5

Import Metadata and Working with Data Sources

This chapter describes how to create a new Oracle BI repository, set up back-end data sources, and import metadata using the Import Metadata Wizard in the Administration Tool. It also describes how to use a standby database with Oracle Analytics Server.
This chapter contains the following topics:

About Importing Metadata and Working with Data Sources

After creating an Oracle BI Repository file, you can import metadata from your data sources into the Physical layer of the repository.

35

In the Oracle BI Administration Tool, the Physical layer of the contains the data sources the Oracle BI Server uses to submit queries, and the relationships between physical databases and other data sources used to process multiple data source queries.

The metadata imported into an Oracle BI Repository must have an ODBC or native database connection to the underlying data source. You can also import metadata from software such as Microsoft Excel using an ODBC connection.

When you importing metadata from each data source, the structure of the data source is also imported into the Physical layer. You can display data from supported data sources on Oracle BI Server and other clients. You can't import metadata from unsupported data sources.

After you import metadata, properties in the associated database object and connection pool are set automatically. You can adjust database or connection pool settings, see Set Up Database Objects and Connection Pools.

Oracle recommends importing metadata rather than manually creating the physical layer to avoid errors.

import. In some cases, you must install client components on the computer where the JavaHost process is located.

This section contains the following topics:

35

Set Up ODBC Data Source Names (DSNs)

Before you can import from a data source through an ODBC connection, or set up a connection pool to an ODBC data source, you must first create an ODBC Data Source Name (DSN) for that data source on the client computer.

You reference the DSN in the Import Metadata Wizard when you import metadata from the data source.

You can only use ODBC DSNs for import on Windows systems.

1. In Windows, locate and open the ODBC Data Source Administrator. The ODBC Data Source Administrator dialog appears.
2. In the ODBC Data Source Administrator dialog, click the System DSN tab, and then click **Add**.
3. From the Create New Data Source dialog, select the driver appropriate for your data source, and then click **Finish**.

   The remaining configuration steps are specific to the data source you want to configure. Refer to the documentation for your data source for more information.

ODBC DSNs on Windows systems are used for both initial import, and for access to the data source during query processing. On Linux systems, ODBC DSNs are only used for data access. See Set Up Data Sources on Linux.

See Set Up Teradata Data Sources.

35

Set Up Oracle Database Data Sources

When you import metadata from an Oracle Database data source or set up a connection pool, you can include the entire connect string for Data Source Name, or you can use the net service name defined in the tnsnames.ora file.

If you choose to enter only the net service name, you must set up a `tnsnames.ora` file in the following location within the Oracle Analytics Server environment, so that the Oracle BI Server can locate the entry:

BI_DOMAIN`/bidata/components/core/serviceinstances/ssi/oracledb`

You should always use the Oracle Call Interface (OCI) when importing metadata from or connecting to an Oracle Database. Before you can import schemas or set up a connection pool, you must add a TNS names entry to your `tnsnames.ora` file. See the Oracle Database documentation for more information.

This section contains the following topics:

- Oracle 12*c* Database In-Memory Data Sources
- Oracle 12*c* on Exadata Data Sources
- Advanced Oracle Database Features Supported by Oracle BI Server
- Oracle Database Fast Application Notification and Fast Connection Failover
- Additional Oracle Database Configuration for Client Installations
- Configure Oracle BI Server When Using a Firewall

See Enable NUMERIC Data Type Support for Oracle Database and TimesTen.

Oracle 12*c* Database In-Memory Data Sources

For all Oracle 12*c* Database In-Memory data sources, the Oracle BI Server creates tables in memory.

Oracle 12*c* Database In-Memory is a high-performance in-memory data manager. It uses In-Memory Column Store to store copies of tables and partitions in a special columnar format that exists in memory and provides for rapid scans. See the 12*c* Release 1 *Oracle Database Concepts Guide* and *Oracle Database Administrator's Guide* for more information.

Oracle 12*c* on Exadata Data Sources

For Oracle 12c Database on Exadata and Oracle 12c Database In-Memory on Exadata data sources, the Oracle BI Server creates tables in memory.

Oracle BI Server uses Exadata Hybrid Columnar Compression (EHCC) by default.

Oracle Exadata Database Machine is the optimal platform for running Oracle Database. Both Oracle 12*c* Database and Oracle 12*c* Database In-Memory run on the Oracle Exadata Database Machine. See the documentation included with the Exadata Database Machine for more information.

