubleshooting Connection to Data Sources with REST Endpoints](#).

## Specifying REST Endpoint Connection Details in a JSON File

Before you create a connection from Oracle Analytics Cloud to a data source's REST endpoints, create a zipped JSON file containing the connection details. Make sure that the data source can output data in JSON format.

You can download a JSON template from the [Oracle Analytics Public Library](#). Store the connection details in a JSON file based on the template, then compress the JSON file in ZIP format. You can also download example JSON files for a range of SaaS and PaaS applications.

### JSON Template Format for Connection to REST Endpoints

```
{
  "name": "Connection name",
  "description": "Brief description",
```

```

    "baseUrl": "URL, e.g. https://api.surveymonkey.com/v3",
    "endpoints": {
      "Endpoint 1": "Endpoint 1 URL, e.g. https://api.surveymonkey.com/v3/
users/endpoint1",
      "Endpoint 2": "Endpoint 2 URL, e.g. https://api.surveymonkey.com/v3/
question_bank/endpoint2",
      "Endpoint n": "Endpoint n URL, e.g. https://api.surveymonkey.com/v3/
users/endpointn"
    },
    "authentication": {
      "type": "Authentication type"
    }
  }
}

```

### JSON Example for Connection to Survey Monkey REST Endpoints

```

{
  "name": "Survey Monkey Connection",
  "description": "Survey Monkey connection",
  "baseUrl": "https://api.surveymonkey.com/v3",
  "endpoints": {
    "Users": "https://api.surveymonkey.com/v3/users/me",
    "Questions": "https://api.surveymonkey.com/v3/question_bank/questions"
  },
  "authentication": {
    "type": "HttpHeader"
  }
}

```

### About OAuth2 Authentication

Before you start, make sure that your target data source supports OAuth2 authentication; not all data sources do support OAuth2.

When you create the JSON file using one of the downloaded templates, specify the appropriate authentication type in the `authentication-type` field.

OAuth2 Types	Valid Values for the authentication-type field.
OAuth2 Code	OAuth2Code
OAuth2 Password Credentials	OAAUTH2PasswordGrant
OAuth2 Implicit	OAAUTH2ImplicitGrant
OAuth2 Client Credentials	OAAUTH2ClientCredentials

In this example, the OAuth2 Password Credentials authentication method is specified using "OAAUTH2PasswordGrant" as the `authentication-type` value.

```
{
  "name": "Name of the datasource",
  "description": "Description about datasource",
  "baseURL": "https://companyname.com",
  "endpoints": {
    "endpointExample1": "/example1",
    "endpointExample2": "/example2"
  },
  "authentication": {
    "//OAuth type": "OAuth2Code or OAUTH2ClientCredentials or OAUTH2ImplicitGrant or OAUTH2PasswordGrant",
    "//Others": "noauth or HttpHeader or BasicAuth",
    "type": "OAUTH2PasswordGrant"
  }
}
```

### Other tips on creating the JSON file

- Remove unnecessary parameters and values from the file.
- Make sure that the Authentication type value is set to noauth, BasicAuth, HttpHeader, or one of the OAuth2 settings in the table above.

## Create a Connection to a Data Source with REST Endpoints

You can connect to data sources with REST endpoints in JSON and analyze the data. For example, connect to SaaS or PaaS applications or government data such as weather, spatial, or census data.


Connecting to data using REST endpoints enables you to analyze data from many transactional SaaS or PaaS applications without having to understand the internal format or structure of the data.

Before you start, create a JSON file for the data source you're connecting to. See [Specifying REST Endpoint Connection Details in a JSON File](#).

1. On the Oracle Analytics Home page, click **Create**, then click **Connection**, then click **REST API (Preview)**.
2. In **Connection Name**, specify a user-friendly name to identify this connection in Oracle Analytics.
3. Click **Import File** and select the REST connector ZIP file that you created as a prerequisite.

The **Description** and **REST base URL** fields are populated from the imported file, and the endpoint table displays the **Name** and **Relative URL** for each available endpoint.

← **Create Connection**



REST API (Preview)

\* Connection Name

Description

\* REST base URL

REST Endpoints

	Name	Relative URL
×	events	events
×	categories	categories
×	business	businesses/search?location=27617

Authentication

4. Optional: Edit the endpoints to match your business requirements. For example, you might delete endpoints that you don't need.
  - To edit an endpoint, double-click the **Name** or **Relative URL** value in the table and edit the text.
  - To add an endpoint, click **Add endpoint** to add a row to the table, and edit the default name and relative URL.
  - To remove an endpoint, click **Delete Row** next to the endpoint (that is, **X**).
5. In **Authentication**, select how you want to protect the connection.

**Tip:** Make sure that the authentication type you select matches the authentication-type specified in the uploaded JSON file. See [Specifying REST Endpoint Connection Details in a JSON File](#).

- **No Authentication** - Allow connection without authentication. Use this option to connect to public endpoints.
- **Basic** - authenticate the connection with a username and password.
- **HTTPHeader** - Authenticate the connection with a security token.
- **OAuth2 Code** - Connect to a client using an authorization code generated in your target application (known as the Authorization Code grant type). This is the most secure OAuth2 connection type.
- **OAuth2 Password Credentials** - Connect to a trusted client using a password, (known as the Password Credentials or Resource Owner Password grant type). Use this connection type if you're using a trusted client.
- **OAuth2 Implicit** - Connect to a client using a public code generated in your target application (known as the Authorization Code grant type). This is less secure than the OAuth2 Code connection type, but is easier to implement.

- **OAuth2 Client Credentials** - Connect to a client using a token, (known as the Client Credentials grant type).

For guidance on specifying OAuth2 connection details, see [OAuth2 Authentication Values for REST Enabled Data Sources](#).

6. Click **Save**.

## OAuth2 Authentication Values for REST Enabled Data Sources

When you connect to a REST enabled data source using one of the OAuth2 authentication types (that is, **OAuth2 Code**, **OAuth2 Password Credentials**, **OAuth2 Implicit**, or **OAuth2 Client Credentials**), you're prompted to specify connection details appropriate for authentication type that you use.

Connection dialog field or option	Description
<b>Authorize</b>	Click <b>Authorize</b> to test the connection and request necessary codes and tokens.
<b>Auth URL</b>	Enter the URL for the authentication page in the target application. For example, <code>https://example.com/login/oauth/authorize</code> .
<b>Client ID</b>	Enter the Client ID that you copy from your target application, such as Chimp, which is typically a string of integers and letters.
<b>Client Secret</b>	Enter the Client Secret that you copy from your target application, such as Chimp, which is typically a string of integers and letters.
<b>Password</b>	Enter the password used to log into your target application.
<b>Scope</b>	Enter <code>read:</code> or <code>write:</code> followed by the name of the target. For example, <code>read:org</code> .
<b>Token URL</b>	Enter the authorization URL provided by the target application. For example, <code>https://example.com/login/oauth/access_token</code> .
<b>Username</b>	Enter the username used to log into your target application.

## Troubleshooting Connection to Data Sources with REST Endpoints

Here're some tips on addressing issues you might encounter when you connect to REST endpoints.

### Creating OAC Connections to data sources with REST endpoints

- **Failed to Import the file - Invalid JSON file provided**
  1. Extract the connection.json file from the uploaded ZIP file.
  2. Validate the JSON using any JSON validator, and fix any syntax errors.
  3. Re-create the connection ZIP file and retry the uploading using the **Import file** option on the Create Connection dialog.
- **Invalid REST Base URL** - Check the base URL using HTTP or CURL by appending each endpoint one at a time.
- **Failed to Import the file - Invalid Authentication Types** - In the JSON file, make sure that the `Authentication type` value is set to `noauth`, `BasicAuth`, or `HttpHeader`.
- **One Endpoint Table is Invalid** - Validate each endpoint URL using HTTP or CURL, and correct any errors.

- **Forbidden Access to some of the end points** - Using CURL or HTTP, validate each endpoint by appending a BASE URL to it using same user credentials. Provide access to any endpoints that don't have access or remove the endpoints from the JSON file.
- **Endpoint URL is invalid** - Using CURL or HTTP, validate each endpoint by appending a BASE URL to it. Correct any invalid endpoints or remove the endpoints from the JSON file.
- **Invalid Username/Password** - Using CURL or HTTP, validate the credentials for each endpoint.
- **Invalid JSON Response from REST data source** - Using HTTP or CURL, connect to the REST data source, extract the response received, and validate the response using a JSON validator. If necessary, contact the administrator of the data source to correct data issues. Make sure that the data source can output data in JSON format.
- **URI too long** - Make sure that the URIs are no more than 8000 characters in length.

## Connect to Remote Data Using Generic JDBC

In Oracle Analytics Cloud , you can connect to a range of non-certified remote on-premises databases using the **JDBC** connection type.

### Note

- Oracle doesn't manage the license or usage compliance for any JDBC drivers that you deploy in your on-premises environment.
- Although the **JDBC** connection type is certified, Oracle can't guarantee to resolve issues with uncertified data sources that you connect to using the **JDBC** connection type. Make sure that you fully test data sources and database features before deployment to production.
- Oracle Analytics might be unable to list database objects with some JDBC drivers.

Before you start, check with your service administrator that remote connectivity is enabled in Oracle Analytics and that your data source is accessible from the instance where Data Gateway is installed.

Check the driver documentation and the JAR file for specifying the URL of your JDBC data source. Avoid using instance-specific connection names such as host names, because the same connection can be configured against different databases in different environments (for example, development and production). When you create a connection using JDBC, the **Use Remote Data Connectivity** option is selected by default and greyed out because you can't use generic JDBC connections for local data sources.

1. Download the JDBC driver JAR file that you're deploying.
2. Navigate to the `\<Data Gateway installation>\` folder and copy in the JAR file that you downloaded in Step 1.
  - In a server deployment, copy the JAR file into: `<Data Gateway install_location>/domain/jettybase/thirdpartyDrivers`.
  - In a personal deployment on Windows, copy the JAR file into: `<Data Gateway_extract_path>\thirdpartyDrivers`.
  - In a personal deployment on MacOS, copy the JAR file into: `<Application->Show Package Contents->Resources->app.nw-> thirdpartyDrivers`.

- Restart the Data Gateway agent.
- On your home page, click **Create**, and then click **Connection**.
- Click **JDBC**.
- Enter the URL of your JDBC data source in the **Host** field.
- Enter the driver class name contained in the JAR file or from the download location in the **Driver Class** field.
- Enter user credentials with access to the data source in the **Username** and **Password** fields.
- Click **Save**.
- Use the connection to connect to your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

## Connect to a Remote Databricks Data Source

In Oracle Analytics, you can connect to a remote Databricks data source.

Oracle Analytics requires that remote connectivity is enabled and that your Databricks service is accessible from the instance where Data Gateway is installed. In addition, Data Gateway must be configured with a Databricks driver. See [Configure Remote Data Connectivity for a Databricks Data Source](#).

- On your home page, click **Create**, and then click **Connection**.
- Click **Databricks**.
- In **Connection Name**, enter a user-friendly display name.
- In **Connection Type**, select **Basic** or **Advanced**, depending on your requirements.
  - Basic** - Provide target data source details as **Host**, **Port**, and **Http Path**.
  - Advanced** - Provide target data source details as a string in **Connection String**.

To obtain the connection details, refer to the JDBC/ODBC tab for a Databricks cluster, or the Connection Details tab for a Databricks SQL warehouse.

- For **Host**, copy in the hostname for your Databricks data source. For example, `adb-1234567890.1.azure.databricks.net`.
- For **Port**, copy in the port number for your Databricks data source. For example, 443.
- For **Http Path**, copy in the Http Path value for your Databricks data source. For example, `/sql/1.0/warehouses/a1234567890b1234567890a`.
- For **Connection String**, specify a JDBC connection URL in the format:  
`jdbc:databricks://<server-hostname>:443;httpPath=<http-path>[;<setting1>=<value1>;<setting2>=<value2>;<settingN>=<valueN>]`

For example:

```
jdbc:databricks://  
adb-1234567890.1.azure.databricks.net:443;HttpPath=/sql/1.0/warehouses/  
a1234567890b1234567890a
```

- For **Username** and **Password**, enter user credentials with access to the Databricks data source.
- In **Driver Class Name** (read-only), you can view the full path of the driver being used.

**Note**

The **Use Remote Data Connectivity** option is selected by default and greyed out because you can't use this connection type with local data sources.

7. Click **Save**.

## Configure Remote Data Connectivity for a Databricks Data Source

In Oracle Analytics, you can connect to a remote Databricks data source using Data Gateway. Before workbook creators connect to the Databricks data source, you must configure your Data Gateway installation to support Databricks.

You supply your own Databricks JDBC driver. Oracle doesn't manage the license or usage compliance for Databricks drivers. Make sure that you fully test data sources and database features before deployment to production.

Oracle Analytics requires that remote connectivity is enabled and that your Databricks service is accessible from the instance where Data Gateway is installed. See [Connect to On-premises Data Sources Using Data Gateway](#).

1. Download the latest Databricks JDBC driver JAR file from the Databricks website.
2. In each Data Gateway installation that you have, navigate to the `\<Data Gateway installation>\` folder and copy in the JAR file.
  - In a server deployment, copy the JAR file into: `<Data Gateway install_location>/domain/jettybase/thirdpartyDrivers`
  - In a personal deployment on Windows, copy the JAR file into: `<Data Gateway_extract_path>\thirdpartyDrivers`
  - In a personal deployment on MacOS, copy the JAR file into: `<Application->Show Package Contents>Resources->app.nw-> thirdpartyDrivers`

3. Restart the Data Gateway agent.

See [Start and Stop a Data Gateway Agent](#).

You can now use the Databricks connection type to connect to your data source. See [Connect to a Remote Databricks Data Source](#).

## Connect to a Remote Trino Data Source

In Oracle Analytics, you can connect to a remote Trino data source.

Oracle Analytics requires that remote connectivity is enabled and that your data source is accessible from the instance where Data Gateway is installed. In addition, Data Gateway must be configured with a Trino driver. See [Configure Remote Data Connectivity for a Trino Data Source](#).

**Note:** The **Use Remote Data Connectivity** option is selected by default and greyed out because you can only use this connection type with remote data sources.

1. On your home page, click **Create**, and then click **Connection**.
2. Click **Trino**.
3. In **Connection Name**, enter a user-friendly display name.
4. Provide connection details.

- For **Host**, copy in the hostname for your Trino web server. For example, `http://example.net/`.
  - For **Port**, copy in the port number for your Trino web server. For example, 8080 (for HTTP) or 443 (for HTTPS).
  - For **Catalog** and **Schema**, optionally specify the Trino catalog and schema (for example, `hive` and `sales`). If you omit these values, you can navigate to a specific data area when you create a dataset in Oracle Analytics.
5. In **Authentication Type**, select **No Authentication** or **Ldap**, depending on your requirements.
- **No Authentication** - Connect to Trino insecurely without security verification.
  - **Ldap** - Connect securely using Lightweight directory access protocol (LDAP). For **Username** and **Password**, enter user credentials with access to the Trino data source.
- For **SSL Verification**, specify one of these values:
- `FULL` - The standard TLS verification is performed.
  - `CA` - Only the CA (Certificate Authority) is verified but hostname mismatch is allowed.
  - `NONE` - No verification is performed.
6. Click **Save**.

## Configure Remote Data Connectivity for a Trino Data Source

In Oracle Analytics, you can connect to a remote Trino data source using Data Gateway. Before workbook creators connect to the Trino data source, you must configure your Data Gateway installation to support Trino.

You supply your own driver for Trino connectivity. Oracle doesn't manage the license or usage compliance for Trino drivers. Make sure that you fully test data sources and database features before deployment to production.

Oracle Analytics requires that remote connectivity is enabled and that your data source is accessible from the instance where Data Gateway is installed. See [Connect to On-premises Data Sources Using Data Gateway](#).

1. Download Version 352 of the Trino JDBC driver from the Maven central repository (in the Trino JDBC area `repol.maven.org/maven2/io/trino/trino-jdbc/`).
- Note:** Trino JDBC driver versions higher than 352 are compiled with JDK 11 and don't work with Data Gateway.
2. In each Data Gateway installation that you have, navigate to the `\<Data Gateway installation>\` folder and copy in the JAR file.
    - In a server deployment, copy the JAR file into: `<Data Gateway install_location>/domain/jettybase/thirdpartyDrivers`
    - In a personal deployment on Windows, copy the JAR file into: `<Data Gateway_extract_path>\thirdpartyDrivers`
    - In a personal deployment on MacOS, copy the JAR file into: `<Application->Show Package Contents>Resources->app.nw-> thirdpartyDrivers`
  3. Restart the Data Gateway agent.
- See [Start and Stop a Data Gateway Agent](#).

**Tip:** Use the Query Page in Data Gateway to test the JDBC driver. See [Diagnosing Connection Issues Using The Query Page](#). See [JDBC driver](#) for information about the JDBC connection string and driver class. You can now use the Trino connection type to connect to your data source. See [Connect to a Remote Trino Data Source](#).

## Connecting to Data Sources Using Kerberos Authentication

You can connect from Oracle Analytics to Spark, Hive, and Impala using Kerberos.

### Topics:

- [Create the Archive File Needed for a Database Connection with Kerberos Authentication](#)
- [Connect to a Spark or Hive Database Using Kerberos Authentication](#)

## Create the Archive File Needed for a Database Connection with Kerberos Authentication

To connect to a data source using Kerberos authentication, you can supply connection details to Oracle Analytics using connection details stored in an archive file (for example, a compressed file with a \*.zip file extension).

Storing connection details in an archive file (that is, a compressed file with a \*.zip file extension) makes it easy to connect to a Spark or Hive data source without having to manually enter connection details.

The archive file requires a directory named `kerberos` that contains the following files :

- `kerberos/krb5conf`
- `kerberos/oac.keytab`
- `kerberos/service_details.json`

The `service_details.json` file contain values for Host, Port, and ServicePrincipalName with parameter values in quotation marks ("value"). For example:

```
{
  "Host" : "myHost.com",
  "Port" : "10000",
  "ServicePrincipalName" : "hive/myHostDB.com@BDA.COM"
}
```

1. Obtain the Kerberos configuration files from your database administrator, for example, to connect to Apache Hive.
2. Create a folder named `kerberos` to contain the Kerberos configuration files.
3. Copy the `krb5conf` file into the `kerberos` folder that you created.
4. Ensure the `.keytab` file is named `oac.keytab` (rename it if required), and copy the file into the folder you created.
5. Get or create the `service_details.json` file and save it in the folder you created.
6. Create an archive file containing the three files that you added to your folder, and provide an appropriate name, for example `SSLKerberos.zip`.

## Connect to a Spark or Hive Database Using Kerberos Authentication

You can connect to a Spark or Hive database using Kerberos network authentication protocol.

Before you start, store the Kerberos connection details in an archive file (that is, a compressed file with a \*.zip file extension).

To find out which database types support Kerberos authentication, look for databases with 'Supports Kerberos' in the **More Information** column in the Supported Data Sources list. See Supported Data Sources.

1. On your home page, click **Create**, and then click **Connection**.
2. Select a Hive connection type (such as **Apache Hive** or **Hortonworks Hive**) or a Spark connection type .
3. Click **Authentication Type** and select **Kerberos**.
4. In the **Client Credentials** field, either drag and drop or click **Select** to browse for a prepared archive or CONF file.

Do one of the following to get the appropriate configuration files for a SSL or a Non-SSL connection:

- Ask your administrator to provide the appropriate archive or CONF files.
  - Prepare your own archive file.
5. If you added an archive file, enter the archive file password in the **ZIP Password** field.
  6. If you added a `krb5conf` file, either drag and drop or click **Select** to browse for the `oac.keytab` file in the **Keytab** field.

The **Host**, **Port**, and **Service Principal** fields automatically display values taken from the `service_details.json` file.

7. If you're connecting to an on-premises database, click **Use Remote Data Connectivity**.  
Your administrator can enable this checkbox in the Console.  
Check with your administrator that you can access the on-premises database.
8. If you're connecting to your data using SSL, click **Enable SSL**.
9. If you want data modelers to be able to use these connection details. click **System connection**. See [Database Connection Options](#).
10. Click **Save**.

## Connect to Oracle Service Cloud

Connect to an Oracle Service Cloud data source to visualize CRM data.

1. On the Home page, click **Create** and then click **Connection**.
2. Click **Oracle Service Cloud** and enter the connection details.
3. Click **Save**.
4. Use the connection to connect to your data. For example, from the Home page, click **Create**, then click **Dataset**, then select the connection that you just created.

# 4

## Connect to Data for Pixel-Perfect Reports

This topic describes how to connect to data sources for creating pixel-perfect reports using Publisher.

### Topics:

- [Overview to Connecting to Data Sources for Pixel Perfect Reports](#)
- [About Private Data Source Connections](#)
- [Grant Access to Data Sources Using the Security Region](#)
- [About Proxy Authentication](#)
- [Choose JDBC or JNDI Connection Type](#)
- [About Backup Databases](#)
- [About Pre Process Functions and Post Process Functions](#)
- [Set Up a JDBC Connection to a Data Source](#)
- [Set Up a Database Connection Using a JNDI Connection Pool](#)
- [Set Up a Connection to an OLAP Data Source](#)
- [Set Up a Connection to a Web Service](#)
- [Set Up a Connection to an HTTP Data Source](#)
- [Set Up a Connection to a Content Server](#)
- [Set Up a Connection to a Snowflake Data Warehouse](#)
- [View or Update a Connection to Data Source](#)

## Overview to Connecting to Data for Pixel-Perfect Reports

You can use a variety of data sources for pixel-perfect reports.

The data can come from:

- Databases
- HTTP XML feeds
- Web Services
- Oracle BI Analyses
- OLAP cubes
- LDAP servers

You can connect to on-premises data sources over a Private Access Channel (PAC). See [Connect to Private Data Sources Through a Private Access Channel](#).

## About Private Data Source Connections

Private connections for OLAP, JDBC, Web Service, and HTTP data sources are supported in Oracle BI Publisher and can be created by users with data model creation privileges.

When you create a private data source connection, the private data source connection is available only to you in the data model editor data source menus.

Administrators have access to the private data source connections created by users. All private data source connections are displayed to Administrators when they view the list of OLAP, JDBC, Web Service, and HTTP data sources from the Administration page.

Private data source connections are distinguished by an **Allowed User** value on the Data Source Administration page. Administrators can extend access to other users to a private data source connection by assigning additional user roles to it.

For more information on assigning roles to data sources, see [Grant Access to Data Sources Using the Security Region](#).

## Grant Access to Data Sources Using the Security Region

When you set up data sources, you can also define security for the data source by selecting which user roles can access the data source.

You must grant access to users for the following:

- A report consumer must have access to the data source to view reports that retrieve data from the data source.
- A report designer must have access to the data source to create or edit a data model against the data source.

By default, a role with administrator privileges can access all data sources.

The configuration page for the data source includes a Security region that lists all the available roles. You can grant roles access from this page, or you can also assign the data sources to roles from the roles and permissions page.

## About Proxy Authentication

Oracle BI Publisher supports proxy authentication for connections to various data sources

Supported data sources include:

- Oracle 10g database
- Oracle 11g database
- Oracle BI Server

For direct data source connections through JDBC and connections through a JNDI connection pool, Oracle BI Publisher enables you to select "Use Proxy Authentication". When you select Use Proxy Authentication, Oracle BI Publisher passes the user name of the individual user (as logged into Oracle BI Publisher) to the data source and thus preserves the client identity and privileges when the Oracle BI Publisher server connects to the data source.

Enabling this feature requires additional setup on the database. The database must have Virtual Private Database (VPD) enabled for row-level security.

For connections to the Oracle BI Server, Proxy Authentication is required. In this case, proxy authentication is handled by the Oracle BI Server, therefore the underlying database can be any database supported by the Oracle BI Server.

## Choose JDBC or JNDI Connection Type

In general, a JNDI connection pool is recommended because it provides the most efficient use of your resources.

For example, if a report contains chained parameters, then each time the report is processed, the parameters initiate to open a database session every time.

## About Backup Databases

When you configure a JDBC connection to a database, you can also configure a backup database.

A backup database can be used in two ways:

- As a true backup when the connection to the primary database is unavailable.
- As the reporting database for the primary. To improve performance you can configure your report data models to run against the backup database only.

To use the backup database in either of these ways, you must also configure the report data model to use it.

## About Connection Creation and Closure Functions

You can define PL/SQL functions for Publisher to run when a connection to a JDBC data source is created (preprocess function) or closed (postprocess function).

The function must return a Boolean value. This feature is supported for Oracle databases only.

These two fields enable the administrator to set a user's context attributes before a connection is made to a database and then to dismiss the attributes after the connection is broken by the extraction engine.

The system variable `:xdo_user_name` can be used as a bind variable to pass the login username to the PL/SQL function calls. Setting the login user context in this way enables you to secure data at the data source level (rather than at the SQL query level).

For example, assuming the following sample function:

```
FUNCTION set_per_process_username (username_in IN VARCHAR2)
RETURN BOOLEAN IS
BEGIN
    SETUSERCONTEXT(username_in);
    return TRUE;
END set_per_process_username
```

To call this function every time a connection is made to the database, enter the following in the **Pre Process Function** field: `set_per_process_username(:xdo_user_name)`

Another sample usage might be to insert a row to the LOGTAB table every time a user connects or disconnects:

```
CREATE OR REPLACE FUNCTION BIP_LOG (user_name_in IN VARCHAR2, smode IN
VARCHAR2)
RETURN BOOLEAN AS
BEGIN
  INSERT INTO LOGTAB VALUES(user_name_in, sysdate,smode);
  RETURN true;
END BIP_LOG;
```

In the **Pre Process Function** field enter: BIP\_LOG(:xdo\_user\_name)

As a new connection is made to the database, it is logged in the LOGTAB table. The SMODE value specifies the activity as an entry or an exit. Calling this function as a **Post Process Function** as well returns results such as those shown in the table below.

