Oracle® Communications Data Model

Release Notes

Release 12.1.2

E84556-01

April 2017

Release 12.1.2 Changes

Provides release notes information for Oracle Communications Data Model.

Overview of Changes Release 12.1.2

With this release, Oracle Communications Data Model supports installation on Oracle Cloud.

See Also:

Oracle Communications Data Model Installation Guide

Overview of Changes Release 12.1.0.2

The Oracle Communications Data Model add-ons have been absorbed into Oracle Communications Analytics. For installation instructions for the Oracle Communications Data Model add-ons, see the *Oracle Communications Analytics Installation and System Administration Guide.*

Overview of Changes Release 12.1

The changes for Oracle Communications Data Model 12.1 were driven by:

- Market requests:
  - TMF SID evolution: for example: NFV (ZOOM project)
  - Generalization and use of 4G network / LTE
  - Integration of Big Data as a standard tool inside Decision Support System environments
- Customer requests (through the Customer Advisory Board and other meetings):
  - Oracle Database 12*c* adoption
  - Updates for problems reported
  - Integration with Oracle Applications (for example Oracle Communications products and new adapters)

- Oracle Offering evolution: Oracle and Oracle Communications Analytics group with the Communications Global Business Unit have been working on integrating the various technologies and products that enables communications service providers (CSPs) to jump-start their analysis for network optimization, customer experience, and data monetization.

In summary, changes were limited to allow for an easy migration from Oracle Communications Data Model 11.3.2.1 to Oracle Communications Data Model 12.1. Nonetheless, some changes in specific areas could impact an existing environment:

- Changes to Foundation layer
  1. LDM only (mistype, corrections, and so on)
  2. PDM only
  3. LDM and PDM (usually extensions)
- Changes to Analytic Layer
  1. Intra-ETLs corrections and performance improvement (and corresponding changes to derived and aggregate tables, where required)
  2. Mining and OLAP improvement
- Changes in Repository and Utilities
  1. Repository, dashboards and reports changes
  2. Utilities type of package
- Changes for security: Two new users: `OCDM_USER` and `OCDM_REPORT` are added during product installation.
  - `OCDM_USER` has the privilege to run `OCDM_SYS` package, it is used to run ETL, Mining, and OLAP packages.
  - `OCDM_REPORT` only has the privilege to select `OCDM_SYS` data, it is used for reports.

Overview of LDM and PDM Changes (page 3)
Provides an overview of Oracle Communications Data Model Logical Data Model and Physical Data Model changes for this Release.

New Features Release 12.1 (page 4)
Describes the Oracle Communications Data Model Release 12.1 new features and changes.

Known Issues (page 7)
Known issues for Oracle Communications Data Model 12.1

Issues Resolved (page 12)
Provides a summary table of bugs fixed in this release.

Documentation Updates for Release 12.1 (page 13)
Provides a list of the documentation in this release and an overview of documentation changes.

Overview of LDM and PDM Changes

Provides an overview of Oracle Communications Data Model Logical Data Model and Physical Data Model changes for this Release.

Improvement for Call Detail Records (CDRs)

The default Call Detail Records (CDR) containers were improved in several ways. Columns of the various CDR (Usage Events) have been unified (same field, same name, same meaning). Call Detail Records (CDR) have also been extended to include most GSMA fields (first/last cell A Number, first/last cell B Number, and so on) to allow a 1:1 mapping with input CDRs. Finally, ASN.1 fields have been added to the RAW CDR container, and MEDIATED CDR fields have been extended (for 1:1 mapping). Similar extensions have been applied to the errored CDRs (or suspended CDRs).

Oracle Communications Data Model 12.1 shows the introduction of late CDRs, that is, CDRs which are arriving at the Service Provider after most other CDRs, and mainly after the normal loading of those CDRs into Oracle Communications Data Model. This is typically the case of roaming CDRs. The main difference is that those CDRs need to be treated and partitioned by LOAD DATE instead of EVENT START DATE.

