Oracle® Cloud

Connecting Oracle Analytics Cloud to Your Data
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Preface

Learn how to connect to your data.

Topics:

• Audience
• Documentation Accessibility
• Related Documents
• Conventions

Audience

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

Documentation Accessibility

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

Access to Oracle Support

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

Related Documents

These related Oracle resources provide more information.

• Getting Started with Oracle Cloud
• Getting Started with Oracle Analytics Cloud
Conventions

Conventions used in this document are described in this topic.

Text Conventions

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

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
Get Started with Data Sources in Oracle Analytics

Topics
• About Data Sources

About Data Sources

A data source is any tabular structure. You get to 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 project, the permissions are synchronized between the project and the external sources that it uses. If you share the project with other users, then the external sources are also shared with those same users.

Any data that you upload (as a data set) 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. Hierarchies can’t be defined 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, it 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 used by itself or it's several files used together and in both cases a subject area isn't involved.

**Note the following criteria to extend a dimension by adding attributes from a data source to a subject area:**

- Matches can be made to a single dimension only.
- The set of values in matched columns must be unique in the data source. For example, if the data source matches on ZIP code, then ZIP codes in the source must be unique.
- Matches can be 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.

**Note the following criteria for adding measures from a data source to a subject area:**

- Matches can be made to one or more dimensions.
- The set of values in matched columns doesn't need to be 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.
- Matches can be 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.

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 both types of data sources that either includes or doesn't include a measure column.

Note the following if you're working with sources with measures.
• 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, they don't need to be at the same grain. For example, a table of daily sales can be matched to a table with sales by Quarter if the table with the daily sales also includes a Quarter column.

Note the following if you’re working with sources with no measures.

If a table has no measures, it's treated as a dimension. Note the following criteria for extending a dimension:

• Matches can be 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.

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-premise Data Sources
• Connect to Data for Visualizations and Analyses
• Connect to Data for Pixel-Perfect Reports
• Manage Database Connections for Data Models
• Manage Access Through Public IP Addresses
Connect to On-premise Data Sources

Oracle Analytics Cloud Data Gateway (which supersedes Remote Data Connector) enables you to query on-premises data sources from Oracle Analytics Cloud.

Topics:

• Overview to Connecting to On-premise Data Sources
• Typical Workflow to Connecting to On-premise Data Sources
• Before You Start with Data Gateway
• Install Data Gateway
• Configure and Register Data Gateway for Data Visualization
• Configure and Register Data Gateway for Reporting
• Connect to an On-premise Database from Oracle Analytics Cloud
• Maintain Data Gateway
• Install the Legacy Remote Data Connector

Overview to Connecting to On-premise Data Sources

Use Oracle Analytics Cloud Data Gateway to connect to on-premise data sources. Data Gateway enables you to deploy Oracle Analytics Cloud with large on-premise data sets without migrating the data to the cloud. Users can analyze the data in data visualizations, and in reporting dashboards and analyses.

There're two types of Data Gateway deployment:

• Server - Install Data Gateway using the Oracle Universal Installer onto a Linux platform.
• Personal - Install Data Gateway by copying the Data Gateway binaries onto a Windows or MacOS machine.

Data Gateway works in the same way for server and personal deployments, but there are differences in how you maintain and upgrade them.

Data Gateway replaces the Remote Data Connector utility that was used in earlier releases. Oracle recommends using Data Gateway for remote connections, except when connecting to remote Oracle Essbase data sources, in which case you should continue to use Remote Data Connector. See Install the Legacy Remote Data Connector.

Architecture

This diagram shows a typical architecture for a deployment of Data Gateway with Oracle Analytics Cloud. You install Data Gateway in the remote network and configure the Data Gateway agent for communication with your Oracle Analytics Cloud instance.
Functionality

- Data Gateway agents poll Oracle Analytics Cloud for queries to run against your on-premise 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)/Secure Sockets Layer (SSL).
- Data flows can source data from remote connections. However, data flows can't save data to data sets that use remote connections.

Supported Operating Systems

For a list of supported operating systems, see Download page for Oracle Analytics Cloud.

Supported Data Sources

Look for databases with a "Yes" in the "Remote Connectivity for Data Sets" column or in the "Remote Connectivity for Data Models" column in Supported Data Sources.

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 might also improve performance if an agent is short of resources. When you register an agent using the Data Gateway Agent Configuration dialog, note the following:

- You should 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-premise Data Sources

Here are the common tasks for connecting to on-premise data sources.

You can review frequently asked questions before you start. See Frequently Asked Questions about Data Gateway.
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<td>Install Data Gateway on a local machine.</td>
<td>Install Data Gateway</td>
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<tr>
<td>Upgrade Data Gateway</td>
<td>To upgrade an earlier server installation of Data Gateway on Linux, install the new version of Data Gateway into the existing installation folder on each machine where you've deployed Data Gateway.</td>
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<td>Configure remote data connectivity</td>
<td>Configure your on-premise environment and register one or more Data Gateway agents.</td>
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<td>Configure remote connectivity for reporting</td>
<td>(Optional) Perform additional configuration to enable remote connection from dashboards and analyses.</td>
<td>Configure and Register Data Gateway for Reporting</td>
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<td>Test Data Gateway</td>
<td>Test your deployment by analyzing data in your on-premise database.</td>
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</tr>
<tr>
<td>Manage Data Gateway</td>
<td>Review installation details, start and stop, or deinstall Data Gateway.</td>
<td>Maintain Data Gateway</td>
</tr>
</tbody>
</table>

**Before You Start with Data Gateway**

Download and install the required software.

- Download the latest version of Oracle Analytics Cloud Data Gateway from Oracle Technology Network.
- To upgrade an earlier server installation of Data Gateway on Linux, install the new version of Data Gateway into the existing installation folder on each machine where you've deployed Data Gateway. See Install Data Gateway.
- (Optional) If you are creating remote connections for analyses and dashboards, download and install the latest Developer Client Tool for Oracle Analytics Cloud from Oracle Technology Network on a Windows machine. If you have a visualization-only deployment (for example, Oracle Analytics Cloud Professional Edition), you don't need Developer Client Tool.
- If you want to install the legacy version of Remote Data Connector, follow the instructions in Install the Legacy Remote Data Connector.
- If you're deploying Data Gateway on Linux, unless you're performing a silent installation, make sure 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, MacOS, 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.
   Download page for Oracle Analytics Cloud

2. Under Oracle Data Gateway <version>, click the OAC Data Gateway version for the deployment type and version of Oracle Analytics Cloud that you have.
   • For server deployments, download OAC Data Gateway <version> Self-contained Installer for Linux.
   • For personal deployments, download the appropriate Data Gateway binaries and copy them onto a Windows or MacOS machine. For example, click OAC Data Gateway <version> binaries for Windows or OAC Data Gateway <version> binaries for MacOS.

3. Accept the Oracle license agreement if prompted, and click the download link to download the software to your local machine.

Download and Install Analytics Client Tools for Oracle Analytics

Download and install Analytics Client Tools if you want to manage and develop your data models, or enable remote connections from reporting dashboards and analyses. You install Analytics Client Tools on a Windows machine on the same network as your database. The software pack installs Administration Tool, Catalog Manager, and Job Manager.

1. Download the latest Analytics Client Tools for Oracle Analytics.
   a. Navigate to:
      Download page for Analytics Client Tools for Oracle Analytics Cloud.
   b. To start the download, click the Oracle Analytics Client Tools link for the version that matches your Oracle Analytics version.
   c. Accept the Oracle license agreement if prompted, and click the download link to download the software to your local machine.

2. Install Analytics Client Tools.
   a. From the downloaded ZIP file, extract the setup_bi_client-<version number>-win64.exe file.
   b. In the local download area, double-click the setup_bi_client-<version number>-win64.exe file to start the installer.
   c. Follow the on-screen instructions.

To start the applications, from the Windows Start menu, click Oracle Business Intelligence Client, click <BI Client Home Name>, and then select the name of an application. For example, to start Developer Client Tool, click Administration.
Install Data Gateway

Install Data Gateway in your on-premise environment 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.

1. Download Data Gateway from OTN (see Before You Start with Data Gateway).
2. To install Data Gateway for a server deployment:
   a. Extract the datagateway-linux64-<version>.zip file to a Linux machine. Make the datagateway-linux64-<version>.bin file executable (for example, using chmod 777).
   b. Use the datagateway-<platform>-<version>.bin file to start the installer. Alternatively, install Data Gateway silently using an Oracle Universal Installer response file and skip to Step 4. Note: To upgrade Data Gateway in silent mode, first create a response file by running the installer with the GUI until you are prompted to save the response file, but don't complete the installation. When you create a response file for an upgrade, you specify an existing Data Gateway install location.
   c. If a Welcome dialog is displayed, click Next.
   d. At the Installation Location dialog, specify where you'd like to install Data Gateway on the local machine, then click Next. To upgrade an earlier server installation of Data Gateway on Linux, specify the location of the existing Data Gateway installation. You'll retain your original configuration details.
   e. At the Select Remote Data Version dialog, select Remote Data Gateway.
   f. At the Credentials dialog, create a username and password for logging into the Data Gateway Agent Configuration page.
   g. Under Next Steps, click Start Jetty, then click Finish. Skip step 3.

3. To install Data Gateway for a personal deployment, unzip to a folder (Windows) or install the package to the Applications folder (MacOS).