NAME	UPDATE_DATE	S_FLAG
oracle	14-MAY-10 09.51.34.000000000	AMStart
oracle	14-MAY-10 10.23.57.000000000	AMFinish
administrator	14-MAY-10 09.51.38.000000000	AMStart
administrator	14-MAY-10 09.51.38.000000000	AMFinish
oracle	14-MAY-10 09.51.42.000000000	AMStart
oracle	14-MAY-10 09.51.42.000000000	AMFinish

## Set Up a JDBC Connection to a Data Source

You can set up a JDBC connection to a data source.

1. From the Administration page, click **JDBC Connection**.
2. Click **Add Data Source**.
3. Enter a display name for the data source in the **Data Source Name** field. This name is displayed in the Data Source selection list in the Data Model Editor.

You can't create a new Oracle BI EE data source with the same name, nor can you delete the provisioned Oracle BI EE data source.

4. Select the driver type.
5. Select **Use Data Gateway** only if you want to connect to a remote data source.

Your administrator must enable remote data connectivity and configure Data Gateway on your target on-premises database. If you select **Use Data Gateway**, the **Database Driver Class**, **Use System User**, **Pre Process Function**, **Post Process Function**, and **Use Proxy Authentication** settings aren't available for selection or update.

6. You can update the **Database Driver Class** field if required.
7. Enter the database connection string.

Example connection strings:

- Oracle database

To connect to an Oracle database (non-RAC), use the following format for the connection string:

jdbc:oracle:thin:@[host]:[port]:[sid]

For example: jdbc:oracle:thin:@myhost.us.example.com:1521:prod

- Oracle RAC database

To connect to an Oracle RAC database, use the following format for the connection string:

jdbc:oracle:thin:@//<host>[:<port>]/<service\_name>

For example: jdbc:oracle:thin:@//myhost.example.com:1521/my\_service

- Microsoft SQL Server

To connect to a Microsoft SQL Server, use the following format for the connection string:

jdbc:hyperion:sqlserver://[hostname]:[port];DatabaseName=[Databasename]

For example: jdbc:hyperion:sqlserver://

myhost.us.example.com:7777;DatabaseName=mydatabase

8. Enter the user name and password required to access the data source.
9. Optional: Enter a PL/SQL function to execute when a connection is created (Pre Process) or closed (Post Process).
10. Optional: Specify a client certificate for secured connection.  
The client certificates uploaded in Upload Center are listed for selection.
11. To enable Proxy Authentication, select **Use Proxy Authentication**.
12. Click **Test Connection**.
13. Optional: Enable a backup database for this connection:
  - a. Select **Use Backup Data Source**.
  - b. Enter the connection string for the backup database.
  - c. Enter the user name and password for this database.
  - d. Click **Test Connection**.
14. Define security for this data source connection. Move the required roles from the **Available Roles** list to the **Allowed Roles** list. Only users assigned the roles in the **Allowed Roles** list can create or view reports from this data source.

When you set up a JDBC connection to Oracle BI EE data source, make sure you move the **BI Consumer** role from the **Available Roles** list to the **Allowed Roles** list.

If you defined a backup data source, the security settings are passed to the backup data source.

## Set Up a Secure JDBC Connection to Oracle Autonomous AI Lakehouse

You can create a secure JDBC connection to Oracle Autonomous AI Lakehouse.

Upload a JDBC client certificate and create an SSL based JDBC connection to Oracle Autonomous AI Lakehouse.

1. Upload the JDBC client certificate (Oracle wallet file, cwallet.sso) to the server.
  - a. From the Publisher Administration page, click **Upload Center**.
  - b. Browse and select the Oracle wallet file, cwallet.sso.

- c. Select **JDBC Client Certificate** from the **File Type** list.
- d. Click **Upload**.
2. From the Publisher Administration page, click **JDBC Connection**.
3. Click **Add Data Source**.
4. Specify the following details for the connection:
  - **Data Source Name:** DBaaSConnection
  - **Driver Type:** Oracle 12c
  - **Database Driver Class:** oracle.jdbc.OracleDriver
5. Enter the JDBC connection string.

Use TCPS strings. For example,

```
jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=server_name)
(PORT=port)))(CONNECT_DATA=(SERVICE_NAME=serviceName))
```

If you're using PAC (Private Access Channel), add `(ENABLE=broken)` to the `DESCRIPTION` parameter in the connect string. For example,

```
jdbc:oracle:thin:@(DESCRIPTION=(ENABLE=broken)(ADDRESS=(PROTOCOL=tcps)
(HOST=server_name)(PORT=port)))(CONNECT_DATA=(SERVICE_NAME=serviceName))
```

6. From the **Client Certificate** list, select the wallet file, `cwallet.sso` uploaded earlier.
7. Click **Test Connection**.
8. Click **Apply**.

## Set Up a JDBC Connection to an On-premises Data Source

You can create a JDBC connection to an on-premises data source by using a data gateway agent.

Ensure that your administrator configures Data Gateway on your target on-premises database and enables data connectivity. See [Overview to Connecting to On-premises Data Sources](#).

1. Enable Data Gateway in Console:
  - a. From the Analytics Cloud Home page, click **Console**.
  - b. Click **Remote Data Connectivity**.
  - c. Enable the **Enable Data Gateway** option.
  - d. Select and enable the data gateway agent you want to use.
2. From the Publisher Administration page, click **JDBC Connection**.
3. Click **Add Data Source**.
4. Enter a display name for the data source in the **Data Source Name** field. This name is displayed in the Data Source selection list in the Data Model Editor.
5. From the **Driver Type** list, select the driver for the database you want to connect. For example, select Oracle 12c for Oracle Database.
6. Select **Use Data Gateway**.

When you select **Use Data Gateway**, the following settings aren't available for selection or update.

- **Database Driver Class** (Default: oracle.jdbc.OracleDriver)
- **Use System User**

- **Pre Process Function**
  - **Post Process Function**
  - **Client Certificate**
  - **Use Proxy Authentication**
7. Enter the connection string for the database.
  8. Enter the user name and password required to access the data source.
  9. Click **Test Connection**.
  10. (Optional) Enable a backup database for this connection:
    - a. Select **Use Backup Data Source**.
    - b. Enter the connection string for the backup database.
    - c. Enter the user name and password for this database.
    - d. Click **Test Connection**.
  11. Define security for this data source connection. Move the required roles from the **Available Roles** list to the **Allowed Roles** list. Only users assigned the roles in the **Allowed Roles** list can create or view reports from this data source.
 

If you have defined a backup data source, the security settings are passed to the backup data source.

## Set Up a Connection to a Snowflake Data Warehouse

You can create a connection to Snowflake Data Warehouse and use the connection to access data for pixel-perfect reports.

1. From the Publisher Administration page, click **JDBC Connection**.
2. Click **Add Data Source**.
3. Enter a display name for the data source in the **Data Source Name** field. This name is displayed in the Data Source selection list in the Data Model Editor.
4. Select **Snowflake** as the driver type.
5. In the **Database Driver Class** field, use the default **net.snowflake.client.jdbc.SnowflakeDriver**.
6. In the Connection String field, enter the following string:
 

```
jdbc:snowflake://accountName.snowflakecomputing.com;db=database
name);warehouse=(warehouse name);schema=(schema name);
```

If you want other properties for the connection, add the properties separated by semicolon (;) as shown in the example.

For example: `jdbc:snowflake://example.us-central1.gcp.snowflakecomputing.com;db=SNOWFLAKE_SAMPLE_DATA;warehouse=COMPUTE_WH;useProxy=true;proxyHost=www-proxy-example.com;proxyPort=80`
7. Enter the user name and password required to access the data source.
8. Optional: Enter a PL/SQL function to execute when a connection is created (Pre Process) or closed (Post Process).
9. Optional: Specify a client certificate for secured connection.
 

The client certificates uploaded in Upload Center are listed for selection.

10. To enable Proxy Authentication, select **Use Proxy Authentication**.
11. Click **Test Connection**.
12. Define security for this data source connection. Move the required roles from the **Available Roles** list to the **Allowed Roles** list. Only users assigned the roles in the **Allowed Roles** list can create or view reports from this data source.

## Set Up a Connection to a Vertica Data Warehouse

You can create a connection to Vertica Data Warehouse and use the connection to access data for pixel-perfect reports.

1. From the Publisher Administration page, click **JDBC Connection**.
2. Click **Add Data Source**.
3. Enter a display name for the data source in the **Data Source Name** field. This name is displayed in the Data Source selection list in the Data Model Editor.
4. Select **Vertica** as the driver type.
5. In the **Database Driver Class** field, use the default **com.vertica.jdbc.Driver**.
6. In the Connection String field, enter the following string:  
`jdbc:vertica://[host_name]:[port_number]/[service_name]`
7. Enter the user name and password required to access the data source.
8. Optional: Enter a PL/SQL function to execute when a connection is created (Pre Process) or closed (Post Process).
9. Optional: Specify a client certificate for secured connection.  
The client certificates uploaded in Upload Center are listed for selection.
10. To enable Proxy Authentication, select **Use Proxy Authentication**.
11. Click **Test Connection**.
12. Define security for this data source connection. Move the required roles from the **Available Roles** list to the **Allowed Roles** list. Only users assigned the roles in the **Allowed Roles** list can create or view reports from this data source.

## Set Up a Database Connection Using a JNDI Connection Pool

You can create a connection to database using a JNDI connection pool to access data for pixel-perfect reports.

Using a connection pool increases efficiency by maintaining a cache of physical connections that can be reused. When a client closes a connection, the connection gets placed back into the pool so that another client can use it. A connection pool improves performance and scalability by allowing multiple clients to share a small number of physical connections. You set up the connection pool in your application server and access it through Java Naming and Directory Interface (JNDI).

**Note**

You can create JNDI connections to the user-defined data sources, but you can't create JNDI connections to the system-defined data sources. Only to create audit reports, you are allowed to create JNDI connections to the system-defined data sources to access the audit data source (AuditViewDataSource).

1. From the Publisher Administration page, click **JNDI Connection**.
2. Click **Add Data Source**.
3. Enter a display name for the data source. This name is displayed in the Data Source selection list in the Data Model Editor.
4. Enter the JNDI name for the connection pool. For example, jdbc/BIPSource.
5. Select **Use Proxy Authentication** to enable Proxy Authentication.
6. Click **Test Connection**. You see a confirmation message if the connection is established.
7. Define security for this data source connection. Move the required roles from the **Available Roles** list to the **Allowed Roles** list. Only users assigned the roles in the **Allowed Roles** list can create or view reports from this data source.

## Set Up a Connection to an OLAP Data Source

You can create connections to several types of OLAP databases to access data for pixel-perfect reports.

1. From the Publisher Administration page, click **OLAP Connection**.
2. Click **Add Data Source**.
3. Enter a display name for the data source. This name is displayed in the Data Source selection list in the Data Model Editor.
4. Select the OLAP type.
5. Enter the connection string for the OLAP database.
6. Enter the user name and password for the OLAP database.
7. Click **Test Connection**.
8. Define security for this data source connection. Move roles from the **Available Roles** list to the **Allowed Roles** list. Only users assigned the roles in the **Allowed Roles** list can create or view reports from this data source.

## Set Up a Connection to a Web Service

You can create a connection to web service data source to access data for pixel-perfect reports.

If you want to use SSL connection for the web service data source, set the **Enable SSL for webservice, HTTP Datasource** runtime property to true.

Upload the SSL certificate in Upload Center before you define the SSL connection to the data source.

1. From the Publisher Administration page, click **Web Service Connection**.

2. Click **Add Data Source**.
3. Enter a display name for the data source. This name is displayed in the Data Source selection list in the Data Model Editor.
4. Select the server protocol.
5. Enter the server name and the server port.
6. Enter the URL for the web service connection.
7. Optional: Enter the session timeout in minutes.
8. Select the security header from **WS-Security**.
  - 2002 — Enables the "WS-Security" Username Token with the 2002 namespace:  
`http://docs.oasis-open.org/wss/2002/01/oasis-200201-wss-wssecurity-secext-1.0.xsd`
  - 2004 — Enables the "WS-Security" Username Token with the 2004 namespace:  
`http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText`
9. Optional: Enter the user name and password for the web service data source.
10. Optional: From the **SSL Certificate** list, select the SSL certificate you want to use for the connection.
11. If you're using a proxy-enabled server, select **Use System Proxy**.
12. Click **Test Connection**.
13. Define security for this data source connection. Move roles from the **Available Roles** list to the **Allowed Roles** list. Only users assigned the roles in the **Allowed Roles** list can create or view reports from this data source.
14. Click **Apply**.

## Set Up a Connection to an HTTP Data Source

You can create a connection to HTTP data source to build data models from XML, JSON, and CSV data over the web by retrieving data through the HTTP GET method.

If you want to use SSL connection for the HTTP data source, set the **Enable SSL for webservice, HTTP Datasource** runtime property to true.

Upload the SSL certificate in Upload Center before you define the SSL connection to the data source.

1. From the Publisher Administration page, click **HTTP Connection**.
2. Click **Add Data Source**.
3. Enter a display name for the data source. This name is displayed in the Data Source selection list in the Data Model Editor.
4. Select the server protocol.
5. Enter the server name and the server port.
6. Enter the URL context for the HTTP data source connection in the **Realm** field.  
For example, `xmlpsrver/services/rest/v1/reports`
7. Enter the user name and password required to access the data source on the database.

8. If you want to use SSL connection, from the **SSL Certificate** list, select the SSL certificate you want to use for the data source.
9. If you're using a proxy-enabled server, select **Use System Proxy**.
10. Define security for this data source connection. Move roles from the **Available Roles** list to the **Allowed Roles** list. Only users assigned the roles in the **Allowed Roles** list can create or view reports from this data source.

## Set Up a Connection to a Content Server

You can create a connection to a Content Server to retrieve a text attachment stored in Oracle WebCenter Content (earlier known as UCM) server, and display the attachment content in a pixel-perfect report.

1. From the Publisher Administration page, select the **Content Server** link.
2. Click **Add Data Source**.
3. Enter the name in the **Data Source Name** field.
4. Enter the URL in the **URI** field.
5. Enter the user name and password in the **Username** and **Password** fields, respectively.
6. Click **Test Connection**.
7. Define security for this data source connection. Move roles from the **Available Roles** list to the **Allowed Roles** list. Only users assigned the roles in the **Allowed Roles** list can create or view reports from this data source.
8. Click **Apply**.

## View or Update a Connection to Data Source

You can view or update a connection to data source from the Publisher Administration page.

1. From the Publisher Administration page, select the **Data Source** type to update.
2. Select the name of the connection to view or update. All fields are editable. See the appropriate section for setting up the data source type for information on the required fields.
3. Select **Apply** to apply any changes or **Cancel** to exit the update page.

# Part III

## Connecting to Oracle Analytics Cloud from Other Applications

This part describes how to connect to Oracle Analytics Cloud from other applications, for example, from Microsoft Power BI Desktop.

### Chapters:

- [Connect to Oracle Analytics Cloud from Microsoft Power BI \(Preview\)](#)
- [Query Semantic Models Remotely Using JDBC](#)
- [Connect to Databases Deployed on a Public IP Address](#)

# 5

## Connect to Oracle Analytics Cloud from Microsoft Power BI (Preview)

You can connect to Oracle Analytics Cloud from Microsoft Power BI and visualize Oracle Analytics content.

If you have an established Microsoft Power BI user base, you can leverage the visualization and publishing capabilities offered by Microsoft Power BI Desktop combined with the enterprise modelling capabilities of Oracle Analytics to create powerful insights into your data.

### Topics:

- [About Microsoft Power BI Connectivity Support in Oracle Analytics Cloud \(Preview\)](#)
- [Prerequisites for Microsoft Power BI Integration \(Preview\)](#)
- [Configure a Microsoft Power BI Environment for Oracle Analytics Cloud Integration \(Preview\)](#)
- [Connect to Oracle Analytics Cloud from Microsoft Power BI Desktop \(Preview\)](#)
- [Integrate Oracle Analytics Cloud with Microsoft Power BI \(Preview\)](#)
- [Frequently Asked Questions the Connector for Microsoft Power BI \(Preview\)](#)
- [Troubleshooting Power BI Connectivity and Performance \(Preview\)](#)

## About Microsoft Power BI Connectivity Support in Oracle Analytics Cloud (Preview)

You can use Microsoft Power BI Desktop to analyze content from Oracle Analytics Cloud.

In Microsoft Power BI, when you create visualizations based on Oracle Analytics Cloud workbooks and reports, you use cached data from Oracle Analytics Cloud subject areas. Data analysts can then share visualizations with other Microsoft Power BI users.

## Prerequisites for Microsoft Power BI Integration (Preview)

Before you start, make sure that you have the following:

- A Windows machine with the latest version of Microsoft Power BI Desktop installed, or the April 2022 version at a minimum. Microsoft Power BI Pro or Premium aren't supported. To consume Oracle Analytics Cloud analyses in Microsoft Power BI Desktop using the Navigator (instead of copying SQL from Oracle Analytics Cloud Classic), use the latest January 2023 Update of Oracle Analytics Cloud and install V1.2 or higher of Power BI connector for Oracle Analytics Cloud.
- A Windows machine with the latest Oracle Analytics Client Tools installed. See [Download page for Oracle Analytics Client Tools](#).
- User role privileges in Oracle Analytics Cloud:

- To consume tables in subject areas, you need BIContentAuthor role privileges or higher.
- To consume analysis reports, you need BIConsumer role privileges or higher.
- A semantic model in Oracle Analytics Cloud.  
If you used Model Administration Tool to develop your semantic model, make sure that subject areas and tables are available in the Presentation layer.

## Configure a Microsoft Power BI Environment for Oracle Analytics Cloud Integration (Preview)

Configure your environment to integrate Microsoft Power BI Desktop with Oracle Analytics Cloud so that you can analyze data from Oracle Analytics Cloud.

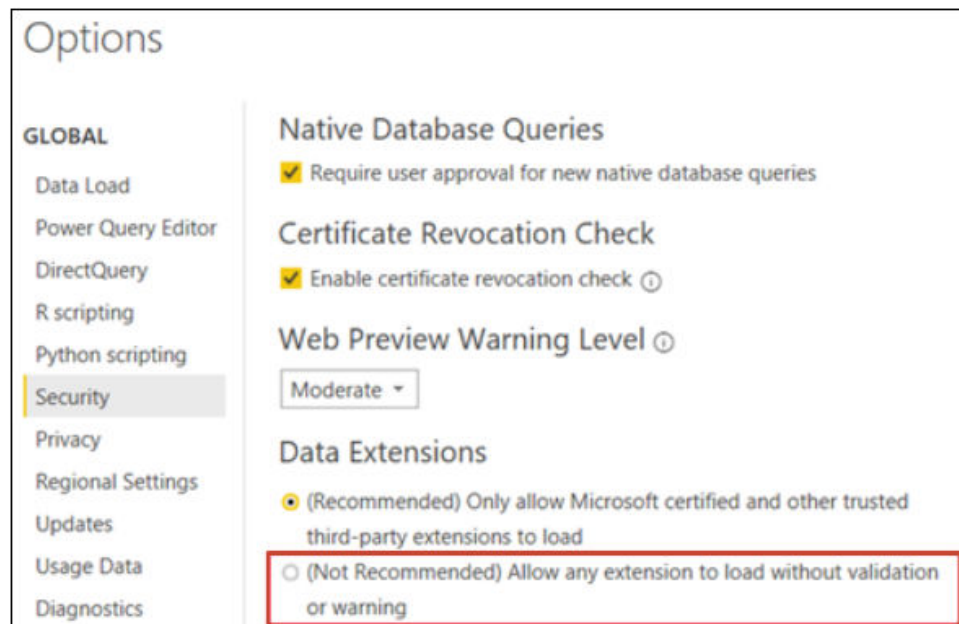
Before you start, use the Oracle Analytics Model Administration Tool to create a data model in Oracle Analytics Cloud so that you can access the subject areas and tables in the presentation layer.

1. Install Microsoft Power BI Desktop.

Install the minimum required version. See [Prerequisites for Microsoft Power BI Integration \(Preview\)](#).

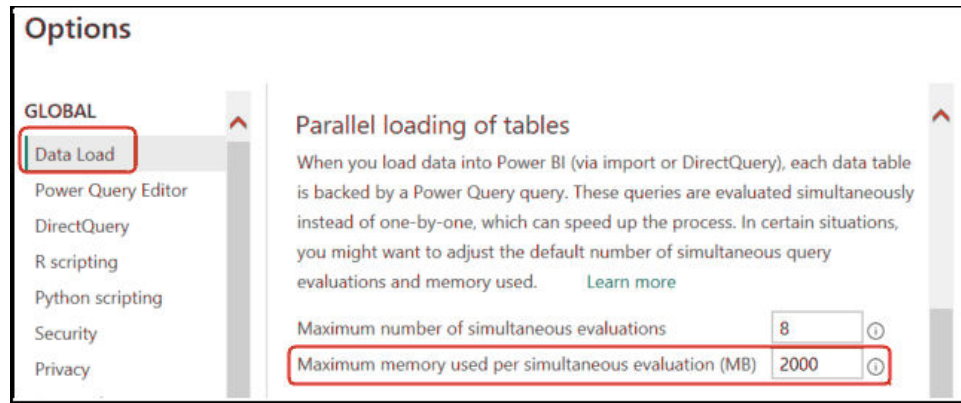
After you've installed it, configure these settings:

- a. In Power BI Desktop, navigate to Options and Settings.
- b. Under **GLOBAL** click **Security**, then under **Data Extensions**, select **(Not Recommended) Allow any extension to load without validation or warning**.



- c. Under GLOBAL, click **Data Load**, and set the value of **Maximum memory used per simultaneous evaluation (MB)** based on the available memory on your machine.

**Tip:** To see how much memory your machine has available, hover over the information (i) icon next to **Maximum memory used per simultaneous evaluation (MB)**.



- d. Under CURRENT FILE, click **Data Load**, and select **Enable parallel loading of tables**.
2. Install Oracle Analytics Client Tools in the same environment as Microsoft Power BI Desktop.
    - a. Navigate to:  
[Download page for Oracle Analytics Client Tools](#)
    - b. Click **Oracle Analytics Client Tools <Month Year> Update** to display the Oracle Software Delivery Cloud page, and select the latest version.
    - c. Click the **Platforms** down arrow, click **Microsoft Windows x64 (64-bit)**, then click outside of the drop-down list or press Enter.
    - d. In the Software column of the table, make sure that Oracle Analytics Client... is selected, and de-select other ZIP files (for example, Windows Data Gateway...).
    - e. Accept the Oracle Cloud Service License Agreement.
    - f. Click **Download** to start Oracle Download Manager, and follow the on-screen instructions.
    - g. Unzip the ZIP file that you downloaded to extract the installer file `setup_bi_client-<update ID>-win64.exe`.
    - h. Double-click the file `setup_bi_client-<update ID>-win64.exe` to start the installer.
    - i. Follow the on-screen instructions.
  3. In the same environment, download and install the Power BI connector for Oracle Analytics Cloud.
    - a. Navigate to:  
[Download page for Oracle Analytics Client Tools](#)
    - b. Click the download link for Oracle Analytics Cloud Connector for Microsoft Power BI to display the Oracle Software Delivery Cloud page, and select the latest version.
    - c. Click the **Platforms** down arrow, click **Microsoft Windows x64 (64-bit)**, then click outside of the drop-down list or press Enter.
    - d. In the Software column of the table, make sure that Oracle Analytics Power BI Connector... is selected, and de-select other ZIP files (for example, Windows Data Gateway...).
    - e. Accept the Oracle Cloud Service License Agreement.
    - f. Click **Download** to start Oracle Download Manager, and follow the on-screen instructions.

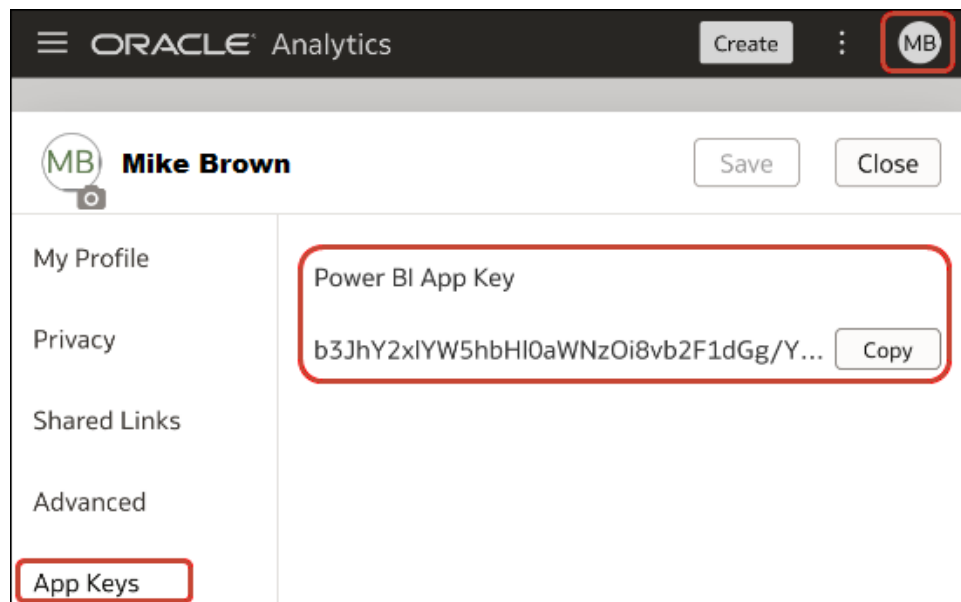
- g. On your local machine, create a `\Power BI Desktop\Custom Connectors` folder in `C:\Users\\Documents\`.  
For example, `C:\Users\\Documents\Power BI Desktop\Custom Connectors`.
- h. Copy the downloaded `OracleAnalyticsCloud-x.x.x.mez` into the `\Power BI Desktop\Custom Connectors` folder.
- i. Start or restart Microsoft Power BI Desktop.