Ad-hoc is to be developed at installation time following the CSP rules of treatment of those CDRs, especially with respect to the finance view– in case of "as-is", "as was" report request.

Intra-ETL, those CDRs are included into the normal derived tables and processes of Oracle Communications Data Model.

Extensions for Mapping with Other Applications

Extensions have been implemented for market demands and to ease mapping and integration for some Oracle applications and Oracle Communications products.

Another important extension is provided for the Network Function Virtualization project in TeleManagement Forum (project ZOOM). Oracle Communications Data Model Release 12.1 contains the related entities for project ZOOM: NETWORK SERVICE, VIRTUAL FUNCTION, VIRTUAL RESOURCE and related areas to cover Network Function Virtualization analytics needs.

Finally, Oracle Communications Data Model Release 12.1 includes changes in the following areas:

- Geography: COUNTY and CITY are now separate with two distinct hierarchies (COUNTY or CITY to STATE).
- PRODUCT SUSBCRIPTION: A direct link has been added to Agreement which has consequences on performance (in updated intra-ETLs).

Smaller corrections and extensions were added to ease Oracle Communications Data Model usage and mapping or reporting:

- New Lookup tables to collect lists of codes: JEOPARDY TYPE, AGE GROUP, ACCOUNT BALANCE IMPACT REASON
- New columns in reference and base tables: in particular, ACCESS METHOD (Number area), ACCOUNT DEBT (notes), BUSINESS INTERACTION and so on.

- Metadata tables (for the metadata reports) are now part of the main Oracle Communications Data Model schema. These tables have names starting with "MD_".

New Features Release 12.1

Describes the Oracle Communications Data Model Release 12.1 new features and changes.

Analytic Layer and Data Mining Changes (page 4)
Provides an overview of Intra ETL improvements and extensions for data mining.

Overview Columns Added Renamed and Dropped (page 5)
Provides a summary of columns added, renamed and dropped.

Analytic Layer and Data Mining Changes

Provides an overview of Intra ETL improvements and extensions for data mining.

Describes new features for Oracle Communications Data Model Release 12.1 analytic layer and data mining.

Intra ETL Improvement

- Contact Center Package: Applying the right "number like" coding for lookup values.
- Account Debt Package: Performance improvement by leveraging temporary tables and reducing the number of joins.

Note:

In Release 12.1 all invoice related payment information should originate from INVOICE. If this is not the case, you need to extend the package to join and use DWB_ACCT_PYMT.

- Agreement, Count, and Revenue packages have improved performance with a direct link between Product Subscriptions and Agreements.
- Performance improvement of aggregates and cubes.
  - TTRVN cube removed (it was not used).
  - Load steps were removed from INV_FCST_STTSTC and SLS_FCST_STTSTC cubes.

Removal of Oracle Policy Adapter Specific Tables and Analytics

The tables of 11.3.2.3 that were specific to Oracle Charging Rules Function (PCRF)(for example,. DWB_PER_EVT) have been moved to the Oracle Policy Analytics applications and removed from Oracle Communications Data Model core.

If Policy Analytics is licensed, the same tables that were found in 11.3.2.1 are installed in a separate schema.

Extensions for Mining

- As part of the Oracle Communications Data Model, new files are included that support Oracle Data Miner (an Oracle SQL Developer extension). The standard PL/SQL interface for Oracle Communications Data Model mining is also provided. When you use the Oracle Data Miner GUI you must remove the default call to the intra-ETL that leverages the mining models. The only exception is if the models in the GUI are only used to create new models (copy and paste) for research in a sandbox.
- Training Data and Test data are now separated explicitly as part of the default process (in PL/SQL).

Note:

Oracle Data Miner repository requires Oracle Database 11.2.0.4 (or above).