4. (Optional) After you've installed or Data Gateway, if you're using an internet proxy for Data Gateway, perform these additional steps:
   a. Stop the Data Gateway agent.
   b. On the machine where you've installed Data Gateway, configure the Data Gateway properties: In a server deployment, edit this file:
      <Installed location>/jetty/obiee_rdc_agent.properties
      In a personal deployment, edit this file:
      <Installed location>/obiee_rdc_agent.properties
   c. Update the following properties with the details of your internet proxy host:
      • proxyUserName
      • proxyPassword
Configure and Register Data Gateway for Data Visualization

After you’ve installed Data Gateway, you configure your on-premise environment and register one or more Data Gateway agents for remote connectivity to visualization projects.

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 Oracle Analytics Cloud.
   b. In the browser’s address bar, copy the URL up to and including <domain> (not the text after that).
   The URL will be in the format https://hostname.domain:port. You’ll use this URL in Step 3 when you set up Data Gateway in Agent Configuration.
3. Enable Data Gateway in Console:
   a. From the Oracle Analytics Cloud Home page, click Console.
   b. Click Remote Data Connectivity.
   c. Enable the Enable Data Gateway option.
   Keep this browser page open as you complete the following steps.
4. For each deployment of Data Gateway, use Data Gateway Agent Configuration 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. Start the Data Gateway Configuration page.
      • In a server deployment, open a web browser and enter the URL: <Local hostname>:<port>/obiee/config.jsp. To obtain the URL used to start Data Gateway Agent Configuration, use the /<Data Gateway install folder>/domain/bin/status.sh command and refer to the URL output value displayed.
      • For a personal deployment on Windows, from your local installation folder, click datagateway.exe.

Example output:

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.)
• For a personal deployment on MacOS, from your local installation folder, click `datagateway`.

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**.

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

   Leave the other fields blank.

5. Switch to the browser session where you have the Console page **Remote Data Connectivity** displayed, and add a Date Gateway agent.

   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-premise machine where you've installed Data Gateway.

   c. Click **OK** to save the details.

6. Switch to the Data Gateway Configuration page.

7. **(Optional)** 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 will attempt 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.

8. **(Optional)** 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 metadata repository/RPD connect scripts (or anywhere else) doesn't contain trailing whitespace or control characters (EOL - End of line, or CR - Carriage Return).

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

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

   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-premise database.
Configure and Register Data Gateway for Reporting

Perform these optional steps to enable remote connectivity to reporting dashboards and analyses.

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

Before you start, follow the configuration steps in the previous topic Configure and Register Data Gateway for Visualization.

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

   In a server deployment:
   a. Execute the command `/<Data Gateway install folder>/domain/bin/status.sh`.
   b. 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:
   a. Open the file: `%localappdata%\Temp\DataGateway\ports.properties`.
   b. Note the machine name and port number.

2. Start the Data Gateway agent.

3. If you want to edit your data model before you start connecting to your data remotely, use Developer Client Tool to load the Java data source metadata.

   You only load Java data source metadata if you're running Data Gateway in a Personal deployment on the same Windows machine as Developer Client Tool, or if you're running Data Gateway in a Server deployment.

   a. From the File menu, click Open, then In the Cloud, and use the Open in the Cloud dialog to specify the details of your Cloud data 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).

4. In Developer Client 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 are happy with the data model and you are ready to make the
connection remote and publish 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
RPD 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 data model to the cloud.

You're now ready to test your deployment by connecting remotely to an on-premise
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

dbc string: jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)
(HOST=\"host-name\") (PORT=\"port\")
(CONNECT_DATA=(SERVICE_NAME=\"service-name\")))

**Apache Hive**

Driver Class: com.oracle.bi.jdbc.hive.HiveDriver

dbc:oracle:hive://\"host-name\":\"port\";EncryptionMethod=SSL;ValidateServerCertificate=false

**DB2**

com.oracle.bi.jdbc.db2.DB2Driver

dbc:oracle:db2://\"host-name\":\"port\";DatabaseName=\"service-name\"

**Impala**

com.oracle.bi.jdbc.impala.ImpalaDriver

dbc:oracle:impala://\"host-name\":\"port\";EncryptionMethod=SSL;ValidateServerCertificate=false

**MySQL**

com.mysql.cj.jdbc.Driver

dbc:mysql://\"host-name\":\"port\"[/database][?properties]

**SQL Server**

com.oracle.bi.jdbc.sqlserver.SQLServerDriver

dbc:oracle:sqlserver://\"host-name\":\"port\";DatabaseName=\"service-name\"

**Teradata**

com.teradata.jdbc.TeraDriver

dbc: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 EXAMPLE.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
ame="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://10.246.64.217"
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.jdbc.sqlserver.SQLServerDataSource"
factory="com.oracle.bi.jdbc.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.jdbc.db2.DB2DataSource"
factory="com.oracle.bi.jdbc.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.jdbc.impala.ImpalaDataSource"
factory="com.oracle.bi.jdbc.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.jdbc.sparksql.SparkSQLDataSource"
factory="com.oracle.bi.jdbc.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.jdbc.hive.HiveDataSource"
Connect to an On-premise Database from Oracle Analytics Cloud

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

1. Create a connection to your on-premise database:
   a. From the Home page, click Create, then Connection.
   b. Click a connection type that supports remote connectivity. For example, Oracle Database.
   c. Use the Create Connection dialog to specify the connection details of your on-premise database.
      For example, for an on-premise Oracle Database, specify the Host, Port, Service Name, and credentials.
   d. Enable the Use Remote Data Connectivity option.
If you don't see this option, make sure that the administrator has enabled one of the remote connectivity options in Console on the Remote Data Connectivity page.

2. Create a new visualization project based on the connection that you created in the Step 1, and add columns from your on-premise database to the project.

3. If you've also configured remote connection for reporting, in Classic Home, create a new analysis based on the connection that you created in Step 1, and add columns from your on-premise database to the analysis.

Maintain Data Gateway

Here are the common tasks to maintain Data Gateway.

Maintenance Tasks for Data Gateway

Some maintenance tasks are different for the two types of deployment:

- Server - Install Data Gateway using the Oracle Universal Installer onto a Linux platform.
- Personal - Install Data Gateway by copying the Data Gateway binaries onto a Windows or MacOS machine.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
</table>
| Review installation details | Find out the Data Gateway URL and port. | In a server deployment, 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.)  
In a personal deployment, use: %localappdata%/temp/datagateway. |
<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
</table>
| Start and stop Data Gateway  | Start and stop the Jetty application server.                                | In a server deployment use these commands: `<Install folder>/bin/startjetty.sh` and `stopjetty.sh` scripts. To restart an agent, execute the stopjetty script, then execute the startjetty script. In a personal deployment: To start the Data Gateway agent, use the `<Install folder>`
datagateway.exe command (on Windows) or `datagateway command` (on MacOS). To restart an agent, stop the Data Gateway agent (on Windows, click the Quit Data Gateway option on the Windows Taskbar; on MacOS, click Oracle Data Gateway Quit on the MacOS Menu Bar), then use the `datagateway command` to start the agent. |
<p>| Configure a Data Gateway Agent | Start the Agent Configuration page for Data Gateway                         | In a server deployment, enter this URL in a browser: <code>&lt;Local hostname&gt;:&lt;port&gt;/obiee/config.jsp</code> In a personal deployment: • On Windows, use the <code>datagateway.exe</code> command. • On MacOS, use the <code>datagateway command</code>. |</p>
<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust the logging level</td>
<td>Change how much logging information is recorded for each Data Gateway agent. You perform this step separately for each agent.</td>
<td>In a server deployment:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Stop the Jetty server by executing domain/bin/stopJetty.sh.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. In the folder jetty/modules/log4j2-impl/resources/, edit the file log4j2.xml.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. In the file log4j2.xml, make these changes:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Line no. 2 - Change the configuration status to debug --- &gt; &lt;Configuration status=&quot;debug&quot; name=&quot;Jetty&quot; &gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Line no. 7 - Change the root level to debug -- &gt; &lt;Root level=&quot;debug&quot;&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Line no. 34 - Change the root level to debug -- &gt; &lt;Root level=&quot;debug&quot;&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Edit the file domain/bin/startJetty.sh.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Add a property named -Dlog4j.configurationFile as a parameter to Java as shown below:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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=&quot;&lt;Full Path of the log4j2.xml&gt;&quot; -jar start.jar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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=&quot;/scratch/user/Oracle/Middleware/Oracle_Home_RDG/jetty/modules/log4j2-impl/resources/log4j2.xml&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Start the Jetty server. You can start the Jetty agent by executing domain/bin/startJetty.sh.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In a personal deployment:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. In the installation folder, edit this file: &lt;Install folder&gt;\config\log4j2.xml</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Change line 2 to &lt;Configuration status=&quot;all&quot; name=&quot;Jetty&quot; &gt;.</td>
</tr>
</tbody>
</table>
### Task | Description | More Information
--- | --- | ---
3. | Change line 24 to `<Root level="all">`. |  
4. | Restart the Data Gateway agent. |  
Upgrade your software | Upgrade or patch Data Gateway on Linux | To upgrade an earlier server installation of Data Gateway on Linux, install the new version of Data Gateway into the existing installation folder on each machine where you’ve deployed Data Gateway. See Install Data Gateway.  
Review the logs | Review the auditing and diagnostics information that Data Gateway has logged. | In a server deployment, on the machine where you installed Data Gateway, review the file `/domain/jettybase/logs/[date].jetty.log`.  
In a personal deployment, review the files in `<Install folder>\logs\`.  
Un-install Data Gateway | Remove Data Gateway from a machine. | In a server deployment, use Oracle Universal Installer.  
In a personal deployment, delete the installation folder.  