## Connect to Oracle Analytics Cloud from Microsoft Power BI Desktop (Preview)

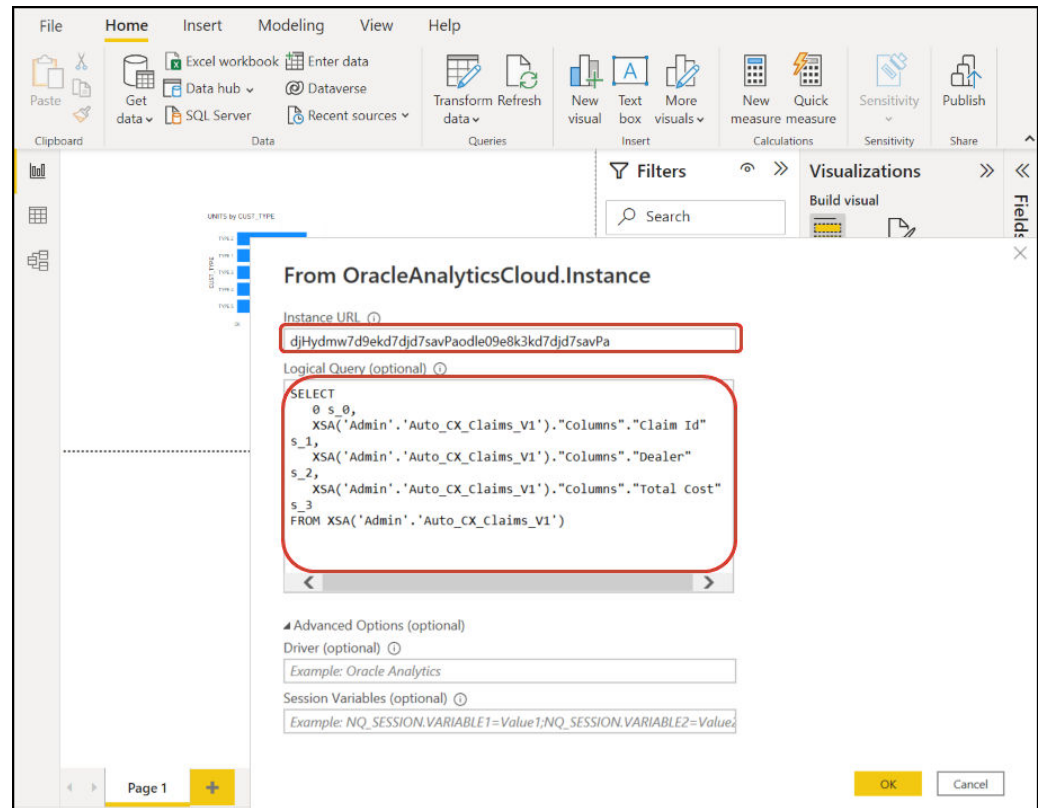
Data analysts connect to Oracle Analytics Cloud from Microsoft Power BI Desktop to analyze data from Oracle Analytics Cloud subject areas.

1. Obtain the **Power BI App Key** for your Oracle Analytics Cloud instance.

In Oracle Analytics Cloud, the administrator obtains the user access key by clicking the administrator user profile, then **Profile**, then **App Keys**, and copying the **Power BI App Key**.



2. In Microsoft Power BI Desktop, connect to Oracle Analytics Cloud.
  - a. From the home page, click **Get Data**, locate and select **Oracle Analytics (Beta)** in the list of connectors, then click **Connect**.
  - b. In the **Instance URL** field, paste in or specify the **Power BI App Key** that you obtained in Step 1.
  - c. In the **Logical Query (optional)** field, if you've copied SQL from a workbook or report, paste in or enter the SQL code.



Make sure that the SQL is copied from the same Oracle Analytics Cloud instance from which you obtained the **Power BI App Key**.

If you haven't copied SQL code from Oracle Analytics Cloud, you can skip Step 2.c and browse to reports or subject area tables manually after you click **OK**.

d. Specify advanced options (optional).

- In **Driver (optional)**, optionally specify an ODBC Driver Name from an Oracle Home if multiple Oracle Analytics Cloud Client Tool installations are present (the default is "Oracle Analytics").

- In **Session Variables (optional)**, optionally specify session variable values used in Oracle Analytics Cloud.

e. Click **OK**.

If you specified SQL code in the **Logical Query** field, Power BI displays the preview data.

If you didn't specify SQL code in the **Logical Query** field, use the Navigator to select an analysis or tables to preview.

f. Click **Load**.

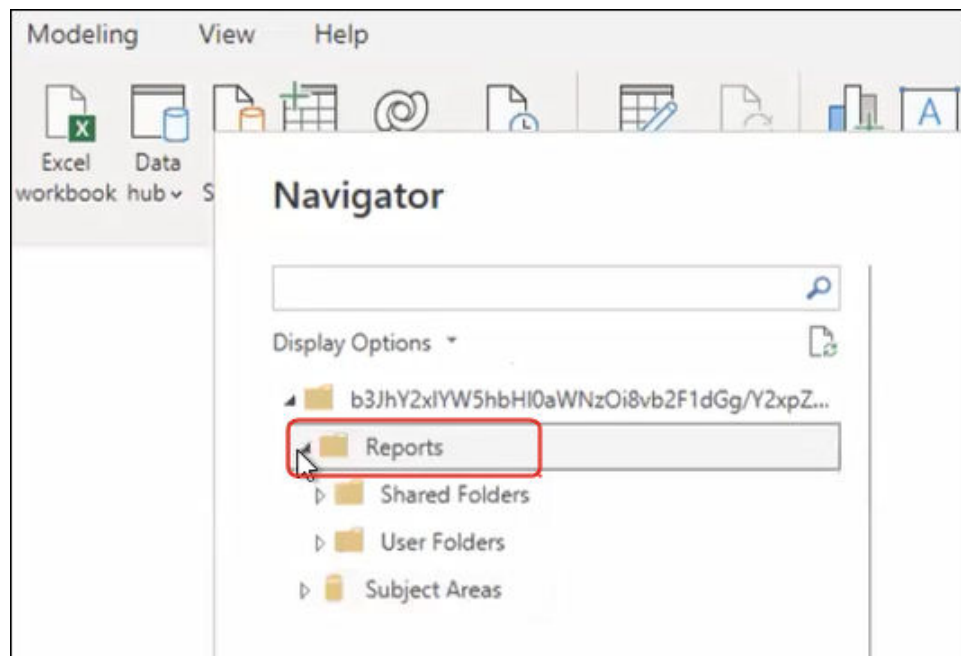
3. In Microsoft Power BI Desktop, create visualizations and save the project in a Power BI Desktop document (PBIX). See [Integrate Oracle Analytics Cloud with Microsoft Power BI \(Preview\)](#).

# Integrate Oracle Analytics Cloud with Microsoft Power BI (Preview)

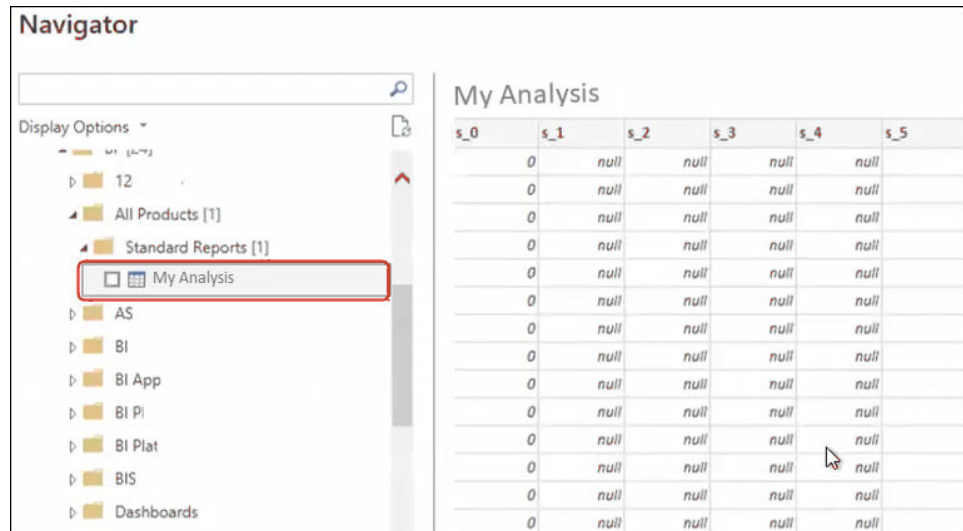
Follow these tips to integrate Oracle Analytics Cloud with Microsoft Power BI.

Integrate Oracle Analytics Cloud with Microsoft Power BI to leverage the visualization and publishing capabilities offered by Microsoft Power BI Desktop combined with the enterprise modelling capabilities of Oracle Analytics to create powerful insights into your data.

- In Power BI Desktop, create visualizations and save the project in a Power BI Desktop document (PBIX).
  - (Recommended approach for to consume reports) Use the Navigator to add reports directly – Analysts can use the Navigator to select reports (analyses) from Oracle Analytics Cloud to add them to a Power BI visualization. In the connect dialog, enter the Power BI App Key in the **Instance URL** field and leave the **Logical Query** box empty. You can then use the Navigator to browse to the Reports area.



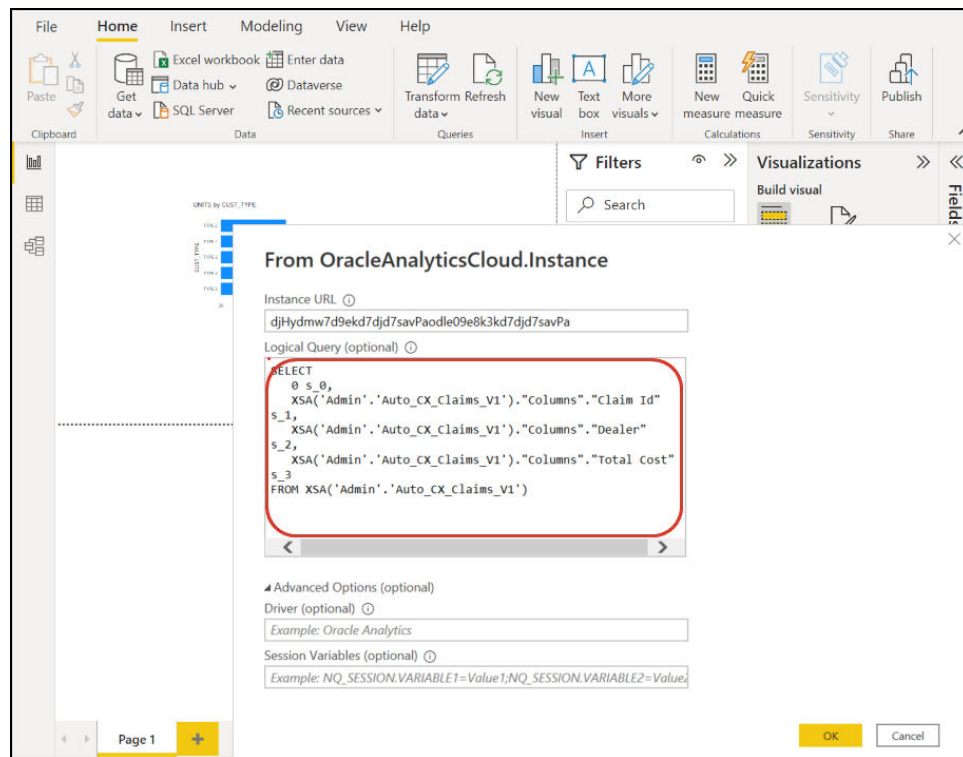
In the Reports area, select a report to add to your Power BI project. In the Reports areas, you can browse for available analyses to add to your Power BI project.



This method takes advantage of the Oracle Analytics Cloud data model.

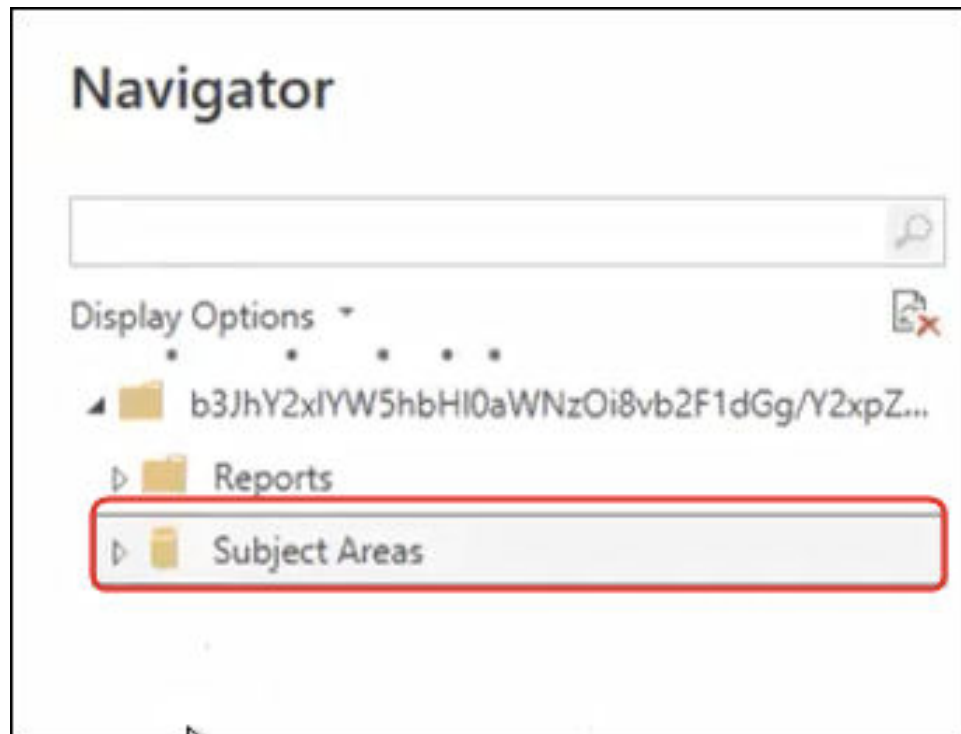
Alternatively, you can copy the **Logical SQL** code from the Advanced Tab of an analysis.

- (Recommended approach to consume workbooks) Copy SQL code from Oracle Analytics In a workbook, copy the SQL code from the Developer panel to add them to a Power BI visualization. Then, in the connect dialog enter the Power BI App Key in the **Instance URL** field and copy the SQL code into the **Logical Query** box. This method takes advantage of the Oracle Analytics Cloud data model.

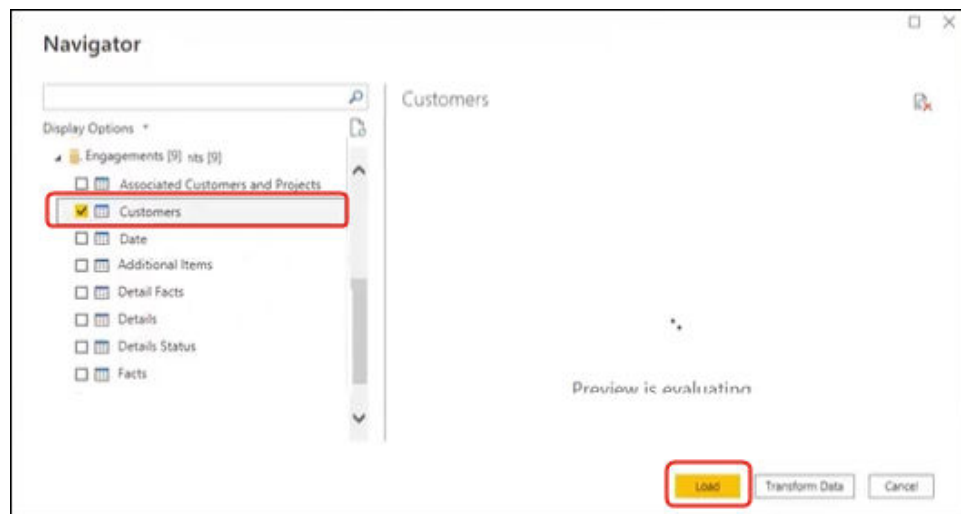


- Browse subject areas manually - Analysts can select subject area tables to load by browsing the subject areas manually. In the connect dialog, enter the Power BI App

Key in the **Instance URL** field and leave the **Logical Query** box empty. You can then use the Navigator to manually select tables in the Subject Areas folder.



In Oracle Analytics Cloud, curate subject areas specifically to meet the reporting needs of the Power BI users. Make sure that subject areas are curated with both fact and dimension columns in a single subject area table.



You can use this approach for basic data, however be aware that Microsoft Power BI makes assumptions and optimizations that affect your analysis results. As a result, it might be more difficult to debug and audit the queries that Microsoft Power BI generates.

In addition, when you access tables by browsing the subject areas, each table is loaded independently of other tables. Subject areas are often structured into dimension and fact tables that don't include related columns.

- Share the Power BI (PBIX) project with other users, who can manipulate any of the visualizations in the project.

## Troubleshooting Power BI Connectivity and Performance (Preview)

Here're some tips on addressing connection and performance issues that you might encounter when you connect from Microsoft Power BI to Oracle Analytics Cloud .

Issue reported	Try this
ODBC Driver Load Is Failing	Make sure that: <ul style="list-style-type: none"> <li>• Oracle Analytics Client Tools is installed in an Oracle_Home.</li> <li>• The PATH variable includes <code>server/bin</code>.</li> <li>• You have a 64-Bit installation of Microsoft Power BI Desktop.</li> </ul>
Unknown ODBC Error	Download and install the latest Oracle Analytics Client Tools. See <a href="#">Download and Install Analytics Client Tools for Oracle Analytics</a> .
I'm unable to see subject areas after signing-in successfully.	Check that the Oracle Analytics Cloud user has the 'BIContentAuthor' role, which is required to access the subject areas in Oracle Analytics Cloud. A user with only the 'BIConsumer' role can't access subject areas from Microsoft Power BI.
I encounter data loading issues when loading tables with large volumes of data.	In Microsoft Power BI on the client machine, go to <b>Options, Data Load</b> , and increase <b>Maximum memory used per simultaneous evaluation (MB)</b> value. To see how much memory your machine has available, hover over the information (i) icon next to <b>Maximum memory used per simultaneous evaluation (MB)</b> . For example, if the value is set to the default 432, you might increase it to 4000.
I encounter an authentication error after approximately 100 seconds.	Contact your Oracle Analytics Cloud administrator to adjust the Expiry Time of the Access Token for Oracle Analytics Cloud.

## Frequently Asked Questions the Connector for Microsoft Power BI (Preview)

Here're some frequently asked questions (FAQs) to help you connect from Microsoft Power BI to Oracle Analytics Cloud .

### Does the connector support Microsoft Power BI Pro or Premium (and Data Gateway)?

No. The connector supports Microsoft Power BI Desktop, but not the Pro or Premium versions.

### Does the connector support live query?

No. Microsoft Power BI caches data for datasets.

### Does the connector support Oracle Analytics Cloud datasets?

No. The concept of an enterprise semantic model at the scale that's commonly used in Oracle Analytics Cloud doesn't exist in Microsoft Power BI, which makes it an important point of integration between the two products.

**Do Microsoft Power BI and Oracle Analytics Cloud use subject areas in the same way?**

No. Power BI is mostly optimized for cached data within its own store, and the integration with Oracle Analytics Cloud is based on that concept.

**How does Oracle Analytics Cloud data security work with Microsoft Power BI?**

Microsoft Power BI applies data security at the time that data is created. Therefore, the Oracle Analytics Cloud credentials determine the result set. Any row-level security on top of that must be done within Microsoft Power BI.

**Should I use Microsoft Power BI or Oracle Analytics Cloud for my visualization needs?**

Oracle recommends using Oracle Analytics Cloud wherever possible. Microsoft Power BI visualization provides additional analysis capabilities if you have a fragmented visualization eco system but still want to maintain enterprise semantics. Oracle Analytics Cloud provides the best combination of powerful enterprise analysis and line-of-business agility.

**How do I get support for the functionality?**

Contact Oracle Support if you have issues or questions relating to this feature at: <https://support.oracle.com>.

# 6

## Query Semantic Models Remotely Using JDBC

You can query Oracle Analytics Cloud semantic models from an external client tool using a JDBC connection.

### Topics

- [About Using JDBC to Remotely Query Semantic Models](#)
- [Choosing an Assertion Type for Your JDBC Connection](#)
- [Query Semantic Models Remotely Using Resource Owner Assertion](#)
- [Query Semantic Models Remotely Using JWT Assertion](#)
- [Download the JDBC Driver](#)
- [Example: Connect to a Semantic Model Remotely Using SQuirrel](#)

## About Using JDBC to Remotely Query Semantic Models

Java Data Base Connectivity (JDBC) is an industry standard API for accessing data sources. Use JDBC-compliant client tools to access semantic models defined in Oracle Analytics Cloud so that you can take advantage of its analytics engine and data abstraction features.

JDBC uses OAuth to secure access to Oracle Analytics Cloud. OAuth is an authorization framework that enables an application to obtain limited access to a protected HTTP resource. OAuth can authorize access using JWT (JSON Web Token) assertion or resource owner assertion.

## Choosing an Assertion Type for Your JDBC Connection

If you want to connect to Oracle Analytics Cloud using JDBC, you must first decide which assertion type you want to use to secure your connection: Resource Owner or JWT (JSON Web Token).

Assertion Type	Use this option when:	Considerations
(Recommended) Resource Owner	You want to connect to Oracle Analytics Cloud with a specific user name and password. You want to create a 'gateway' connection to query data from the semantic model in Oracle Analytics. Gateway accounts always use one single user name and password.	We recommend using this assertion type. It's simpler to configure.

Assertion Type	Use this option when:	Considerations
JSON Web Token (JWT)	You don't have the password and you need to connect to Oracle Analytics Cloud as different users.	This assertion type is more complex to configure. It also allows you to impersonate any Oracle Analytics user in the system, therefore you must ensure that the keys you generate are secured appropriately.

## Query Semantic Models Remotely Using Resource Owner Assertion

You can query Oracle Analytics Cloud semantic models from an external client tool using a JDBC connection.

### Topics

- [Typical Workflow to Query Data Models Remotely Using Resource Owner Assertion](#)
- [Collecting Details That You Need for the bijdbc.properties File](#)
- [Download the JDBC Driver](#)
- [Connect to Oracle Analytics Cloud Using a JDBC URL \(with Resource Owner Assertion\)](#)
- [Example: Connect to a Semantic Model Remotely Using Squirrel](#)

## Typical Workflow to Query Data Models Remotely Using Resource Owner Assertion

If you're querying semantic models remotely for the first time using Resource Owner assertion as the connection method, follow this workflow. See *Choosing an Assertion Type for Your JDBC Connection*.

### Resource Owner Assertion

Task	Description	More Information
Collect connection details for bijdbc.properties	Determine various property values for the bijdbc.properties file that you'll use to connect to Oracle Analytics Cloud.	<a href="#">Collecting Details That You Need for the bijdbc.properties File</a>
Download the JDBC driver	Download the JDBC driver for Oracle Analytics Cloud.	<a href="#">Download the JDBC Driver</a>
Connect to Oracle Analytics Cloud	Connect to Oracle Analytics Cloud remotely using JDBC. Refer to the example as a guide, see <a href="#">Example: Connect to a Semantic Model Remotely Using Squirrel</a> .	<a href="#">Connect to Oracle Analytics Cloud Using a JDBC URL (with Resource Owner Assertion)</a>

## Collecting Details That You Need for the bijdbc.properties File

When you assert using Resource Owner, you'll need these details when you specify the JDBC URL. Collect these details before you start.

If you want to connect to Oracle Analytics Cloud using JDBC as the resource owner, you need to gather the following information for the bijdbc.properties file:

- idcsEndpointUrl: URL of the identity provider that Oracle Analytics Cloud uses.
- idcsClientId: Client ID associated with the identity provider.
- idcsClientScope: Client Scope associated with the identity provider.
- idcsClientSecret: Client Secret associated with the identity provider.
- user: Name of valid Oracle Analytics Cloud user in the format `firstname.lastname@example.com`
- - password: Password of the user.

This table describes where you can find the information.

If you're asserting using JWT, see *Register the BIJDBC Application using JWT Assertion*.

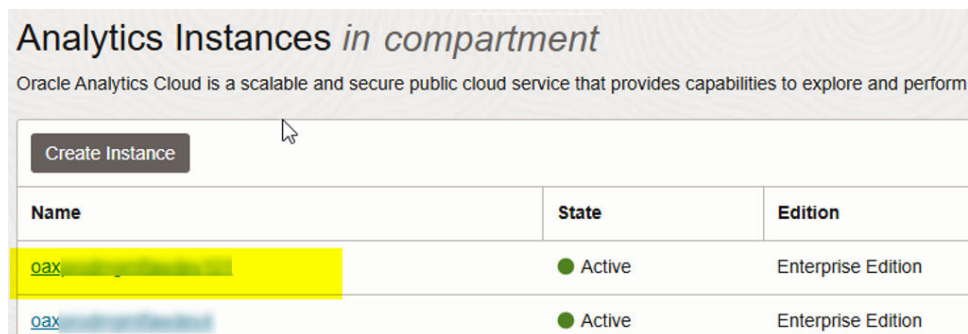
---

### Details that you need    Where to obtain the details

---

oacHostname and  
idcsEndpointUrl

List of Analytics Instances. Click on Instance -> Additional Details. See How can I find information about the identity provider my Oracle Analytics Cloud uses?.