In the Presentation Layer of the Data Model

- The default presentation layer is slightly changed. Some names shown have been aligned with the TMF SID and for the overall Oracle Communications Data Model naming conventions.
- The repository of OBIEE has been aligned with the changes of the foundation and analytic layers, in particular with the updated geography hierarchies. Some extensions that connect analytics in the analytic layer, but no reports show those analytics. These changes simplify the creation of new reports.

Overview Columns Added Renamed and Dropped

Provides a summary of columns added, renamed and dropped.

Provides overview information on Oracle Communications Data Model Release 12.1 changed columns.

Columns Added Renamed and Dropped

The columns STATUS CODE, EFFECTIVE FROM DATE and EFFECTIVE TO DATE have been removed from most lookup tables. These lookup tables in Oracle Communications Data Model by default never check for dates but only for codes (the only Primary key). Hence, the values should be up to date and should be always valid. If the meaning of a code change time, the new meaning should be applied or all intra-ETL and reports that use this lookup table should have a date condition to make sure the right meaning is used. That would not be recommended for performance and complexity reasons.

Some columns were duplicated or contained mistypes and one of them has been dropped:

- CELL PHONE_NO in Employee (and its subtypes such as CALL CENTER AGENT, SALE REPRESENTATIVE).
- SRVC_KEY1 in DWR_STRCT_SCHDLNG_SRVC

- SL_TAX, SL_TAX_LCL, SL_TAX_RPT (sale_tax) by SMS, MMS, UMS and Rated UDR events
- V in DWR_CRDT_SCR_PRVDR, HST_IND in DWR_NTWK_NODE, RECE_SPEC_KEY in DWR_IN_RUTNG_DVC
- Geo County Code was also removed from usage events as it was not clear which geography it was dealing with (party A number or B number, beginning or end of the call) and it was now duplicated with the cell ID start/end for calling or called number.
- Event Begin date was removed from several BSS type of event as it was duplicated with EVENT START TIME or INTERACTION START TIME
- EVENT PARTY INTERACTION has seen removed the CHANNEL KEY and BUSINESS UNIT CODE (double of SALES CHANNEL and/or INTERACTION TYPE CODE and ORGANIZATION BUSINESS UNIT KEY respectively).
- In Performance Specification (and its subtypes), ID, NAME and DESCRIPTION were removed because it was double with the PERFORMANCE SPEC KEY, CODE, NAME and DESCRIPTION.

Some incorrectly placed columns were removed in some super entities and their sub-entities: for example,. CMPST_PROD_SPEC_CHRG_TYP_CD (Composite Product Spec Charge type code) and PROD_OFR_PRICE_TYP_CD (Product Offer Price Type code) which had nothing to do in the Product Specification itself (those are part of and used in Product Offer Price by definition).

For IMPRESSION (DWB_IMPRESSION), most of the columns have been removed as it is now dealt with as part of the PROCESS type of event (and in particular INVOICE GENERATION).

There are several new columns to either better map existing sources or to help with performance (or to supply missing values). A total of about 10800 columns have been added.

Some important column changes include:

- CURRENCY CODE was added in every table dealing with monetary amounts and UOM_CD in other doubtful cases (for example, AGE GROUP).
- Around CDRs, many extensions to map most fields defined by the GSMA association for all type of CDRs.
- In case of inheritance, there are changes to ensure all columns of the super-type were present in the subtypes:
  - Around BUSINESS INTERACTION and its subtypes, especially EVENT PARTY INTERACTION
  - Similarly for subtypes from PARTY such as VENDOR, BANK and RETAIL STORE (subtype of ORGANIZATION BUSINESS UNIT which is subtype of PARTY)
  - subtypes from SERVICE such as VOICE MESSAGE SERVICE and VPN SERVICE and so on

