Oracle® Communications Data Model

Installation Guide

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Preface

The *Oracle Communications Data Model Installation Guide* describes how to install and configure Oracle Communications Data Model.

Audience

This guide is intended for anyone responsible for installing Oracle Communications Data Model on a supported operating system platform.

Installation of Oracle Communications Data Model requires basic knowledge of Oracle Database, Oracle OLAP, Oracle Data Mining, and Oracle Business Intelligence Suite Enterprise Edition.

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

For more information about Oracle Communications Data Model, see the following documents in the Oracle Communications Data Model documentation set:

- *Oracle Communications Data Model Implementation and Operations Guide*

- *Oracle Communications Data Model Reference*

- *Oracle Communications Data Model Release Notes*

- *Oracle Communications Data Model Adapters and Analytics Installation Guide*

- *Oracle Communications Data Model Adapters and Analytics User's Guide*

Conventions

The following text conventions are used in this document:

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

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Hardware and Software Requirements

This chapter describes the hardware and software requirements of Oracle Communications Data Model:

- Supported Platforms

- Hardware Requirements

- Software Requirements

Before you install Oracle Communications Data Model, you must verify that all hardware and software requirements are met.

Supported Platforms

Oracle Communications Data Model is supported on the following platforms. For each platform, the given operating system version or later versions are required:

- Linux *x*86-64

    - Asianux Server 3 SP2 and higher

    - Oracle Linux 5 Update 2 and higher

    - Oracle Linux 5 Update 5 (with the Oracle Unbreakable Enterprise Kernel for Linux)

    - Red Hat Enterprise Linux 5 Update 2

    - Red Hat Enterprise Linux 5 Update 5 (with the Oracle Unbreakable Enterprise Kernel for Linux)

    - Red Hat Enterprise Linux 6

    - SUSE Linux Enterprise Server 10 SP2

    - SUSE Linux Enterprise Server 11

- Oracle Solaris on SPARC (64-bit)

    - Oracle Solaris 10 U6 (5.10-2008.10)

    - Oracle Solaris 11 11/11 SPARC

- Oracle Solaris on x86-64 (64-bit)

    - Oracle Solaris 10 U6 (5.10-2008.10)

    - Oracle Solaris 11 11/11 X86

- IBM AIX on POWER Systems (64-bit)

  - AIX 6.1 TL 02 SP1 ("6100-02-01"), 64-bit kernel

  - AIX 7.1 TL 0 SP1 ("7100-00-01-1037"), 64-bit kernel

Hardware Requirements

The Oracle Database installation guide for your platform includes procedures for checking that your installation meets the hardware and operating system requirements for Oracle Database.

Additionally, for a complete installation of Oracle Communications Data Model, the minimum hardware requirement is disk space of at least 10 GB.

The minimum hardware requirement for Oracle Communications Data Model Sample Reports installation is disk space of at least 25 GB.

Software Requirements

The minimum software requirements for Oracle Communications Data Model are as follows:

- Operating System: For details of supported platforms, see "Supported Platforms".

- Oracle Database, including the options specified in "Oracle Database Requirements"

- Oracle Business Intelligence Suite Enterprise Edition 11*g* (11.1.1.7 or later). See "Oracle Business Intelligence Suite Enterprise Edition" (this is optional for installing Oracle Communications Data Model and the Reports, but is required to view and use the reports).

- Oracle Data Integrator Enterprise Edition 11*g* (11.1.1.5.0 or later). See "Oracle Data Integrator Enterprise Edition" (this is optional for Oracle Communications Data Model component installation but is required to use certain optional Add-on adapters).

- Oracle GoldenGate 11*g* (11.1.1.1 or later). See "Oracle GoldenGate" (this is optional for Oracle Communications Data Model component installation but is required to use certain optional Add-on adapters, depending on whether you are using real-time feed with the adapter).

> **Note:**
>
> The recommended patches and software versions are accurate as of product release. For the latest recommendations for database supported platforms, see https://support.oracle.com/.

Oracle Database Requirements

Oracle Communications Data Model installation requires one of the following Oracle Database releases:

- Oracle Database 12c Release 1 (12.1) Enterprise Edition (12.1.0.2 or later)

- Oracle Database 11*g* Release 2 Enterprise Edition (11.2.0.4 or later)

Installation of the Oracle Communications Data Model component requires the following database options:

- Oracle Partitioning

- Oracle Online Analytical Processing (OLAP)

- Oracle Data Mining (for Oracle Database 12*c* Release 1 Oracle Advanced Analytics option)

> **Tip:**
>
> To confirm that you have Oracle Data Mining and OLAP options installed, follow the instructions outlined in "Confirming that Oracle Data Mining and OLAP Options are Installed".

> **Note:**
>
> When you install Oracle Database ensure that the database character set is Unicode (AL32UTF8) to support multilanguage installations; Oracle Communications Data Model supports the installation of English and nine other languages.

After you download and install the database, upgrade to the latest patch. Patches are available from My Oracle Support at the following location:

http://support.oracle.com

Oracle Business Intelligence Suite Enterprise Edition

You must install Oracle Business Intelligence Suite Enterprise Edition to view and to use the Oracle Communications Data Model reports (Oracle Business Intelligence Suite Enterprise Edition is not required for the installation of the Oracle Communications Data Model component and the installation of Oracle Communications Data Model Reports is valid without Oracle Business Intelligence Suite Enterprise Edition installed).

Oracle Business Intelligence Suite Enterprise Edition 11.1.1.7 can be downloaded from the "Oracle Business Intelligence 11*g* downloads" link on Oracle Technology Network at:

http://www.oracle.com/technetwork/middleware/bi-enterprise-edition/downloads/index.html

Installation instructions are included in the documentation.

Oracle Data Integrator Enterprise Edition

If you install Application Adapters, you must also install Oracle Data Integrator Enterprise Edition. Oracle Data Integrator Enterprise Edition 11*g* (11.1.1.5.0) can be downloaded from Oracle Technology Network at:

http://www.oracle.com/technetwork/middleware/data-integrator/downloads/index.html

Installation instructions are included in the documentation.

> **Note:**
>
> When you install Oracle Data Integrator Enterprise Edition 11*g*, at the Step: Repository Configuration, choose the "Skip Repository Configuration" option.

For more information, see

http://www.oracle.com/technetwork/middleware/data-integrator/
documentation/index.html

For more information on Oracle Communications Data Model Adapters, see *Oracle Communications Data Model Adapters and Analytics User's Guide*.

Oracle GoldenGate

If you install Application Adapters, using, installing, and configuring Oracle GoldenGate is optional depending on whether you want to use real-time feeds.