### Install the Legacy Remote Data Connector

Install Remote Data Connector in your on-premise environment.

1. Review the prerequisites in Before You Start. See Before You Start with Remote Data Connector.
3. Deploy Remote Data Connector on Linux. See Deploy the Legacy Remote Data Connector on Linux.

### Before You Start with Remote Data Connector

Download and install the required software.

**Before you start**

- Ask the database administrator for the host name and port number of the web-tier machine that's protecting the on-premises network.
- Download your Public Key from the Console in Oracle Analytics Cloud. See Download the Public Key for Your Cloud Service. Then copy the Public Key file `oracle_bics_rdc.pem` to the machine where you plan to install Remote Data Connector.
- Configure your company firewall so that the port on the machine where you install Remote Data Connector is accessible from your Oracle Analytics Cloud instance. Your network administrator configures the best approach for your organization. For example, you might install a web tier in your DMZ that accepts incoming traffic from your Oracle Analytics Cloud instance and provides port forwarding to your data gateway server deployed behind your firewall. In this case, you configure your web tier to trust the root CA certificate used to sign the SSL certificate of your data gateway server.
Download the Public Key for Your Cloud Service

You download your public key from Oracle Analytics Cloud.

1. In Oracle Analytics Cloud, click Navigator to display the navigator bar, and then click Console.
2. Click Connections.
3. From the menu, click Get Public Key.
   This downloads the key file oracle_bics_rdc.pem to your local machine.

Install the Legacy Remote Data Connector Version on Linux

Install Remote Data Connector in your on-premises environment.

Before you start, download Remote Data Connector from Oracle Technology Network to a Linux machine.

1. Run the bi_rdc_client installer file.
2. If a Welcome dialog is displayed, click Next.
3. At the Installation Location dialog, specify where you'd like to install Remote Data Connector on the local machine, then click Next.
4. At the Select Remote Data Version dialog, select Remote Data Connector:
5. At the RDC Configuration dialog, configure these settings:
   - Enable DV Connection: Select this option.
   - Enable RPD Connection: Select this option if you want to model your data in Oracle BI Developer Client before you analyze the data in Oracle Analytics Cloud. When you select this option, you're prompted to specify Java Naming and Directory Interface (JNDI) connection details for an initial on-premises database. If you clear this option, you can skip to Step 6.
   - Database: Select the type of on-premises database that you're connecting to.
   - JNDI Name: Specify a short name to identify the connection in the JNDI connection pool. For example, RDC_Oracle_DB.
   - Server Name and Port Number: If your private network is protected by a web tier, specify the server name and port of the web tier server. If you don't have a web tier, specify the machine name and port number of the machine where Remote Data Connector is being installed.
   - Database Name: Specify the name of the on-premises database.
   - Database connect string: Specify database connection details.
   - Username and Password: Specify a user with privileges to access the on-premises database. Remote Data Connector will use this database account for queries to the Oracle Analytics Cloud data model.

The installer creates an initial JNDI connection in Remote Data Connector that you use to connect to your data model. If you have more than one on-premises database that you want to connect to, then you manually add connection details to the web.xml file and webapps.xml file later.
6. At the OAC Public Key dialog, specify the path where the installer can find the public key to your OAC service instance. The installer copies this key to RDCHome/domain/rdc_keys. If you ever change the Oracle Analytics Cloud service instance that will use this Remote Data Connector installation, you need to either re-install Remote Data Connector or update the key in this location. A Remote Data Connector installation can only serve a single Oracle Analytics Cloud service instance.

7. Click Next.

8. At the Installation Summary dialog, click Install.

9. Follow the on-screen instructions until you get to the Installation Complete dialog.

10. Under Next Steps, click Start Jetty, then click Finish.

The Remote Data Connector connection details are displayed on-screen. You can review the details at any time using the \<RDC install folder>\domains\bin\status.sh command. For example:

```
... 
RDC HTTP Port: 41250 
RDC Status: UP 
   URL: http://example.com:41250/obiee/javads?status 
... 
```

Tip: If you plan to analyze your on-premises data in data visualizations, you’ll need the URL displayed under RDC Status to enable remote connections in the later deployment steps. For example, http://example.com:41250/obiee/javads?status.

Deploy the Legacy Remote Data Connector on Linux

Install Remote Data Connector in your on-premises environment.

Before you start, download Remote Data Connector from Oracle Technology Network to a Linux machine.

1. In Developer Client Tool, load the Java data source metadata:
   a. From the File menu, click Open, then In the Cloud, and use the Open in the Cloud dialog to specify the details of your Cloud data model.
   b. From the File menu, click Load Java Data Sources.
   c. Click SSL.
   d. Enter the host name and SSL port to reach your Remote Data Connector installation.

2. In the Physical layer, create a Physical database connection and update your data model.

3. Edit the connection that you created in Step 2, and change the details in the connection pool so that you use a JDBC/JNDI call interface and specify the name of the JNDI data source.

   On the Miscellaneous tab, ensure that Use SQL over HTTP is set to True.

4. Publish the data model to the cloud.
5. Test that you can use the data source from Oracle Analytics Cloud.

6. Enable Remote Data Connector for remote connections:
   a. From the Home page navigator, click **Console**, then click **Remote Data Connectivity**.
   b. Click **Enable Remote Data Connector**.
   c. In the **URL** field, specify the Remote Data Connector URL displayed on-screen at the end of the Remote Data Connector installation.

   You can also use the `\<RDC install folder\>\domains\bin\status.sh` command to display the Remote Data Connector URL and port details. For example, `http://example.com:41250/obiee/javads?status`.

7. Create a connection to your on-premises database via Remote Data Connector:
   a. From the Home page, click **Create**, then **Connection**.
   b. Click a database type that supports connection via Remote Data Connector. For example, Oracle Database.
   c. Use the Create Connection dialog to specify connection details.
   d. Select the **Use Remote Data Connector** option.
3

Connect to Data for Visualizations and Analyses

You can analyze data from many types of data source.

Topics

• About Data Sources
• Manage Connections to Data Sources
• Connect to a Database
• Connect to Oracle Applications
• Connect to Essbase
• Connect to Dropbox
• Connect to Google Drive or Google Analytics
• Connect to Oracle Autonomous Transaction Processing
• Connect to Oracle Talent Acquisition Cloud
• Connect to NetSuite
• Connect to Snowflake Data Warehouse
• Connect to Oracle Autonomous Data Warehouse

About Data Sources

Connect to many types of data source, such as Cloud databases, on-premise databases, and many commonly used applications, such as Dropbox, Google Drive, and Amazon Hive.

Once connected, you can create projects to visualize your data to create powerful insights.

Connect to a Database

You can create, edit, and delete database connections and use the connections to create data sets from databases.

Topics:

• Create a Database Connection
• Create the ZIP File Needed for a Database Connection with Kerberos Authentication
• Create a Database Connection with Kerberos Authentication
Create a Database Connection

You can create a connection to a database and use the connection to access data and build a data set.

1. On the Home page, click **Create**, then click **Connection**.

2. In the Create Connection dialog, click the icon for the connection type that you want to create a connection for (for example **Oracle Database**).

3. Enter a unique name for the new connection, and specify the required connection information for the database, such as the hostname, port, credentials, service name and so on.

If you're creating an SSL connection to an Oracle Database, 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. (Optional) When you connect to some database types (for example, Oracle Talent Acquisition Cloud), you might have to specify the following authentication options on the Create Connection and Inspect dialogs:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always use these credentials</td>
<td>The login name and password you provide for the connection are always used and users aren't prompted to log in.</td>
</tr>
<tr>
<td>Require users to enter their</td>
<td>Prompt users to enter their own user name and password for the data source. Users required to log in see only the data that they have the permissions,</td>
</tr>
<tr>
<td>own credentials</td>
<td>privileges, and role assignments to see.</td>
</tr>
<tr>
<td>Use the active user's</td>
<td>Don't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics Cloud are also used to access this data source. Users can access only the data that they have the permissions,</td>
</tr>
<tr>
<td>credential</td>
<td>Before you use the <strong>Use the active user's credentials</strong> option, check that your administrator has configured user impersonation, after which you can use those credentials in this dialog.</td>
</tr>
</tbody>
</table>

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. Click **Save**.

   You can now begin creating data sets from the connection.
   You can't use remote connections to save a data set from a Data Flow.
Create the ZIP File Needed for a Database Connection with Kerberos Authentication

You need a ZIP file that contains specific configuration files to create an SSL connection that uses Kerberos authentication.

The zip file must have a directory named kerberos that contains the following files:

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

1. Get the Kerberos configuration files from your database administrator (for example, to connect to Apache Hive).
   You may need to create or modify the files.
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.
   The service_details.json file must contain values for Host, Port, and ServicePrincipalName, for example:

   ```json
   {
     "Host" : "myHost.com",
     "Port" : "10000",
     "ServicePrincipalName" : "hive/myHostDB.com@BDA.COM",
   }
   ```
   You must enclose all parameter values in quotation marks ("value").
6. Create a ZIP file containing the three files that you added to your folder, and provide an appropriate name (for example SSLKerberos.ZIP).
   You can now create a database connection with Kerberos authentication.