35

About Setting Up Essbase Data Sources

The Oracle BI Server uses the Essbase client libraries to connect to Essbase data sources.

The Essbase client libraries are installed by default. No additional configuration is required to enable Essbase data source access.

See Configure SSO for Essbase, Hyperion Financial Management, or Hyperion Planning Data Sources for configuration used for authentication using a shared token against Essbase installed with the EPM System Installer.

35

About Setting up Cloudera Impala Data Sources

These topics provide information about Windows ODBC drivers and Cloudera Impala Metadata.

Use the information in this section to set up Cloudera Impala data sources in the Oracle BI repository.

- Obtain Windows ODBC Driver for Cloudera
- Import Cloudera Impala Metadata Using the Windows ODBC Driver

Obtain Windows ODBC Driver for Cloudera

If you performed a client installation, then you don't have the Windows ODBC driver required for you to import Cloudera Impala metadata.

If you used the Installer to install the Oracle BI Administration Tool, then you don't have to perform this procedure.

1. Go to Cloudera's website.
2. Click the Downloads link and then click the Impala ODBC Drivers & Connectors link.
3. In the Download list, locate the required ODBC driver for your Administration Tool platform and click **Download Bits** to download the installer.
4. Run the ODBC driver installer to install the driver.

Import Cloudera Impala Metadata Using the Windows ODBC Driver

35

Cloudera Impala is a massively parallel processing (MPP) SQL query engine that runs natively in Apache Hadoop. Perform this procedure to import Cloudera Impala metadata into the Oracle BI repository.

To perform this procedure, you must have the required Windows ODBC driver. If you've a client installation of the Administration Tool, then you must follow the Obtain Windows ODBC Driver for Cloudera procedure to install the required Windows ODBC driver.

1. In Windows, locate and open the ODBC Data Source Administrator.
2. In the ODBC Data Source Administrator dialog, click the System DSN tab, and then click **Add**.

35

Multidimensional Data Source Connection Options

In the Oracle BI Administration Tool when importing multidimensional data sources into your repository, you can use these connection types in the Import Metadata wizard's Select Data Source page.

ODBC 3.5

The ODBC 3.5 connection type is used for Oracle RPAS data sources. Select the DSN entry and provide the user name and password for the selected data source. See Set Up ODBC Data Source Names (DSNs).

Essbase 9+

Use Essbase 9+ connection type for Essbase 9 or Essbase 11 data sources. Provide the host name of the computer where the Essbase Server is running in the Essbase Server field, then provide a valid user name and password for the data source. This information should be obtained from your data source administrator.

If the Essbase Server is running on a non-default port or in a cluster, include the port number in the Essbase Server field as `hostname:port_number`. See Work with Essbase Data Sources.

XMLA

35

Use the XMLA connection type for Microsoft Analysis Services and SAP/BW. Enter the URL of a data source from which to import the schema. You must specify the Provider Type such as Analysis Services 2000 or SAP/BW 3.5/7.0, and a valid user name and password for the data source.

You can use a new or existing Target Database.

Oracle OLAP

Provide the net service name in the Data Source Name field, and a valid user name and password for the data source. The data source name is the same as the entry you created in the `tnsnames.ora` file in the Oracle Analytics Server environment. You can also choose to enter a full connect string rather than the net service name.
Provide the URL of the `biadminservlet`. The servlet name is `services`, for example:

```
http://localhost:9704/biadminservlet/services
```

You must start the `biadminservlet` before you can use it. Check the status of the servlet in the Administration Console if you receive an import error. You can also check the Administration Server diagnostic log and the Domain log.

See Work with Oracle OLAP Data Sources.

You can use data sources from an Oracle Database data sources and the OLAP connection type. The data source can contain both relational tables and multidimensional tables. You should avoid putting multidimensional and relational tables in the same database object because you might need to specify different database feature sets for the different table types.

For example, Oracle OLAP queries fail if the database feature `GROUP_BY_GROUPING_SETS_SUPPORTED` is enabled. However, you might need to `GROUP_BY_GROUPING_SETS_SUPPORTED` enabled for Oracle Database relational tables.

the star schema more are unnecessary. You should remove the unnecessary joins manually.

See Set Up ODBC Data Source Names (DSNs).