Oracle GoldenGate 11*g* (11.1.1.1.0) can be downloaded from Oracle Technology Network at:

http://www.oracle.com/technetwork/middleware/goldengate/
downloads/index.html

Installation instructions are included in the documentation. For more information, see

http://www.oracle.com/technetwork/middleware/goldengate/
documentation/index.html

For more information on Oracle Communications Data Model Adapters, see *Oracle Communications Data Model Adapters and Analytics User's Guide*.

2

Introduction to Oracle Communications Data Model Installation

This chapter describes how to install Oracle Communications Data Model and other components you use to create an Oracle Communications Data Model data warehouse:

- Types of Installations Provided for Oracle Communications Data Model

- Overview of the Installation Process

Types of Installations Provided for Oracle Communications Data Model

Using the Oracle Universal Installer you can perform two types of Oracle Communications Data Model installation:

- Installation of the Oracle Communications Data Model component. You *must* install this component to create an Oracle Communications Data Model data warehouse.

- Installation of reports and schemas that you can use for ideas about how to design your own reports. Installing the reports is optional.

Different items are installed depending on whether you install the database objects, or the reports and schemas.

Note:

Use the separate Add-ons installer to install Oracle Communications Data Model Add-ons:

- **Oracle Communications BRM Adapter**

- **Oracle Communications NCC Adapter**

- **Oracle Communications Social Network Analytics**

- **Oracle Communications Billing Analytics**

- **Oracle Communications Policy and Charging Analytics**

For more information on Add-ons, see *Oracle Communications Data Model Adapters and Analytics Installation Guide*.

Communications Data Model Installation

When you perform a **Communications Data Model** installation of Oracle Communications Data Model, the Oracle Universal Installer installs the Oracle

Communications Data Model component without data. Specifically, the installer creates the following schema in the target database:

- `ocdm_sys` which is the main schema for Oracle Communications Data Model. This schema contains all the relational and OLAP components of Oracle Communications Data Model, including the Oracle Communications Data Model data mining tables. This schema also contains all the mining components of Oracle Communications Data Model.

> **See:**
>
> For detailed information about all created objects in the `ocdm_sys` schema, see the *Oracle Communications Data Model Reference*.

There is no data in this schema. You need to populate data into the schema.

Sample Reports Installation

When you perform a **Sample Reports** installation of the Oracle Communications Data Model, the installer creates the Oracle Communications Data Model sample schema in the target database. Specifically, the installer installs:

- The following files that provide the data for the reports:

  - `ocdm_sample.dmp.zip` which is a dump file of the schemas that contain the sample data for the relational and data mining components of Oracle Communications Data Model.

    > **Tip:**
    >
    > The default user name for the schema is `ocdm_sample`.

- The following files that define and create the sample reports:

  - `ocdm.rpd`

  - `ocdmwebcat.zip`

Oracle Communications Data Model Home Directory Structure

The installation image contains the following directories under *ORACLE_HOME*/ocdm:

- `adons`: when you install Add-ons, this directory contains the files required for the selected optional adapters or analytics subproducts.

- `report`: which contains the sample report files for Oracle Communications Data Model installation.

- `utl`: which contains metadata and TM Forum KPI information. The TM Forum provides business-critical industry standards and expertise to enable the creation, delivery, and monetization of digital services. For more information on TM Forum, see

  http://www.tmforum.org/

- `pdm`: which contains the physical schema dump, creation scripts, and lookup value population in subdirectories:

Subdirectory	Description
relational	Relational schema installation scripts and relational related files
relational/ddl/ocdm/calendar	Calendar data population package
relational/ddl	Relational schema installation scripts
relational/flexible_hierarchy	Flexible hierarchy scripts
relational//ddl/ocdm/intra_etl	Intra-ETL and related files
relational/sample_schema	Physical sample schema
mining	Data mining scripts and related files
olap	OLAP scripts and related files

Overview of the Installation Process

Installation of Oracle Communications Data Model requires the following tasks:

1. Read *Oracle Communications Data Model Release Notes* to identify any last minute changes.

2. Verify that your system is one of the supported platforms and that it satisfies the hardware and software requirements as described in Hardware and Software Requirements.

3. Identify and perform any necessary preinstallation tasks, as described in "Preinstallation Tasks".

4. Install the Oracle Communications Data Model component or the Oracle Communications Data Model reports as described in "Running the Installer".

   Tip:

   You can also perform a silent installation, see "Installing Using a Silent Installation" for more information.

5. Identify and perform any necessary postinstallation tasks, as described in "Postinstallation Tasks".

6. Install the additional components that you need to create an Oracle Communications Data Model data warehouse or run the reports, as described in Installation of Additional Components .

   Note:

   To deinstall Oracle Communications Data Model, you do *not* simply run the Oracle Universal Installer in deinstall mode. To deinstall Oracle Communications Data Model, follow the directions in Backup_ Recovery_ and Deinstallation of Oracle Communications Data Model .

> **Note:**
>
> You *must* deinstall Oracle Communications Data Model before you reinstall it over an existing version of Oracle Communications Data Model.

3

Installation of Oracle Communications Data Model

This chapter describes how to install Oracle Communications Data Model:

- Preinstallation Tasks
- Running the Installer
- Installing Using a Silent Installation
- Postinstallation Tasks

Preinstallation Tasks

Before you install the Oracle Communications Data Model, perform the following tasks:

- Back up the Oracle Database.

- Ensure that the software required for Oracle Communications Data Model is installed, as described in "Ensuring Required Software is Installed".

- Set the maximum processes initialization parameter, as described in "Changing the Default Value for the Maximum Processes Initialization Parameter".

- Increase the maximum number of data files, as described in "Changing the Maximum Data Files Option".

- If you are using the Oracle Database Vault, disable the option, as described in "Disabling Oracle Database Vault".

- Ensure that the `tnsnames.ora` file includes a value for `SERVICE_NAME`, as described in "Ensuring a Value is Set for the Service Name".

Ensuring Required Software is Installed

As discussed in "Software Requirements", you must have certain software installed before you can successfully install the Oracle Communications Data Model component or the Oracle Communications Data Model sample data and reports.

Take the following steps to ensure that for each type of installation, the required software is installed:

- Before you install Oracle Communications Data Model:

  - Confirm that the required database options are installed by following the steps outlined in "Confirming that Oracle Data Mining and OLAP Options are Installed".

- Before you install the sample data and reports for Oracle Communications Data Model, confirm that Oracle Business Intelligence Suite Enterprise Edition is installed as described in "Confirming that Oracle Business Intelligence Suite Enterprise Edition is Installed".

- Before you install the sample data and reports for Oracle Communications Data Model, confirm that Confirming that Oracle Business Intelligence Developer Client Tools Installer is Installed as described in "Confirming that Oracle Business Intelligence Developer Client Tools Installer is Installed".