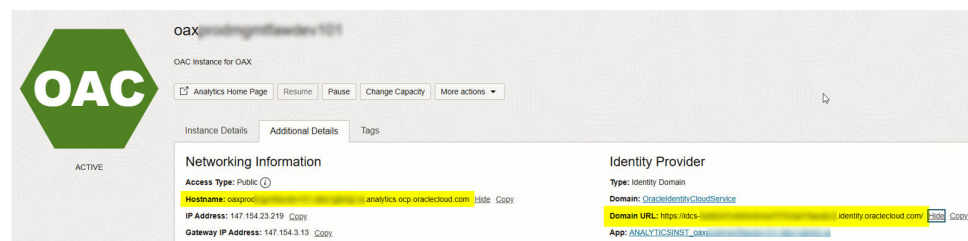
**Analytics Instances in compartment**

Oracle Analytics Cloud is a scalable and secure public cloud service that provides capabilities to explore and perform

Create Instance

Name	State	Edition
oax_...	Active	Enterprise Edition
oax_...	Active	Enterprise Edition

If your cloud account offers identity domains, copy the Hostname and Domain URL. If your cloud account doesn't offer identity domains, copy the Stripe properties.



OAC Instance for OAX

Instance Details    Additional Details    Tags

**Networking Information**

Access Type: Public ⓘ

Hostname: oaxprod... analytics.ocp.oraclecloud.com    Hide    Copy

IP Address: 147.154.23.219    Copy

Gateway IP Address: 147.154.3.13    Copy

**Identity Provider**

Type: Identity Domain

Domain: OracleIdentityCloudService

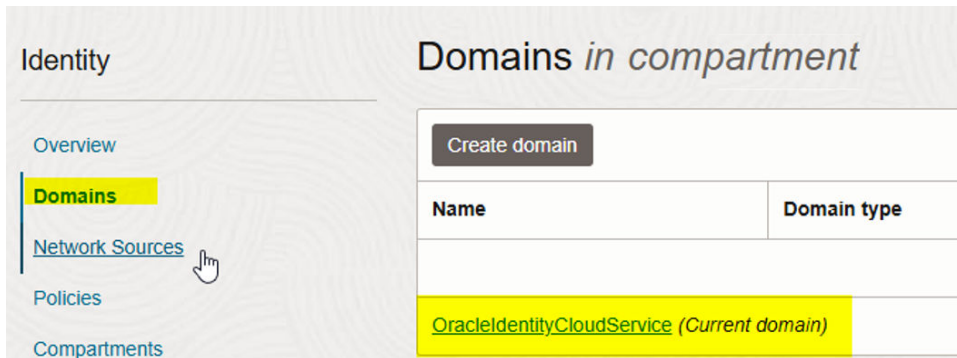
Domain URL: https://idcs... identity.oraclecloud.com    Hide    Copy

App: ANALYTICSINST\_...

**Details that you need**   **Where to obtain the details**

idcsClientId and  
idcsClientSecret

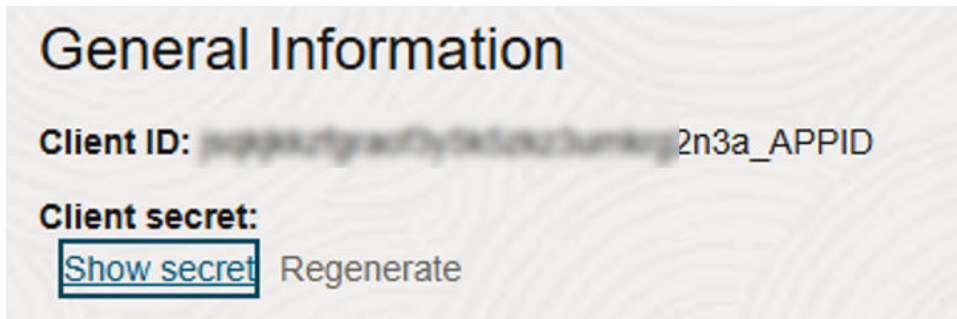
Click the "App" link on the Additional Details page, and then show Client ID/Secret under General Information.



Search on ANALYTICSINST\_  
Select your Analytics instance.



Under General Information, copy Client ID and Client Secret.



**Details that you need**   **Where to obtain the details**

idcsClientScope   List of Analytics Instances. Analytics Cloud -> Click on Instance -> Additional Details.

**Analytics Instances** *in compartment*

Oracle Analytics Cloud is a scalable and secure public cloud service that provides capabilities to explore and perform

Create Instance

Name	State	Edition
oax...	Active	Enterprise Edition
oax...	Active	Enterprise Edition

Under Identity Provider, click the App.

**Identity Provider**

**Type:** Identity Domain

**Domain:** [OracleIdentityCloudService](#)

**Domain URL:** ...cloud.com/ [Show](#) [Copy](#)

**App:** ANALYTICSINST\_oax...

Copy Primary audience and the Scope and concatenate the two values.

**Configure application APIs that need to be OAuth protected**

**Access token expiration (seconds):** 100

**Allow token refresh:** Allowed

**Refresh token expiration (seconds):** 86400

**Primary audience:** https://...analytics.ocp.oraclecloud.com

**Secondary audience**

Secondary audience

https://oaxproc...analytics.ocp.oraclecloud.com

**Scopes**

Scope	Protected
urn:opc:resource:consumer::all	Yes

## Connect to Oracle Analytics Cloud Using a JDBC URL (with Resource Owner Assertion)

Connect to Oracle Analytics Cloud using a JDBC connection with resource owner assertion so that you can query the semantic model.

1. Create a `bijdbc.properties` file that contains the OAuth authentication and authorization properties required to connect to your Oracle Analytics Cloud instance.

Use the details that you collected earlier. See [Collecting Details That You Need for the bijdbc.properties File](#). Use the following format for your `bijdbc.properties` file:

```
idcsEndpointUrl=https://<IDCS_hostname>
idcsClientId=<ID string>
idcsClientScope=<ID string>
idcsClientSecret=<secret>
user=<firstname.lastname@example.com>
password=<password>
```

For example:

```
idcsEndpointUrl=https://
idcs-1a2bc345678901d2e34fgh56789j0ke.identity.c9abc1.oc9def.com
idcsClientId=12a000dc9ef345678000ghij2kl8a34
idcsClientScope=https://<host>.com:443urn:opc:resource:consumer::all
idcsClientSecret=xyz
user=myuser@office.com
password=yourpassword
```

2. Determine the URL required to connect to your Oracle Analytics Cloud instance. The format you use depends on when and how the instance was deployed.

To connect to an instance deployed on	Create date
Oracle Cloud Infrastructure (Gen 2)	Any
Oracle Cloud Infrastructure	12th May 2020 or later

Use this URL format with OAuth:

```
jdbc:oraclebi:https://<host>:<port>/api/jdbc?BIJDBC_PROPERTIES_FILE=<fully
qualified location and name of properties file>
```

For example:

```
jdbc:oraclebi:https://<host>:443/api/jdbc?BIJDBC_PROPERTIES_FILE=D:\
\Workspace\bijdbc\bijdbc.properties
```

To connect to an instance deployed on	Create date
Oracle Cloud Infrastructure	Before 12th May 2020

Use this URL format with OAuth:

```
jdbc:oraclebi:https://<host>:<port>/bimodeler/api/jdbc?
BIJDBC_PROPERTIES_FILE=<fully qualified location and name of properties
file>
```

For example:

```
jdbc:oraclebi:https://abcdefghijkl123-jklmnopqrs4t-
je.analytics.ocp.oraclecloud.com:443/bimodeler/api/jdbc?
BIJDBC_PROPERTIES_FILE=D:\\Workspace\\bijdbc\\bijdbc.properties
```

### 3. Test the connection to the target Oracle Analytics Cloud instance.

Use your favorite SQL command tool to connect to Oracle Analytics Cloud with the appropriate JDBC URL. For example:

```
jdbc:oraclebi:https://abcdefghijkl123-jklmnopqrs4t-
je.analytics.ocp.oraclecloud.com:443/api/jdbc?BIJDBC_PROPERTIES_FILE=D:\\
Workspace\\bijdbc\\bijdbc.properties
```

## Query Semantic Models Remotely Using JWT Assertion

You can use JWT assertion to query Oracle Analytics Cloud semantic models from an external client tool using a JDBC connection.

### Topics

- [Typical Workflow to Query Data Models Remotely Using JWT Assertion](#)
- [Generate the Client Private Key and Client Certificate File](#)
- [Register the BIJDBC Application Using JWT Assertion](#)
- [Set Up Refresh Security Token](#)
- [Download the JDBC Driver](#)
- [Connect to Oracle Analytics Cloud Using a JDBC URL \(Using JWT Assertion\)](#)
- [Example: Connect to a Semantic Model Remotely Using Squirrel](#)

## Typical Workflow to Query Data Models Remotely Using JWT Assertion

If you're querying semantic models remotely for the first time using JWT assertion as the connection method, follow this workflow. See *Choosing an Assertion Type for Your JDBC Connection*.

### JWT Assertion

Task	Description	More Information
Register the BIJDBC application	Register the BIJDBC application to authenticate your JDBC connection.	With JWT assertion: <ul style="list-style-type: none"> <li>• First, generate a private key and certificate that JWT requires, see <a href="#">Generate the Client Private Key and Client Certificate File</a>.</li> <li>• Then, use JWT assertion, see <a href="#">Register the BIJDBC Application Using JWT Assertion</a>.</li> </ul>

Task	Description	More Information
Enable refresh security tokens	Configure your BIJDBC application to refresh security tokens.	<a href="#">Set Up Refresh Security Token</a>
Download the JDBC driver	Download the JDBC driver for Oracle Analytics Cloud.	<a href="#">Download the JDBC Driver</a>
Connect to Oracle Analytics Cloud	Connect to Oracle Analytics Cloud remotely using JDBC. Refer to the example as a guide, see <a href="#">Example: Connect to a Semantic Model Remotely Using Squirrel</a> .	<a href="#">Connect to Oracle Analytics Cloud Using a JDBC URL (Using JTW Assertion)</a>

## Generate the Client Private Key and Client Certificate File

If you decide to secure your JDBC connection using the JWT assertion type, you generate a private key and certificate to authenticate the connection.

**Note:** You don't need a private key and certificate file if you're securing your JDBC connection using the Resource Owner assertion type.

See <https://docs.oracle.com/javase/8/docs/technotes/tools/unix/keytool.html>.

### 1. Generate a key pair and key store.

From a command prompt, issue a `keytool` command, using the command format:

```
keytool -genkeypair -v -keystore <keystore name> -storetype <store type i.e PKCS12> -storepass <store pass> -keyalg <key algorithm> -keysize <key size> -sigalg <sig algorithm> -validity <validity days> -alias <alias name> -keypass <key pass>
```

For example:

```
keytool -genkeypair -v -keystore bijdbckeystore.jks -storetype PKCS12 -storepass password -keyalg RSA -keysize 2048 -sigalg SHA256withRSA -validity 3600 -alias bijdbcclientalias -keypass password
```

### 2. Generate a public certificate.

From a command prompt, issue a `keytool` command, using the command format:

```
keytool -exportcert -v -alias <alias name> -keystore <keystore name> -storetype <store type, such as PKCS12> -storepass <store pass> -file <certificate file> -rfc
```

For example:

```
keytool -exportcert -v -alias bijdbcclientalias -keystore bijdbckeystore.jks -storetype PKCS12 -storepass password -file bijdbcclient.cert -rfc
```

### 3. Use OpenSS to extract the private key, in PKCS8 format, from the keystore file.

Use the command format:

```
openssl pkcs12 -in <keystore file name> -passin pass:<keystore password> -nodes -nocerts -nomacver > <PKCS8 key file path>
```

For example:

```
openssl pkcs12 -in bijdbckeystore.jks -passin pass:password -nodes -nocerts -nomacver |sed -n '/BEGIN PRIVATE KEY/,,$p' > bijdbcclient.pem
```

- Save the generated key and certificates in a location accessible to your client machine.

## Register the BIJDBC Application Using JWT Assertion

You register the BIJDBC application in Oracle Cloud Infrastructure using JWT assertion to authenticate your public JDBC connections.

Before you start, generate a Client Private Key and Client Certificate File as specified in the previous step.

- In Oracle Cloud Infrastructure Console, navigate to **Identity & Security**, and click **Domains**.

If your cloud account doesn't offer identity domains, you don't see the **Domains** link. This means your cloud account federates with Oracle Identity Cloud Service. Click **Federation**, select **oracleidentitycloudservice**, and then click the **Oracle Identity Cloud Service Console URL**.

- Navigate to the **Applications** tab and click **Add**.
- In the Add Application dialog, click **Confidential Application**.
- Specify a **Name** (for example, bi-jdbc-connection) , a **Description**, and then click **Next**.
- Select **Configure this application as a client now**.
- In **Allowed Grant Types**, click **JWT Assertion**.
- For **Security**:
  - Select **Trusted Client**.
  - Click **Import** , enter a **Certificate Alias**, and then upload your client certificate file.

- In the **Token Issuance Policy** section:
  - Under **Authorized Resources**, select **Specific**.  
If your cloud account uses identity domains, select **Add resources**.
  - Click **Add Scope**.
  - Select the Oracle Analytics Cloud instance you want to connect to (for example, select `AUTOANALYTICSINST_<my_instance_ID>`).

- d. Click **Add**.
9. Click **Next** and then **Finish** to display an Application Added window.
10. Copy the **Client ID** and **Client Secret** to use later.
11. Close the Application Added page.
12. Click **Activate**, then click **Activate Application**.
13. Click **Save** to display a confirmation message.

## Set Up Refresh Security Token

Configure your BIJDBC application to refresh security tokens.

1. In Oracle Cloud Infrastructure Console, navigate to **Identity & Security**, and click **Domains**.  
  
If your cloud account doesn't offer identity domains, you don't see the **Domains** link. This means your cloud account federates with Oracle Identity Cloud Service. Click **Federation**, select **oracleidentitycloudservice**, and then click the **Oracle Identity Cloud Service Console URL**.
2. Enable the **Refresh Token** option for the BIJDBC application that you created earlier.
  - a. Navigate to **Applications**, and click the name of the BIJDBC application that you created earlier.
  - b. Click **Edit OAuth Configuration**, then **Client Configuration**.  
  
If your cloud account uses Oracle Identity Cloud Service, select **Configuration** then **Client Configuration**.
  - c. Select **Refresh Token**, and click **Save**.

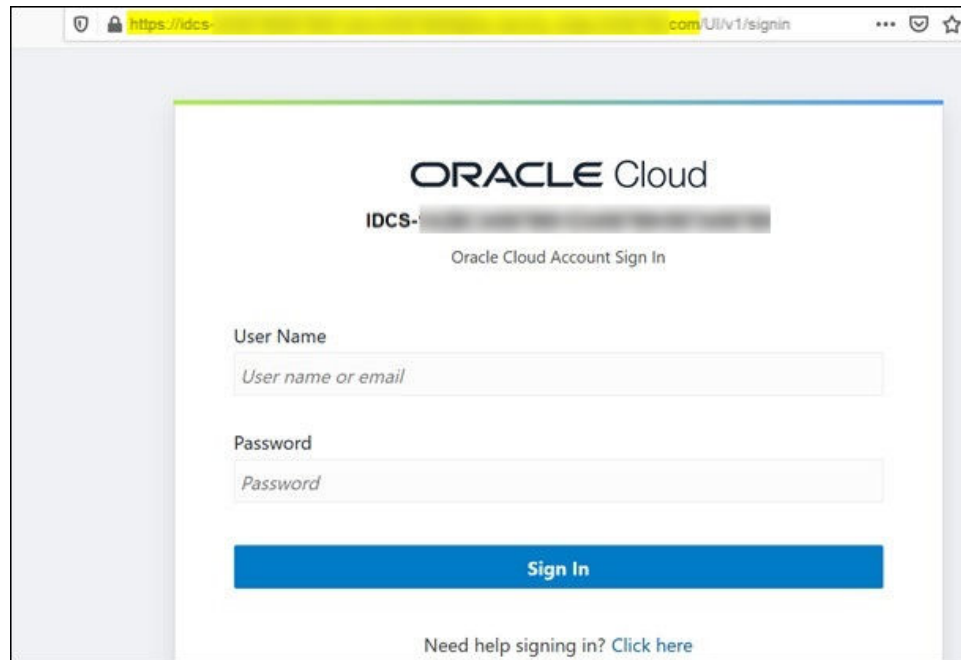
The screenshot shows the Oracle Identity Cloud Service console for the 'bi-jdbc-connections' application. The 'Client Configuration' section is expanded, showing the following settings:

- Register Client:  Register Client,  No Client
- Allowed Grant Types:  Resource Owner,  Client Credentials,  JWT Assertion,  SAML2 Assertion,  Refresh Token (highlighted with a red box),  Authorization Code,  Implicit,  Device Code
- Allow non-HTTPS URLs:
- Redirect URL:
- Logout URL:
- Post Logout Redirect URL:
- Client Type:  Trusted,  Confidential,  Public
- Certificate:
- Allowed Operations:  Introspect,  On behalf Of
- Bypass Consent:

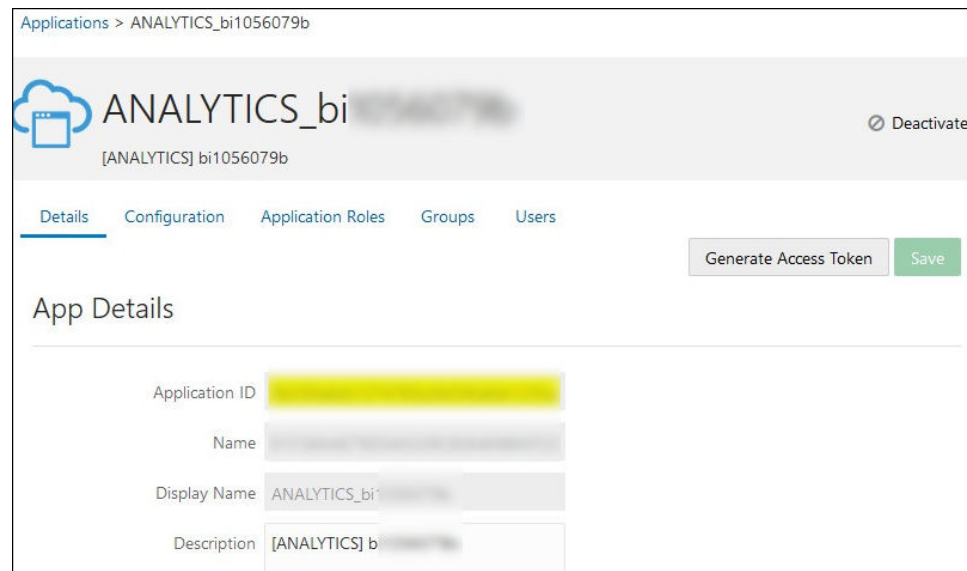
If your Oracle Analytics Cloud instance was created after 12th May 2020, your BIJDBC application is now configured to refresh security tokens.

If your Oracle Analytics Cloud instance was created before 12th May 2020, perform the additional steps 2 to 4.

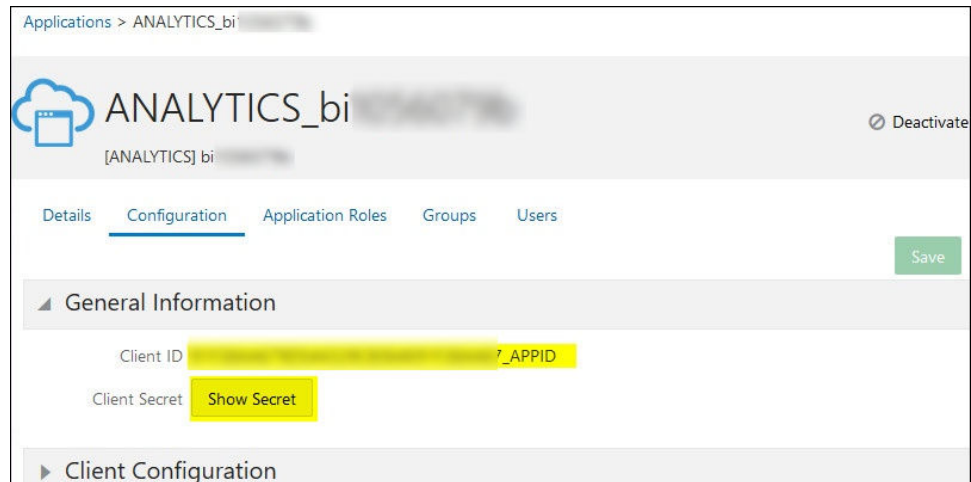
3. Make a note of your identity management host name displayed when you sign in to your Oracle Cloud account.



4. Navigate to the application associated with the Oracle Analytics Cloud you want to connect to, and make a note of the **Application ID**, **Client ID** and **Client Secret**.
  - **Application ID** (For the application associated with Oracle Analytics Cloud)



- **Client ID and Client Secret** (For the application associated with Oracle Analytics Cloud)



5. Use the REST API to generate the access token using client credentials.

Use this REST API command format:

```
curl --insecure -i -u '<Client-ID>:<Client-Secret>' -H "Content-Type:
application/x-www-form-urlencoded;charset=UTF-8" --request POST https://<IDCS-
Host>/oauth2/v1/token -d
"grant_type=client_credentials&scope=urn:opc:idm:__myscopes__"
```

Parameters:

- **Client-ID:** Client ID of the application associated with your Oracle Analytics Cloud instance.
- **Client-Secret:** Client secret for the application associated with your Oracle Analytics Cloud instance.
- **IDCS-Host:** Host name you noted earlier.

See [Generate Access Token and Other OAuth Runtime Tokens to Access the Resource](#).

6. Use the REST API to update the flag.

Use this REST API command format:

```
curl --location --request PATCH 'https://<IDCS-Host>/admin/v1/Apps/
<Application-Id>' \ --header 'Authorization: Bearer <Access-token>' \ --header
'Content-Type: application/json' \ --data-raw '{ "schemas":
[ "urn:ietf:params:scim:api:messages:2.0:PatchOp" ], "Operations": [{ "op":
"replace", "path": "allowOffline", "value": true } ] }'
```

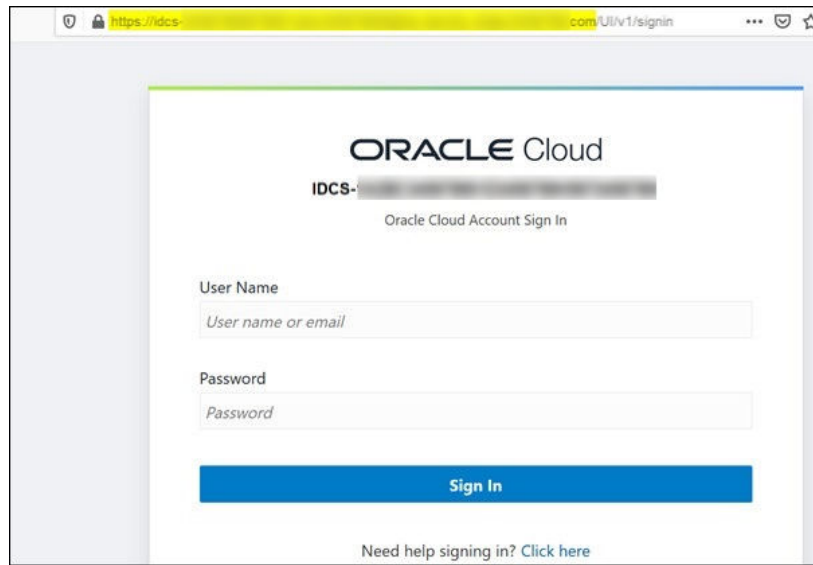
Parameters:

- **IDCS-Host:** Host name you noted earlier.
- **Application-Id:** ID of the application associated with your Oracle Analytics Cloud instance.
- **Access-token:** Access token value you generated earlier.

## Connect to Oracle Analytics Cloud Using a JDBC URL (Using JWT Assertion)

Connect your Oracle Analytics Cloud instance to a remote data model.

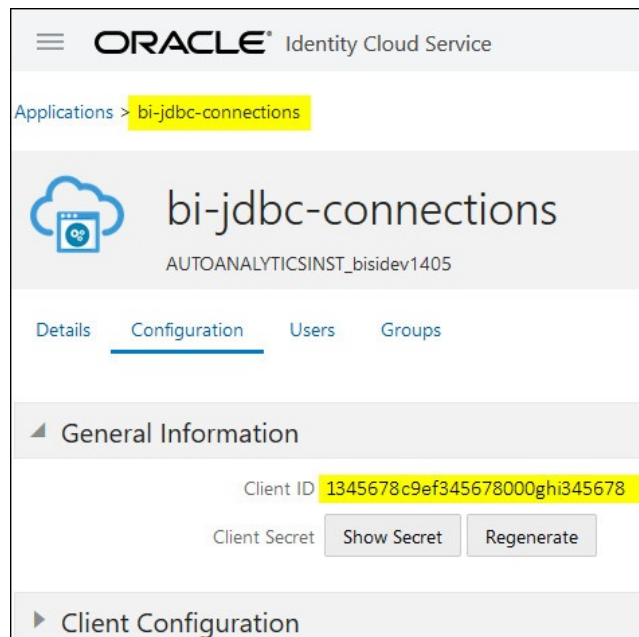
1. Sign in to your cloud account and make a note of your identity management host name displayed on the sign in page.