Create a Database Connection with Kerberos Authentication

You can configure a database connection to use Kerberos network authentication protocol.

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.

1. On the Home page, click Create, and then click Connection.
2. In the Create Connection dialog, click the icon for the connection type such as Apache Hive.
3. Click **Authentication Type** and select **Use Kerberos**.

4. In the **Client Credentials** field, either drag and drop or click **Select** to browse for a prepared ZIP 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 ZIP or CONF files.
   - Prepare your own ZIP file.

5. If you added a ZIP file, enter the ZIP 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 creating a SSL connection, click **Enable SSL** to enable the connection to use SSL.

9. Click **Save**.

---

**Connect to Oracle Applications**

You can connect to Oracle Applications and create data sets that help you visualize, explore, and understand your Oracle Applications data.

**Topics:**

- Oracle Applications Connector
- Create an Oracle Applications Connection
- Configure Impersonate User for the Use Active User's Credentials Option

**Oracle Applications Connector**

Oracle Applications Connector supports Oracle Applications Cloud. You can also use Oracle Applications Connector to connect to your on-premises Oracle BI Enterprise Edition deployments (if patched to an appropriate level) and another Oracle Analytics service.

Oracle Applications Cloud applications you can connect to:

- Oracle Sales Cloud
- Oracle Financials Cloud
- Oracle Human Capital Management Cloud
- Oracle Supply Chain Cloud
- Oracle Procurement Cloud
• Oracle Project Cloud
• Oracle Loyalty Cloud

Create an Oracle Applications Connection

You can create a connection to Oracle Applications and use the connection to access your data.

1. On the Data page or Home page, click Create, then click Connection.
2. Click the Oracle Applications icon.
3. Enter a name for the connection, the URL for Oracle Fusion Applications with Oracle Transactional Business Intelligence or Oracle BI EE, the user name, and the password.
4. Select the Authentication options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always use these credentials</td>
<td>The login name and password you provide for the connection are always used and users aren’t prompted to log in.</td>
</tr>
<tr>
<td>Require users to enter their own credentials</td>
<td>Prompt users to enter their own user name and password for the data source. Users required to log in see only the data that they have the permissions, privileges, and role assignments to see.</td>
</tr>
<tr>
<td>Use the active user's credentials</td>
<td>Don’t prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics Cloud are also used to access this data source. Users can access only the data that they have the permissions, privileges, and role assignments to access. Before you use the Use the active user's credentials option, check that your administrator has configured user impersonation, after which you can use those credentials in this dialog.</td>
</tr>
</tbody>
</table>

5. Click Save.

You can now create data sets from the connection.

The connection is visible only to you (the creator), but you can create and share data sets for it.

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

You can configure the impersonate user functionality to enable the Use the active user's credentials option when you create an Oracle Applications connection to access data.

After you configure the impersonate user functionality, you can use the Use the active user's credentials option to create an Oracle Applications connection type to connect to Oracle Fusion Applications with Oracle Transactional Business Intelligence and to Oracle BI EE using the active user's credentials. You select this option when you don't want to prompt users to enter their user name and password, but you still want them to
use data from the Oracle Applications data source. Users see only the data that they have the permissions, privileges, and role assignments to see. Before you use the **Use the active user's credentials** option, your administrator must configure the impersonate user functionality.

1. Use this to provision the impersonate user functionality in Oracle Fusion Applications when your Oracle Application connection target is Oracle Fusion Applications with Oracle Transactional Business Intelligence.

   Your administrator must connect to Oracle Fusion Applications for your Oracle Analytics instance using an administrator account that can create or modify a role. Create or modify a user to assign a role to the BI Impersonator privilege. Then use the credentials of Oracle Analytics users who also have access rights for the assignment to that role in Oracle Fusion Applications.

   a. Log in to Oracle Fusion Applications as an administrator that can create or modify a role.
   
   b. Display the Security Console dialog, and display the **Users** tab.
   
   c. Click **Add User Account** to create a user. For example, create a user called dvadmin.
   
   d. Display the **Roles** tab, and click **Create Role**.
   
   e. Enter a name in the **Role Name** field. For example, enter **DV Access**.
   
   f. Enter a code for the role name in the **Role Code** field. For example, enter **DV_ACCESS**.
   
   g. Select **BI - Abstract Roles** in the **Role Category** field.
   
   h. Skip the steps Function Security Policies and Data Security Policies.
   
   i. In the Role Hierarchy step, click (+) **Add Role** and select the existing **BIImpersonator** role in the Add Role Membership dialog.
   
   j. Add the user that you created (for example, DV Admin).
   
   k. Click **Add User to Role** in the Add User dialog.
   
   l. 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.

2. Use this to provision the impersonate user functionality in Oracle Fusion Middleware Control when your Oracle Applications connection target is an on-premises installation of Oracle BI EE.

   To create a user or application role with permission to impersonate other users, your administrator must create a permission grant using the ResourceType "oracle.bi.user", with a name of ".*", and with an action of "impersonate".

   a. Log in to Oracle Fusion Middleware Control for your Oracle BI EE instance using an administrator account.
   
   b. Click the **Weblogic Domain** option, and select **Security and Application Policies**.
   
   c. Click **Create** to display the Create Application Grant dialog.
   
   d. Click (+) **Add** in the Permissions area.
   
   e. Select **Resource Types**.
f. Select `oracle.bi.user` from the drop-down list.

g. Click **Continue**.

h. Enter an asterisk (*) in the **Resource Name** field.

i. Select "impersonate" in **Permission Actions**.

j. Click **Select**.

k. Click (+) **Add** in the Grantee section.

l. Select **User** from the **Type** drop-down list.
   
   You can choose to grant the newly created permission to either an application role or user.

m. Select **Includes** from the **Principal Name** drop-down list and enter an asterisk (*) into the field.

n. Click the **greater-than arrow** (>) to display a list of users.

o. Select the user that you want to give the permission to and click **OK**.
   
   You have now given impersonate permissions to the user.

p. Use the user with the impersonate permissions in Oracle Analytics in conjunction with the **Use Active User's Credentials** option in the Create Oracle Application Connection dialog.

### Edit an Oracle Applications Connection

You can edit an Oracle Applications connection. For example, you must edit a connection if your system administrator changed the Oracle Applications login credentials.

1. In the Data page, click **Connections**.

2. Locate the connection that you want to edit and click its **Actions menu** icon and select **Edit**.

3. In the Edit Connection dialog, edit the connection details. Note that you can't see or edit the password that you entered when you created the connection. If you need to change the connection's password, then you must create a new connection.

4. Click **Save**.

### Delete an Oracle Applications Connection

You can delete an Oracle Applications connection.

1. Delete any data sets that use the connection you need to delete.

2. In the Data page, click **Connections**.

3. To the right of the connection that you want to delete, click **Actions menu**, and then select **Delete**.

4. Click **Yes**.
Connect to Essbase

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

Topics:
- Create a Connection to Oracle Essbase
- Create Connections to Oracle Essbase Data on a Private Network
- Enable Users to Visualize Oracle Essbase Cubes Using Single Sign-on

Create a Connection to Oracle Essbase

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

1. Click **Create**, and then click **Connection**.
2. Click **Oracle Essbase**.
3. For **Connection Name**, enter a name that identifies this connection.
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. Select the **Authentication** option:
   - **Always use these credentials**: The username and password you provide for the connection are always used. Users aren't prompted to sign in to access the data available through this connection.
   - **Require users to enter their own credentials**: Users are prompted to enter their own username and password if they want access to this data source. Users see only the data that they have the permissions, privileges, and role assignments to see.
   - **Use the active user’s credentials**: Users aren't prompted to sign in to access the data. The same credentials they used to sign in to Oracle Analytics Cloud are also used to access this data source.
7. Click **Save** to create the connection.

You can now create data sets from the connection.
Create a Connection to Oracle Essbase Data on a Private Network

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 (for data sets) or Remote Data Connector (for data models). Your Administrator installs Data Gateway or Oracle Remote Data Connector in your private network. Queries are then redirected to the Essbase host.

1. Click Create, and then click Connection.
2. Click Oracle Essbase.
3. For Connection Name, enter a name that identifies this connection.
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 Remote Data Connector 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. Select the Authentication option:

- Always use these credentials: The username and password you provide for the connection are always used. Users aren’t prompted to sign in to access the data available through this connection.

- Require users to enter their own credentials: Users are prompted to enter their own username and password if they want access to this data source.
Users see only the data that they have the permissions, privileges, and role assignments to see.

- **Use the active user's credentials**: Users aren’t prompted to sign in to access the data. The same credentials 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. Save the details.

   You can now create data sets 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, from the 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. From the Navigator on the Home page, click **Data**, then click **Connections**.

2. Click the **Actions menu** for the connection you'd like to share, then click **Inspect**.

   The **Actions menu** displays when you hover over a connection.

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

## Connect to Dropbox

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

1. If needed, set up an application in Dropbox:
   a. Sign into your Dropbox account, and then go to the Developer’s Area.
   b. Click Create app to create and save an application.
   c. Open the application’s Settings, paste the redirect URL provided by Oracle Analytics, and copy the App key and App secret.

      Read the Dropbox documentation for more information about how to perform these tasks.