Confirming that Oracle Data Mining and OLAP Options are Installed

To check that the Oracle Data Mining and OLAP options are installed, log in as SYS and enter the following SQL queries:

```
SELECT VALUE FROM V$OPTION WHERE PARAMETER ='Data Mining';
SELECT VALUE FROM V$OPTION WHERE PARAMETER ='OLAP';
```

If these queries return TRUE, the options are installed.

Confirming that Oracle Business Intelligence Suite Enterprise Edition is Installed

To test that Oracle Business Intelligence Suite Enterprise Edition is installed, open the following link in a browser.

```
http://hostname:7001/analytics
```

The sample Oracle Business Intelligence Suite Enterprise Edition login window is displayed.

If Oracle Business Intelligence Suite Enterprise Edition is not installed, see "Oracle Business Intelligence Suite Enterprise Edition".

> **Note:**
>
> The 7001 value in the link is the value of the default Oracle Business Intelligence Suite Enterprise Edition port; if you specified a different port when you installed Oracle Business Intelligence Suite Enterprise Edition, use the value for that port.

Confirming that Oracle Business Intelligence Developer Client Tools Installer is Installed

Select the version of Oracle Business Intelligence Developer Client Tools Installer according to the version of Oracle Business Intelligence Suite Enterprise Edition. For example, if the version of Oracle Business Intelligence Suite Enterprise Edition is 11.1.1.7.0, then select Oracle Business Intelligence Developer Client Tools Installer version is 11.1.1.7.0.

For more information, see:

```
http://www.oracle.com/technetwork/middleware/bi-enterprise-
edition/downloads/bus-intelligence-11g-165436.html
```

Changing the Default Value for the Maximum Processes Initialization Parameter

Oracle Communications Data Model requires that the initial value for the PROCESSES initialization parameter be set to a value greater than the default database installation value.

How to determine the current value for the PROCESSES parameter

To determine the current value for the maximum processes parameter, log in to the Oracle Database as DBA, and then execute the following SQL statement:

```
show parameter processes;
```

How to change the value for the maximum processes

To change the value for the maximum processes, issue the following statements. Depending on your database options, the value specified for processes should be set to a minimum value greater than or equal to 250.

```
alter system set processes=250 scope=spfile;
shutdown immediate
startup
```

Changing the Maximum Data Files Option

Oracle Communications Data Model supports the partition of transaction-related fact tables according to your data volume estimation. You can specify the start year, end year and then the transaction related fact tables are partitioned by the date as one partition for each month.

In order to support the partition of transaction-related fact tables, you might need a different value for the maximum number of data files that is presently specified for the database.

How to determine the value for maximum number of data files

Use the following formula to determine the value that you need for the maximum number of data files:

```
Maximum Datafiles = Default Value + 300 + ((End year) - (Start year) + 1) * 12
```

How to determine the current value for the maximum number of data files

To determine the current value for the maximum number of data files, log in to the Oracle Database as DBA, and then execute the following SQL statement.

```
show parameter db_files
```

In the results for this statement, the value column shows the current maximum number of data files.

How to change the value for the maximum number of data files

To change the value for the maximum number of data files, issue the following statements where *new_number* is the new value that you want to specify.

```
alter system set db_files = new_number scope = spfile;
shutdown immediate
startup
```

Disabling Oracle Database Vault

The Oracle Communications Data Model installer requires additional steps on a Vault-enabled database. For an Oracle Database with the Oracle Database Vault enabled, take the following steps to disable Oracle Database Vault before you install Oracle Communications Data Model.

To find out if the Oracle Database is Vault-enabled, do the following:

```
SELECT * FROM V$OPTION WHERE PARAMETER = 'Oracle Database Vault';
```

If this command returns true, then the Oracle Database Vault is enabled.

To disable the Oracle Database Vault, do the following:

1. On UNIX systems, ensure that the environment variables, ORACLE_HOME, ORACLE_SID, and PATH are correctly set.

2. Log in to SQL*Plus as user SYS with the SYSOPER privilege.

3. Shut down the database.

4. From the command line, stop the Database Control console process and the listener. For example:

```
sqlplus sys as sysoper
Enter password: password
SQL> SHUTDOWN IMMEDIATE
SQL> EXIT
$ emctl stop dbconsole
$ lsnrctl stop listener_name
```

   For Oracle RAC installations, shut down each database instance as follows:

```
$ srvctl stop database -d db_name
```

5. Disable Oracle Database Vault with the following commands (this is a UNIX system example):

```
cd $ORACLE_HOME/rdbms/lib
make -f ins_rdbms.mk dv_off
cd $ORACLE_HOME/bin
relink all
```

   For Oracle RAC installations, run these commands on all nodes.

6. Startup the Oracle Database, Database Control console process, and listener. For example, on UNIX systems, log in to SQL*Plus as user SYS with the SYSOPER privilege and restart the database. Then from the command line, restart the Database Control console process and listener. For example:

```
sqlplus sys as sysoper
Enter password: password
SQL> STARTUP
SQL> EXIT
$ emctl start dbconsole
$ lsnrctl start listener_name
```

   For Oracle RAC installations, restart each database instance as follows:

```
$ srvctl start database -d db_name
```

After you have installed Oracle Communications Data Model, you reenable Oracle Database Vault, as described in "Reenabling Oracle Database Vault".

For more information, see *Oracle Database Vault Administrator's Guide.*

Ensuring a Value is Set for the Service Name

Ensure that in tnsnames.ora file, the service name is provided. To do this, perform the following steps:

1. Go to the directory: `$ORACLE_HOME/network/admin`.

2. Edit `tnsnames.ora` to make sure the `SERVICE_NAME` value is provided. For example:

```
orcl11g =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = sample.com)(PORT = 1521))
(CONNECT_DATA =
(SERVER = DEDICATED)
(SERVICE_NAME = orcl)
)
)
```

Running the Installer

Before you install Oracle Communications Data Model, perform the necessary preinstallation tasks described in "Preinstallation Tasks".

> **Note:**
>
> You must install Oracle Communications Data Model on the localhost where the database server is located. You can determine the value of your localhost by issuing the following command where *db_name* is the name of your Oracle database.
>
> ```
> tnsname db_name
> ```

Follow these steps to install Oracle Communications Data Model:

1. Log in using the user ID that you plan to use to run the installation. You should use the same user ID to install Oracle Communications Data Model as used to install the Oracle Database and Oracle Business Intelligence Suite Enterprise Edition.

2. Set the `ORACLE_HOME` environment variable to the location of the database where you want to install Oracle Communications Data Model.