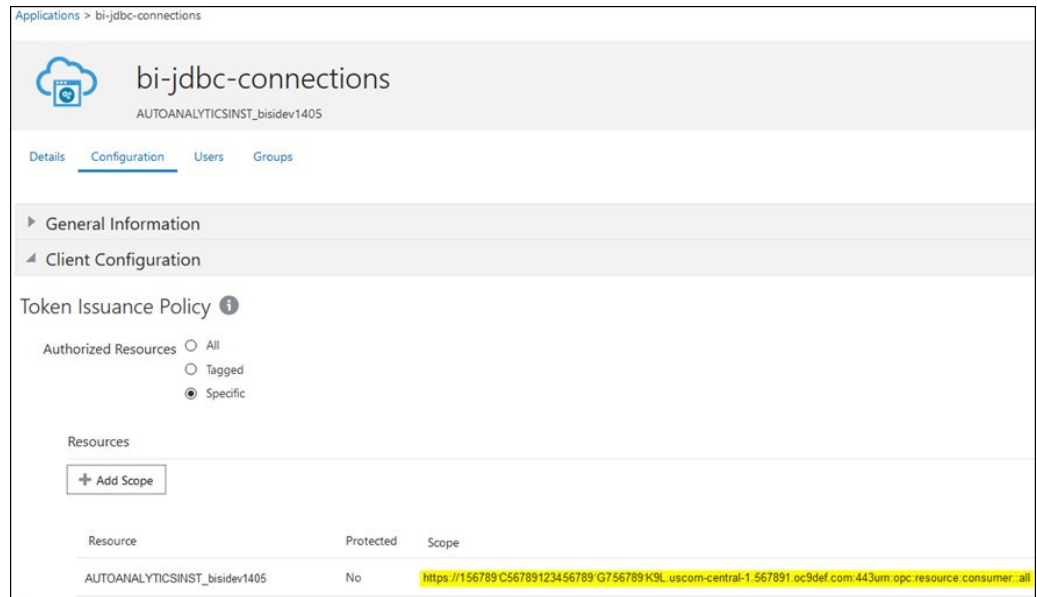


2. In Oracle Cloud Infrastructure Console, navigate to **Identity & Security**, and click **Domains**.

If your cloud account doesn't offer identity domains, you don't see the **Domains** link. This means your cloud account federates with Oracle Identity Cloud Service. Click **Federation**, select **oracleidentitycloudservice**, and then click the **Oracle Identity Cloud Service Console URL**.

3. Navigate to the **Applications** tab and click the name of your BIJDBC application.
4. Make a note of the Client ID and Client Scope:





5. Create a `bijdbc.properties` file for OAuth authentication and authorization and add credentials for your Oracle Analytics Cloud instance.

Use the details that you collected earlier. See [Register the BIJDBC Application Using JWT Assertion](#). Use the following format for your `bijdbc.properties` file:

```
user=<firstname.lastname@example.com>
idcsEndpointUrl=https://<IDCS_hostname>
idcsClientId=<ID string>
idcsClientScope=<ID string>
certificateFile=<location>\jdbc\bijdbcclient.cert
privateKeyFile=<location>\jdbc\bijdbcclient.pem
```

6. Determine the URL required to connect to your Oracle Analytics Cloud instance. The format you use depends on when and how the instance was deployed.

To connect to an instance deployed on	Create date
Oracle Cloud Infrastructure (Gen 2)	Any
Oracle Cloud Infrastructure	12th May 2020 or later

Use this URL format with OAuth:

```
jdbc:oraclebi:https://<host>:<port>/api/jdbc?BIJDBC_PROPERTIES_FILE=<fully
qualified location and name of properties file>
```

For example:

```
jdbc:oraclebi:https://<host>:443/api/jdbc?BIJDBC_PROPERTIES_FILE=D:\
\Workspace\bijdbc\bijdbc.properties
```

To connect to an instance deployed on	Create date
Oracle Cloud Infrastructure	Before 12th May 2020

Use this URL format with OAuth:

```
jdbc:oraclebi:https://<host>:<port>/bimodeler/api/jdbc?  
BIJDBC_PROPERTIES_FILE=<fully qualified location and name of properties  
file>
```

For example:

```
jdbc:oraclebi:https://abcdefghijkl123-jklmnopqrs4t-  
je.analytics.ocp.oraclecloud.com:443/bimodeler/api/jdbc?  
BIJDBC_PROPERTIES_FILE=D:\\Workspace\\bijdbc\\bijdbc.properties
```

#### 7. Test the connection to the target Oracle Analytics Cloud instance.

Use your favorite SQL command tool to connect to Oracle Analytics Cloud with the appropriate JDBC URL. For example:

```
jdbc:oraclebi:https://abcdefghijkl123-jklmnopqrs4t-  
je.analytics.ocp.oraclecloud.com:443/api/jdbc?BIJDBC_PROPERTIES_FILE=D:\\  
Workspace\\bijdbc\\bijdbc.properties
```

## Download the JDBC Driver

Obtain the JDBC driver JAR file (`bijdbc-all.jar`) from an Oracle Analytics Cloud Client Tools installation on a Windows machine.

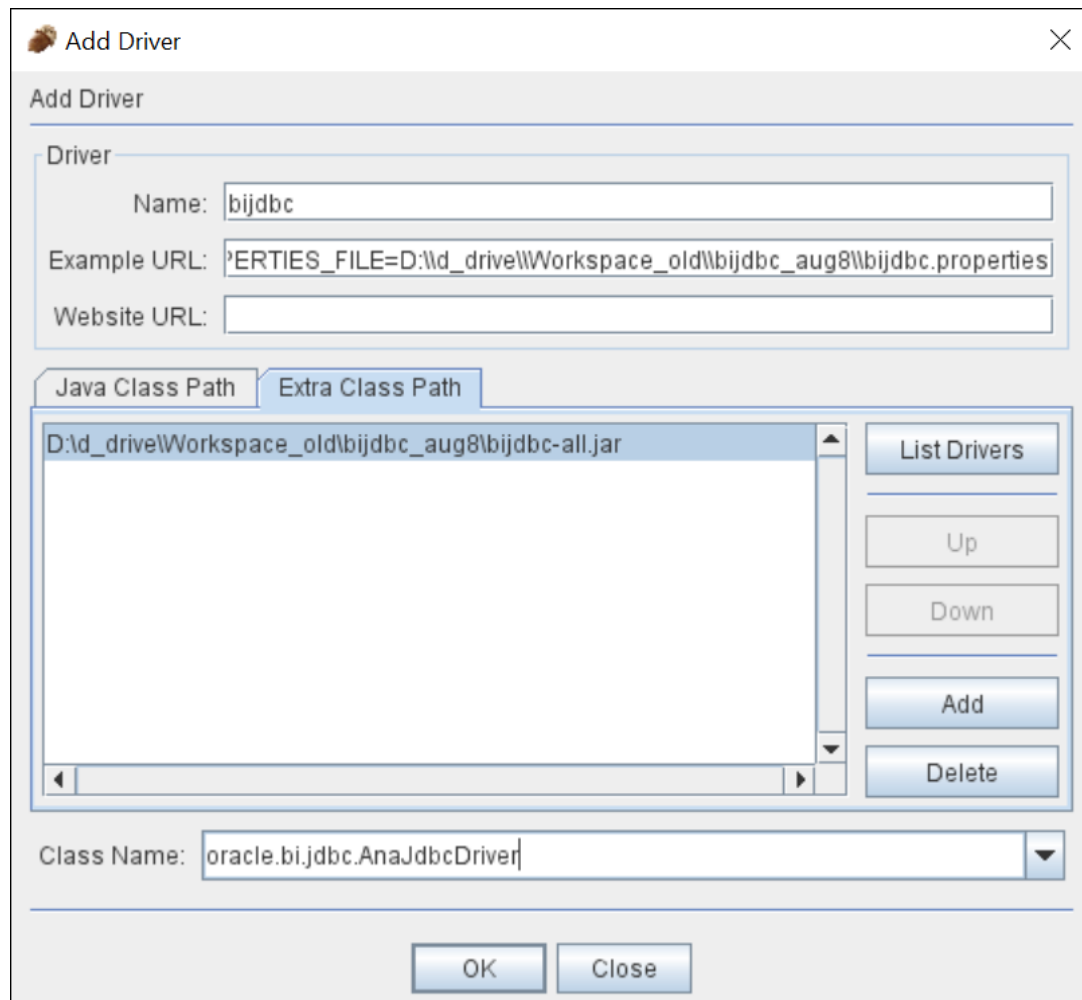
If you haven't done so already, download and install Oracle Analytics Cloud Client Tools on a Windows machine. If you want to connect to Oracle Analytics Cloud from an iOS machine, you must copy the JDBC driver file from the Windows installation folder to your iOS machine.

1. Download the latest Oracle Analytics Client Tools.
  - a. Go to [Download page for Oracle Analytics Client Tools](#).
  - b. To start the download, click the **Oracle Analytics Client Tools** link that matches your Oracle Analytics Cloud environment.  
In most cases, this is the latest available update.
  - c. Accept the Oracle license agreement if prompted, and then click the download link to download the software to your local machine.
2. Install Oracle Analytics Client Tools on your local machine.
  - a. Unzip the file that you downloaded to extract the installer file `setup_bi_client-  
<update ID>-win64.exe` file.
  - b. Double-click the file `setup_bi_client-  
<update ID>-win64.exe` to start the installer.
  - c. Follow the on-screen instructions.
3. From the installation folder, copy the JDBC driver file `<OH>/bi/bifoundation/jdbc/  
bijdbc-all.jar`.  
To connect to Oracle Analytics Cloud from an iOS machine, copy the `bijdbc-all.jar` file to your iOS machine.

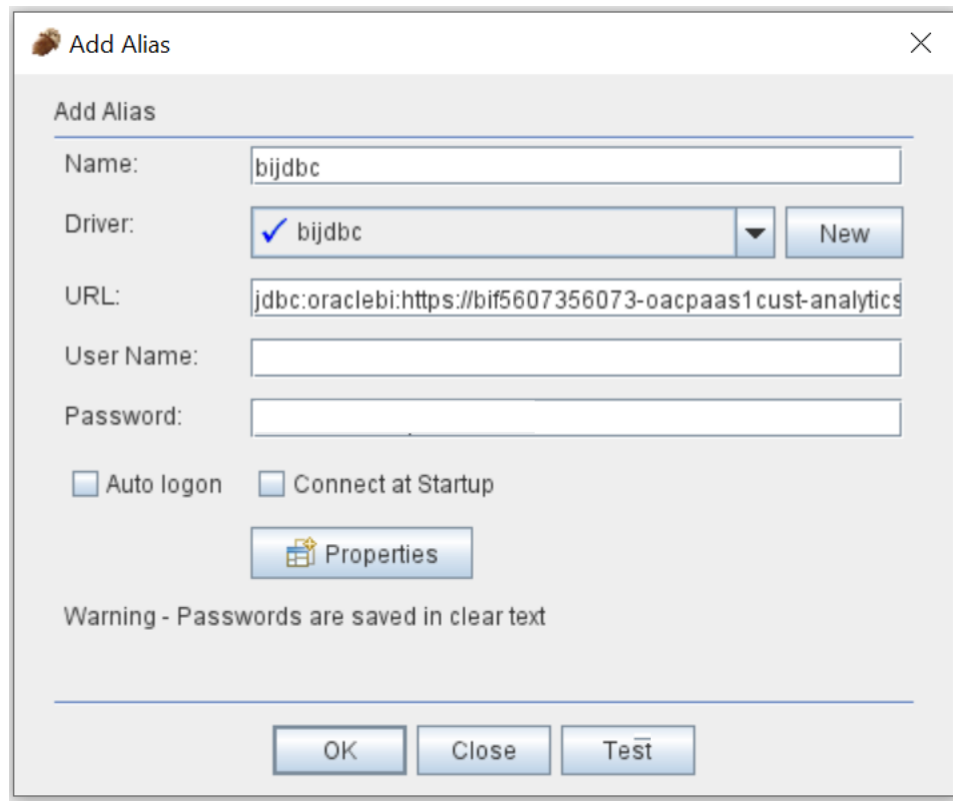
## Example: Connect to a Semantic Model Remotely Using SQuirrel

This example shows how to connect to a Oracle Analytics Cloud semantic model using JDBC with SQuirrel SQL Client tool.

1. Register the JDBC driver.
  - a. In Squirrel SQL Client, under **Drivers**, click **Create a New Driver**.
  - b. In the **Example URL** field, specify the BIJDBC application URL with a fully qualified properties file.  
 For example: `jdbc:oraclebi:https://abcdefghijkl123-jklmnopqrs4t-je.analytics.ocp.oraclecloud.com:443/bimodeler/api/jdbc?BIJDBC_PROPERTIES_FILE=D:\\Workspace\\bijdbc\\bijdbc.properties`
  - c. In the **Extra Class Path** tab, select the BIJDBC driver (JAR file) you downloaded from Client Installer.
  - d. Click **List Drivers**, and under **Class Name** select `oracle.bi.jdbc.AnaJdbcDriver`, then save the details.



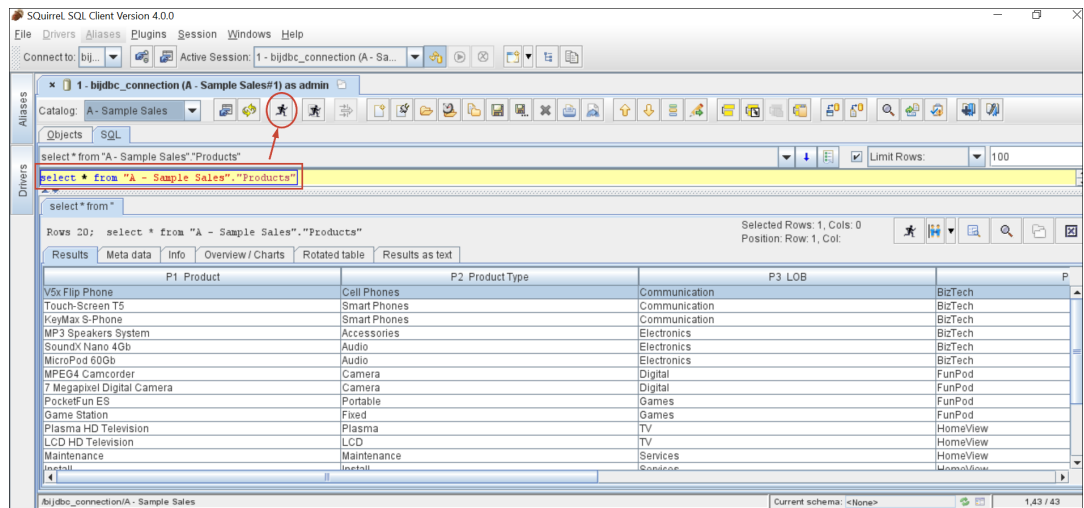
2. Create a connection or (alias).
  - a. Under **Aliases**, click **Create a New Alias**.
  - b. In the **Driver** option, select `bi jdbc`.
  - c. Edit the **URL**, specify credentials (if required), then click **Test**.  
 If credentials are provided in the property file, you don't need to specify **User Name** or **Password**.
  - d. Validate the connection by connecting to the Alias and exploring the metadata in the **Objects** section.



- In the **SQL** tab, enter a sample logical SQL query and click the **Run** button.

For more information, see [Logical SQL Reference Guide](#).

If the connection is working, the **Results** tab shows the results of your query.



- Check the **Results** tab to verify the rows returned by the query.

# 7

## Connect to Databases Deployed on a Public IP Address

You can use Oracle Analytics Cloud to connect to databases with a public IP address so that end users can analyze that data in visualizations, analyses, and pixel-perfect reports.

For example, you might want to analyze data in a database deployed on Oracle Cloud Infrastructure.

### Topics:

- [Connect to a Database Deployed on Oracle Cloud Infrastructure with a Public IP Address](#)
- [Connect to Oracle Autonomous AI Lakehouse with a Public IP Address](#)

## Connect to a Database Deployed on Oracle Cloud Infrastructure with a Public IP Address

Configure Oracle Analytics Cloud to connect to a database deployed on Oracle Cloud Infrastructure with a public IP address, so that end users can analyze that data in visualizations, analyses, and pixel-perfect reports.

### Topics

- [Typical Workflow to Connect to a Database Deployed on Oracle Cloud Infrastructure](#)
- [Prerequisites](#)
- [Record Database Information](#)
- [Enable Database Access Through Port 1521](#)
- [Connect to Your Database from Oracle Analytics Cloud](#)

## Typical Workflow to Connect to a Database Deployed on Oracle Cloud Infrastructure

If you're connecting to an database deployment on Oracle Cloud Infrastructure for the first time, follow these tasks as a guide.

Task	Description	More Information
Verify the prerequisites	Verify that your environment satisfies the prerequisites required for this configuration.	<a href="#">Prerequisites</a>
Record database information	Record connection information for database.	<a href="#">Record Database Information</a>
Enable database access	Add an ingress rule to give Oracle Analytics Cloud access to the database.	<a href="#">Enable Database Access Through Port 1521</a>

Task	Description	More Information
Connect to the database	Create and test your connections.	<a href="#">Connect to Your Database from Oracle Analytics Cloud</a>


## Prerequisites


Before you start, make sure you have the required environment.

Step	Description	Important Information to Note
Set up Oracle Analytics Cloud	Deploy Oracle Analytics Cloud.	<b>Region</b> <b>Availability Domain</b>
Set up a Virtual Cloud Network (VCN) on Oracle Cloud Infrastructure	Set up a VCN for the database deployment on Oracle Cloud Infrastructure. <b>Note:</b> The VCN must be in the same Region and Availability Domain as Oracle Analytics Cloud.	<b>Virtual Cloud Network Subnet</b> Same: <ul style="list-style-type: none"> <li><b>Region</b></li> <li><b>Availability Domain</b></li> </ul>
Deploy a database: <ul style="list-style-type: none"> <li>Deploy the database on the VCN in Oracle Cloud Infrastructure</li> <li>Populate the database with data</li> <li>Set up a database user with permissions to read database tables</li> </ul>	Deploy a database on the VCN in Oracle Cloud Infrastructure. <b>Note:</b> The database must be in the same Region and Availability Domain as the VCN.	<b>Public IP</b> <b>Database Unique Name</b> <b>Host Domain Name</b> <b>Database User/Password</b> Same: <ul style="list-style-type: none"> <li><b>Region</b></li> <li><b>Availability Domain</b></li> <li><b>Virtual Cloud Network</b></li> <li><b>Client Subnet</b></li> </ul>

## Record Database Information

All the information you need to connect to a database is available in the Oracle Cloud Infrastructure Console. Record the information now, so you have the required details when you set up the connection in Oracle Analytics Cloud.

- In Oracle Cloud Infrastructure Console, click  in the top left corner.
- Click **Databases**. Under **MySQL**, click **DB Systems**.
- Locate the database you want to connect to and record the **Public IP** address.



Database **DB Systems** in *OACPMABTEST* Compartment

Launch DB System

**DBS** AVAILABLE

[CustomerDBaaS](#)

**Availability Domain:** VXeD:US-ASHBURN-AD-1

**OCID:** ...gmakdq [Show](#) [Copy](#)

**DB System Version:** 12.2.0.1.180116

**Oracle Database Software Edition:** Enterprise Edition

**Shape:** VM.Standard1.1

**Virtual Cloud Network:** [CustomerVCNwithInternetAccess](#)

**Client Subnet:** Public Subnet

**Private IP:** 10.0.0.2

**Public IP:** 129.000.01.023

**Available Data Storage:** 2048 GB

**Total Storage Size:** 2656 GB

- Click the name of the database you want to connect to and write down the values in these fields: **Database Unique Name**, **Host Domain Name**, **Virtual Cloud Network**, **Client Subnet**, and **Port**.

Database > DB Systems > DB System Details

## CustomerDBaaS

Scale Storage Up Add SSH Keys Apply Tag(s) Terminate

**DB System Information** Tags

Availability Domain: VXE:US-ASHBURN-AD-1	OCID: ...gmkdq Show Copy
Shape: VM.Standard1.1	Created: Thu, 03 May 2018 10:31:01 GMT
Compartment: OACPMABTEST	DB System Version: 12.2.0.1.180116
Oracle Database Software Edition: Enterprise Edition	Virtual Cloud Network: CustomerVCNwithInternetAccess
Available Data Storage: 2048 GB	Client Subnet: Public Subnet VXE:US-ASHBURN-AD-1
Total Storage Size: 2656 GB	Port: 1521
Hostname Prefix: custdbaas	Host Domain Name: customerercnwithinternetaccess1.oraclevcn.com
SCAN DNS Name: custdbaas-scan... Show Copy	License Type: License Included

Resources

Nodes (1)  
Databases (1)  
Patches (1)

### Databases


Displaying 1 Databases

<b>DB</b> AVAILABLE	<a href="#">CustDB</a>	Database Version: 12.1.0.2.180116	Automatic Backup: Disabled
	Database Home: dbhome20180503103101	Database Workload: OLTP	
	Launched: Thu, 03 May 2018 10:31:01 GMT	Database Unique Name: CustDB_lad1vm	

- Find out the user name and password of a database user with permissions to read from this database, and write them down as you need these later. For example, the user SYSTEM.

## Enable Database Access Through Port 1521

Add an ingress rule that enables Oracle Analytics Cloud to access the database through port 1521.

- Make a note of the Oracle Analytics Cloud IP addresses that you want to allow access to.
- In Oracle Cloud Infrastructure Console, click  in the top left corner, and click **Databases**. Under **MySQL**, click **DB Systems**.
- Click the database that you want to connect to.
- Click the **Virtual Cloud Network** link.

Database > DB Systems > DB System Details

## CustomerDBaaS

Scale Storage Up Add SSH Keys Apply Tag(s) Terminate

**DB System Information** Tags

Availability Domain: VXE:US-ASHBURN-AD-1	OCID: ...gmkdq Show Copy
Shape: VM.Standard1.1	Created: Thu, 03 May 2018 10:31:01 GMT
Compartment: OACPMABTEST	DB System Version: 12.2.0.1.180116
Oracle Database Software Edition: Enterprise Edition	Virtual Cloud Network: CustomerVCNwithInternetAccess
Available Data Storage: 2048 GB	Client Subnet: Public Subnet VXE:US-ASHBURN-AD-1
Total Storage Size: 2656 GB	Port: 1521
Hostname Prefix: custdbaas	Host Domain Name: customerercnwithinternetaccess1.oraclevcn.com
SCAN DNS Name: custdbaas-scan... Show Copy	License Type: License Included

- Navigate to the appropriate subnet, and under **Security Lists**, click **Default Security List For <VCN>**.

Networking > Virtual Cloud Networks > Virtual Cloud Network Details

## CustomerVCNwithInternetAccess

AVAILABLE

Terminate Apply Tag(s)

VCN Information Tags

CIDR Block: 10.0.0.0/16  
 Compartment: OACPMABTEST  
 Created: Thu, 03 May 2018 10:27:08 GMT

OCID: ...bzxgrq Show Copy  
 Default Route Table: Default Route Table for CustomerVCNwithInternetAccess  
 DNS Domain Name: customervcnwith... Show Copy

### Subnets in OACPMABTEST Compartment

Create Subnet

Sort by: Display Name (0-9, A-Z, a-z)

Subnet	CIDR Block	Availability Domain	Route Table	DHCP Options
CustSubnet OCID: ...uwfpea Show Copy	10.0.3.0/24	VxED:US-ASHBURN-AD-1	Default Route Table for CustomerVCNwithInternetAccess	Default DHCP Options for CustomerVCNwithInternetAccess

Security Lists: Default Security List for CustomerVCNwithInternetAccess

- Click **Add Ingress Rules**.

Networking > Virtual Cloud Networks > vcn20190809165840 > Security List Details

## Default Security List for vcn20190809165840

Instance traffic is controlled by firewall rules on each Instance in addition to this Security List

AVAILABLE

Move Resource Add Tags Terminate

Security List Information Tags

OCID: ...fexdxa Show Copy  
 Compartment: ANALYTICS\_Compartment  
 Created: Fri, Aug 9, 2019, 4:58:40 PM UTC

### Ingress Rules

Add Ingress Rules Remove

Stateless	Source	IP Protocol	Source Port Range	Destination Port Range	Type and Code	Allow
<input type="checkbox"/>	No	0.0.0.0/0	TCP	All	22	TC ent

- For each IP address that you want to give access to, add an ingress rule to allow any incoming traffic from the public internet to reach port 1521 on this database node, with the following settings:
  - SOURCE CIDR:** Enter the IP address that you wrote down in Step 1.
  - IP PROTOCOL:** TCP
  - SOURCE PORT RANGE:** All
  - DESTINATION PORT RANGE:** 1521
  - Allows:** TCP traffic for ports: 1521

The screenshot shows the 'Add Ingress Rules' dialog box. At the top right is a 'cancel' link. The main title is 'Ingress Rule 1'. Below it, a green note says 'Allows TCP traffic 1521'. There is a 'STATELESS' checkbox with an information icon. The 'SOURCE TYPE' is a dropdown menu set to 'CIDR'. The 'SOURCE CIDR' is a text input field containing '130.35.0.0/16', with a note below it: 'Specified IP addresses: 130.35.0.0-130.35.255.255 (85,536 IP addresses)'. The 'IP PROTOCOL' is a dropdown menu set to 'TCP'. The 'SOURCE PORT RANGE' is a text input field set to 'All', with a note 'OPTIONAL' and an information icon, and examples '80, 20-22'. The 'DESTINATION PORT RANGE' is a text input field set to '1521', with a note 'OPTIONAL' and an information icon, and examples '80, 20-22'. At the bottom right is a '+ Additional Ingress Rule' button. At the bottom left are 'Add Ingress Rules' and 'Cancel' buttons.