2. On the Data or Home page, click Create, then click Connection to display the Create Connection dialog.

3. Browse or search for the Dropbox icon. Click the Dropbox icon.

4. Enter a name for the connection, and then enter the required connection information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redirect URL</td>
<td>Confirm that the Dropbox application is open and its Settings area is displaying. Copy the URL in the Redirect URL field and paste it into the Dropbox application’s OAuth 2 Redirect URIs field and then click Add.</td>
</tr>
<tr>
<td>Client ID</td>
<td>Go to the Dropbox application, locate the App key field, and copy the key value. Go to Oracle Analytics and paste this value into the Client ID field.</td>
</tr>
<tr>
<td>Client Secret</td>
<td>Go to the Dropbox application, locate the App secret field, click Show to reveal the secret, and copy the secret value. Go to Oracle Analytics and paste this value into the Client Secret field.</td>
</tr>
</tbody>
</table>

5. Click Authorize. When prompted by Dropbox to authorize the connection, click Allow.

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

6. Click Save.

   You can now create data sets from the Dropbox connection.

## Connect to Google Drive or Google Analytics

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

1. If needed, set up an application in Google:
   a. Sign into your Google account, and go to the Developer’s Console.
   b. Create a project, then go to the API Manager Developers area of the Google APIs site and click Create app to create and save an application.
   c. Enable the application and create credentials for the application by accessing the Analytics API.
d. Open the page displaying the credential information, and paste the redirect URL provided by Oracle Analytics, and copy the Client ID and Client secret. Read the Google documentation for more information about how to perform these tasks.

2. On the Data or Home page, click **Create**, then click **Connection** to display the Create Connection dialog.

3. Browse or search for the Google Drive or the Google Analytics icon, and then click the icon.

4. Enter a connection name and the required connection information as described in this table.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redirect URL</td>
<td>Confirm that the Google application is open and its Credentials area is displaying. Copy the URL in the Redirect URL field and paste it into the Google application’s Authorized redirect URIs field.</td>
</tr>
<tr>
<td>Client ID</td>
<td>Go to the Google application’s Credentials area, locate the Client ID field, and copy the key value. Go to Oracle Analytics and paste this value into the Client ID field.</td>
</tr>
<tr>
<td>Client Secret</td>
<td>Go to the Google application’s credential information, locate the Client secret field and copy the secret value. Go to Oracle Analytics and paste this value into the Client Secret field.</td>
</tr>
</tbody>
</table>

5. Click **Authorize**.

6. When prompted by Google to authorize the connection, click **Allow**. The Create Connection dialog refreshes and displays the name of the Google account, and its associated email account.

7. Click **Save**. You can now create data sets from the Google Drive or Google Analytics connection.

### Connect to Oracle Autonomous Transaction Processing

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

1. To enable secure communication between Oracle Analytics and Oracle Autonomous Transaction Processing, you must upload trusted SSL certificates from Oracle Autonomous Transaction Processing to Oracle Analytics. See Download Client Credentials (Wallets) in *Using Oracle Autonomous Transaction Processing on Shared Exadata Infrastructure*.

   The credentials wallet file secures communication between Oracle Analytics and Oracle Autonomous Transaction Processing. The wallet file (for example, `wallet_SALESATP.zip`) that you upload contain SSL certificates, to enable SSL on your Oracle Autonomous Transaction Processing connections.

2. To create a connection to Oracle Autonomous Transaction Processing:
   a. On the Home page, click **Create** then click **Connection**.
   b. Click **Oracle Autonomous Transaction Processing** to display the fields for the connection.
c. Enter the **Connection Name** and **Description**.

d. In the **Client Credentials** field, click **Select** to browse for the Client Credentials wallet file (for example, `wallet_SALESATP.zip`).

   The **Client Credentials** field displays the `cwallet.sso` file.

e. Enter the **Username**, and **Password**, and select a **Service Name** from the list.

f. Click **Save** to create the connection.

   You can now create data sets from the connection.

---

### Connect to Oracle Talent Acquisition Cloud

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

1. Click **Create** and then click **Connection**.

2. Click **Oracle Talent Acquisition** to display the fields for the connection.

3. Enter the connection details.

4. 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`.

5. Select the **Authentication** options.

   - 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.

6. Click **Save** to create the connection.

   You can now create data sets from the connection.

---

### Connect to NetSuite

Connect to NetSuite data to visualize ERP and CRM data.

To analyze data from a NetSuite data source, you create a connection to store connection details. To obtain the connection details for your NetSuite application, go to the NetSuite Portal home page, click **Settings**, then click **Set up SuiteAnalytics Connect**, and copy the details displayed.

NetSuite data sources can be NetSuite.com or NetSuite2.com (the NetSuite home page always displays NetSuite.com). Note:

- NetSuite.com uses the only schema available up to 2018.2.
• NetSuite2.com uses the new schema available from 2019.1 for SuiteAnalytics Connect shared with the SuiteAnalytics Workbook, saved searches and reports.

Connect to Snowflake Data Warehouse

You can create a connection to Snowflake Data Warehouse and use the connection to access data.

1. Click Create, and then click Connection.
2. Click Snowflake Data Warehouse.
3. For Connection Name, enter a name that identifies this connection.
4. For Description, enter a description for this connection.
5. For Hostname enter the host account name for your data source.
   Use the format, for example:
   
   <account>.snowflakecomputing.com

   Where account is the Snowflake account name that you want to use to access the data.
   For example: exampleaccountname.snowflakecomputing.com.

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

6. For Username and Password, enter user credentials with access to the Snowflake data source.
7. For Database Name, enter the name of the database containing the schema tables and columns that you want to connect to.
8. For Warehouse, enter the name of the warehouse containing the database, schema tables and columns that you want to connect to. For example, Example-WH.
9. Click Save to create the connection.
   You can now create data sets from the connection.

Connect to Oracle Autonomous Data Warehouse

You can create a connection to Oracle Autonomous Data Warehouse and use the connection to access data.

1. To enable secure communication between Oracle Analytics and Oracle Autonomous Data Warehouse, you must upload trusted SSL certificates from Oracle Autonomous Data Warehouse to Oracle Analytics.

   See Download Client Credentials (Wallets) in Using Oracle Autonomous Data Warehouse on Shared Exadata Infrastructure.

   The credentials wallet file secures communication between Oracle Analytics and Oracle Autonomous Data Warehouse. The wallet file (for example,
wallet_ADWC1.zip) that you upload must contain SSL certificates, to enable SSL on your Oracle Autonomous Data Warehouse connections.

2. To create a connection to Oracle Autonomous Data Warehouse:
   a. On the Home page, click Create then click Connection.
   b. Click Oracle Autonomous Data Warehouse to display the fields for the connection.
   c. Enter the Connection Name and Description.
   d. In the Client Credentials field, click Select to browse for the Client Credentials wallet file (for example, wallet_ADWC1.zip).
      The Client Credentials field displays the cwallet.sso file.
   e. Enter the Username and Password, and select a Service Name from the list.
   f. Click Save to create the connection.
      You can now create data sets from the connection.

Manage Connections to Data Sources

Manage connections to your data sources.

Create a Connection to a Data Source

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

1. On the Home page, click Create, then click Connection.
2. In the Create Connection dialog, click the icon for the connection type that you want to create a connection for (for example Oracle Database).
3. (Optional) When you connect to some database types (for example, Oracle Talent Acquisition Cloud), you might have to specify authentication options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Always use these credentials</td>
<td>The login name and password you provide for the connection are always used and users aren’t prompted to log in.</td>
</tr>
<tr>
<td>Require users to enter their</td>
<td>Prompt users to enter their own user name and password for the data source. Users required to log in see only the data that they have the permissions,</td>
</tr>
<tr>
<td>own credentials</td>
<td>privileges, and role assignments to see.</td>
</tr>
<tr>
<td>Use the active user's credentials</td>
<td>Don't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics Cloud are also used to access this data source. Users can access only the data that they have the permissions, privileges, and role assignments to access. Before you use the Use the active user's credentials option, check that your administrator has configured user impersonation, after which you can use those credentials in this dialog.</td>
</tr>
</tbody>
</table>

4. 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.

5. Save the details.
You can now begin creating projects or data sets from the connection.

Edit a Database Connection

You can edit a database’s connection details.

1. In the Data page, click Connections.

2. Select the connection you want to edit and click Action menu or right-click, then select Inspect.

3. In the Inspect dialog, edit the connection details.

4. Click Save.

If you’re editing an SSL connection to an Oracle 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.

You must provide a unique Connection Name. If a connection with the same name already exists in your system, an error message is displayed. You can’t see or edit the current password for your connection. If you need to change it, you must create a connection that uses the same password.

Delete a Database Connection

You can delete a database connection. 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 data sets, then you must delete the data sets before you can delete the connection.

1. Go to the Data page and select Connections.

2. Select the connection that you want to delete and click Actions menu or right-click, then click Delete.

3. Click Yes.

Database Connection Options

When you specify connection details using the Create Connection dialog or Inspect dialog, some database types have extra 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))
• **Enable Bulk Replication** - If you’re loading a data set for a project, 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.