   For example, suppose Oracle Home is in the directory `/loc/app/oracle/product/dbhome`

   In a Bourne, Bash, or Korn shell, use these commands to set `ORACLE_HOME`:

   ```
   $ ORACLE_HOME=/loc/app/oracle/product/dbhome
   $ export ORACLE_HOME
   ```

   In a C shell, use this command to set `ORACLE_HOME`:

   ```
   % setenv ORACLE_HOME /loc/app/oracle/product/dbhome
   ```

3. Start the installer from the directory that contains the Oracle Communications Data Model installation files:

   ```
   cd directory-containing-OCDM_installation-files
   ./runInstaller
   ```

4. The **Welcome** page is displayed. Click **Next**.

5. In the **Select Installation Type** page, select the type of Oracle Communications Data Model installation that you want to perform:

- If you want to install the Oracle Communications Data Model component, select **Communications Data Model**. Making this selection performs the installation as described in "Communications Data Model Installation".

- If you want to install the Oracle Communications Data Model reports and sample data, select **Sample Reports**. Making this selection performs the installation as described in "Sample Reports Installation".

Oracle Communications Data Model supports English and 9 other languages. To add support for one language in addition to English, click **Product Languages** and select the language.

Click **Next**.

6. In the **Specify Home Details** page, verify that the **Name** and **Path** correspond to the database in which you want to install Oracle Communications Data Model. You can click **Browse** to navigate to any valid local data file path.

   Click **Next**.

7. In the **Product-Specific Prerequisite Checks** page, if one or more items are flagged, manually verify that your environment meets the minimum requirements. For details about performing this manual verification, click the flagged item and review the details in the box at the bottom of the page.

   When the status of all items are checked as **Succeeded**, click **Next**.

8. In the **Specify Database Connection Information** page, provide the following information:

   - Select the **Net Service Name** which is the alias used for a connect descriptor to connect to the Oracle Database where Oracle Communications Data Model will be installed.

     Tip:

     A net service name is a simple name for a service that resolves to a connect descriptor. Net service names are populated from the `OracleHome/ network/admin/tnsnames.ora` file.

   - Enter the **Password for SYSTEM user** of the Oracle Database where Oracle Communications Data Model will be installed.

   Click **Next**.

9. The **Specify OCDM Schema Information** page is displayed when you select to install the component, **Communications Data Model**. In this dialog specify where all the data files that correspond to the Oracle Communications Data Model tablespace should reside:

   - If you do *not* want to use the Automatic Storage Management (ASM) feature in Oracle Database, but instead want to explicitly specify a folder name, select **File System** and enter a folder name. You can click **Browse** to navigate to any valid local data file path.

     Click **Next**.

   - If you have stored your Oracle database files using the Automatic Storage Management (ASM) feature, and you also want store Oracle Communications

Data Model data files using ASM, select **Automatic Storage Management (ASM)**.

Click **Next**.

In the **Select ASM Disk Group** page, select the disk group in which you want to install the Oracle Communications Data Model data files.

Click **Next**.

10. The **Specify OCDM Sample Schema Information** page displays when you select to install the **Sample Reports**. In this dialog you specify where all the data files that correspond to the Oracle Communications Data Model sample schemas should reside:

   • If you do *not* want to use the Automatic Storage Management (ASM) feature in Oracle Database, but instead want to explicitly specify a folder name, select **File System** and enter a folder name. You can click **Browse** to navigate to any valid local data file path.

     Click **Next**.

   • If you have stored your Oracle database files using the Automatic Storage Management (ASM) feature, and you also want store Oracle Communications Data Model data files using ASM, select **Automatic Storage Management (ASM)**.

     Click **Next**.

     In the **Select ASM Disk Group** page, select the disk group in which you want to install the Oracle Communications Data Model data files.

     Click **Next**. When you install the sample reports, the next page shows the installer Summary that summarizes the information that you specified, as shown in step 13.

11. In the **Specify Calendar Date Range** page, specify the calendar date range by providing values for **Start Date** and **Number of Years**. The installer uses this information to populate the calendar data. A recommended **Number of Years** value is 15 years. Specifying larger **Number of Years** values proportionally increases the time it takes to implement the partitioning portion of Oracle Communications Data Model install activity. The start year specified with **Start Date** should be the lowest possible dates from your historical data load (lowest possible CDR date typically). There is no easy method to incrementally extend the time dimension, so your initial choice for **Number of Years** should be specified to meet your needs for a reasonably long time.

   Start Date must be in the format YYYY-MM-DD; for example, 2011-01-01 stands for January 1, 2011. **Number of Years** must be a whole number.

   > **Note:**
   >
   > These calendar dates have nothing to do with the number of years you will effectively keep the data. The calendar as such is totally independent of the Information Lifecycle Management process you may use.

   Click **Next**.

12. In the **Specify Partitions for reference and base tables** page, specify the number of Second Level hash partitions for each entity, Organization, Customer, Access Method, Account, and Agreement. Specify a value for each field. If you enter an invalid value the installer shows a dialog displaying the valid values. For each value you specify, you should choose a value that is a power of 2 (for example: 4, 8, 16, 32, 64 and so on).

    Click **Next**.

13. The installer summarizes the information that you specified. Check that this information is correct. If necessary, click **Back** to return to previous screens and make corrections. When you are satisfied with the information, click **Install**.

14. The Oracle Communications Data Model component or sample reports are installed. If there are any problems, messages are displayed. After the installation finishes, the end of installation screen appears. Click **Exit** to exit the installer.

After you exit the installer, perform any necessary postinstallation tasks described in "Postinstallation Tasks". Then install the other components that you need to create an Oracle Communications Data Model warehouse, as described in Installation of Additional Components .

Installing Using a Silent Installation

A silent installation has no graphical output and no input by the user. It is accomplished by supplying Oracle Universal Installer with a response file and specifying the `-silent` flag on the command line. Use silent installation when you want the same installation parameter on more than one computer.

Selecting a Response File

Before performing a silent installation you must provide information specific to your installation in a response file. The installer fails if you attempt a to perform a silent installation using a response file that is not configured correctly. Response files are text files that you can create or edit in a text editor. The response file `cdm.rsp` is located in the `/response` directory (located in the directory that contains the Oracle Communications Data Model installation files). Edit the response file according to your requirements for silent installation. To use a response file, first copy it to your system.

> **Note:**
>
> You must install Oracle Communications Data Model on the localhost where the database server is located. You can determine the value of your localhost by issuing the following command where *db_name* is the name of your Oracle database.
>
> ```
> tnsname db_name
> ```

Editing the Response File

Use any text editor to edit the response file to include information specific to your system. You must specify values for variables in your response file. Each variable listed in the response file is associated with a comment, which identifies the variable type. For example:

```
string = "Sample Value"
Boolean = True or False
Number = 1000
StringList = {"StringValue 1", "String Value 2"}
```

The values that are given as <*Value* Required> must be specified for silent installation. Remove the comment from the variable values in the response file before starting the Oracle Communications Data Model installation.