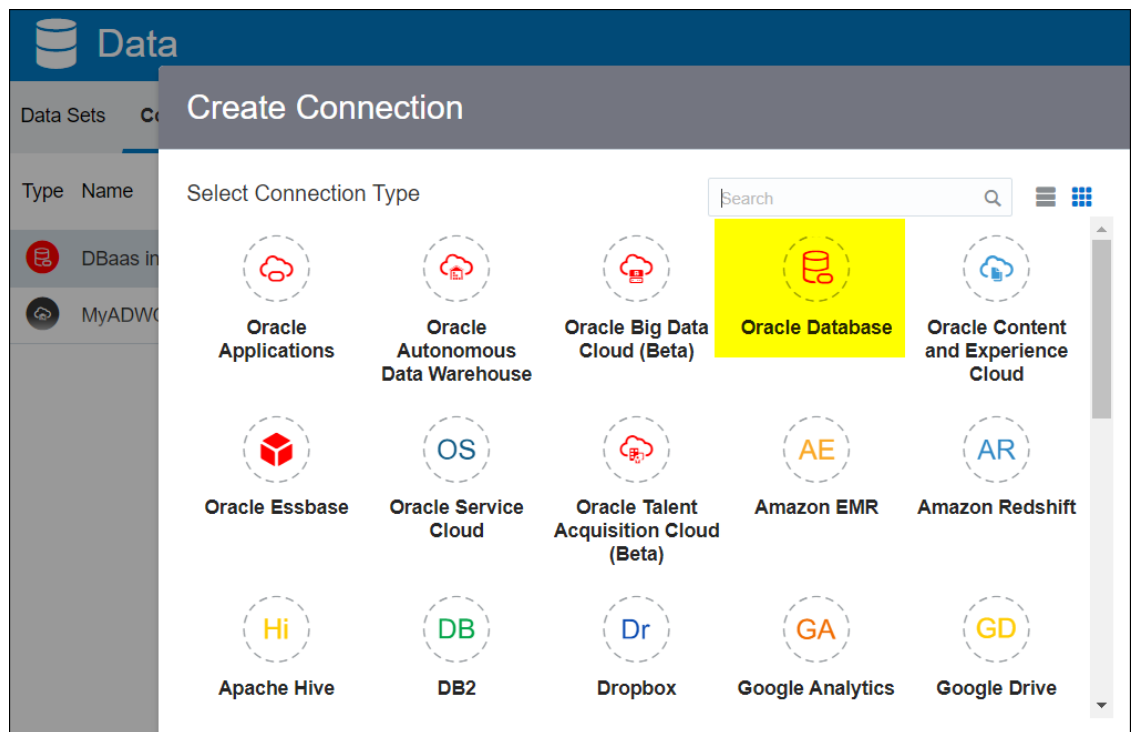
## Connect to Your Database from Oracle Analytics Cloud

After enabling access to the database, use the database connection information you wrote down earlier to connect Oracle Analytics Cloud to the database. The way you connect to the database depends on what you want to do with the data.

- Visualize the data.
- Model the data using Semantic Modeler, then generate analyses and dashboards.
- Model the data with Oracle Analytics Cloud Model Administration Tool, then generate analyses and dashboards.
- Publish the data in pixel-perfect reports.


## Connect to Your Database for Data Visualization or Semantic Modeler

In Oracle Analytics Cloud, create connection to Oracle AI Database for data visualizations in the usual way. See [Create Database Connections](#).



Use the database details you recorded earlier to fill in the Create Connection dialog.

Create Connection



Oracle Database

\*New Connection Name

\*Host

\*Port

\*Username

\*Password

\*Service Name

Specify these values:

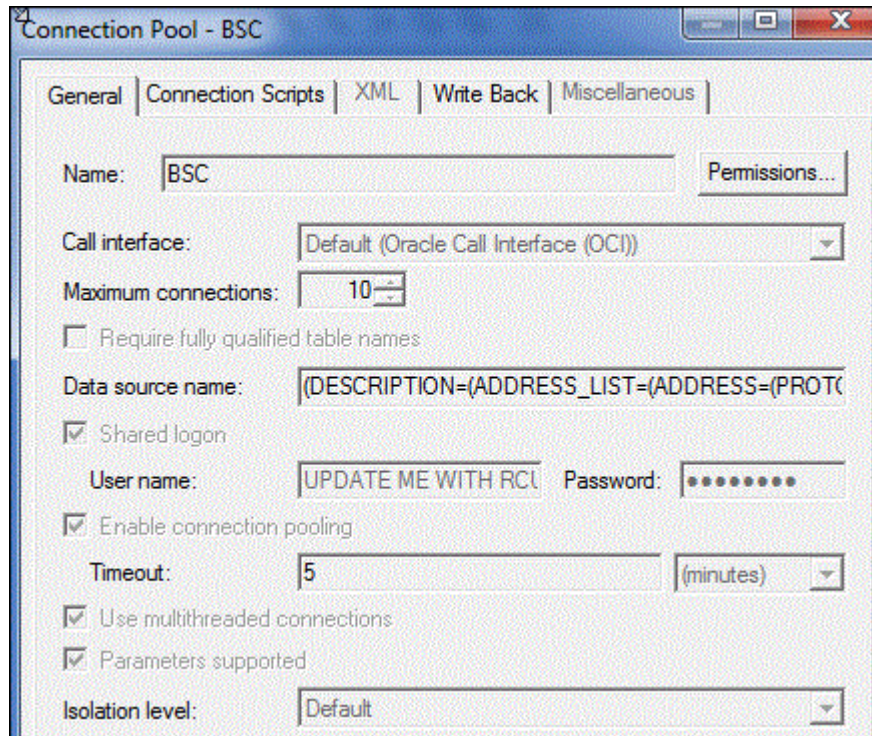
- **New Connection Name:** A name for the database you want to connect to.
- **Host:** The **Public IP** address for the database instance. For example, 123.213.85.123.
- **Port:** The port number that enables access to the database. For example, 1521.
- **Username:** The name of a user with read access to the database.
- **Password:** The password for the specified database user.
- **Service Name:** A concatenated name comprising **Database Unique Name** and **Host Domain Name**, separated with a period. For example, CustDB\_iad1vm.sub05031027070.customervcnwith.oraclevcn.com.

## Connect to Your Database in Model Administration Tool

In Model Administration Tool for Oracle Analytics Cloud, click **File**, then **Open**, then **In the Cloud** to open your semantic model. See [Edit a Semantic Model in the Cloud](#).

When you sign in, use connection information for your Oracle Analytics Cloud to fill in the Open in the Cloud dialog.

Create a connection pool for your database. In the Physical pane, expand the **DBaaS** node, right-click the database icon, and click **Properties** to display the Connection Pool dialog. Use the database details you recorded earlier to specify **Call Interface**, **Data Source Name**, **User Name**, and **Password**.



Specify these values:

- **Call interface:** Select **Default (Oracle Call Interface (OCI))**.
- **Data Source Name:** Specify the connection details. For example:
 

```
(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=129.213.85.177)(PORT=1521)))
(CONNECT_DATA=(SERVICE_NAME=CustDB_iad1vm.sub05031027070.customervcnwith.oraclecn.com)))
```

For **SERVICE\_NAME**, specify the concatenated **Database Unique Name** and **Host Domain Name** separated by a period, for example, `db1_phx1tv.mycompany.com`. To find both these names in Oracle Cloud Infrastructure Console, click **Databases**, under **MySQL** click **DB Systems**, and then click the name of your database.

## Connect to Oracle Autonomous AI Lakehouse with a Public IP Address

Configure Oracle Analytics Cloud to connect to Autonomous AI Lakehouse over a public IP address so that end users can analyze that data in visualizations, analyses, dashboards, and pixel-perfect reports.

### Topics

- [Typical Workflow to Connect to Oracle Autonomous AI Lakehouse with a Public IP Address](#)
- [Prerequisites](#)
- [Enable Access to Oracle Autonomous AI Lakehouse](#)
- [Connect to Oracle Autonomous AI Lakehouse](#)

## Typical Workflow to Connect to Oracle Autonomous AI Lakehouse with a Public IP Address

If you're connecting Oracle Analytics Cloud to Autonomous AI Lakehouse over a public IP address for the first time, follow these tasks as a guide.

Task	Description	More Information
Verify the prerequisites	Verify that your environment satisfies the prerequisites required for this configuration.	<a href="#">Prerequisites</a>
Enable access to Autonomous AI Lakehouse	Upload your Autonomous AI Lakehouse Client Credentials file (wallet file) to Oracle Analytics Cloud.	<a href="#">Enable Access to Oracle Autonomous AI Lakehouse</a>
Connect to Autonomous AI Lakehouse	Create and test your connections.	<a href="#">Connect to Oracle Autonomous AI Lakehouse</a>

### Prerequisites

Before you start, make sure you have the required environment.

Step	Description	Important Information to Note
Set up Oracle Analytics Cloud	Deploy Oracle Analytics Cloud.	<b>Region</b> <b>Availability Domain</b>
Set up Oracle Autonomous AI Lakehouse	Deploy Autonomous AI Lakehouse. <ul style="list-style-type: none"> <li>Deploy Autonomous AI Lakehouse on Oracle Cloud Infrastructure.</li> <li>Populate Autonomous AI Lakehouse with data.</li> <li>Set up a database user with permissions to read database tables on Autonomous AI Lakehouse</li> </ul>	<b>Host Name</b> <b>Port Number</b> <b>Service Name</b> (Obtain these details from <code>tnsnames.ora</code> in the Autonomous AI Lakehouse Client Credentials file.)

### Enable Access to Oracle Autonomous AI Lakehouse

To enable secure communication between Oracle Analytics Cloud and Autonomous AI Lakehouse, you upload trusted SSL certificates to Oracle Analytics Cloud.

- In Autonomous AI Lakehouse Console, obtain the Client Credentials file.
 

The Client Credentials file is a ZIP file containing the files `cwallet.sso` and `tnsnames.ora`. See [Download Client Credentials \(Wallets\) in Using Oracle Autonomous AI Lakehouse](#).
- Extract the `cwallet.sso` file from the Client Credentials file.
- Upload the `cwallet.sso` file to Oracle Analytics Cloud.
  - Sign in to Oracle Analytics Cloud, open the **Console** and click **Database Connections**.
  - Click **Upload Wallet** to upload a wallet for the first time or **Replace Wallet** to update an existing wallet.

- c. Click **Browse** and locate the wallet file (`cwallet.sso`) you downloaded from Autonomous AI Lakehouse.
- d. Select the file and click **Open**.
- e. Click **Update** and **OK** to update the existing wallet file.

## Connect to Oracle Autonomous AI Lakehouse


After enabling access to Oracle Autonomous AI Lakehouse, use the connection details you recorded earlier to connect Oracle Analytics Cloud to Autonomous AI Lakehouse. The way you connect depends on what you want to do with the data.

- Visualize the data
- Model the data using Semantic Modeler, then generate analyses and dashboards.
- Model the data with Oracle Analytics Model Administration Tool, then generate analyses and dashboards.
- Publish the data in pixel-perfect reports.

## Connect to Autonomous AI Lakehouse for Data Visualization or Semantic Modeler

In Oracle Analytics Cloud, create an Autonomous AI Lakehouse connection for data visualization. See [Create Connections to Oracle Autonomous AI Lakehouse](#).

← **Create Connection**



Oracle Autonomous Data Warehouse

\* Connection Name

Description

Encryption Type

\* Client Credentials

\* Username

\* Password

\* Service Name

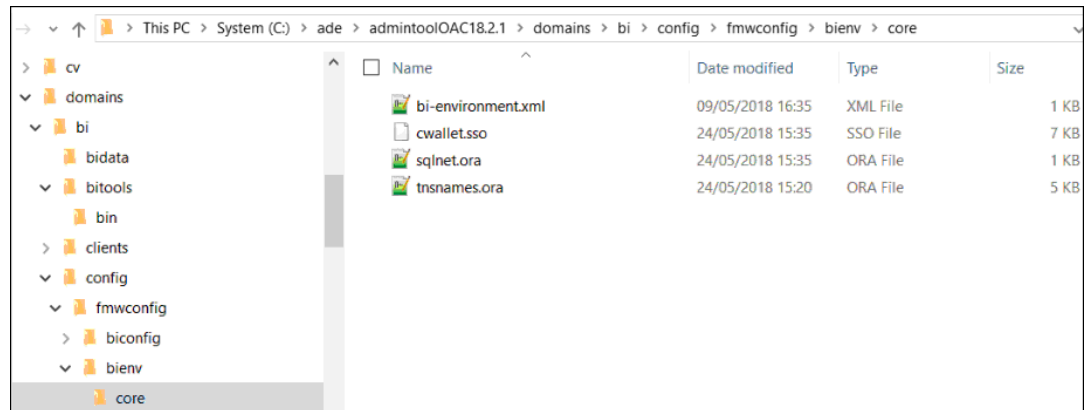
Now create a new workbook and dataset to visualize data from your Autonomous AI Lakehouse.

## Connect to Autonomous AI Lakehouse in Model Administration Tool

You can use Model Administration Tool for Oracle Analytics Cloud to edit a semantic model connected to Autonomous AI Lakehouse.

1. On the machine where you installed Oracle Analytics Cloud Client Tools, copy the `cwallet.sso`, `sqlnet.ora`, and `tnsnames.ora` from the zip file that you downloaded from Autonomous AI Lakehouse to the folder:

```
<Developer Client Tool installation
folder>\domains\bi\config\fmwconfig\bienv\core
```



2. Edit `sqlnet.ora` so that the wallet location points to:

```
<Developer Client Tool installation
folder>\domains\bi\config\fmwconfig\bienv\core
```

For example:

```
WALLET_LOCATION = (SOURCE = (METHOD = file) (METHOD_DATA =
(DIRECTORY="C:\ade\admintoolOAC18.2.1\domains\bi\config\fmwconfig\bienv\core")
)) SSL_SERVER_DN_MATCH=yes
```

3. In Model Administration Tool, click **File**, then **Open**, then **In the Cloud** to open your semantic model. See [Edit a Semantic Model in the Cloud](#).

When you log in, use the connection information for your Oracle Analytics Cloud instance to fill in the Open in the Cloud dialog.

- For **Port**, specify 443.
  - For **Host name**, specify the host domain name of your Oracle Analytics Cloud instance.
  - Select **SSL**. For **Trust Store** and **Password**, point to a local JDK/JRE cacerts keystore that trusts certificates signed by well-known CAs.
4. Connect to Autonomous AI Lakehouse.

- a. Click **File**, then **Import Metadata** to start the Import Metadata wizard, and follow the on-screen instructions.

- b. On the Select Data Source page, for the **Data Source Name** value, specify a long TNS connection string from the downloaded `tnsnames.ora` file. Include the entire description, enclosed in brackets.

For example:

```
(description=(address=(protocol=tcps)(port=1522)
(host=ALKc.example.oraclecloud.com))
(connect_data=(service_name=ALKc1_high.ALKc.oraclecloud.com))
(security=(ssl_server_cert_dn="CN=ALKc.example.oraclecloud.com,OU=Oracle
BMCS US,O=Oracle Corporation,L=Redwood City,ST=California,C=US"))) )
```

- c. For **User Name** and **Password**, enter the credentials for the ADMIN user or another suitable Autonomous AI Lakehouse user.

You're now ready to model the data in Model Administration Tool, publish the semantic model to Oracle Analytics Cloud, and create analyses and data visualizations using data from Autonomous AI Lakehouse.

# Part IV

## Reference

Find answers to common questions, and troubleshoot connection issues.

**Appendices:**

- [Data Sources and Data Types Reference](#)
- [Troubleshoot Private Access Channel Connectivity Issues](#)

# A

## Data Sources and Data Types Reference

Find out about supported data sources, databases, JSON templates, and data types.

### Topics

- [List of Supported Data Sources in Oracle Analytics Cloud](#)
- [Certification - Supported Data Types](#)
- [JSON Examples for Common Data Sources with REST Endpoints](#)
- [About the Oracle Applications Connector](#)

## List of Supported Data Sources in Oracle Analytics Cloud

Oracle Analytics Cloud supports these data sources. Data sources can be databases, applications, or files. Follow the links for connectivity information about your data source.

- [Oracle AI Data Platform](#)
- [Oracle AI Database](#)
- [Oracle Analytic Views](#)
- [Oracle Applications](#)
- [Oracle Autonomous AI Lakehouse](#)
- [Oracle Autonomous AI Transaction Processing](#)
- [OCI Data Flow SQL Endpoints](#)
- [OCI Object Storage](#)
- [OCI Resource](#)
- [Oracle EPM Cloud \(for Oracle Fusion Cloud Enterprise Performance Management\)](#)
- [Oracle Essbase](#)
- [Oracle Hyperion Planning](#)
- [Oracle NetSuite](#)
- [Oracle Fusion Cloud B2C Service](#)
- [Oracle Service Cloud](#)
- [Oracle Talent Acquisition Cloud](#)
- [Amazon EMR](#)
- [Amazon Redshift](#)
- [Apache Hive](#)
- [Apache Spark](#)
- [CSV File](#)
- [Databricks](#)

- [Delta Share](#)
- [DropBox](#)
- [Google Analytics](#)
- [Google BigQuery](#)
- [Google Drive](#)
- [Greenplum](#)
- [Hortonworks Hive](#)
- [IBM BigInsights Hive](#)
- [IBM DB2](#)
- [Impala \(Cloudera\)](#)
- [Informix](#)
- [JDBC](#)
- [Local Subject Area in Oracle Analytics Cloud](#)
- [MapR Hive](#)
- [Microsoft Excel File](#)
- [Microsoft Azure SQL Database](#)
- [Microsoft SQL Server](#)
- [Microsoft Azure Synapse Analytics](#)
- [MongoDB](#)
- [MySQL](#)
- [MySQL HeatWave](#)
- [OData](#)
- [Pivotal HD Hive](#)
- [PostgreSQL](#)
- [REST API](#)
- [Salesforce](#)
- [Snowflake](#)
- [Sybase ASE](#)
- [Sybase IQ](#)
- [Teradata](#)
- [Trino](#)
- [Vertica](#)
- [Key to Connectivity Information](#)
- [Data Sources that Support Incremental Reload for Datasets](#)

## Oracle AI Data Platform

You can connect Oracle Analytics to Oracle AI Data Platform.





### Supported Versions

Latest version.

### Prerequisites

See [Connect to Oracle AI Data Platform](#).

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> </ul> </li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>Public*</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> </ul> </li> </ul>	* For semantic model connections, you can only have one global wallet per semantic model connection.
Model Administration Tool		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> </ul> </li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, [Key to Connectivity Information](#).

### Other Connectivity Information

- See [Connect to Oracle AI Data Platform](#).
- Use the **Oracle AI Data Platform** connection type.
- At the Create Connection dialog, use the **Catalog** option to list catalogs available and select a catalog to use.

### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle Analytic Views

You can connect Oracle Analytics to Oracle Analytic Views.





### Supported Versions

Oracle Database 19c, 23ai

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Live</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>Public</li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>Public</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

None.

**Useful Documentation Links**

- [Connect to Oracle Analytic Views](#)
- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle AI Database

You can connect Oracle Analytics to Oracle AI Database.





**Supported Versions**

12.1+, 12.2+, 19+, 21c, 23ai, 26ai

**Prerequisites**

Ensure that the appropriate security access rules are in place for Oracle Analytics to make a network connection to the database service on the database listening port.

## Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public*</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	* For dataset connections, you can connect to multiple database instances. Upload a wallet for each connection. Manual SQL in Oracle Analytics does not support WITH clauses (that is, Common Table Expressions, or CTEs). Queries must be rewritten using inline subqueries, database views, or materialized tables.
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public**</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	** For semantic model connections, you can only have one global wallet per semantic model connection.
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• System connection</li> </ul>	Use Oracle Call Interface instead of ODBC to connect to Oracle AI Database using Oracle Client Tools, for example, Model Administration Tool.
Oracle Analytics Publisher		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> </ul> </li> </ul>	-

For more information about this connectivity table, [Key to Connectivity Information](#).

### Other Connectivity Information

- Supports saving output from data flows.
- Use the **Oracle Database** connection type to connect to Oracle Database Classic Cloud Service, Oracle Database, and Oracle AI Database.
- Supports incremental refresh for datasets based on this database type. See [Configure a Dataset to Load Incrementally](#).

### Useful Documentation Links

- [Connect to Oracle AI Database](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle Applications

You can connect Oracle Analytics to Oracle Applications.





### Supported Versions

Oracle Fusion Cloud Applications Suite, On-premises Oracle BI Enterprise Edition deployments, Another Oracle Analytics service

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Remote data connectivity*</li> </ul> </li> <li>Data access - Cache only</li> </ul>	* Remote connectivity for datasets is only available using Data Gateway for Linux.
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Connector supports several applications in Fusion Applications Suite.
- Supports incremental refresh for datasets based on this database type. See [Configure a Dataset to Load Incrementally](#).
- Note:** Increment reload is supported for Subject Areas / Enter SQL only. It isn't supported for Analysis based datasets.

**Useful Documentation Links**

- [About the Oracle Applications Connector](#).
- [Connect to an Application in Oracle Fusion Cloud Applications Suite](#)
- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle Autonomous AI Lakehouse

You can connect Oracle Analytics to Oracle Autonomous AI Lakehouse.





**Supported Versions**

19c, 21c, 23ai, 26ai

**Prerequisites**

None.

## Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• System connection</li> </ul>	-
Oracle Analytics Publisher		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Use the **Oracle Autonomous Data Warehouse** connection type. As an alternative to using the **Oracle Autonomous Data Warehouse** connection type, you can also use Delta Sharing to connect to Oracle Autonomous AI Lakehouse. See [Connect to a Database Using Delta Sharing](#).
- Supports resource principal authentication in OCI Identity and Access Management (except when using Oracle Analytics Publisher).
- Supports saving output from data flows.
- Supports incremental refresh for datasets based on this database type. See [Configure a Dataset to Load Incrementally](#).
- For semantic model connections, you can only have one global wallet, therefore you can only connect to one instance.

### Useful Documentation Links

- [Connect to Oracle Autonomous AI Lakehouse](#) .
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle Autonomous AI Transaction Processing

You can connect Oracle Analytics to Oracle Autonomous AI Transaction Processing.





### Supported Versions

19c, 21c, 23ai, 26ai

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	For dataset connections, you can have one wallet per connection, therefore you can connect to multiple instances.
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• System connection</li> </ul>	For semantic model connections, you can only have one global wallet per connection, therefore you can only connect to one instance.
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Use the **Oracle Autonomous Transaction Processing** connection type.
- Supports saving output from data flows.
- Supports resource principal authentication in OCI Identity and Access Management (except when using Oracle Analytics Publisher).
- Supports incremental refresh for datasets based on this database type. See Configure a Dataset to Load Incrementally.

### Useful Documentation Links

- [Connect to Oracle Autonomous AI Transaction Processing](#)
- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## OCI Data Flow SQL Endpoints

You can connect Oracle Analytics to OCI Data Flow SQL Endpoints.





### Supported Versions

Latest version.

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

None.

### Useful Documentation Links

- [Connect to OCI Data Flow SQL Endpoints](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## OCI Object Storage

You can connect Oracle Analytics to OCI Object Storage and create datasets.





### Supported Versions

Latest version.

### Prerequisites

None.

## Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> <li>Data access - Live or cache</li> </ul>	Supports incremental refresh for datasets based on this database type. See <a href="#">Configure a Dataset to Load Incrementally</a> .
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Supports incremental refresh for datasets based on this database type. See [Configure a Dataset to Load Incrementally](#).

### Useful Documentation Links

- [Create a Dataset from OCI Object Storage](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## OCI Resource

You can connect Oracle Analytics to an OCI Resource database. Create a connection to an OCI Resource to integrate Oracle Analytics with OCI functions, OCI Vision, OCI Data Science, or OCI Language. You also use the OCI Resource connection type to connect to OCI Object Storage.

For example, you might register a language conversion function hosted in OCI so that you can convert English text into Spanish or German using an Oracle Analytics data flow.

### Supported Versions





Latest version.

### Prerequisites

If applicable.

### Connectivity

Use this connection type to register Oracle functions for use in data flows. See [Create a Connection to Your OCI Tenancy](#).

Use Data Source With	Support	Connectivity Options	Notes
Datasets		-	Use the OCI Resource connection type to connect to OCI Object Storage. See <a href="#">Create a Dataset from OCI Object Storage</a> .
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- None.

#### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Create a Dataset from OCI Object Storage](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle EPM Cloud (for Oracle Fusion Cloud Enterprise Performance Management)

You can connect Oracle Analytics to an Oracle EPM Cloud database.



#### Supported Versions



Latest version.

#### Prerequisites

Before you start, make sure that your product is supported. See [Which Oracle EPM Business Processes Does Oracle Analytics Support?](#).

#### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	See <a href="#">Get Started With Semantic Modeling</a> .

Use Data Source With	Support	Connectivity Options	Notes
Model Administration Tool		<ul style="list-style-type: none"> <li>Public</li> </ul>	See Model Oracle Cloud Enterprise Performance Management Data Using Model Administration Tool.
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- You can't use Oracle Fusion Cloud Enterprise Performance Management (EPM) datasets in Data Flows.
- You can't blend datasets that use Oracle Fusion Cloud Enterprise Performance Management (EPM) data sources.
- When you connect to a Oracle EPM Cloud data source, note that:
  - Time-based columns are sometimes not imported correctly. A column displaying a date in text format can't be converted to a date data-type column.
  - When you import data, you can't prepare the data, and you can't edit the data. For example, you can't change a column's data-type or aggregation.

### Useful Documentation Links

- [Connect to Oracle Fusion Cloud Enterprise Performance Management \(EPM\)](#).
- [#unique\\_231](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle Essbase

You can connect Oracle Analytics to Oracle Essbase.


### Supported Versions




11.1.2.4.0+, 21c

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> <li>Data access - Live only</li> </ul>	-

Use Data Source With	Support	Connectivity Options	Notes
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	See Get Started With Semantic Modeling.
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	See <a href="#">#unique_232</a> .
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- For direct connections, see [Create a Connection to Oracle Essbase](#).
- For remote connections via Data Gateway, see [Create a Connection to Oracle Essbase Data on a Private Network Using Data Gateway](#).
- For remote connections via Private Access Channel, see [Connect to On-premises Data Sources over a Private Access Channel](#).
- You can't use Oracle Essbase datasets in Data Flows.
- You can't blend datasets that use Oracle Essbase data sources.

### Useful Documentation Links

- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle Hyperion Planning

You can connect Oracle Analytics to Oracle Hyperion Planning to model your data.




### Supported Versions


11.1.2.4+, 11.2+

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		-	-
Semantic Modeler		-	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Data access - Live only</li> </ul>	-

Use Data Source With	Support	Connectivity Options	Notes
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- None.

#### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle NetSuite

You can connect Oracle Analytics to Oracle NetSuite.