  - subtypes from RESOURCE such as TRAIL and TRAIL TERMINATION POINT, SWITCH and SWITCH PROTOCOL (a logical resource for the later but inheriting also from RESOURCE).
  - subtypes from ROLE such as SWITCHING ROLE
  - subtypes from PRODUCT such as SERVICE PACKAGE
  - subtypes from PRODUCT SPECIFICATION such as SERVICE PACKAGE SPEC

- All geographic LOCATION and SITE or AREA (and subtypes) include a LATITUDE, a LONGITUDE, a GEOMETRY and an ACURACY field to allow the full use of spatial related analytics.
- Missing TMF SID attributes are added so that the TMF certification for SID 13.0 could be in principle extended to this version of Oracle Communications Data Model. In particular, several column extensions were added in the relationship associated with flexible characteristics and characteristic values, and their effective use,
  - For example adding SERVICE SPEC ROLE ID to SERVICE SPECIFICATION
- SHORT NAME has been added to some lookup tables. The SHORT NAME it is more practical and explicit at times than the code itself and is shorter than the FULL name. Some end-users tend to prefer plotting SHORT_NAME rather than CODE or NAME on graphic for this reason. The SHORT NAME is mainly associated with Lookup tables for REASON, CATEGORY, STATUS, GROUP, BAND and TYPE:
  - For example,. ACCOUNT ADJUSTMENT REASON, ADDRESS STATUS, AGE BAND, AGREEMENT TERM TYPE, ARPU BAND, COST SUBTYPE, and so on.
- Some additions on the fly:
  - ACCOUNT BALANCE includes a delayed balance amount and next balance amount (and RPT/LCL) fields to better analyze and keep track of history, especially when dealing with snapshots.
  - ACCOUNT COST has been extended with several dimensions such as Resource, service, Product Spec, and GL Account type code – this allows it to track the main parts of a specific cost from an account.
  - ACCOUNT DEBT has been extended with notes and status change reason, and the due amount at the time it leaves debt (which should be equal to the write-off value).
  - ACCOUNT DEBT HISTORY has been extended to link the possible PAYMENT PLAN.

Known Issues

Known issues for Oracle Communications Data Model 12.1

FILE CANNOT BE MODIFIED AT THIS TIME AT IMPORTING OLAP ORA-00372 (page 8)
Describes issue documented in Bug 21788062.

MINING BUILD AS LESS PRIVILEGED USER OCDM_USER FAILING ON 121020 (page 9)
Describes issue documented in Bug 21643827.

ATTRIBUTE IMPORTANCE AND DECISION TREE MODEL BUILD TAKING LONGER TIME ON EXADATA (page 9)
Describes issue documented in Bug 21461912.

Querying from DWC_OLAP_ACTIVITY Tables Sometimes Returns No Rows (page 9)
Describes issue documented in Bug 21422925.

ORA-39346 ERROR IS SEEN IN INSTALLATION LOG OF SAMPLE REPORTS (page 10)
Describes issue documented in Bug 21402577.

RPD Warning Message (page 10)
Describes issue documented in Bug 19908753.

Fully Configured Oracle Communications Data Model Requires More Space than Reported by Oracle Installer (page 11)
Describes issue documented in Bug 13243223.

Installer Error Message is Wrong and is not Translated (page 11)
Describes issue documented in Bug 10128575.

Installer Help Text Includes Extra Characters for Select Install Type Dialog Translation Issue (page 11)
Describes issue documented in Bug 10128520.

Deinstall Warning Message Can Be Ignored (page 11)
Describes issue documented in Bug 13601107.

Installer Help Text Not Translated (page 12)
Describes issue documented in Bug 10128517.

FILE CANNOT BE MODIFIED AT THIS TIME AT IMPORTING OLAP ORA-00372

Describes issue documented in Bug 21788062.

FILE CANNOT BE MODIFIED AT THIS TIME AT IMPORTING OLAP

The Oracle Communications Data Model Configuration assistant fails during install while installing Oracle 11.2.0.4.0.