Specifying a Response File and Starting the Installation

Before you specify a response file, ensure that all values in the response file are correct. To make Oracle Universal Installer use the response file at installation time, specify the location of the response file as a parameter when starting Oracle Universal Installer. To perform a silent installation, use the -silent parameter as follows:

```
./runInstaller -silent -responseFile absolute_path_and_filename
```

> **Caution:**
>
> During installation, response files may be copied to subdirectories in the Oracle home. If you have provided passwords or other sensitive information in your response files, then for security purposes you should delete them after completing and verifying the installation.

Silent Installation Log Files

The success or failure of silent installations is logged in the installActions.log file. Additionally, the silent installation creates the silentInstall.log file. The log files are created in the /oraInventory/logs directory. The silentInstall*Date_Time*.log file contains the following line if the installation was successful:

```
The installation of Oracle Communications Data Model was successful.
```

The corresponding installActions*Date_Time*.log file contains specific information regarding installation.

Security Tips for Silent Installation

The response file contains the installation password in clear text. To minimize security issues, follow these guidelines:

- Set the permissions on the response files so that they are readable only by the operating system user performing the silent installation.

- If possible, remove the response files from the system after the silent installation is completed.

Error Handling for Silent Installation

Values for variables that are of the wrong context, format, or type are treated as if no value were specified. Variables that are outside any section are ignored. If you attempt a silent installation with an incorrect or incomplete response file, or if Oracle Universal Installer encounters an error, such as insufficient disk space, then the installation will fail.

Postinstallation Tasks

After you install Oracle Communications Data Model, perform following steps as appropriate for your particular installation:

1. Obtain the IP Patch. The IP Patch includes additional documentation. To obtain the IP Patch and for the latest information about Oracle Communications Data Model patch sets, go to My Oracle Support at `https://support.oracle.com`.

2. Unlock the `OCDM_SYS` account, as described in "Unlocking the OCDM_SYS Account".

3. If you installed the Oracle Communications Data Model sample reports, then perform the following steps:

    a. Unlock the `OCDM_SAMPLE` account, as described in "Unlocking the OCDM_SAMPLE Account".

    b. If you do not want users to make changes to the schemas, grant only select privileges to those users as described in "Limiting User Privileges When You Install Sample Reports"

    c. Install the RPD and Web Catalog, as described in "Installing RPD and Web Catalog for Oracle Business Intelligence Suite Enterprise Edition".

4. Configure the OLAP working environment, as described in "Configuring the Working OLAP Environment".

5. Run the OLAP builds to load data, as described in "Running OLAP Builds to Load Data into Analytical Workspace".

6. If you want to enable Oracle Database Vault and you disabled it before installation, then reenable Oracle Database Vault, as described in "Reenabling Oracle Database Vault".

7. Ensure that the Oracle Communications Data Model objects are valid, as described in "Ensuring Oracle Communications Data Model Objects are Valid".

8. If necessary, change the values specified for `PGA_AGGREGATE_TARGET` and `WORKAREA_SIZE_POLICY`, as described in "Ensuring PGA_AGGREGATE_TARGET is Set to the Proper Value".

After performing these tasks, install other components that are required for your particular Oracle Communications Data Model warehouse, as described in Installation of Additional Components .

Unlocking the OCDM_SYS Account

After running the installer the `OCDM_SYS` account is locked. To unlock this account:

1. Log in to the database as DBA.

2. Unlock the account by issuing the following SQL statement.

```
alter user ocdm_sys account unlock;
```

Unlocking the OCDM_SAMPLE Account

After installing the Oracle Communications Data Model sample reports, the OCDM_SAMPLE account is locked. To unlock this account:

1. Log in to the database as DBA.

2. Unlock the account by issuing the following SQL statement.

   ```
   alter user ocdm_sample account unlock identified by password;
   ```

Limiting User Privileges When You Install Sample Reports

By default, when you perform a Sample Reports type of Oracle Communications Data Model installation, the sample reports connect to OCDM_SYS schema directly. For security reasons, you may want to grant only select privileges to users who will be working with these reports. To grant only select privileges, perform the following steps:

1. Create a dedicated reporting user (for example, OCDM_Report).

2. Grant select privilege for all Oracle Communications Data Model tables required for reporting to the user you created in Step 1. The easy way is to grant the select privilege for all Oracle Communications Data Model tables, which start with one of the following prefixes: DWA, DWB, DWD, DWR, DWL.

3. Create a view (or synonym) in OCDM_REPORT schema, pointing to the OCDM_SYS tables.

4. In the Oracle Business Intelligence Suite Enterprise Edition repository, change the connection information to point to the new schema.

Configuring the Working OLAP Environment

To set up a working OLAP environment for an Oracle Communications Data Model warehouse, configure the database with the following parameter and configuration settings:

- Set sga_target to 35% of available memory.

- Set pga_aggregate_target to 35% of available memory

- Set olap_page_pool_size=0. (This specifies dynamic page pool.)

- Set _olap_page_pool_hi=30 (that is, lower than default of 50).

- Set _olap_parallel_update_threshold and _olap_parallel_update_small_threshold to a high value (for example, ~2Gb.. 2147483647). These settings turn off parallel update for the analytic workspace.

- Set memory_max_target to value greater than SGA and PGA settings. This is the maximum amount of memory used for both SGA and PGA. The SGA and PGA settings specified are the minimum settings. (Note that failure to set memory_max_target leads to failure of instance startup (the next time these settings are validated which occurs if spfile had an older and distinct setting for memory_max_target).

The following statements illustrate changing these settings.

```
alter system set sga_target=1365M scope=spfile;
alter system set pga_aggregate_target=1365M scope=spfile;
alter system set memory_max_target=3030M scope=spfile;
alter system set olap_page_pool_size=0 scope=spfile;
alter system set "_olap_parallel_update_small_threshold"=2147483647
scope=spfile;
alter system set "_olap_page_pool_hi"=30 scope=spfile;
alter system set job_queue_processes=5 scope=spfile;
shutdown immediate;
startup;
```

Running OLAP Builds to Load Data into Analytical Workspace

The Oracle Communications Data Model Sample Reports installation loads an empty Analytical Workspace named OCDM into the sample schema `ocdm_sample`. You must load the sample schema data into the empty OLAP Analytical Workspace before you can run the reports or view data in the Sample Reports.

Note: the Non-OLAP sample reports such as the data mining related sample reports and relational sample reports work without performing the OLAP Analytic Workspace steps.

Perform the following steps to load data into the Oracle Communications Data Model OLAP Analytical Workspace (depending on your hardware and configuration, the total expected time to complete these steps may be up to one hour):

1. Go to the following directory containing the OLAP source files including the OLAP load scripts:

   ```
   cd $ORACLE_HOME/ocdm/pdm/olap
   ```

2. Review the script `ocdm_cube_historical_load.sql`. For sample schema OLAP loads, you do not need to make any changes to these scripts. This script starts an intra-ETL process, loads data into Analytical Workspace, and ends the intra-ETL process.