### Authentication Options

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Always use these credentials</td>
<td>The login name and password you provide for the connection are always used and users aren’t prompted to log in.</td>
</tr>
<tr>
<td>Require users to enter their own credentials</td>
<td>Prompt users to enter their own user name and password for the data source. Users required to log in see only the data that they have the permissions, privileges, and role assignments to see.</td>
</tr>
<tr>
<td>Use the active user’s credentials</td>
<td>Don’t prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics Cloud are also used to access this data source. Users can access only the data that they have the permissions, privileges, and role assignments to access. Before you use the Use the active user’s credentials option, check that your administrator has configured user impersonation, after which you can use those credentials in this dialog.</td>
</tr>
</tbody>
</table>

### Share a Data Source Connection

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

1. From the Navigator on the Home page, click **Data**, then click **Connections**.
2. Click the **Actions menu** for the connection you’d like to share, then click **Inspect**. The Actions menu displays when you hover over a connection.
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.

When users next log in, they can use connections that you’ve shared to visualize data from this database.
Connect to Data for Pixel-Perfect Reports

This topic describes how to set up data sources for 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
- View or Update a 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

About Private Data Source Connections

Private connections for OLAP, JDBC, Web Service, and HTTP data sources are supported in 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

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, Publisher enables you to select "Use Proxy Authentication". When you select Use Proxy Authentication, Publisher passes the user name of the individual user (as logged into Publisher) to the data source and thus preserves the client identity and privileges when the 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 executed, 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 execute 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 Pre Process Functions and Post Process Functions

You can define PL/SQL functions for Publisher to execute 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:

```plsql
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:

```sql
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.

<table>
<thead>
<tr>
<th>NAME</th>
<th>UPDATE_DATE</th>
<th>S_FLAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>oracle</td>
<td>14-MAY-10 09:51:34.000000000</td>
<td>AMStart</td>
</tr>
<tr>
<td>oracle</td>
<td>14-MAY-10 10:23:57.000000000</td>
<td>AMFinish</td>
</tr>
<tr>
<td>administrator</td>
<td>14-MAY-10 09:51:38.000000000</td>
<td>AMStart</td>
</tr>
<tr>
<td>administrator</td>
<td>14-MAY-10 09:51:38.000000000</td>
<td>AMFinish</td>
</tr>
<tr>
<td>oracle</td>
<td>14-MAY-10 09:51:42.000000000</td>
<td>AMStart</td>
</tr>
<tr>
<td>oracle</td>
<td>14-MAY-10 09:51:42.000000000</td>
<td>AMFinish</td>
</tr>
</tbody>
</table>

---

**Set Up a JDBC Connection to a Data Source**

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

To 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.
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-premise database. If you select **Use Data Gateway**, the **Database Driver Class**, **Use System User**, **Pre Process Function**, **Post Process Function**, **Client Certificate**, 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) Select 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.
    If you defined a backup data source, the security settings are passed to the backup data source.

Create a Secure JDBC Connection to Oracle Autonomous Data Warehouse

You can upload a JDBC client certificate and set up an SSL based JDBC connection to a database on the cloud.

To create a secure JDBC connection to Oracle Autonomous Data Warehouse:
1. Upload the JDBC client certificate.
Set Up a JDBC Connection to a Data Source

You can set up a JDBC connection to a data source by using a data gateway agent.

Ensure that your administrator configures Data Gateway on your target database and enables data connectivity. See Overview to Connecting to On-premise Data Sources.

To set up a JDBC connection:

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.
Set Up a Database Connection Using a JNDI Connection Pool

You can connect to the JDBC data source using a connection pool.

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).

You can use a JNDI connection only to connect to the audit data source (AuditViewDataSource) to create audit reports.

To set up a database connection using a JNDI connection pool:

1. From the 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. Enter the following fields for the new connection:
6. Select Use Proxy Authentication to enable 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.
7. Click **Test Connection**. You see a confirmation message if the connection is established.

8. 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 set up connections to several types of OLAP databases.

To set up a connection to an OLAP data source:

1. From the 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 use a web service as a data source.

If you want to use an SSL certificate for the connection, upload the SSL certificate in Upload Center before you define the connection to the data source.

To add a web service as a data source:

1. From the 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**.
   
• 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

HTTP data sources enable your data model designers 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 an SSL certificate for the connection, upload the SSL certificate in Upload Center before you define the connection to the data source.

To add an HTTP data source:

1. From the 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, xmlpserver/services/rest/v1/reports

7. Enter the user name and password required to access the data source on the database.

8. (Optional) 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

Content server data source enables you to retrieve a text attachment content stored in Oracle WebCenter Content (earlier known as UCM) server and display it in the report of the corresponding document.

To set up a connection to a content server data source:
1. From the 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 Data Source**

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

To view or update a data source:

1. From the 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.
Manage Database Connections for Data Models

Administrators create and manage cloud database connections for Data Modeler. Your business data doesn't have to be in one place. Connect to multiple cloud databases so business modelers and analysts can analyze company data wherever it is stored.

Topics

• About Database Connections for Data Models
• Connect to Data in an Oracle Cloud Database
• Secure Database Connections with SSL

About Database Connections for Data Models

Data Modeler in Oracle Analytics Cloud can handle data stored in Oracle Cloud databases. Simply connect Oracle Analytics Cloud to your cloud data sources to start modeling the data.

It doesn't matter if your business data is stored in several different locations. You can connect Oracle Analytics Cloud to multiple cloud databases, so business analysts can model and then analyze their data wherever it is stored.

Administrators create, manage, and test database connections for Data Modeler through the Console. Business modelers can see connected databases through Data Modeler and build business models from the data.

You can connect Data Modeler to Oracle Cloud databases. The target database must be Oracle Database Classic Cloud Service or Oracle Autonomous Data Warehouse.

You don't have to re-enter database connection information for data models pre-built with Oracle BI Enterprise Edition. Connection information for these models is often already defined in the data model file (.rpd) that you upload to Oracle Analytics Cloud. See About Uploading Oracle BI Enterprise Edition Data Models to the Cloud.

If you're using Oracle Analytics Developer Client Tool to edit your data models and upload them to Oracle Analytics Cloud, you can refer to any database connections you define in the Console “by name” in the Connection Pool dialog. You don't need to re-enter the connection details in Developer Client Tool. See Connect to a Data Sources using a Connection Defined In Console.

Connect to Data in an Oracle Cloud Database

Administrators create database connections for Data Modeler so business analysts can analyze data stored in Oracle Cloud databases.

1. Click Console.
2. Click **Connections**.

3. Click **Create**.

4. Enter a meaningful **Name** and **Description** that you'll remember and business modelers will recognize.

5. For **Connect Using**, select which properties you want to use to connect to the database.

6. Enter database connection information for your Oracle Database Classic Cloud Service or Oracle Autonomous Data Warehouse.

   Ask the database administrator to provide the connection details.

<table>
<thead>
<tr>
<th>Connection Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Host</strong></td>
<td>Host name of the database or the IP address of the database you want to connect to.</td>
</tr>
<tr>
<td><strong>Port</strong></td>
<td>Port number on which the database is listening for incoming connections.</td>
</tr>
<tr>
<td><strong>Service Name</strong></td>
<td>Network service name of the database.</td>
</tr>
<tr>
<td><strong>SID</strong></td>
<td>Name of the Oracle database instance.</td>
</tr>
<tr>
<td><strong>TNS Descriptor</strong></td>
<td>TNS connect descriptor that provides the location of the database and the name of the database service. Use the format: DESCRIPTION=(ADDRESS=(PROTOCOL=protocol)(HOST=host)(PORT=port))(CONNECT_DATA=(SERVICE_NAME=service name)) For example: DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=myhost.example.om)(PORT=1521))(CONNECT_DATA=(SERVICE_NAME=sales.example.om))</td>
</tr>
</tbody>
</table>

7. For **Connect As**, enter the name of a user with read access to database and then enter the **Password**.

8. Select **Enable SSL**, to secure this connection using SSL.

   If you haven't done so already, you must upload a wallet containing your SSL certificates.

9. Click **Test** to verify the connection.

10. Click **OK**.

    Business modelers see the new connection in Data Modeler right away and can start to model the data.

---

### Secure Database Connections with SSL

Use SSL to secure communication between Oracle Analytics Cloud and an Oracle database with SSL configured, Oracle Autonomous Data Warehouse, or Oracle Autonomous Transaction Processing. You must obtain and upload a wallet that contains SSL certificates, to enable SSL on your Oracle Database Classic Cloud Service connections.

1. Click **Console**.
2. Click **Connections**.

3. If you’ve not done so already, upload a wallet file containing SSL certificates to Oracle Analytics Cloud:
   - Click the Action menu, then **Upload Wallet**.
     To update an existing wallet file, click **Replace Wallet**.
   - Click **Browse** and locate the wallet file.
     Select a valid **cwallet.sso** file.
   - Click **OK**.

4. Enable SSL security on a database connection:
   - Create or edit a database connection.
   - In the Connection dialog, select **Enable SSL**.
   - Click **OK**.

Create Data Model Connections to Snowflake Data Warehouse

Configure your on-premises environment so that you can model data in an on-premises Snowflake database.

Before you start, install Data Gateway and Oracle Analytics Developer Client Tool on the same Windows machine.

1. On the Windows machine where you installed Data Gateway and Oracle Analytics Developer Client Tool, install the latest Snowflake JDBC driver.
   - Download the latest Snowflake JDBC driver (for example, in file **snowflake-jdbc-3.9.0.jar**).
   - Copy the downloaded JAR file to the Data Gateway installation folder.
     In a server deployment, copy the JAR file to `<Data Gateway installation folder>/domain/jettybase/lib/ext`.
     In a personal deployment, copy the JAR file to `<Data Gateway installation folder>\war\datagateway\WEB-INF\lib`.
   - Re-start Data Gateway. See **Maintain Data Gateway**.