- When you import RPAS schemas in the Administration Tool, you must import the data with joins. To do this, select the metadata types **Keys** and **Foreign Keys** in the Import Metadata Wizard.
- After you've imported RPAS schemas, you must change the **Normalize Dimension Tables** field value in the ODBC DSN Setup page back to *No*. You need to revert this setting back to *No* after import to enable the Oracle BI Server to correctly generate optimized SQL against the RPAS driver.

  If you don't change the **Normalize Dimension Tables** setting value to *No*, most queries fail with an error message similar to the following:

  ```
  [nQSError: 16001] ODBC error state: S0022 code: 0 message: [Oracle Retail][RPAS ODBC]Column:YEAR_LABEL not found..[nQSError: 16014] SQL statement preparation failed. Statement execute failed.
  ```

- If Oracle RPAS is the only data source, you must set the value of `NULL_VALUES_SORT_FIRST` to `ON` in the `NQSConfig.INI` file. See *Administering Oracle Analytics Server* for setting values in `NQSConfig.INI`.

After you import metadata from an Oracle RPAS data source, a database object for the schema is automatically created. Depending on your version of RPAS, you might need to adjust the data source definition in the Database property.

If RPAS is specified in the **data source definition Database** field and the version of RPAS is prior to 1.2.2, then the Oracle BI Server performs aggregate navigation when the SQL is generated and sent to the database. Because the table name used in the generated SQL is automatically generated, a mismatch between the generated SQL and the database table name could result. To enable the SQL to run, you must:

- Change the names of tables listed in the metadata so that the generated names are correct.
- Create tables in the database with the same names as the generated names.

If the database doesn't have tables with the same name or if you want to have the standard aggregate navigation, then you must change the **data source definition Database** field from RPAS to ODBC Basic. See Create a Database Object Manually in the Physical Layer.

About Importing Metadata from XML Data Sources 35

Learn how to import metadata from Extensible Markup Language (XML) documents.

This section contains the following topics:

- About Using XML as a Data Source
- Import Metadata from XML Data Sources Using the XML Gateway
- Import Metadata from XML Data Sources Using XML ODBC
- Examples of XML Documents

You need to modify your existing database configurations to use the DataDirect drivers. For information about modifying your existing database configuration, see the following procedures:

- Configure the DataDirect Connect ODBC Driver for DB2 Database
- Configure the DataDirect Connect ODBC Driver for MySQL Database
- Configure the DataDirect Connect ODBC Driver for Sybase ASE Database
- Configure the DataDirect Connect ODBC Driver for Informix Database
- Configure the DataDirect Connect ODBC Driver for Cloudera Impala Database
- Configure the DataDirect Connect ODBC Driver for Apache Hive Database

Additional DataDirect Configuration for Oracle Essbase

Modify the DataDirect configuration to connect to Essbase data sources.

The name of the DataDirect 7.1.6 driver file to use with Essbase is `essbase.cfg`.

1. Open `essbase.cfg` for editing from the following location:

   BI_DOMAIN`/config/fmwconfig/biconfig/essbase`

2. In the configuration file, locate the `BPM_ORACLE_DriverDescriptor` element and change the value to `"DataDirect 7.1.6 Oracle Wire Protocol"`.

35

3. Use Fusion Middleware Control to restart Essbase.

Configure the DataDirect Connect ODBC Driver for DB2 Database

Use these steps to connect to a DB2 database.

The name of the DataDirect ODBC driver file to connect to a MySQL database is `ARdb227.so`.

1. Open the `obis.properties` file located in:

   BI_DOMAIN`/config/fmwconfig/bienv/OBIS`

2. Locate the `LD_LIBRARY_PATH` variable. Use the following:
   - For Linux, the library path variable is `LD_LIBRARY_PATH`.
   - For AIX, the library path variable is `LIBPATH`.
3. If necessary, update the `LD_LIBRARY_PATH` variable to include the DataDirect driver path.
4. In `obis.properties`, locate the `PATH` variable and if necessary, include the DataDirect driver path.
5. Save and close the file.
6. Open the `odbc.ini` file. You can find this file at:

   BI_DOMAIN`/config/fmwconfig/bienv/core`

7. Create an entry for the database:

   Use the same ODBC connection name to the data source name specified in the connection pool defined in the repository.