3. Login to `ocdm_sample` schema through SQL*Plus or SQL Developer and verify the entries in the table `DWC_OLAP_ETL_PARAMETER`. The entries in the table suitable for HISTORICAL load are:

   ```
   process_name='OCDM-OLAP-ETL'
   build_method='C'
   cubename='ALL'
   maxjobqueues=4
   calc_fcst='Y'
   no_fcst_yrs=2
   fcst_mthd='AUTO'
   fcst_st_yr='BY 2009'
   fcst_end_yr='BY 2010'
   other1=NULL
   other2=NULL
   ```

   For more information on the entries in the `DWC_OLAP_ETL_PARAMETER` table, see *Oracle Communications Data Model Reference*.

4. Run the script `ocdm_cube_historical_load.sql` from SQL*Plus to execute the HISTORICAL load:

   ```
   SQL> @ocdm_cube_historical_load.sql
   ```

5. After the load completes, review the contents of the file `ocdm_olap_hist_load.log` created in directory where you ran the script

shown in step 4. This load typically completes in 30-35 minutes (usually in less
than one hour). The typical output from a successful HISTORICAL load run is as
follows:

```
--Typical Output of the full load. :--

Running the Historical load with build method 'C':- PROMPT

Start an intra-etl process


PL/SQL procedure successfully completed.


Historical load attempts to load Non-Forecast and Forecast cubes ...

07:42:45 : Loading Non-Forecast Cube:ALL in
mode:C

07:42:45 : Building Non-Forecast Cube:ACM in
method:C

07:45:34 : Building Non-Forecast Cube:ADM in
method:C

07:46:33 : Building Non-Forecast Cube:AGRMNT in method:C
07:47:08 : Building Non-Forecast Cube:APM in
method:C

07:48:02 : Building Non-Forecast Cube:CCM in
method:C

07:48:50 : Building Non-Forecast Cube:CHRN in
method:C

07:50:04 : Building Non-Forecast Cube:CMSN in
method:C

07:50:50 : Building Non-Forecast Cube:COM in method:C
07:51:43 : Building Non-Forecast Cube:CSM in
method:C

07:52:51 : Building Non-Forecast Cube:IAM in
method:C

07:53:52 : Building Non-Forecast Cube:INV in
method:C

07:58:03 : Building Non-Forecast Cube:INVCM in
method:C

07:59:03 : Building Non-Forecast Cube:RVN in
method:C

08:01:04 : Building Non-Forecast Cube:SLS in method:C
08:04:16 : Building Non-Forecast Cube:TTRVN in
method:C

08:05:11 : Running Forecast programs and Building Forecast Cubes: ACM_FCST,
CSM_FCST, HSKM_FCST,
RVN_FCST
08:05:11 : Building All Forecast Cubes in
method:AUTO

08:05:11 : Building All Forecast Cubes in method:FCST_ACM ''BY 2009'' ''BY
2010''
1
```

```
PL/SQL procedure successfully completed.


Stop the currently running intra-etl process


PL/SQL procedure successfully completed.
```

6. The Oracle Communications Data Model OLAP Analytical Workspace is now successfully loaded with the data in the underlying schema.

Reenabling Oracle Database Vault

If you are using the Oracle Database Vault and you disabled it before installation as described in "Disabling Oracle Database Vault", reenable Oracle Database Vault by performing the following steps:

1. Shutdown the database, Database Control console process, and listener. For example on UNIX systems, ensure that the environment variables, ORACLE_HOME, ORACLE_SID, and PATH are correctly set. Log in to SQL*Plus as user SYS with the SYSOPER privilege and shut down the database. Then from the command line, stop the Database Control console process and listener. For example:

```
sqlplus sys as sysoper
Enter password: password
SQL> SHUTDOWN IMMEDIATE
SQL> EXIT
$ emctl stop dbconsole
$ lsnrctl stop listener_name
```

For Oracle RAC installations, shut down each database instance as follows:

```
$ srvctl stop database -d db_name
```

2. Enable Oracle Database Vault.

```
cd $ORACLE_HOME/rdbms/lib
make -f ins_rdbms.mk dv_on
make -f ins_rdbms.mk ioracle
```

3. Startup the Oracle Database, Database Control console process, and listener. For example, on UNIX systems, log in to SQL*Plus as user SYS with the SYSOPER privilege and restart the database. Then from the command line, restart the Database Control console process and listener. For example:

```
sqlplus sys as sysoper
Enter password: password
SQL> STARTUP
SQL> EXIT
$ emctl start dbconsole
$ lsnrctl start listener_name
```

For Oracle RAC installations, restart each database instance as follows:

```
$ srvctl start database -d db_name
```

4. For Oracle RAC installations, repeat these steps for each node on which the database is installed.

For more information, see *Oracle Database Vault Administrator's Guide.*

Ensuring Oracle Communications Data Model Objects are Valid

To ensure that all Oracle Communications Data Model objects are valid, log in to the database as DBA and recompile all objects in `ocdm_sys` by issuing the following SQL statements:

```
exec utl_recomp.recomp_serial('OCDM_SYS');
```

Ensuring PGA_AGGREGATE_TARGET is Set to the Proper Value

For good performance, you need to ensure that the `PGA_AGGREGATE_TARGET` is set to the proper value which depends on the physical RAM of your Database Server. You also need to ensure that the `WORKAREA_SIZE_POLICY` parameter is set to `AUTO`.

> **See Also:**
>
> For information on tuning the `PGA_AGGREGATE_TARGET` initialization parameter, see *Oracle Database Performance Tuning Guide*.

> **Note:**
>
> Setting `PGA_AGGREGATE_TARGET` to a nonzero value has the effect of automatically setting the `WORKAREA_SIZE_POLICY` parameter to `AUTO`.

Installing RPD and Web Catalog for Oracle Business Intelligence Suite Enterprise Edition

If you installed the Oracle Communications Data Model Oracle sample reports, you need to deploy the Oracle Communications Data Model RPD and Web Catalog on the Business Intelligence Suite Enterprise Edition 11*g* instance. For more information on deploying RPD and Web Catalog in BIEE, see *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*.

After you use the installer to install the sample reports, you can find the RPD file and the Web Catalog file in the `$ORACLE_HOME/ocdm/report` directory:

```
ocdm.rpd
```
```
ocdmwebcat.zip
```

Unzip the Web Catalog

Before you deploy the Web Catalog, you need to unzip `ocdmwebcat.zip`.