2. In Oracle Analytics Developer Client Tool, create a connection pool.
   - On the General tab, in **Database type**, select **Snowflake**.
   - On the **Connection Pools** tab, create a connection pool and specify these details:
     - **Call Interface**: JDBC(Direct Driver).
     - **Require fully qualified table names**: Yes.
   - On the Miscellaneous tab, specify these details:
     - **JDS Server URL**: Leave this field blank (remove any entry in this field).
     - **Driver Class**: `net.snowflake.client.jdbc.SnowflakeDriver`. 
• **Use SQL over HTTP**: false.
• **RDC Version**: Leave this field blank.

You can now model your data using this connection.
Manage Access Through Public IP Addresses

Topics

Give Data Sources Access to Analytics Cloud Instances

Give Data Sources Access to Analytics Cloud Instances

Administrators manage access into and out from an Oracle Analytics Cloud deployment through public IP addresses.

Topics:

- About Access Into and Out from Analytics Cloud Instances
- Public Ranges and Gateway IPs for Oracle Analytics Cloud Instances
- Whitelist the IP Address of Your Analytics Cloud Instance
Part III
Reference

Find answers to common questions, and troubleshoot connection issues.

Appendices:

• Data Sources and Data Types Reference
• Frequently Asked Questions
• Troubleshoot
Data Sources and Data Types Reference

Find out about supported data sources, databases, and data types.

Topics
• Supported Data Sources
• Supported Data Types
• Oracle Applications Connector

Supported Data Sources

With Oracle Analytics you can connect to a wide range of data sources.

Notes On Using The Table
• 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 (>=) 1.6 (for example, this includes version 1.8 but not version 2.4).
• Data Sets - ‘Yes’ means that you can connect to a data source and visualize data of that type. Data sets are displayed on the Data page in Oracle Analytics Cloud.
• Data Models - ‘Yes’ means that you can connect to the semantic layer of a data source and model the data of that type.
• Remote Connectivity Data Sets - ‘Yes’ means that if your administrator has set up and enabled data connectivity, you can visualize on-premises data of that type. 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.
• Remote Connectivity Data Models - ‘Yes’ means that if your administrator has set up and enabled data connectivity, you can model on-premises data of that type. You create a physical data connection in Oracle Analytics Developer Client Tool (also known as Administration Tool) to enable you to model on-premises data.
## Data Sources Supported for Use with Oracle Analytics Cloud (sorted alphabetically by Oracle databases first, then other databases)

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Supported Versions</th>
<th>Data Sets</th>
<th>Data Models</th>
<th>Remote Connectivity Data Sets</th>
<th>Remote Connectivity Data Models</th>
<th>SSL</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Applications</td>
<td>11.1.1.9+ or Fusion Applications Release 8 and later</td>
<td>Yes</td>
<td>No</td>
<td>Yes*</td>
<td>No</td>
<td>Yes</td>
<td>Remote connectivity for data sets is only available using Data Gateway for Linux. Connector supports several Oracle Applications Cloud. See <a href="#">Oracle Applications Connector</a>. See also <a href="#">Create an Oracle Applications Connection</a>.</td>
</tr>
<tr>
<td>Oracle Autonomous Data Warehouse</td>
<td>18.2.4-20 and later</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Supports saving output from data flows. For data set connections, you can have one wallet per connection, which means you can connect to multiple instances. For data model connections, you can only have one global wallet, therefore you can only connect to one instance. See <a href="#">Connect to Oracle Autonomous Data Warehouse</a>.</td>
</tr>
</tbody>
</table>
## Supported Data Sources

<table>
<thead>
<tr>
<th>Data Source</th>
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<th>Data Sets</th>
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<th>Remote Connectivity Data Sets</th>
<th>Remote Connectivity Data Models</th>
<th>SSL</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Autonomous Transaction Processing</td>
<td>Current version</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Supports saving output from data flows. For data model connections, you can only have one global wallet per connection, therefore you can only connect to one instance. For data set connections, you can have one wallet per connection, therefore you can connect to multiple instances. For data model connections, you can only have one global wallet per connection, therefore you can only connect to one instance.</td>
</tr>
<tr>
<td>Oracle Database</td>
<td>11.2.0.4+</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Supports saving output from data flows. Use the Oracle Database connection type to connect to Oracle Database Classic Cloud Service. For data set connections, you can connect to multiple database instances. Upload a wallet for each connection. For data model connections, you can only have one global wallet per data model connection. Ensure that the appropriate security access rules are in place for Oracle Analytics Cloud to make a network connection to the database service on the database listening port. See <a href="#">Create a Database Connection</a>.</td>
</tr>
<tr>
<td>Data Source</td>
<td>Supported Versions</td>
<td>Data Sets</td>
<td>Data Models</td>
<td>Remote Connectivity Data Sets</td>
<td>Remote Connectivity Data Models</td>
<td>SSL</td>
<td>More Information</td>
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<td>------------------</td>
</tr>
<tr>
<td>Oracle Essbase</td>
<td>11.1.2.4.0+</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes*</td>
<td>No</td>
<td>* Use Remote Data Connector to connect remotely to Oracle Essbase, not Data Gateway. For direct connections, see Create a Connection to Oracle Essbase. For remote connections, see Create a Connection to Oracle Essbase Data on a Private Network.</td>
</tr>
<tr>
<td>Oracle Hyperion Planning</td>
<td>11.1.2.4+</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>Oracle NetSuite</td>
<td>Release 2019.2 (JDBC Driver 8.10.85.0)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes*</td>
<td>Yes *</td>
<td>* SSL: Default SSL support by driver. See Connect to NetSuite.</td>
</tr>
<tr>
<td>Oracle Enterprise Performance Management Cloud</td>
<td>17.10.34+</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Oracle Analytics Cloud supports all EPM Cloud applications, including Planning, Financial Consolidation and Close, Tax Reporting, and so on.</td>
</tr>
<tr>
<td>Oracle Service Cloud</td>
<td>1.2</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>Oracle Talent Acquisition Cloud</td>
<td>17.4+ 15b.9.3+</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>See Connect to Oracle Talent Acquisition Cloud.</td>
</tr>
<tr>
<td>Amazon EMR</td>
<td>Amazon EMR 4.7.2 running Amazon Hadoop 2.7.2 and Hive 1.0.0 Amazon EMR (MapR) No Amazon Machine Image (AMI) 3.3.2 running MapR Hadoop M3 and Hive 0.13.1</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Complex data types not supported.</td>
</tr>
<tr>
<td>Amazon Redshift</td>
<td>1.0.1036 +</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>Apache Hive</td>
<td>2.3.0+ 3.0+</td>
<td>Yes</td>
<td>Yes Basic and Kerberos</td>
<td>Yes Basic</td>
<td>Yes Basic and Kerberos</td>
<td>Yes</td>
<td>Supports Kerberos. Supports saving output from data flows.</td>
</tr>
<tr>
<td>Data Source</td>
<td>Supported Versions</td>
<td>Data Sets</td>
<td>Data Models</td>
<td>Remote Connectivity Data Sets</td>
<td>Remote Connectivity Data Models</td>
<td>SSL</td>
<td>More Information</td>
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<td>-------------------------------</td>
<td>---------------------------------</td>
<td>-----</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CSV File</td>
<td>NA</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>See Add Spreadsheets as Data Sets.</td>
</tr>
<tr>
<td>DB2</td>
<td>10.1+ 10.5+</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Supports SSL between Remote Data Connector and Oracle Analytics Cloud.</td>
</tr>
<tr>
<td>DropBox</td>
<td>NA</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>See Connect to Dropbox.</td>
</tr>
<tr>
<td>Google Analytics</td>
<td>NA</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>See Connect to Google Drive or Google Analytics.</td>
</tr>
<tr>
<td>Google Drive</td>
<td>NA</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>See Connect to Google Drive or Google Analytics.</td>
</tr>
<tr>
<td>GreenPlum</td>
<td>4.3.8+</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>HortonWorks Hive</td>
<td>1.2+</td>
<td>Yes Basic and Kerberos</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td>Supports Kerberos. Supports saving output from data flows.</td>
</tr>
<tr>
<td>IBM BigInsights Hive</td>
<td>1.2+</td>
<td>Yes Basic and Kerberos</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Supports Kerberos.</td>
</tr>
<tr>
<td>Impala (Cloudera)</td>
<td>2.7+</td>
<td>Yes Basic and Kerberos</td>
<td>Yes Basic</td>
<td>Yes Basic</td>
<td>Yes Basic</td>
<td>Yes</td>
<td>Supports Kerberos.</td>
</tr>
<tr>
<td>Informix</td>
<td>12.10+</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Local Subject Area in Oracle Analytics Cloud</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>See About Adding a Subject Area as a Data Set.</td>
</tr>
<tr>
<td>MapR Hive</td>
<td>1.2+</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Supports Kerberos. Supports saving output from data flows.</td>
</tr>
<tr>
<td>Microsoft Excel File</td>
<td>NA</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Only XLSX files (or XLS with unpivoted data).</td>
</tr>
<tr>
<td>Microsoft Azure SQL Database</td>
<td>5.6.0</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes*</td>
<td>**</td>
<td>*SSL is mandatory. *Direct connections for data sets are supported for MySQL Enterprise Edition. **Remote connection supported for all MySQL Editions.</td>
</tr>
<tr>
<td>MongoDB</td>
<td>3.2.5</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>MySQL</td>
<td>5.6+ 5.7+</td>
<td>Yes*</td>
<td>No</td>
<td>Yes**</td>
<td>Yes**</td>
<td>No</td>
<td>* Direct connections for data sets are supported for MySQL Enterprise Edition. **Remote connection supported for all MySQL Editions.</td>
</tr>
<tr>
<td>OData</td>
<td>2.0</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Pivotal HD Hive</td>
<td>NA</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Supports Kerberos.</td>
</tr>
</tbody>
</table>

*SSL is mandatory.
Supported Data Types

Read about the data types that Oracle Analytics supports.