Database	Supported Versions	Datasets	Data Models	More Information
Oracle Database	11.2+ 12.1+ 12.2+ 18+ 19+	Yes	Yes	Supports saving output from data flows.
Oracle Applications	11.1.1.9+ or Oracle Fusion Applications Release 8 and later	Yes	No	-
Oracle Autonomous Data Warehouse	18.2.4+ 19+	Yes	Yes	-
Oracle Autonomous Transaction Processing	19c	Yes	Yes	-
Oracle Enterprise Performance Management Cloud	Latest version	Yes	Yes	You can't blend datasets that use Oracle Enterprise Performance Management Cloud data sources.
Oracle Essbase	11.1.2.4.0+ 21c	Yes	Yes	You can't blend datasets that use Oracle Essbase data sources.
Oracle Hyperion Financial Management	11.1.2.4+ 11.2+	No	Yes	-
Oracle Hyperion Planning	11.1.2.4+ 11.2+	No	Yes	-
Oracle NetSuite	Release 2019.2 (JDBC Driver 8.10.85.0)	Yes	No	See Connect to NetSuite Data Sources.
Oracle OLAP	11.2+ 12+ 18+	No	Yes	-
Oracle Service Cloud	1.2	Yes	No	-
Oracle Talent Acquisition Cloud	17.4+ 15b.9.3+	Yes	No	-
Oracle TimesTen	11+ 18.1+* 22.1	No	Yes	* Requires installation and configuration of the 18.1 client software.
Amazon Aurora	-	No	Yes	-
Amazon EMR	4.7.2*	Yes	No	* 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
Amazon Redshift	1.0.1036 +	Yes	Yes	-
Apache Hive	2.3+ 3+	Yes	Yes	Supports Kerberos
Apache Spark SQL	1.6+	Yes	Yes	-

Database	Supported Versions	Datasets	Data Models	More Information
Aster Database	5.0 6.0	No	Yes	-
Cloudera CDH	4.6+ 5.5+	No	Yes	-
Cloudera Impala	2.7+	Yes	Yes	-
DropBox	-	Yes	No	-
Google Analytics	-	Yes	No	-
Google Drive	-	Yes	No	-
Green Plum	4.3+	Yes	Yes	-
Hortonworks Hive	1.2+	Yes	Yes	Supports Kerberos authentication for datasets
HP Vertica	7+	No	Yes	-
IBM Big Insights Hive	-	Yes	No	Supports Kerberos authentication for datasets
IBM DB2	10.5+ 11.1+	Yes	Yes	-
Informix	12.10+	Yes	No	-
IBM Netezza NPS	NPS 6+ NPS 7+ NPS 11+	No	Yes	-
MapR Hive	1.2+	Yes	Yes	Supports Kerberos authentication for datasets
Microsoft Access	2013 2016	No	Yes	-
Microsoft Azure SQL Database	-	Yes*	No	* Use the **SQL Server** connection type on the Create Connection page. SSL is mandatory.
Microsoft Azure Synapse Analytics	-	Yes	No	-
Microsoft Excel	2013 2016	Yes	No	-
Microsoft SQL Server Analysis Services	2014 2016 2017 2019	No	Yes	Connectivity is through XML for Analysis (XMLA). You must configure XMLA access to Microsoft SQL Server Analysis Services.
Microsoft SQL Server	2014 2016 2017 2019	Yes*	Yes*	* Supports case sensitive and case insensitive collation.
MongoDB	3.2.5	Yes	Yes	-
MySQL	5.6+ 5.7+ 8.0+	Yes	Yes	-
OData	2.0	Yes	No	-

Database	Supported Versions	Datasets	Data Models	More Information
ODBC	N/A	No	Yes	-
Pivotal HD Hive	N/A	Yes	No	-
PostgreSQL	9.0+	Yes	Yes	-
Presto DB	0.149+	Yes	No	-
Salesforce	-	Yes	No	-
Snowflake	Current version	Yes	Yes	-
Sybase Adaptive Server Enterprise	15.7+	Yes	Yes	-
Sybase IQ	16+	Yes	Yes	-
Teradata	16.20 17.x	Yes	Yes	-

35

Certification - Supported Data Types

Here're the supported data types for Oracle Analytics.

Topics:

Supported Base Data Types

When reading from a data source, Oracle Analytics attempts to map incoming data types to the supported data types.

For example, a database column that contains only date values is formatted as a DATE, a spreadsheet column that contains a mix of numerical and string values is formatted as a VARCHAR, and a data column that contains numerical data with fractional values uses DOUBLE or FLOAT.