Update the RPD Connection Pool

Do the following to update the RPD connection pool:

1. Open Oracle Business Intelligence Developer Client Tools and select File->Open->Offline...,

    Browse to locate $ORACLE_HOME/ocdm/report/ocdm.rpd

2. Double click **Connection Pool** in ODWT at the Physical layer.

3. Update the Host, Port, Service and User name to point to Oracle Communications Data Model schema.

> **Note:**
>
> In addition, follow steps 2 and 3 to update the connection pool in OCDM_OLAP at the Physical layer.

4. Click **OK** to exit and then click **Save**.

5. Test the connection pool to check that it is successfully configured. Right click a table, such as DWA_ACCT_DEBT_MO in the ODWT.OCDM_SYS. Select, **Update Row Count**. If no errors are reported then the connection pool is successfully configured.

Deploy the RPD and Web Catalog

Perform the following steps to deploy the Oracle Communications Data Model RPD and Web Catalog.

1. Use your browser to open the weblogic Enterprise Manager portal:

   ```
   http://SERVERNAME:7001/em
   ```

   Log in with the weblogic admin ID and password.

   From the Business Intelligence tab select coreapplication, then select **Deployment** and click **Repository**. Next deploy the RPD and Web Catalog.

> **Note:**
>
> When you deploy the RPD you need to provide an RPD password. Contact Oracle Support to obtain a temporary RPD password.

2. Use your browser to open the weblogic console portal:

   ```
   http://SERVERNAME:7001/console/login/LoginForm.jsp
   ```

   Log in with your weblogic admin ID and password. Go to your security realm and create a user named ocdm and set a password for this user.

3. Follow the instructions to "Refreshing User GUIDs" to update the GUIDs. For more information, see *Oracle Fusion Middleware Security Guide for Oracle Business Intelligence Enterprise Edition*.

4

Installation of Additional Components

This chapter describes how to install Oracle components that you did not need to install before you installed the Oracle Communications Data Model component or sample reports, but that you will use when you are creating an Oracle Communications Data Model data warehouse:

- Install Oracle Business Intelligence Suite Enterprise Edition Catalog

- Instal Analytic Workspace Manager

Install Oracle Business Intelligence Suite Enterprise Edition Catalog

The sample reports provided with Oracle Communications Data Model are created using the Oracle Business Intelligence Suite Enterprise Edition. In order to modify these reports or to use them as the basis for creating new reports you must have installed Oracle Business Intelligence Suite Enterprise Edition and have created an Oracle Business Intelligence Suite Enterprise Edition catalog for Oracle Communications Data Model.

Installing Oracle Business Intelligence Suite Enterprise Edition

If you installed Oracle Communications Data Model sample reports, you installed Oracle Business Intelligence Suite Enterprise Edition as a preinstallation step before you ran the installer. If you installed the Oracle Communications Data Model component rather than the sample reports, then install Oracle Business Intelligence Suite Enterprise Edition by following the instructions given in "Oracle Business Intelligence Suite Enterprise Edition".

You also need to add the catalog. For more information, see "Installing RPD and Web Catalog for Oracle Business Intelligence Suite Enterprise Edition".

> **Tip:**
>
> To check that Oracle Business Intelligence Suite Enterprise Edition is installed, follow the instructions in "Confirming that Oracle Business Intelligence Suite Enterprise Edition is Installed".

Instal Analytic Workspace Manager

Although not required before you install Oracle Communications Data Model, you need to install the Analytic Workspace Manager to view and modify Oracle Communications Data Model OLAP cubes. Analytic Workspace Manager 11*g* is installed as a standalone product. The latest version of Analytic Workspace Manager is available at the Oracle OLAP home page at

`http://www.oracle.com/technetwork/database/options/olap/index.html`

Installation instructions are included in the documentation.

5

Backup, Recovery, and Deinstallation of Oracle Communications Data Model

This chapter explains how to deinstall Oracle Communications Data Model:

- Backing Up and Recovering Oracle Communications Data Model
- Performing Predeinstallation Tasks
- Executing the Deinstallation Script
- Performing Post-Deinstallation Tasks

Backing Up and Recovering Oracle Communications Data Model

Backing up and recovering Oracle Communications Data Model involves:

- Exporting Oracle Communications Data Model
- Importing Oracle Communications Data Model

Exporting Oracle Communications Data Model

Do the following to backup Oracle Communications Data Model:

- Backup the OCDM_SYS schema by executing the expdp utility.

  This utility exports all physical tables containing the data, any OLAP analytical workspaces, and trained mining models. For more information, see *Oracle Database Utilities*.

Importing Oracle Communications Data Model

Do the following to restore Oracle Communications Data Model from the backup files:

- Restore the OCDM_SYS schema by executing the impdp utility.

  This utility imports all physical tables containing the data, OLAP analytical workspaces, and trained mining models. For more information, see *Oracle Database Utilities*.

Overview: Deinstalling Oracle Communications Data Model

To deinstall Oracle Communications Data Model, you do *not* simply run Oracle Universal Installer in deinstall mode. Instead, you perform the following tasks:

1. Backup Oracle Communications Data Model, as described in "Exporting Oracle Communications Data Model".

2. Stop any sessions that use the Oracle Communications Data Model schemas, as described in "Performing Predeinstallation Tasks".

3. Execute the deinstallation script, as described in "Executing the Deinstallation Script".

4. If you are deinstalling the sample reports, perform the tasks described in "Performing Post-Deinstallation Tasks".

> **Note:**
>
> To deinstall Oracle Communications Data Model, you do *not* simply run the Oracle Universal Installer in deinstall mode.

Performing Predeinstallation Tasks

The deinstallation script removes the ocdm_sys schema. Consequently, before you run the deinstallation script, ensure that there are no active sessions that connect to the ocdm_sys schema.

Identifying if the ocdm_sys schema is active

To identify if there are active sessions connecting to the schema take the following steps:

1. Sign in as DBA.

2. Execute the following SQL statements:

```
select SID,SERIAL# from v$session where USERNAME='OCDM_SYS';
```

If this query returns a session ID, then there is an active session.

Example 5-1   Ending an active ocdm_sys schema session

To end an active session execute the following statement in which you replace *sid* and *serial* that are the session ID and serial number returned by the earlier queries.

```
alter system kill session 'sid,serial' ;
```

Executing the Deinstallation Script

To execute the Oracle Communications Data Model deinstallation script:

1. Set the ORACLE_HOME to the location of the database on which to deinstall Oracle Communications Data Model.

   For example, suppose that Oracle Home is in the directory /loc/app/oracle/product/dbhome

   In a Bourne, Bash, or Korn shell, use these commands to set ORACLE_HOME:

```
$ ORACLE_HOME=/loc/app/oracle/product/dbhome
$ export ORACLE_HOME
```

   In a C shell, use this command to set ORACLE_HOME

```
% setenv ORACLE_HOME /loc/app/oracle/product/dbhome
```

2. Execute the Oracle Communications Data Model deinstallation script:

```
$ORACLE_HOME/ocdm/ocdm_deinstall.sh
```

3. When prompted, enter the SYSTEM password.

   The script deconfigures Oracle Communications Data Model and executes the Oracle Universal Installer in deinstall silent mode.