#### Supported Versions

Release 2019.2 (JDBC Driver 8.10.85.0)

#### Prerequisites

None.

#### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> </ul>	Two-factor authentication using single sign-on (SSO) isn't supported. OAuth authentication is supported. See <a href="#">Create Integration Records for Applications to Use OAuth 2.0</a> .
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- Specify NetSuite2.com as Data Source.

- OAuth authentication is supported. See [Create Integration Records for Applications to Use OAuth 2.0](#).

#### Useful Documentation Links

- [Connect to NetSuite](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle Fusion Cloud B2C Service

You can connect Oracle Analytics to Oracle Fusion Cloud B2C Service.





#### Supported Versions

1.2

#### Prerequisites

None.

#### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- None.

#### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle Service Cloud

You can connect Oracle Analytics to an Oracle Service Cloud data source.





#### Supported Versions

Latest version.

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- None.

**Useful Documentation Links**

- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Oracle Talent Acquisition Cloud

You can connect Oracle Analytics to Oracle Talent Acquisition Cloud/Oracle Talent Management Cloud.





**Supported Versions**

15b.9.3+, 17.4+

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Supports incremental refresh for datasets based on this database type. See [Configure a Dataset to Load Incrementally](#).

**Useful Documentation Links**

- [Connect to Oracle Talent Acquisition Cloud](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Amazon EMR

You can connect Oracle Analytics to an Amazon EMR database.





**Supported Versions**

4.7.2

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Complex data types not supported.
- Amazon EMR (MapR) No Amazon Machine Image (AMI) 3.3.2 running MapR Hadoop M3 and Hive 0.13.1.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Amazon Redshift

You can connect Oracle Analytics to an Amazon Redshift database.





### Supported Versions

1.0.1036 +

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Remote data connectivity</li> </ul> </li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>Private               <ul style="list-style-type: none"> <li>Remote data connectivity</li> </ul> </li> <li>System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, [Key to Connectivity Information](#).

### Other Connectivity Information

- None.

### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [JDBC and JNDI Templates and Examples](#)
- [Manage Connections Using REST APIs](#)

## Apache Hive

You can connect Oracle Analytics to an Apache Hive database.





### Supported Versions

2.3.0+, 3.0+

### Prerequisites

None.

## Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Supports saving output from data flows.
- Supports Kerberos authentication for datasets.

### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Apache Spark

You can connect Oracle Analytics to an Apache Spark database.





### Supported Versions

1.6+, 3.0

### Prerequisites

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> </ul> </li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> </ul> </li> <li>Remote Data Connectivity</li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Remote data connectivity</li> </ul> </li> <li>System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Supports saving output from data flows.
- Supports Kerberos authentication for datasets.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## CSV File

You can connect Oracle Analytics to data in a comma-separated values (CSV) file.



**Supported Versions**



Latest version.

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Cache only</li> </ul>	-
Semantic Modeler		-	-

Use Data Source With	Support	Connectivity Options	Notes
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- None.

#### Useful Documentation Links

- [Create Datasets from Files](#)

## Databricks

You can connect Oracle Analytics to a remote Databricks database.





#### Supported Versions

Latest version.

#### Prerequisites

Oracle Analytics requires that remote connectivity is enabled and that your data source is accessible from the instance where Data Gateway is installed. See [Connect to On-premises Data Sources Using Data Gateway](#). In addition, configure Data Gateway by installing the Databricks driver you're using. See [Configure Remote Data Connectivity for a Databricks Data Source](#).

#### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Private               <ul style="list-style-type: none"> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	You must have Data Gateway configured to use the <b>Databricks</b> connection type.
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> </ul>	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- Use the **Databricks** connection type.  
As an alternative to connecting to Databricks via Data Gateway using the **Databricks** connection type, you can also use [Delta Share](#) to connect to Databricks. See [Connect to a Database Using Delta Sharing](#).

If you're connecting to Databricks via Deltashare, make sure that your database uses a supported timestamp type. See [Delta Share](#).

#### Useful Documentation Links

- [Connect to a Remote Databricks Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Delta Share

Use the Delta Sharing protocol to connect to Oracle Autonomous AI Lakehouse and Databricks.



#### Supported Versions

Latest version.

#### Prerequisites

None.

#### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		• Public	<a href="#">Connect to a Database Using Delta Sharing</a>
Semantic Modeler		-	<a href="#">Connect to a Database Using Delta Sharing</a>
Model Administration Tool	Not applicable	-	-
Oracle Analytics Publisher	Not applicable	-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- Use the **Delta Share** connection type.
- If you're connecting to Databricks, make sure that you're not using the INT96 type of timestamp, which is deprecated. Instead use a supported timestamp type such as INT64 (TIMESTAMP\_MILLIS) or INT64 (TIMESTAMP\_MICROS).

#### Useful Documentation Links

- [Connect to a Database Using Delta Sharing](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## DropBox

You can connect Oracle Analytics to a DropBox database.





### Supported Versions

Latest version.

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Cache only</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- None.

### Useful Documentation Links

- [Connect to Dropbox](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Google Analytics

You can connect Oracle Analytics to a Google Analytics data source.





### Supported Versions

Universal Analytics, Google Analytics V4

### Prerequisites

None.

## Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Cache only</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Use the **Google Analytics** connection type.

### Useful Documentation Links

- [Connect to Google Analytics](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Google BigQuery

You can connect Oracle Analytics to a Google BigQuery database.





### Supported Versions

Latest version.

### Prerequisites

A connection to Google BigQuery is defined explicitly to a single project. If you require data from multiple projects, then the connection must be created by a service user that has access to the projects and datasets. Dataset outputs can be blended.

## Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>Public</li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- None.

**Useful Documentation Links**

- [Connect to Google BigQuery](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Google Drive

You can connect Oracle Analytics to a Google Drive data source.





**Supported Versions**

Latest version.

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Use the **Google Drive** connection type.

**Useful Documentation Links**

- [Connect to Google Drive](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Greenplum

You can connect Oracle Analytics to a Greenplum database.





**Supported Versions**

4.3.8+

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- None.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Hortonworks Hive

You can connect Oracle Analytics to a Hortonworks Hive database.


**Supported Versions**




1.2+

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> <li>Data access - Live or cache</li> </ul>	-

Use Data Source With	Support	Connectivity Options	Notes
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Private <ul style="list-style-type: none"> <li>– Private access channel</li> </ul> </li> <li>• System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Supports saving output from data flows.
- Supports Kerberos authentication for datasets.

### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## IBM BigInsights Hive

You can connect Oracle Analytics to a IBM BigInsights Hive database.





### Supported Versions

1.2+

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private <ul style="list-style-type: none"> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private <ul style="list-style-type: none"> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Supports Kerberos authentication for datasets.

### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## IBM DB2

You can connect Oracle Analytics to an IBM DB2 database.





### Supported Versions

11.5+

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• System connection</li> </ul>	-
Oracle Analytics Publisher		<ul style="list-style-type: none"> <li>• Public</li> </ul>	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Supports incremental refresh for datasets based on this database type. See Configure a Dataset to Load Incrementally.
- Supports SSL between Data Gateway and Oracle Analytics Cloud.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Impala (Cloudera)

You can connect Oracle Analytics to an Impala (Cloudera) database.





**Supported Versions**

2.7+

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Supports Kerberos authentication for datasets.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Informix

You can connect Oracle Analytics to an Informix database.





### Supported Versions

12.10+

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>Public</li> </ul>	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Supports incremental refresh for datasets based on this database type. See [Configure a Dataset to Load Incrementally](#).

### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## JDBC

You can connect Oracle Analytics to JDBC-supported data sources using the **JDBC** connection type.

Although the **JDBC** connection type is certified, Oracle can't guarantee to resolve issues with uncertified data sources that you connect to using the **JDBC** connection type. Make sure that you fully test data sources and database features before deployment to production.

Before you start, check with your service administrator that remote connectivity is enabled in Oracle Analytics and that your data source is accessible from the instance where Data Gateway is installed.





### Supported Versions

Latest version.

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Private               <ul style="list-style-type: none"> <li>Remote Data Connectivity</li> </ul> </li> <li>Data access - Cache only</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- None.

**Useful Documentation Links**

- [Connect to Remote Data Using Generic JDBC](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Local Subject Area in Oracle Analytics Cloud

You can connect Oracle Analytics to data in a Local Subject Area in Oracle Analytics Cloud.



**Supported Versions**



Latest version.

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Cache only</li> </ul>	-
Semantic Modeler		-	-

Use Data Source With	Support	Connectivity Options	Notes
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- None.

#### Useful Documentation Links

- [Create a Dataset from a Local Subject Area](#)

## MapR Hive

You can connect Oracle Analytics to a MapR Hive database.





#### Supported Versions

1.2+

#### Prerequisites

None.

#### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Private <ul style="list-style-type: none"> <li>– Private access channel</li> </ul> </li> <li>• System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- Supports saving output from data flows.
- Supports Kerberos authentication for datasets.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Microsoft Excel File

You can connect Oracle Analytics to data in a Microsoft Excel file.





**Supported Versions**

Latest version.

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Data access - Cache only</li> </ul>	Only XLSX files (or XLS with unpivoted data).
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- None.

**Useful Documentation Links**

- [Create Datasets from Files](#)

## Microsoft Azure SQL Database

You can connect Oracle Analytics to Microsoft Azure SQL Database.





**Supported Versions**

Latest version.

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Live or cache</li> </ul>	Use the <b>SQL Server</b> connection type on the Create Connection page.
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- None.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Microsoft Azure Synapse Analytics

You can connect Oracle Analytics to a Microsoft Azure Synapse Analytics database.





**Supported Versions**

Latest version.

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private <ul style="list-style-type: none"> <li>Private access channel</li> </ul> </li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- None.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Microsoft SQL Server

You can connect Oracle Analytics to a Microsoft SQL Server database.





**Supported Versions**

2014, 2016, 2017, 2019, 2022

**Prerequisites**

In Microsoft SQL Server, set up a named connection using static port allocation. Dynamic port allocation isn't supported.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• System connection</li> </ul>	-
Oracle Analytics Publisher		<ul style="list-style-type: none"> <li>• Public</li> </ul>	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Supports incremental refresh for datasets based on this database type. See Configure a Dataset to Load Incrementally.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)

- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## MongoDB

You can connect Oracle Analytics to a MongoDB database.





### Supported Versions

3.2.5

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> </ul> </li> <li>• System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- None.

### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## MySQL

You can connect Oracle Analytics to a MySQL database.





### Supported Versions

5.6+, 5.7+, 8.0+

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	Supports Enterprise Edition Only.
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> <li>– Remote data connectivity</li> </ul> </li> <li>• System connection</li> </ul>	Supports Enterprise Edition Only. (Not Community Edition)
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Supports incremental refresh for datasets based on this database type. See [Configure a Dataset to Load Incrementally](#).

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## MySQL HeatWave

You can connect Oracle Analytics to a MySQL HeatWave database.





**Supported Versions**

8.0.31+

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> </ul> </li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> <li>System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Current latest cloud version supported.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## OData

You can connect Oracle Analytics to an OData database.



**Supported Versions**



4.0

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Cache only</li> </ul>	-
Semantic Modeler		-	-

Use Data Source With	Support	Connectivity Options	Notes
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Oracle Analytics doesn't support the following OData features:
  - Columns other than the following data types: Edm.String, Edm.Int16, Edm.Int32, Edm.Int64, Edm.Double, Edm.Single, Edm.Decimal, Edm.Date, Edm.TimeOfDay, and Edm.DateTimeOffset.
  - Complex Types and Enums.
  - OData v4 Actions and Functions.
  - OData v4 servers with a custom \$top limit. If you specify a custom limit for \$top and a query exceeds the \$top limit and receives a failure response from the server, then this might prevent you from loading tables in Oracle Analytics.

### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections Using REST APIs](#)

## Pivotal HD Hive

You can connect Oracle Analytics to a Pivotal HD Hive database.




### Supported Versions


Latest version.

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> </ul>	-

Use Data Source With	Support	Connectivity Options	Notes
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- Supports Kerberos authentication for datasets.

#### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## PostgreSQL

You can connect Oracle Analytics to a PostgreSQL database.





#### Supported Versions

9.0+, 13, 14, 15

#### Prerequisites

None.

#### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> </ul> </li> <li>• System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- Use the **PostgreSQL** connection type.
- This connection type doesn't support Server Name Indication (SNI) for Transport Layer Security (TLS).

- Oracle Analytics doesn't support PostgreSQL databases deployed on the NEON platform.

#### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## REST API

You can connect Oracle Analytics to a REST API database.





#### Supported Versions

Latest version.

#### Prerequisites

None.

#### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Private access channel</li> </ul> </li> </ul>	Connect to wide range of data sources that have REST endpoints available.
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- None.

#### Useful Documentation Links

- [Create a Connection to a Data Source with REST Endpoints](#).
- [JSON Examples for Common Data Sources with REST Endpoints](#).
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Salesforce

You can connect Oracle Analytics to a Salesforce database.





#### Supported Versions

Latest version.

## Prerequisites

Before you create a Salesforce connection, in the Salesforce application make sure that you enable API access in the administrative permissions for the Salesforce user.

## Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler		-	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

## Other Connectivity Information

- None.

## Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

# Snowflake

You can connect Oracle Analytics to a Snowflake database.


## Supported Versions

Latest version.

## Prerequisites

None.

## Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Public</li> <li>Private <ul style="list-style-type: none"> <li>Private access channel</li> </ul> </li> <li>Data access - Live or cache</li> </ul>	Use key-pair authentication. See <a href="#">Connect to Snowflake Data Warehouse</a> .

Use Data Source With	Support	Connectivity Options	Notes
Semantic Modeler	✓	<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> </ul>	Use key-pair authentication.
Model Administration Tool	✓	<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> </ul> </li> <li>System connection</li> </ul>	See Model Data in Snowflake Data Warehouse.
Oracle Analytics Publisher	✓	<ul style="list-style-type: none"> <li>Public</li> </ul>	Use username and password authentication. See <a href="#">Set Up a Connection to a Snowflake Data Warehouse</a> .

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- None.

### Useful Documentation Links

- (For visualization and data-modeling) [Connect to Snowflake Data Warehouse](#)
- (For data for pixel-perfect reports) [Set Up a Connection to a Snowflake Data Warehouse](#)
- (For modeling in Model Administration Tool) Model Data in Snowflake Data Warehouse
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Sybase ASE

You can connect Oracle Analytics to a Sybase ASE database.

### Supported Versions



15.7+

### Prerequisites

None.

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets	✓	<ul style="list-style-type: none"> <li>Public</li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler	✓	<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> </ul>	-

Use Data Source With	Support	Connectivity Options	Notes
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- Supports incremental refresh for datasets based on this database type. See Configure a Dataset to Load Incrementally.

#### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Sybase IQ

You can connect Oracle Analytics to a Sybase IQ database.





#### Supported Versions

16+

#### Prerequisites

None.

#### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> </ul>	-
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

#### Other Connectivity Information

- Supports incremental refresh for datasets based on this database type. See Configure a Dataset to Load Incrementally.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Teradata

You can connect Oracle Analytics to a Teradata database.





**Supported Versions**

16.20, 17.x

**Prerequisites**

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Remote data connectivity</li> </ul> </li> <li>• Data access - Live or cache</li> </ul>	-
Semantic Modeler		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool		<ul style="list-style-type: none"> <li>• Public</li> <li>• Private               <ul style="list-style-type: none"> <li>– Remote data connectivity</li> </ul> </li> <li>• System connection</li> </ul>	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- None.

**Useful Documentation Links**

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Trino

You can connect Oracle Analytics to a remote Trino data source.





### Supported Versions

Latest version.

### Prerequisites

Oracle Analytics requires that remote connectivity is enabled and that your data source is accessible from the instance where Data Gateway is installed. See [Connect to On-premises Data Sources Using Data Gateway](#). In addition, configure Data Gateway by installing the Trino driver you're using. See [Configure Remote Data Connectivity for a Trino Data Source](#).

### Connectivity

Use Data Source With	Support	Connectivity Options	Notes
Datasets		<ul style="list-style-type: none"> <li>Private               <ul style="list-style-type: none"> <li>Remote data connectivity</li> </ul> </li> <li>Data access - Live or cache</li> </ul>	You must have Data Gateway configured.
Semantic Modeler		<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Remote data connectivity</li> </ul> </li> </ul>	You must have Data Gateway configured.
Model Administration Tool		-	-
Oracle Analytics Publisher		-	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

### Other Connectivity Information

- Use the **Trino** connection type.

### Useful Documentation Links

- [Connect to a Remote Trino Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Vertica

You can connect Oracle Analytics to a Vertica database.

### Supported Versions

9.x, 12.x

### Prerequisites

None.

**Connectivity**

Use Data Source With	Support	Connectivity Options	Notes
Datasets	✓	<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> <li>Data access - Live or cache</li> </ul>	-
Semantic Modeler	✓	<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> </ul>	-
Model Administration Tool	✓	<ul style="list-style-type: none"> <li>Public</li> <li>Private               <ul style="list-style-type: none"> <li>Private access channel</li> <li>Remote data connectivity</li> </ul> </li> <li>System connection</li> </ul>	-
Oracle Analytics Publisher	✓	<ul style="list-style-type: none"> <li>Public</li> </ul>	-

For more information about this connectivity table, see [Key to Connectivity Information](#).

**Other Connectivity Information**

- Server-Side SSL support only – no support for Mutual-TLS.
- Remote connectivity for datasets is only available using Data Gateway.
- If you're connecting to an on-premises Vertica database using Data Gateway, you must copy the Vertica JDBC client driver JAR file to the machine where Data Gateway is installed:

1. Stop the Jetty server. For example, use:

```
./stopJetty.sh
```

(on Linux) or:

```
stopJetty.cmd
```

(on Windows). Run this command from:

```
Oracle/Middleware/Oracle_Home/domain/bin
```

```
.
```

2. Copy the Vertica JAR file to:

```
Oracle/Middleware/Oracle_Home/domain/jettybase/lib/ext
```

```
.
```

3. Start the Jetty server. For example:

```
./startJetty.sh
```

#### Useful Documentation Links

- [Create a Connection to a Data Source](#)
- [Manage Connections to Data Sources](#)
- [Manage Connections Using REST APIs](#)

## Key to Connectivity Information

Use this guidance on connectivity options to connect Oracle Analytics to your data.

### Key

- **Version Numbers:**
  - "1.x" means any version starting with a 1. For example, this includes version 1.4.3 but not version 2.0.
  - "2.0.x" means any version starting with 2.0. For example, this includes version 2.0.4 but not version 2.4.
  - "1.6+" means any version starting with 1 and is greater than or equal to ( $\geq$ ) 1.6. For example, this includes version 1.8 but not version 2.4.
- A "Yes" (✓) in the **Support** column means that you can connect to this type of data source using one or more of the options listed in **Connectivity Options**.
- **Connectivity Options:**
  - **Public** means that the data source host is accessible via the public Internet.
  - **Private** means that the data source host isn't accessible via the public Internet.
    - \* **Private access channel** means that Oracle Analytics Cloud can access data on a private host over a private access channel. You can use a private access channel to connect to private data sources that are within your virtual cloud network (VCN) on Oracle Cloud Infrastructure or other networks peered to the VCN such as your corporate network. See [Connect to Private Data Sources Through a Private Access Channel](#).  
When you connect to a private data source in Oracle Analytics Cloud, you must specify the Fully Qualified Domain Name (FQDN) of your private data source in the connect dialog. You can't use IP addresses to connect to private data sources.
    - \* **Remote data connectivity:**
      - \* For datasets, this means that if your administrator has set up and enabled remote data connectivity, you can visualize on-premises data. You'll see a check box named **Use Remote Data Connectivity** on the Create Connection dialog that you select to indicate that the database is on-premises. See [Configure Data Gateway for Data Visualization](#).  
When you connect to a private data source in Oracle Analytics Cloud, you must specify the Fully Qualified Domain Name (FQDN) of your private data source in the connect dialog. You can't use IP addresses to connect to private data sources.
      - \* For Semantic Modeler or Model Administration Tool, this means that if your administrator has set up and enabled remote data connectivity, you can model

on-premises data of that type. See [Configure and Register Data Gateway for Reporting](#).

- In data flows, you can read data from remote data sources connected with Data Gateway. However, you can't write data to remote data sources connected with Data Gateway.
- **Data Access** options:
  - Live only** means that in a dataset, the table can only get its data directly from the data source.
  - Cache only** means that in a dataset, the table can only get its data directly from the cache. Data loads and reloads into cache.
  - Live or cache** means that in a dataset the table can access its data in either live mode or cache mode.See [Specify Whether a Dataset Table Is Cached or Live](#).
- **System Connection** means that data modelers can connect to a semantic model using connection details copied from an Oracle Analytics Cloud connection. For supported data sources, data modelers copy the **Object ID** from the Inspect pane into Semantic Modeler. See [About Semantic Model Data Source Connections](#). If you're using Model Administration Tool, copy the Object ID into the Connection Pool dialog.
- When Oracle Analytics is deployed as part of other services such as Fusion Analytics Warehouse or NetSuite Analytics Warehouse, you can't connect to the semantic model. Therefore you can ignore the **Semantic Modeler** options.
- Oracle Analytics Cloud can support Transport Layer Security (TLS) for data sources.
- In addition to the connections types listed on the Connections page, you can connect remotely to other on-premises data sources using generic JDBC. See [Connect to Remote Data Using Generic JDBC](#).
- Your use of third-party data sources is governed by the data source vendor's terms and agreements, and you're responsible for complying with these terms and agreements.

## Data Sources that Support Incremental Reload for Datasets

You can reload a dataset's data incrementally if it uses one of these data sources.

- Oracle Database/Oracle AI Database
- Oracle Applications
- Oracle Autonomous AI Lakehouse (ALK)
- Oracle Autonomous AI Transaction Processing (ATP)
- Oracle Cloud Infrastructure Object Storage
- Oracle Talent Management Cloud/Oracle Talent Acquisition Cloud (Taleo)
- DB2
- Informix
- MySQL
- SQL Server
- Sybase ASE and Sybase IQ

See [Configure a Dataset to Load Incrementally](#).

# Certification - Supported Data Types

Here're the supported data types for Oracle Analytics.

## Topics:

- [Supported Base Data Types](#)
- [Supported Data Types by Database](#)

## Supported Base Data Types

When reading from a data source, Oracle Analytics attempts to map incoming data types to the supported data types.

For example, a database column that contains only date values is formatted as a DATE, a spreadsheet column that contains a mix of numerical and string values is formatted as a VARCHAR, and a data column that contains numerical data with fractional values uses DOUBLE or FLOAT.

In some cases Oracle Analytics can't convert a source data type. To work around this data type issue, you can manually convert a data column to a supported type by entering SQL commands. In other cases, Oracle Analytics can't represent binary and complex data types such as BLOB, JSON, and XML.

Note that some data types aren't supported. You'll see an error message if the data source contains unsupported data types.

Oracle Analytics supports the following base data types:

- **Number Types** — SMALLINT, SMALLUNIT, TINYINT, TINYUINT, UINT, BIT, FLOAT, INT, NUMERIC, DOUBLE
- **Date Types** — DATE, DATETIME, TIMESTAMP, TIME
- **String Types** — LONGVARCHAR, CHAR, VARCHAR

## Supported Data Types by Database

Oracle Analytics supports the following data types.

Database Type	Supported Data Types
Oracle	BINARY DOUBLE, BINARY FLOAT CHAR, NCHAR CLOB, NCLOB DATE FLOAT NUMBER, NUMBER (p,s), NVARCHAR2, VARCHAR2 ROWID TIMESTAMP, TIMESTAMP WITH LOCAL TIMEZONE, TIMESTAMP WITH TIMEZONE

<b>Database Type</b>	<b>Supported Data Types</b>
DB2	BIGINT CHAR, CLOB DATE, DECFLOAT, DECIMAL, DOUBLE FLOAT INTEGER LONGVAR NUMERIC REAL SMALLINT TIME, TIMESTAMP VARCHAR
SQL Server	BIGINT, BIT CHAR DATE, DATETIME, DATETIME2, DATETIMEOFFSET, DECIMAL FLOAT INT MONEY NCHAR, NTEXT, NUMERIC, NVARCHAR, NVARCHAR(MAX) REAL SMALLDATETIME, SMALLINT, SMALLMONEY TEXT, TIME, TINYINT VARCHAR, VARCHAR(MAX) XML
MySQL	BIGINT, BIGINT UNSIGNED CHAR DATE, DATETIME, DECIMAL, DECIMAL UNSIGNED, DOUBLE, DOUBLE UNSIGNED FLOAT, FLOAT UNSIGNED INTEGER, INTEGER UNSIGNED LONGTEXT MEDIUMINT, MEDIUMINT UNSIGNED, MEDIUMTEXT SMALLINT, SMALLINT UNSIGNED TEXT, TIME, TIMESTAMP, TINYINT, TINYINT UNSIGNED, TINYTEXT VARCHAR YEAR
Apache Spark	BIGINT, BOOLEAN DATE, DECIMAL, DOUBLE FLOAT INT SMALLINT, STRING TIMESTAMP, TINYINT VARCHAR


Database Type	Supported Data Types
Teradata	BIGINT, BYTE, BYTEINT CHAR, CLOB DATE, DECIMAL, DOUBLE FLOAT INTEGER NUMERIC REAL SMALLINT TIME, TIMESTAMP VARCHAR

## JSON Examples for Common Data Sources with REST Endpoints

Download example JSON files for commonly used data sources such as Mailchimp and Yelp from the Oracle Analytics Public Library to enable you to connect to data sources with REST endpoints.

See REST Connectors at [Oracle Analytics Public Library](#).

## About the Oracle Applications Connector

The "Oracle Applications" connection type (  ) enables you to use Oracle Analytics to visualize data from applications in Oracle Fusion Cloud Applications Suite. For example, Oracle Fusion Cloud Financials. You can also use the "Oracle Applications" connection type to connect to your on-premises Oracle BI Enterprise Edition deployments (if patched to an appropriate level) or connect to another Oracle Analytics service.