This problem sometimes occurs on Database: RAC:- Typical - Enterprise Edition - General Purpose. Install Oracle Communications Data Model and then choose sample reports.

```
Error in log
ERROR at line 1:
ORA-37162: OLAP error
XOQ-00703: error executing OLAP DML command "(UPDATE OCDM_SAMPLE.OCDM :
```

```
ORA-37605: error during OLAP AW UPDATE
ORA-00372: file 204 cannot be modified at this time
ORA-01110: data file 204: '+DATA/dbf_dw_ocdm_sample_temp.dbf' )"
ORA-06512: at "SYS.DBMS_CUBE", line 433
```

Workaround

1. Start the analytic workspace manager.
2. Import the AW xml file at `$ORACLE_HOME/ocdm/pdm/olap/ocdm.xml`.

MINING BUILD AS LESS PRIVILEGED USER OCDM_USER FAILING ON 121020

Describes issue documented in Bug 21643827.

OCDM_SYS schema contains tables, IETL packages, Mining, and OLAP. Oracle Communications Data Model also contains a less privileged user, OCDM_USER, to execute IETL packages, Mining, and OLAP. OCDM_USER granted EXECUTE privilege on IETL PL/SQL packages, Mining packages, and OLAP package.

Database 12.1.0.2.0 Failure

On 12.1.0.2.0 Database, when Run procedure invoked as OCDM_USER user to build mining models as follows:

```
BEGIN
     ocdm_sys.pkg_ocdm_mining.run;
END;
```

Procedures/Functions of PKG_OCDM_MINING get executed as OCDM_SYS (Definer Rights). Attribute Importance model build failing with following error:

```
ORA-00942: table or view does not exist:
```

Database 11.2.0.3 Success

On 11.2.0.3.0 Database, when Run procedure invoked as OCDM_USER user to build mining models as follows:

```
BEGIN
   ocdm_sys.pkg_ocdm_mining.run;
END;
```

Procedures/Functions of PKG_OCDM_MINING get executed as OCDM_SYS (Definer Rights). Attribute Importance model build getting succeeded.

ATTRIBUTE IMPORTANCE AND DECISION TREE MODEL BUILD TAKING LONGER TIME ON EXADATA

Describes issue documented in Bug 21461912.

Certain Data Mining Models on Exadata Taking Long Time to Build

Attribute Importance(Algo: MINIMUM_DESCRIPTION_LENGTH) and Decision Tree (Algo: DECISION TREE) models build taking too long to build on Exadata.

Querying from DWC_OLAP_ACTIVITY Tables Sometimes Returns No Rows

Describes issue documented in Bug 21422925.

Provides a description and workaround for the querying bug that only occurs when using AIX and Oracle Database 12*c*.

Error in Installation Log

The installation log, the error message on AIX with Database 12*c*:

```
CREATE MATERIALIZED VIEW 'DWA_ACCT_DEBT_MO'  FROM DWD_ACCT_DEBT_MO DEBT         *
ERROR at line 57: ORA-00039: error during periodic action ORA-04036: PGA memory used
by the instance exceeds PGA_AGGREGATE_LIMIT

.
```

Workaround

1. Deinstall Oracle Communications Data Model.
2. Before reinstalling Oracle Communications Data Model, run the following script as sys or system in SQL*PLUS or SQL Developer:

   ```
   SQL>alter system set pga_aggregate_limit=0 scope=both;
   ```

3. Restart Oracle Communications Data Model installation.

ORA-39346 ERROR IS SEEN IN INSTALLATION LOG OF SAMPLE REPORTS

Describes issue documented in Bug 21402577.

After sample installation on 12*c*, The ORA-39346 error is found in the installation log:

```
ORA-39346: data loss in character set conversion for object string

Cause: Oracle Data Pump import converted a metadata object from the export database
character set into the target database character set prior to processing the object.
Some characters could not be converted to the target database character set and so
the default replacement character was used.

Action: No specific user action is required. This type of data loss can occur if the
target database character set is not a superset of the export databases character
set.
```

Workaround

This ORA error can be ignored.