If you are deinstalling the sample reports, after the deinstallation script runs, perform the tasks described in "Performing Post-Deinstallation Tasks".

Performing Post-Deinstallation Tasks

If you are deinstalling the Oracle Communications Data Model sample reports, follow these steps to perform additional cleanup:

1. Delete ocdm.rpd in the directory *BIHome*/instances/instance1/
   bifoundation/OracleBIServerComponent/coreapplication_obis1/
   repository.

2. Delete the ocdmwebcat folder in *BIHome*/instances/instance1/
   bifoundation/OracleBIPresentationServicesComponent/
   coreapplication_obips1/catalog.

3. Delete the following line from *BIHome*/instances/instance1/config/
   OracleBIServerComponent/coreapplication_obis1/NQSConfig.INI:

```
Star   =   ocdm.rpd, DEFAULT
```

A

License Information

Product	Subproduct	Licensing Description
Oracle Communications Data Model		Oracle Communications Data Model is a standards-based, pre-built approach to communications data warehousing enabling a communications company to realize the power of insight more quickly. Oracle Communications Data Model includes the following: • Communications industry specific data model conformance certified with TM Forum's Information Framework (SID). • Physical implementation of the data model consisting of a foundation layer in third-normal-form schema, as well as dimensional models leveraging star schemas and OLAP cubes. • Automatic data movement (intra-ETL) to populate the dimensional models based on data from the foundation layer. • Pre-defined data mining models for churn prediction, churn factors, customer segmentation, customer sentiment, and others. • Pre-built sample reports and dashboards. **Prerequisites:** Oracle Communications Data Model requires the use of other Oracle software, which must be licensed separately. Please contact your Oracle sales representative for additional information.
Oracle Communications Data Model - Application Adapters	Oracle Communications Network Charging and Control Adapter for Oracle Communications Data Model	The Oracle Communications Network Charging and Control Adapter for Oracle Communications Data Model (NCC Adapter) extracts data from an Oracle Communications Prepaid Charging application and loads and transforms that data into an Oracle Communications Data Model environment. The NCC Adapter supports two options for data loading: • Standard - where data is loaded to Oracle Communications Data Model in customer defined intervals. • Real-Time - where data is loaded to Oracle Communications Data Model staging in near-real-time intervals as transactions occur in NCC. **Prerequisites:** NCC Adapter requires the use of other Oracle software, which must be licensed separately. Please contact your Oracle sales representative for additional information.
Oracle Communications Data Model - Application Adapters	Oracle Communications Billing and Revenue	The Oracle Communications Billing and Revenue Management Adapter for Oracle Communications Data Model (BRM Adapter) extracts data from an Oracle

Product	Subproduct	Licensing Description
	Management Adapter for Oracle Communications Data Model	Communications Billing and Revenue Management application and loads and transforms that data into an Oracle Communications Data Model environment. The BRM Adapter supports two options for data loading: • Standard - where data is loaded to Oracle Communications Data Model in customer defined intervals. • Real-Time - where data is loaded to Oracle Communications Data Model staging in near-real-time intervals as transactions occur in BRM. **Prerequisites:** BRM Adapter requires the use of other Oracle software, which must be licensed separately. Please contact your Oracle sales representative for additional information.
Oracle Communications Data Model - Application Adapters	Oracle Communications Policy Management Adapter for Oracle Communications Data Model	The Oracle Communications Policy Management Adapter for Oracle Communications Data Model (Policy Management Adapter) interfaces with an Oracle Communications Policy Management application using the Policy Event Records Distribution option to accept policy event records (PER) as well as policy reference data (PRD) and loads the data into an Oracle Communications Data Model environment. The Policy Management Adapter is developed using Java. **Prerequisites:** Policy Management Adapter requires the use of other Oracle software, which must be licensed separately. Please contact your Oracle sales representative for additional information. **Restricted Use:** The included Java Runtime Environment (JRE) is restricted to use solely to run the Oracle Communications Policy Management Adapter for Oracle Communications Data Model as provided by Oracle.
Oracle Communications Data Model - Analytic Applications	Oracle Communications Billing Analytics	Oracle Communications Billing Analytics is a separately licensed add-on option to Oracle Communications Data Model. Billing Analytics provides a set of reports and dashboards built using Oracle Business Intelligence Enterprise Edition. The reports and dashboards cover the following categories: • Billed Revenue - Revenue related metrics such as total revenue, ARPU, adjustments, collections, etc.; viewable across various parameters • Billing Efficiency - Based on TM Forum's business metrics, these reports are centered on a billing operations efficiency such as payments by payment method, % e-bills issued, % of bills adjusted, etc. • Customer Metrics - Customer acquisition and churn metrics viewable across various parameters • Prepaid Metrics - Prepaid specific metrics such as total, average recharges, disturbed recharge cycles, etc.; across various parameters • Usage Metrics - Usage specific metrics such as total minutes of usage, number of calls, top users (voice, data, SMS), across various parameters **Prerequisites:** Billing Analytics requires the use of other Oracle software, which must be licensed

Product	Subproduct	Licensing Description
		separately. Please contact your Oracle sales representative for additional information.
Oracle Communications Data Model - Analytic Applications	Oracle Communications Social Network Analytics	Social Network Analytics uses call detail records (CDRs) to identify the communities that exist based on the social interactions between users (for example. calls, texts, mms). Oracle Advanced Analytics (Data Mining) is used to determine some of the following: • Social relationship communities • Subscriber roles • Influence scores • Churn pressure • Community and subscriber value • Value at risk Results are stored in output tables, and displayed using Oracle Business Intelligence reports and dashboards. Customers can leverage this valuable information and use it for viral marketing campaigns as well as customer retention initiatives. **Prerequisites:** Social Network Analytics requires the use of other Oracle software, which must be licensed separately. Please contact your Oracle sales representative for additional information.
Oracle Communications Data Model - Analytic Applications	Oracle Communications Policy and Charging Analytics	Policy and Charging Analytics leverages policy event records (PER) and policy reference data (PRD), and optionally charging data that has been loaded into the appropriate Oracle Communications Data Model tables. It performs aggregation and calculation of various metrics using this data. Results are displayed in Oracle Business Intelligence reports and dashboards. The dashboards fall under the following categories: • Policy Execution • Quota Usage • Customer Metrics The information can be leveraged by operations teams in order to improve policy operations, as well as by marketing to aid in developing new offers. **Prerequisites:** Policy and Charging Analytics requires the use of other Oracle software, which must be licensed separately. Please contact your Oracle sales representative for additional information.

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