You can connect to these applications in Fusion Applications Suite:

- Oracle Fusion Cloud Financials
- Oracle Fusion Cloud Human Capital Management
- Oracle Fusion Cloud Loyalty
- Oracle Fusion Cloud Procurement
- Oracle Fusion Cloud Project
- Oracle Fusion Cloud Supply Chain Planning
- Oracle Sales Automation

**Note**

When you connect to applications in Fusion Applications Suite, you access the data from an Oracle Transactional Business Intelligence report. These reports are cached in Oracle Transactional Business Intelligence, and the data available in Oracle Analytics is based on the cached data. You can't control the cache behavior in Oracle Transactional Business Intelligence from Oracle Analytics.

# B

## Frequently Asked Questions

This reference provides answers to common questions asked by administrators and business intelligence analysts connecting to Oracle Analytics Cloud.

### Topics

- [Frequently Asked Questions about Data Gateway](#)
- [Frequently Asked Questions about Private Data Sources](#)

## Frequently Asked Questions about Data Gateway

Here are answers to common questions about Data Gateway.

### What operating systems does Data Gateway support?

You can deploy Data Gateway on Linux and Windows platforms. For a full list of supported operating systems, see [Download page for Oracle Analytics Cloud](#).

### What is the Data Gateway architecture?

See [Overview to Connecting to On-premises Data Sources](#).

### Where do I install Data Gateway?

You install Data Gateway in a subnet that gives visibility to both Oracle Analytics Cloud and the target data sources. Your network needs to allow outbound traffic from the node where Data Gateway is installed to the public internet on port 443 so that Data Gateway can communicate with Oracle Analytics Cloud. In addition, the network needs to allow outbound traffic from the Data Gateway agent to the data source. For example, you might test the network by opening a browser on the node where Data Gateway is installed and connect to Oracle Analytics Cloud. You might also test the connection from the same node to the data source using a generic JDBC tool.

### Can I deploy multiple Data Gateway agents?

Yes. You can configure multiple Data Gateway agents to service the same Oracle Analytics Cloud service instance. However, all of these agents must be capable of servicing all remote queries. In other words, you cannot configure one agent to service queries for one data source only, and another agent to service queries for a different data source. In addition, in server deployments you can have multiple Data Gateway agents on each node (physical or virtual). For high availability, Oracle recommends at least two Data Gateway agents (that is, on two virtual machines) per Oracle Analytics Cloud instance.

### How do I configure high availability for Data Gateway?

On the Oracle Analytics Cloud side, high availability is provided natively. On the Data Gateway side, you set up high availability by deploying two Data Gateways for each Oracle Analytics Cloud instance.

### Why is Data Gateway traffic egress only?

Data Gateway regularly communicates with Oracle Analytics Cloud to see whether Oracle Analytics Cloud has queries that need processing, known as long-polling. Data Gateway makes a long-running Transport Layer Security-encrypted HTTP request to Oracle Analytics Cloud and waits until Oracle Analytics Cloud has a query to process. If there're no queries from Oracle Analytics Cloud after two minutes, Data Gateway terminates and re-issues the request in order to avoid termination by the network as an idle or stale connection.

### How does Data Gateway manage SSL certificates?

The HTTPS communication between Data Gateway and Oracle Analytics Cloud leverages the SSL certificate of your Oracle Analytics Cloud service instance. The same certificate encrypts your browser connections to Oracle Analytics Cloud.

### How do I size Data Gateway?

Ask your sales account team for guidance on sizing Data Gateway.

### Where is Data Gateway running? Do I install it on a virtual machine (VM)?

- At the Oracle Analytics Cloud end, Oracle Analytics Cloud manages the Data Gateway queue, therefore there's nothing additional to install.
- At the data source end, the Data Gateway agent typically runs on a server or Virtual Machine next to the data source. You can also run Data Gateway from a laptop or a compute instance in the cloud, as long as Data Gateway can connect to the data source.

### How is Data Gateway network traffic secured?

Network traffic between the Data Gateway Server and Agents is secured using HTTPS and TLS (Transport Layer Security). TLS is the encryption protocol that HTTPS relies on to ensure privacy and data integrity during communication between two applications.

### Can Data Gateway limit queries that affect performance or security?

Data Gateway doesn't limit the query row size. The query row size limit is determined by the number of Oracle Compute Units (OCPU) that your Oracle Analytics Cloud service has.

### What is the timeout setting for Data Gateway?

Data Gateway uses the same query timeout as Oracle Analytics Cloud. See [Limits Querying Data \(Data Visualization Workbooks, Classic Analyses and Dashboards\)](#).

## Frequently Asked Questions about Private Data Sources

Here're the answers to some frequently asked questions about private data sources.

### When I connect to my private data source in Oracle Analytics Cloud, do I specify the domain name or the IP address of my private data source?

You must specify the Fully Qualified Domain Name (FQDN) of your private data source in the connect dialog. This is the same FQDN that's registered in the private access channel. For example, domain names such as `custcorp.com`, `example.com`, `adb.us-ashburn-1.oraclecloud.com`, and so on. See [About Private Data Sources](#).

You can't use IP addresses to connect to private data sources.

# C

## Troubleshoot

This topic describes common connection issues and explains how to solve them.

### Topics:

- [Troubleshoot Private Access Channel Connectivity Issues](#)
- [Troubleshoot Data Gateway](#)

## Troubleshoot Private Access Channel Connectivity Issues

This topic describes common problems that you might encounter and explains how to solve them.

### Troubleshoot connectivity to an on-premises Oracle database

Complete the following configuration in your on-premises for single node Oracle database environment:

1. On the firewall, open the Oracle Database port e.g. 1521.
2. Set up a direct connection between your on-premises network and Oracle Cloud Infrastructure VCN.
3. Create a private DNS view, and then add a zone (in the view) for your custom domain. For example, `ocivcn.companyabc.com`.

Create a temporary Compute instance in the PAC subnet and then verify that you can resolve the on-premises database hostname and port, and ping the private IP address.

### Hostname resolution check command:

```
$ nslookup <On-premises database hostname>
```

If you can't resolve the on-premises single node Oracle database hostname, it means the DNS servers configured in the subnet DHCP option can't resolve the hostname or the DNS zone configuration is invalid.

### Connection check command:

```
nc -zv <On-premises database hostname> <port>
```

For example: `nc -zv onprem.db.xyz.com 1521`.

Note: If the `nc` package isn't available, use `yum install nc*`.

If you can't establish a connection, check VPN or FastConnect network connectivity between Oracle Cloud Infrastructure VCN and on-premises network.

### Troubleshoot connectivity to an on-premises Oracle Essbase data source

Complete the following configuration in your on-premises Essbase environment:

1. On the firewall, open Essbase port ranges `32768-33768` and `1423`. Check your `essbase.cfg` file for any valid ports that Essbase is currently using.

**Note:** If you are using Palo Alto Networks firewall, don't create a rule on *App-ID* that is, oracle-essbase. Instead, create a firewall rule that includes the Essbase port ranges.

2. Set up a direct connection between your on-premises network and Oracle Cloud Infrastructure VCN.
3. Create a private DNS view, and then add a zone (in the view) for your custom domain. For example, ocivcn.companyabc.com.

**Hostname resolution check command:**

```
$ nslookup <On-premises Essbase hostname>
```

If you can't resolve the on-premises Essbase hostname, it means the DNS servers configured in the subnet DHCP option isn't able to resolve the hostname or the DNS zone configuration is invalid.

**Connection check command:**

```
nc -zv <On-premises Essbase hostname> <essbase port>
```

For example:

```
nc -zv onprem.essbase.xyz.com 1423
```

```
nc -zv onprem.essbase.xyz.com 33767
```

**Note:** If the nc package isn't available, use `yum install nc*`.

If you can't establish socket connection, check the following:

- VPN or FastConnect network connectivity between your Oracle Cloud Infrastructure VCN and on-premises network.
- Firewall rule exists for the entire Essbase port range 32768-33768.

## Troubleshoot the maximum amount of query execution time in Planning and Budgeting Cloud Service

Oracle's Planning and Budgeting Cloud Service is one such cloud-based technology that provides businesses with an integrated solution for budgeting, forecasting, and planning. To ensure stability, it is crucial to set query execution time (QRYGOVEXEETIME) in Planning and Budgeting Cloud Service (Essbase). In this section, we will discuss the importance of setting QRYGOVEXEETIME.

### What is QRYGOVEXEETIME?

QRYGOVEXEETIME is a parameter that controls the maximum amount of time that a query can run in Essbase.

### Why is QRYGOVEXEETIME important?

QRYGOVEXEETIME is essential in Planning and Budgeting Cloud Service because it helps ensure the stability of both Oracle Analytics Cloud and Planning and Budgeting Cloud Service. Here are a few reasons why:

- Prevents long-running queries: Long-running queries can cause system instability, leading to performance issues and even system crashes. By setting QRYGOVEXEETIME (in PBCS), businesses can prevent long-running queries from executing, which can help ensure system stability.
- Limits resource consumption: Queries that run for an extended period can consume significant system resources, leading to performance degradation. By setting

QRYGOVEXEETIME, businesses can limit resource consumption by preventing queries from running indefinitely.

- Improves user experience: When users run a query that takes a long time to complete, it can lead to frustration and dissatisfaction. By limiting the maximum query execution time, businesses can improve the user experience by ensuring that queries run in a timely manner.

In conclusion, setting QRYGOVEXEETIME in PBCS / Essbase is an important step in safeguarding the stability of both Oracle Analytics Cloud and Essbase. By limiting query execution times, you can prevent resource contention, improve system stability, and improve overall performance. So, take the time to adjust this parameter to an appropriate value for your environment.

To implement this query execution time limits raise an SR with Oracle Support for Oracle Planning and Budgeting Cloud.

## Troubleshoot Data Gateway

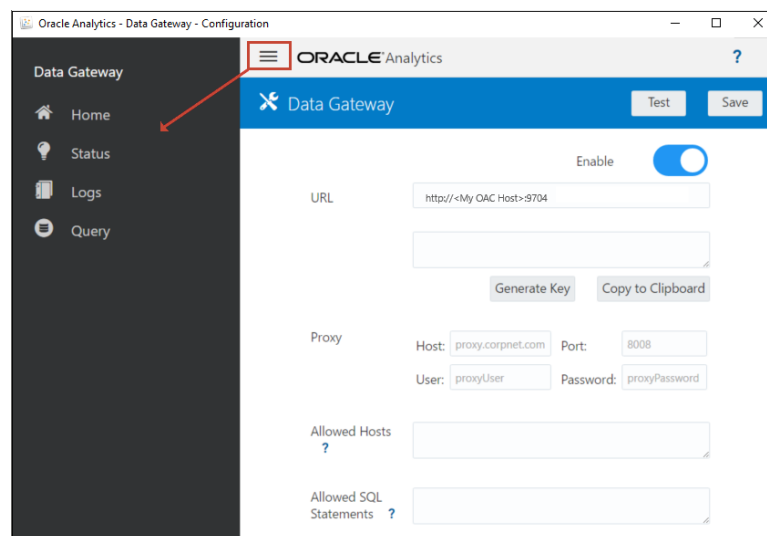
In a Data Gateway agent, use the Data Gateway Navigator options to display the Status, Logs, and Query pages to monitor remote connection traffic, and troubleshoot common connectivity and performance issues.

Before you start, use Console to configure you Data Gateway agents. See [Configure and Register Data Gateway for Reporting](#).

### Topics

- [Diagnosing Connection Issues Using The Status Page](#)
- [Diagnosing Connection Issues Using The Logs Page](#)
- [Diagnosing Connection Issues Using The Query Page](#)
- [Remote Connectivity Issues and Tips](#)

Click Navigator to access the Data Gateway pages.



## Diagnosing Connection Issues Using The Status Page

Use this page to review database requests that a Data Gateway agent makes with the remote database.

In a Data Gateway agent, click **Navigator** then **Status** to review database requests.

To diagnose issues, you typically search on date or job status:

- To search on date, in the **Search Request** field, enter all or part of the date and time in the format "YYYY-MM-DD HH-MM-SS". For example, enter "2022-03-28" to look for entries for 28th March, 2022.
- To search for failed jobs, in the **Search Request** field, enter "REQUEST FINISHED WITH ERRORS".

Clear the **Search Request** field to review all jobs.

The screenshot shows the Oracle Analytics Data Gateway interface. At the top, there are five job status indicators: Total Jobs (29), Executing Jobs (0), Successful Jobs (27), Failed Jobs (2), and Cancelled Jobs (0). Below this is a search bar labeled 'Search Request'. A table lists several database requests with columns for Request ID, Status, Date/Time, Username, and SQL Query. The first two rows show 'REQUEST FINISHED WITH ERRORS' and the last three show 'REQUEST FINISHED'.

Click on a job to view the detailed status information.

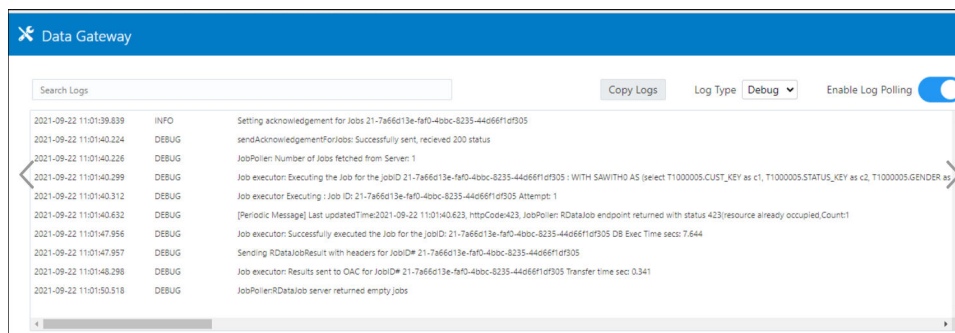
The screenshot shows a 'Request Status' dialog box. It contains the following details:

- Request ID:** 20-9f9622db-8874-4785-98c6-ed433321413f
- Status:** Request finished with errors
- Query String:** select SHIPTO\_ADDR\_KEY as SHIPTO\_ADDR\_KEY, OFFICE\_KEY as OFFICE\_KEY, EMPL\_KEY as EMPL\_KEY, PROD\_KEY as PROD\_KEY, ORDER\_KEY as ORDER\_KEY, UNITS as UNITS, DISCNT\_VALUE as DISCNT\_VALUE, BILL\_MTH\_KEY as BILL\_MTH\_KEY, BILL\_QTR\_KEY as BILL\_QTR\_KEY, BILL\_DAY\_DT as BILL\_DAY\_DT, ORDER\_DAY\_DT as ORDER\_DAY\_DT, PAID\_DAY\_DT as PAID\_DAY\_DT, DISCNT\_RATE as DISCNT\_RATE, ORDER\_STATUS as ORDER\_STATUS, CURRENCY as CURRENCY, ORDER\_TYPE as ORDER\_TYPE, CUST\_KEY as CUST\_KEY, SHIP\_DAY\_DT as SHIP\_DAY\_DT, COST\_FIXED as COST\_FIXED, COST\_VARIABLE as COST\_VARIABLE, SRC\_ORDER\_NUMBER as SRC\_ORDER\_NUMBER, ORDER\_NUMBER as ORDER\_NUMBER, REVENUE as REVENUE, ORDER\_TIME1\_DB\_TZ as ORDER\_TIME1\_DB\_TZ, ORDER\_TIME2\_TIMEZONE as ORDER\_TIME2\_TIMEZONE, ORDER\_TIME2\_CUSTOM\_TZ as ORDER\_TIME2\_CUSTOM\_TZ from BISAMPLE.SAMP\_REVENUE\_F
- Time Taken:** 586ms
- Connection String:** jdbc:oracle:thin:@//celvpvm02890.us.oracle.com:1521/pdborcl.us.oracle.com
- Driver Class:** oracle.jdbc.OracleDriver
- Error Message:** [JDSError : 116] JDBC Connection Error, Cause: Listener refused the connection with the following error: ORA-12514, TNS:listener does not currently know of service requested in connect descriptor

## Diagnosing Connection Issues Using The Logs Page

Use this page to review a Data Gateway agent's log entries so that you can analyze connection traffic.

In a Data Gateway agent, click **Navigator** then **Logs** to review log entries. Enable the **Enable Log Polling** option and select an appropriate logging level. For example, to diagnose connection issues, you might set **Log Type** to **Debug**.

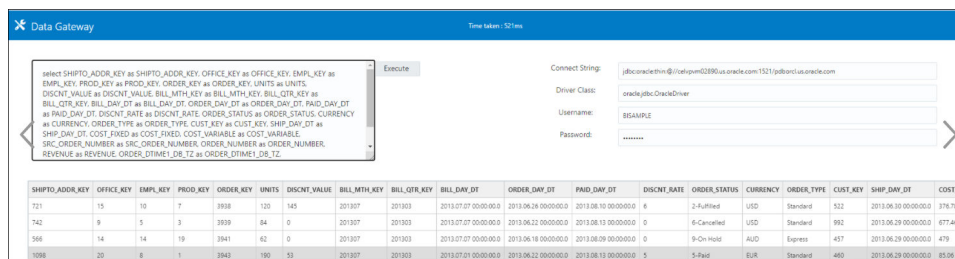


Oracle recommends that when you've completed your troubleshooting, you either disable **Enable Log Polling** or adjust the **Log Type** to capture less information.

## Diagnosing Connection Issues Using The Query Page

Use this page to query a remote database from a Data Gateway agent to test the connection and assess performance.

In a Data Gateway agent, click **Navigator** then **Query** to execute a SQL statement directly from the Data Gateway agent to the (on-premises) database. For example, you might copy the **Query String**, **Connection String**, and **Driver Class** from a failed job listed on the Status page. Supply the database credentials and execute the query to review the outcome and the performance statistics (Time taken). **Note:** The remote database must support connection using a JDBC connection string.



## Remote Connectivity Issues and Tips

Here're some connectivity issues that you might encounter and tips on how to resolve them.

### Dashboard and Analyses Issues

Issue reported	Do this
Error Code 603 - no agents are connected	Check that the Data Gateway agent is running and enabled in the Data Gateway Configuration page. With Data Gateway on Linux: Run \$ <Data Gateway Install Directory>/domain/bin/status.sh and see if the "Data Gateway Status" is UP or DOWN. With Data Gateway on Windows: Check the Task Manager > Details tab for "datagateway.exe" processes.
[nQSError: 77031] Error occurs while calling remote service DatasourceService. Details: [JDSError : 78] Error Malformed URL	Review the Connection Pool in the semantic model and verify the settings in the General tab and Misc tabs.

## Connections or Dataset Issues

Issue reported	Do this
Error Code 603 - no agents are connected	Check that the Data Gateway agent is running. With Data Gateway on Linux: Run \$ <Data Gateway Install Directory>/domain/bin/status.sh and see if the "Data Gateway Status" is UP or DOWN. For Data Gateway agents on Windows, check the Details tab in Task Manager for "datagateway.exe" processes.
Failed to save the Connection. Invalid Connection details were supplied. Please enter the correct details and try again.	<p>You see this error on the Connection dialog when you create a connection to DB2 or SQL Server. In the agent's Status page, you also see "REQUEST FINISHED WITH ERRORS", and if you click the requests, you see "[JDSError : 110] JDS - Invalid connect string / URL to external source, Cause: Invalid Oracle URL specified".</p> <p>Workaround:</p> <ol style="list-style-type: none"> <li>1. Edit the &lt;Data Gateway Install Directory&gt;/oracle_common/jdk1.8.0_333/jre/lib/security/java.security file.</li> <li>2. Locate this text (around line number 720): jdk.tls.disabledAlgorithms=SSLv3, TLSv1, TLSv1.1, RC4, DES, MD5withRSA, \</li> <li>3. Change it to: jdk.tls.disabledAlgorithms=SSLv3, TLSv1, RC4, DES, MD5withRSA, \</li> <li>4. Restart the agent using &lt;Data Gateway Install Directory&gt;/domain/bin/stopJetty.sh followed by &lt;Data Gateway Install Directory&gt;/domain/bin/startJetty.sh.</li> </ol>
JDSError : 110 - Invalid connect string / URL to external source	Check that the Data Gateway agent can connect to the data source. For example, if you're connecting to an Oracle database, then test using "telnet <hostname> <port>" on the machine where Data Gateway is installed.
No Columns display	Upgrade your Data Gateway agent. This issue typically happens if you're using an earlier Data Gateway agent update that doesn't match your Oracle Analytics update.
Use Remote Data Connectivity option is missing	Check that the <b>Enable Data Gateway</b> option is enabled on the Remote Data Connectivity page in Console.

## General Issues

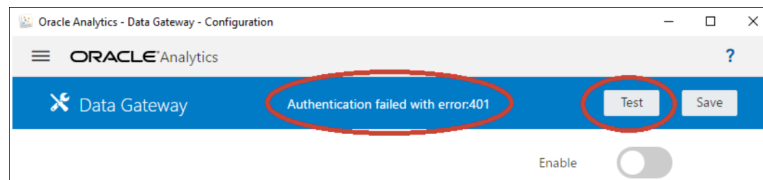
**Issue reported**

Agent state change failed with error: Agent name or Oracle Analytics Cloud URL not specified or the Key pair not generated

Authentication failed with error: 401" is returned on Test. Possible reasons include:

- The Data Gateway agent key hasn't been copied to the Remote Data Connectivity page in Oracle Analytics Cloud Console. For example, you might have clicked the Test button before pasting the key in the OAC > Console > Remote Data Connectivity page.

- The Data Gateway agent key has been regenerated, but the new key hasn't been copied to the Remote Data Connectivity page in Oracle Analytics Cloud Console. For example, you might have already registered a Data Gateway agent in the Remote Data Connectivity page in Console but its ID doesn't match the "id" of the key in the Data Gateway agent Home page.

**Do this**

Click **Save**, then **Enable**. If the problem persists, restart the application. If necessary, check your network.

If the Data Gateway agent key hasn't been copied, paste the key in the Console to register the Agent.

If the Data Gateway agent key has been regenerated, delete the Data Gateway agent in the Console, then paste the key in the Console to re-register the agent.

Authentication failed with error: 404" is returned on Save.

This is usually encountered when the Oracle Analytics instance has been updated.

See:

- [Guidance For Using Remote Data Gateway on Environments Upgraded From Oracle Analytics Cloud 105.2 and Lower \(Doc ID 2574387.1\)](#)
- [Oracle Analytics Cloud - Classic : How to Enable Remote Data Gateway in Customer Managed Oracle Analytics Cloud-Classic Instance Upgraded from 105.2 or Lower Release \(Doc ID 2632064.1\)](#).

Invalid OAC URL /Unknown Host Exception or no error/message is returned on Test.

Possible reasons include:

- An incorrect URL is specified in the Data Gateway agent Home page. For example, you might have provided a URL like `https://oacinst-tenancy.analytics.ocp.oraclecloud.com/dv/ui` or `https://oacinst-tenancy.analytics.ocp.oraclecloud.com/analytics`

- There is no suitable network route from the Data Gateway agent to the Oracle Analytics Cloud instance. For example, you might have a proxy server for Internet access and a firewall is blocking access from the Data Gateway agent to Oracle Analytics Cloud. If no Proxy Server is required, then confirm connectivity from the machine where Data Gateway is running to Oracle Analytics Cloud.

If an incorrect URL is specified in the Data Gateway agent Home page, update the URL in the **URL** field. For example, if the Oracle Analytics Cloud URL is `https://<instance details>.oraclecloud.com/dv/ui`, then specify this **URL**: `https://<instance details>.oraclecloud.com`.

There is no suitable network route from the Data Gateway agent to the Oracle Analytics Cloud instance:

- On Linux, issue the command `$ sudo traceroute -T -p 443 https://<instance details>.oraclecloud.com`
- On Windows, issue the command `C:\> telnet https://<instance details>.oraclecloud.com 443`.

If a Proxy Server is required, then check the proxy details for Data Gateway. See *Invalid Oracle Analytics Cloud URL (Data Gateway can't communicate with Oracle Analytics Cloud)*.

Issue reported	Do this
Invalid Oracle Analytics Cloud URL (Data Gateway can't communicate with Oracle Analytics Cloud)	<ul style="list-style-type: none"> <li>• Check that you've enabled and configured Data Gateway in Oracle Analytics Cloud Console.</li> <li>• Make sure you can reach the Oracle Analytics Cloud URL from the environment where Data Gateway is running. For example, on Linux you might use a traceroute command, such as <code>sudo traceroute -T -p 443 &lt;Fully qualified domain name of your Oracle Analytics Cloud instance&gt;</code>.</li> <li>• Make sure there's nothing else blocking communication through the firewall.</li> <li>• If you're using a proxy, navigate to the Home page in the Data Gateway agent, and check the <b>Proxy</b> settings for <b>Host</b>, <b>Port</b>, <b>User</b>, and <b>Password</b>.</li> </ul>
Performance is slow	<p>Review the Logs page and search on :</p> <ul style="list-style-type: none"> <li>• date</li> <li>• failed jobs</li> <li>• Job ID</li> <li>• 'REMOTE'</li> </ul> <p>Once you've found log entries, click on a job and review the Request Status dialog to see the Time Taken in milliseconds.</p> <p>Ask your sales account team for guidance on sizing Data Gateway.</p>
Test fails in Console page Remote Data Connectivity	<p>If the test fails, the Data Gateway agent can't authenticate for various reasons including:</p> <ul style="list-style-type: none"> <li>• The Data Gateway agent key hasn't been copied to the <b>Remote Data Connectivity</b> page in Oracle Analytics Cloud Console.</li> <li>• The Data Gateway agent key has been regenerated, but the new key hasn't been copied to the <b>Remote Data Connectivity</b> page in Oracle Analytics Cloud Console.</li> <li>• There's no suitable network route from the Data Gateway agent to Oracle Analytics Cloud.</li> </ul>