RPD Warning Message

Describes issue documented in Bug 19908753.

A warning messages appears in the RPD included in Oracle Communications Data Model. The warning message does not impact any of the out-of-the-box reports included with Oracle Communications Data Model.

```
The features in Database 'OCDM_OLAP' do not match the defaults. This can cause query
problems.
```

Workaround

This warning message does not impact any of the out-of-the-box reports.

Fully Configured Oracle Communications Data Model Requires More Space than Reported by Oracle Installer

Describes issue documented in Bug 13243223.

When installing Oracle Communications Data Model, the Oracle Installer reports *only* the amount of space required for copying the Oracle Communications Data Model files (that is, 240MB).

However, a fully-installed and configured Oracle Communications Data Model also requires space for the Database files created during the postinstall configuration of Oracle Communications Data Model.

If insufficient space is available for the Oracle Communications Data Model Database files, the Oracle Communications Data Model installation fails during configuration.

Workaround

Before installing and configuring Oracle Communications Data Model, ensure that at least 3 GB is available.

Installer Error Message is Wrong and is not Translated

Describes issue documented in Bug 10128575.

When installing Oracle Communications Data Model, the Oracle Installer reports an error message similar to the following when a wrong path is specified in the **Specify Home Details** dialog:

```
OUI-10137-An oracle Home with name Oradb11g_home1 already exists at location
/scratch/aaa/sw Please specify another name for oracle home
```

Workaround

There is no workaround for this issue.

Installer Help Text Includes Extra Characters for Select Install Type Dialog Translation Issue

Describes issue documented in Bug 10128520.

When installing Oracle Communications Data Model, the Oracle Installer includes extra help text in the help associated with the **Select Install Type** dialog. The dialog shows some extra characters.

Workaround

There is no workaround for this issue.

Deinstall Warning Message Can Be Ignored

Describes issue documented in Bug 13601107.

Bug 13601107 deinstall warning error in the deinstall log file

The following warning message, or messages similar to the following message can be ignored on deinstall:

```
WARNING: Error while copying directory
//dbhome_1/inventory with exclude file list
```

```
 '/tmp/OraInstall2012-01-11_02-37-25PM/installExcludeFile.lst' to nodes


. /logs/installActions2012-01-11_02-37-25PM.log'

. for details. You may fix the errors on the required remote nodes
Refer to the install guide for error recovery.
This deinstallation was successful
End of deinstallations
```

Installer Help Text Not Translated

Describes issue documented in Bug 10128517.

When installing Oracle Communications Data Model for a language other than English, the Oracle Installer includes English help text in the help associated with the **Select Install Type** dialog. The following dialogs are not translated: Specify Oracle Communications Data Model Schema Information, Specify Calendar Date Range, Specify Partitions for Reference and Base Tables.

Workaround

There is no workaround for this issue.

Issues Resolved

Provides a summary table of bugs fixed in this release.

Table Oracle Communications Data Model Resolved Issues

Oracle Communications Data Model Resolved Issues

Number	Description
21429979	TEST: THE DB 12.1.0.1 SETUP THROWS ORA-27125
21395663	OCDM: PERFORMANCE ISSUES AND LOGIC ERRORS ON PKG_DWD_ACCT_DEBT_MO
21388716	OCDM CONFIGURATION ASSISTANT FAILED DURING COMMUNICATION DATA MODEL ON ASM
21373365	REMOVE POLICY SEQUENCE
21367983	OCDM CONFIGURATION ASSISTANT FAILED DURING SAMPLE REPORTS INSTALLATION ON ASM
21161207	IETL CNTCT CNTR DAY: LOOKUP VALUE ISSUE
20844049	LDM EXT.: FOR NFV, ADD REQUIRED ZOOM EXTENSIONS OF TMF SID
20100128	METADATA:THERE ARE 3 OUTPUTS FOR PROGRAM DWD_PRPD_ACCT_STTSTC_DAY_PKG
19447857	LDM EXT.: BSNS INTRACN STATE ASSGN OR HIST AND SUBTYPES
19432245	LDM ENH: REMOVE POLICY ANALYTICS SPECIFIC TABLE FROM 3NF