In some cases Oracle Analytics can’t convert a source data type. To work around this data type issue, you can manually convert a data column to a supported type by entering SQL commands. In other cases, Oracle Analytics can't represent binary and complex data types such as BLOB, JSON, and XML.

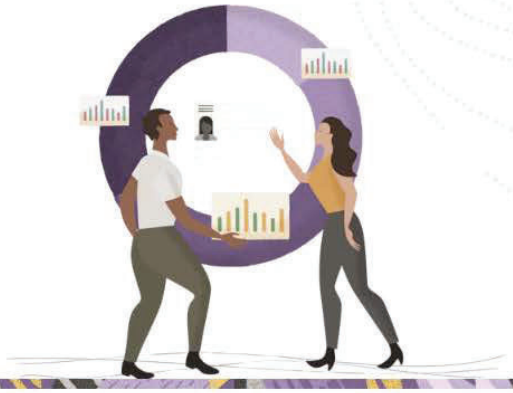
Note that some data types aren't supported. You'll see an error message if the data source contains unsupported data types.

Oracle Analytics supports the following base data types:

- **Number Types** — SMALLINT, SMALLUNIT, TINYINT, TINYUINT, UINT, BIT, FLOAT, INT, NUMERIC, DOUBLE
- **Date Types** — DATE, DATETIME, TIMESTAMP, TIME
- **String Types** — LONGVARCHAR, CHAR, VARCHAR

Oracle Siebel CRM

Utilize a complete, enterprise grade CRM solution, capable of extreme scale and performance for even the most complex organizations. Oracle Siebel CRM has unrivalled customization and integration capabilities, an open architecture for a truly personalized user experience, and can be deployed either on-premises or in the cloud. It's a key component of Oracle's customer experience (CX) and industry solution strategy.



Siebel CRM in the Oracle Cloud

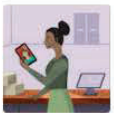
Reduce TCO, improve performance and agility, and enhance your Siebel CRM solution by moving it to Oracle Cloud Infrastructure (OCI).

Learn about OCI

Complete industry solutions

Deliver real value with broad, rich, industry-specific functionality that paves the way for a complete CX transformation.

Learn about Industries



Enhance Siebel CRM

Complement and augment Siebel CRM with Oracle CX applications. Reimagine CRM with a CX mindset across marketing, sales, and customer service.

Learn about CX

Siebel CRM transformation

WINDTRE transforms from telco to digital service provider

Learn how WINDTRE eliminated silos and complexity to achieve agility, resiliency, and reliability so they could evolve their service offering beyond that of a traditional telco.

Read their story

Explore Oracle Siebel CRM

35

- Sales
- Marketing
- Service
- Commerce
- User experience
- **Application framework**
- Platform

Application framework

Utilize a sophisticated and robust application framework to configure business rules and automate processes—all from within a single application. This DevOps framework orchestrates the delivery of application updates at near zero downtime, aligning to your corporate IT policies.

Web Tools (IDE)
Siebel CRM offers almost unlimited configuration capabilities. Configure Siebel CRM applications from anywhere by using a browser and Siebel Web Tools. Developers can use Workspaces, a sandbox that lets you develop and test configurations without affecting other users.

Parallel development
Developers can use Workspaces to support parallel application development. Many developers can work on the same objects at once, with full versioning mechanism and governance to track changes. Ensure maximum productivity with a flexible, hierarchical framework for building features and releases.

Automated testing
Test automation interfaces optimize your applications testing process. Eliminate many of the well-known pain points intrinsic to generic test automation technologies. Create test suites using intuitive click-to-record features and execute test runs with the flexibility of data-driven dynamic

Performance metrics monitoring
Identify performance problems automatically with Siebel Application Response Management (ARM). Collect critical performance and timing data, making it possible to profile the execution of requests throughout Siebel CRM.

Usage pattern tracking
Allow administrators to review details about when and how often users are accessing all parts of a Siebel CRM application. Use the collected data with analytical tools to improve productivity, onboarding, adoption, and user experience.

Business rules and services
In addition to many options for UX customization, Siebel CRM supports customized business rules, scripting, and workflows. Define your custom business processes and orchestrate business services between your front-office CRM and back-office (ERP) applications.

Enhance business rules with Oracle Intelligent Advisor
Integrate Siebel CRM with Oracle Intelligent Advisor to easily automate business processes, rules, regulations, and policies. Deliver up-to-date, accurate advice within business processes across all