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, TINYUNIT, 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.

<table>
<thead>
<tr>
<th>Database Type</th>
<th>Supported Data Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle</td>
<td>BINARY DOUBLE, BINARY FLOAT</td>
</tr>
<tr>
<td></td>
<td>CHAR, NCHAR</td>
</tr>
<tr>
<td></td>
<td>CLOB, NCLOB</td>
</tr>
<tr>
<td></td>
<td>DATE</td>
</tr>
<tr>
<td></td>
<td>FLOAT</td>
</tr>
<tr>
<td></td>
<td>NUMBER, NUMBER (p,s), NVARCHAR2, VARCHAR2</td>
</tr>
<tr>
<td></td>
<td>ROWID</td>
</tr>
<tr>
<td></td>
<td>TIMESTAMP, TIMESTAMP WITH LOCAL TIMEZONE, TIMESTAMP WITH TIMEZONE</td>
</tr>
<tr>
<td>DB2</td>
<td>BIGINT</td>
</tr>
<tr>
<td></td>
<td>CHAR, CLOB</td>
</tr>
<tr>
<td></td>
<td>DATE, DECFLOAT, DECIMAL, DOUBLE</td>
</tr>
<tr>
<td></td>
<td>FLOAT</td>
</tr>
<tr>
<td></td>
<td>INTEGER</td>
</tr>
<tr>
<td></td>
<td>LONGVAR</td>
</tr>
<tr>
<td></td>
<td>NUMERIC</td>
</tr>
<tr>
<td></td>
<td>REAL</td>
</tr>
<tr>
<td></td>
<td>SMALLINT</td>
</tr>
<tr>
<td></td>
<td>TIME, TIMESTAMP</td>
</tr>
<tr>
<td></td>
<td>VARCHAR</td>
</tr>
<tr>
<td>SQL Server</td>
<td>BIGINT, BIT</td>
</tr>
<tr>
<td></td>
<td>CHAR</td>
</tr>
<tr>
<td></td>
<td>DATE, DATETIME, DATETIME2, DATETIMEOFFSET, DECIMAL</td>
</tr>
<tr>
<td></td>
<td>FLOAT</td>
</tr>
<tr>
<td></td>
<td>INT</td>
</tr>
<tr>
<td></td>
<td>MONEY</td>
</tr>
<tr>
<td></td>
<td>NCHAR, NTEXT, NUMERIC, NVARCHAR, NVARCHAR(MAX)</td>
</tr>
<tr>
<td></td>
<td>REAL</td>
</tr>
<tr>
<td></td>
<td>SMALLDATETIME, SMALLINT, SMALLMONEY</td>
</tr>
<tr>
<td></td>
<td>TEXT, TIME, TINYINT</td>
</tr>
<tr>
<td></td>
<td>VARCHAR, VARCHAR(MAX)</td>
</tr>
<tr>
<td></td>
<td>XML</td>
</tr>
<tr>
<td>Database Type</td>
<td>Supported Data Types</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------</td>
</tr>
</tbody>
</table>
| 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  
| Teradata      | BIGINT, BYTE, BYTEINT  
                | CHAR, CLOB  
                | DATE, DECIMAL, DOUBLE  
                | FLOAT  
                | INTEGER  
                | NUMERIC  
                | REAL  
                | SMALLINT  
                | TIME, TIMESTAMP  
                | VARCHAR |

Oracle Applications Connector

Oracle Applications Connector supports Oracle Applications Cloud. You can also use Oracle Applications Connector to connect to your on-premises Oracle BI Enterprise Edition deployments (if patched to an appropriate level) and another Oracle Analytics service.

Oracle Applications Cloud applications you can connect to:

- Oracle Sales Cloud
- Oracle Financials Cloud
- Oracle Human Capital Management Cloud
- Oracle Supply Chain Cloud
- Oracle Procurement Cloud
- Oracle Project Cloud
• Oracle Loyalty Cloud
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 Data Gateway

Here’re the answers to some frequently asked questions about Data Gateway.

What operating systems does Data Gateway support?

For a server deployment, you can use Oracle Universal Installer to install on Linux. For a personal deployment, you can copy the binary files onto MacOS or Windows.

What is the Data Gateway Architecture?

See Overview to Connecting to On-premise Data Sources.

What is the difference between Remote Data Connector and Data Gateway?

Data Gateway replaces the Remote Data Connector utility that was used in earlier releases. Although you can still use Remote Data Connector, we recommend moving to Data Gateway, unless you’re connecting to Essbase. Using Data Gateway has many advantages over using Remote Data Connector:

• You can deploy multiple Data Gateway agents to query the same database. This provides failover and a highly-available architecture.
• In Remote Data Connector, the communication is initiated by Oracle Analytics Cloud. In Data Gateway, the communication is initiated by Data Gateway. As a result:
  – You don’t need to install anything in a network demilitarized zone (DMZ).
  – You don’t have to open ports for ingress traffic in the on-premises firewall.
  – You don’t have to whitelist Oracle Analytics Cloud.

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 outgoing (egress) 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 outgoing (egress) 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 (that is, 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 Gateways (that is, two VMs) 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, a process known as long-polling. Data Gateway makes a long-running TLS-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 the request being identified and terminated as an idle or stale connection by the network.

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 is used to encrypt your browser connections to Oracle Analytics Cloud.

How do I size Data Gateway?

To size the server that hosts Data Gateway, use Remote Data Connector sizing guidelines, which are based on 100Mbps bandwidth, 5000 result set rows, and 35ms latency. Data Gateway’s performance and resource usage is similar to that of Remote Data Connector.

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.

Can I use Data Gateway and Remote Data Connector with my Oracle Analytics Cloud instance at the same time?

No.
How is Data Gateway network traffic secured?

When you install and set up Data Gateway, you generate a public key. This public key is used in conjunction with the private key for Oracle Analytics Cloud to encrypt all communication between Oracle Analytics Cloud and Data Gateway. Data Gateway’s security features prevent “replay attacks” and “man-in-the-middle” attacks. The TLS1.2 encryption deployed by the HTTPS connection provides a further layer of encryption.

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 (OCPUs) that your Oracle Analytics Cloud service has.

What is the timeout setting for Data Gateway?

Data Gateway uses the timeout setting applied by the Oracle Analytics Cloud query engine. If for any reason a query timeout isn’t enforced by Oracle Analytics Cloud, Data Gateway queries apply a 15 minute timeout.
Troubleshoot

This topic describes common connection issues and explains how to solve them.

Topics:
- Troubleshoot Data Gateway

Troubleshoot Data Gateway

Here's how to troubleshoot common setup issues with Data Gateway.

<table>
<thead>
<tr>
<th>Issue reported</th>
<th>Do this</th>
</tr>
</thead>
<tbody>
<tr>
<td>All issues</td>
<td>Check that you are on the correct version of Data Gateway that matches your version of Oracle Analytics Cloud. To check the version of the Data Gateway agent, on a server deployment, refer to the version in the file <code>&lt;installdirectory&gt;/inventory/registry.xml</code>.</td>
</tr>
<tr>
<td>Agent state change failed</td>
<td>Click <strong>Save</strong>, then <strong>Enable</strong>. If the problem persists, restart the application. If necessary, check your network.</td>
</tr>
<tr>
<td>with error: Agent name or</td>
<td></td>
</tr>
<tr>
<td>Oracle Analytics Cloud URL not</td>
<td></td>
</tr>
<tr>
<td>specified or the Key pair not</td>
<td></td>
</tr>
<tr>
<td>generated</td>
<td></td>
</tr>
<tr>
<td>Issue reported</td>
<td>Do this</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Invalid Oracle Analytics Cloud URL (Data Gateway can't communicate with Oracle Analytics Cloud) | • Check that you've enabled and configured Data Gateway in Oracle Analytics Cloud Console.  
• 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 `sudo traceroute -T -p 443 <Fully qualified domain name of your Oracle Analytics Cloud instance>`.  
• Make sure there's nothing else blocking communication through the firewall.  
• If you're using a proxy:  
  1. Stop the Data Gateway agent.  
  2. On the machine where you've installed Data Gateway, configure the Data Gateway properties:  
     In a server deployment, edit this file:  
     `<Installed location>/jetty/obiee_rdc_agent.properties`  
     In a personal deployment, edit this file:  
     `<Installed location>
obiee_rdc_agent.properties`  
     3. Update the following properties with the details of your internet proxy host:  
        - `proxyUserName`  
        - `proxyPassword`  
        - `proxyHost` (for example, www-proxy.us.oracle.com)  
        - `proxyPort` (for example, 80)  
  3. Start the Data Gateway agent. |