Table (Cont.) Oracle Communications Data Model Resolved Issues

Number	Description
19168752	ETL PACKAGE BODY CREATED WITH COMPILATION ERRORS
18907622	PDM AND COMMENTS ERRORS DISCOVERED BY OCDM CUSTOMER
18872811	LDM EXT (MSS): DWR_ADDR_LOC & DWR_EXCHG_LOC: ADD NEW COLS
18817967	DOC ENH FOR BUG 18557960 : SAY NOT TO INSTALL OCDM SAMPLE ON RAC FOR LINUX.
18557960	OCDM CONFIGURATION ASSISTANT FAILED DURING OCDM SAMPLE REPORTS INSTALLATION
17849862	LDM EXT. POLICY: ADD DWR_RSCE_PLCY_ASGN TO OCDM
17654855	LDM SIMPLIFICATION AND EXTENSION: CDR CLEANING
17287180	CDR DERIVED NEEDS ROUTING TYPE CODE
17278566	DWD_RVN_DAY AND CO: ADD EQUIPMENT REC FEE ARREAR JUST IN CASE + REARRANGE VALUES
17253471	IETL DWD_AGRMNT_CHG: MINOR ISSUE + UPGRADE
17239370	TTRVN CUBE IS NOT REQUIRED
17060160	CUST_ORDR_LN_ITEM: ADD THE NB OF DISTINCT ORDR NBR !
16880855	PDM EXT.: LOOKUP VALUES FOR ACTIVTY TYP AND CTGRY FOR BI APPS.
16829741	PDM CORR.: SMS + MMS SHALL INCLUDE ALL FIELDS OF DWB_WRLS_CALL_EVT
16704238	LDM EXT.: LINK DWL_CHRN_RSN WITH OTHER TABLES, AND SPLIT IT IN 2
16568533	DWB_EVT_PRTY_INTRACN AND SUBTYPES: SOME CLEANING...
14688264	MISSING FIELDS IN TABLE DWR_CRDT_SCR_PRVDR
13834750	LDM: NTWK_EVT RENAME TIME BAND CODE TO CALL DURATION BAND CODE
13823381	LDM ENH.: ALL CDRS SHOULD HAVE SVC_CD/SVC_ID ON TOP OF SVC_TYP
13495889	ADD CUBE DWA_CUST_MNNG_STSTCS AND RELATED MV.
12385854	LDM: RAW/MDTD/ERROR ALSO FOR NON WIRELESS CALL EVENT

Documentation Updates for Release 12.1

Provides a list of the documentation in this release and an overview of documentation changes.

The Oracle Communications Data Model documentation set for this release consists of the manuals in the previous release, but does not include the Adapters and Analytics Guides. The following books include updates for Release 12.1:

- *Oracle Communications Data Model Installation Guide* that describes how to install and configure the Oracle Communications Data Model.
- *Oracle Communications Data Model Reference* that describes the data model structures for Oracle Communications Data Model.
- *Oracle Communications Data Model Implementation and Operations Guide* that describes using and modifying Oracle Communications Data Model.
  - Includes a new "Oracle Communications Data Model Security" chapter.
  - Includes a new section Running Oracle Data Miner Workflows in the chapter, "ETL Implementation and Customization"
- Removed: *Oracle Communications Data Model Adapters and Analytics Installation Guide*
- Removed: *Oracle Communications Data Model Adapters and Analytics User's Guide*

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.

Oracle® Communications Data Model Release Notes, Release 12.1.2
E84556-01

Copyright © 2010, 2017, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.