Oracle Utilities Meter Data Management

Database Administrator's Guide

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Oracle Utilities Meter Data Management Database Administrator's Guide

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Preface

This guide provides instructions for installing and maintaining the database for Oracle Utilities Meter Data Management.

This preface contains these topics:

*   **Audience**

*   **Related Documents**

*   **Updates to this Documentation**

*   **Conventions**

Audience

Oracle Utilities Meter Data Management Database Administrator's Guide is intended for database administrators who will be installing and maintaining the database for Oracle Utilities Meter Data Management.

Related Documents

For more information, see these Oracle documents:

*   *Oracle Utilities Meter Data Management Quick Install Guide*

*   *Oracle Utilities Meter Data Management Installation Guide*

Updates to this Documentation

This documentation is provided with the version of the product indicated. Additional and updated information about the operations and configuration of the product is available from the Knowledge Base section of My Oracle Support (http://support.oracle.com). Please refer to My Oracle Support for more information.

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.

Chapter 1

Database Overview

This section provides an overview of the Oracle Utilities Meter Data Management database, including:

- **Supported Database Platforms**
- **Database Maintenance Rules**

Supported Database Platforms

This section defines the platforms on which Oracle Utilities Meter Data Management is verified to operate.

Supported Platforms Summary Table

Oracle Utilities Meter Data Management is certified on the following platforms:

Platform	Database Version
AIX 6.1 TL4 (POWER 64-bit)	Oracle Database Server 11.2.0.1 (64-bit)
Oracle Linux 5.8/6.2 (64-bit) x86_64 (64-bit)	Oracle Database Server 11.2.0.1 (64-bit)
Red Hat Enterprise Linux 5.8/6.2 (64-bit) x86_64 (64-bit)	Oracle Database Server 11.2.0.1 (64-bit)
Solaris 10 (SPARC 64-bit)	Oracle Database Server 11.2.0.1 (64-bit)
Windows Server 2008 R2 (x86_64 64-bit)	Oracle Database Server 11.2.0.1 (64-bit)

The following Oracle Database Server Editions are supported:

• Oracle Database Enterprise Edition

• Oracle Database Standard Edition

> **Note:** Oracle Database Enterprise Edition and the Partitioning and Advanced Compression options are not mandatory but recommended. Standard Edition should only be considered suitable for very small, pilot projects or development environments where scalability, performance, and database size-on-disk are not important considerations. Oracle Database Enterprise Edition, including the Advanced Compression and Partitioning options, is strongly recommended in all other situations.

Refer to My Oracle Support for additional details.

Support for Software Patches and Upgrades

Due to the ongoing nature of software improvement, vendors will issue patches and service packs for the operating systems, application servers and database servers on top of specific versions that Oracle Utilities Meter Data Management has been tested with.

If it is necessary to apply an upgrade, please do so in a test environment that is running on the same platform as your production environment prior to updating the Oracle Utilities Meter Data Management production environment.

The exception from this rule is Hibernate software version 3.3.2 ga. This version should not be upgraded.

Always contact Oracle Utilities Meter Data Management support prior to applying vendor updates that do not guarantee backward compatibility.

Database Maintenance Rules

The database supplied with the product consists of the following elements:

- A set of users to administrate, execute and read the database schema provided.

- A set of database roles to implement security for each of the users provided.

- A tablespace and a schema containing the base database objects used by the product.

The installation of these components is outlined in the installation section of this document.

What Changes Are Permitted

During and after installation of the product the following changes may be performed by the database administrator personnel on site:

- Users supplied by product may be changed according to the site standards.

- Database objects may be added to the schema according to database naming standards outlined later in this document.

- Database views and indexes may be created against base database objects.

- Database storage attributes for base indexes and base tables may be changed according to site standards and hardware used.

- Tablespace names, attributes and locations may be changed according to site standards.

- Database topology (that is, base table/index to tablespace, tablespace to data file, data file to location) may be altered according to tuning and/or site standards.

- Database triggers may be created against base database objects unless they attempt to contravene base data integrity rules.

- Database initialization and parameter settings may be altered according to site standards unless otherwise advised by Oracle Support or outlined in this document.

What Changes Are Not Permitted

In order to maintain operability and upgradeability of the product, during and after the installation of the product the following changes may *not* be performed by the database administration personnel on site:

- Base objects must not be removed or altered in the following ways:

  - Columns in base tables must not be altered in anyway (altered, removed or added).

  - Columns in Indexes must not be altered or removed.

  - Tables must not be renamed or removed.

  - Base views must not be renamed or removed.

  - Base Triggers and Sequences must not be renamed or removed.

  - Base indexes must not be altered or removed.

Chapter 2

Database Installation for V2.0.1.0

This section provides the steps required to install or upgrade the Oracle Utilities Meter Data Management database, including:

- **Installation Overview**
- **Oracle Database Installation**

Installation Overview

> **Note:** Refer to the *Oracle Utilities Meter Data Management Installation Guide* for the hardware and software versions required for the installation on Unix or Windows. This installation is for Oracle Utilities Meter Data Management V2.0.1 and the upgrade of Oracle Utilities Meter Data Management V2.0.0 to V2.0.1.

The following type of installation is available for Oracle Utilities Meter Data Management:

- **Initial Install** - a database with no demo data.
- **Upgrade Install** - a database upgrade.
- **Demo Install** - a database populated with demo data.

The database installation requires a supported version of the Java Development Kit to be installed on the Windows desktop where the install package is staged and run from. Refer to the Supported Platform section of the *Oracle Utilities Meter Data Management Installation Guide* for the required version of Java.

For an Initial Install or Demo Install you will create an empty database on the Unix or Windows server and then populate the database with data. For a database Upgrade Install you will upgrade your current Oracle Utilities Meter Data Management database.

Review the Storage.xml file prior to an Initial Install or Upgrade Install. Information in this file is used by CDXDBI while installing and upgrading the Oracle Utilities Meter Data Management database objects.

For optimum storage allocation, database administrators should create multiple tablespaces with extents sized to store different types of tables/indexes. They can then edit this file before each upgrade and install process, to spread tables and indexes across these tablespaces. Tables and indexes can be created in parallel by editing degree of parallelism.

Tablespace, storage options, securefile options, Advanced Compression, and parallel information are used only for new objects. Therefore, for initial installs, information for each object should be reviewed.For upgrades, only tablespace information for objects added in the current release needs to be reviewed. Be careful while editing this file. Make sure that tablespace names being used exist in the database. Do not change the basic format of this file.

> **Note:** Prior to the installation of the database schema for the product, please ensure that the Database Management System software is installed according to your site standards and the installation guide provided by the database vendor.

Oracle Database Installation

This section describes how to install the Oracle Database for Oracle Utilities Meter Data Management. It contains the following topics:

- **Database Scripts and Utilities**

- **Initial Install**

- **Upgrade Install**

- **Demo Install**

- **Creating the Database**

- **Security Configuration**

- **Populating Language Data**

- **Installing Service Packs and Patches**

    Note: The installation tools outlined in this guide run on Windows and UNIX/Linux only. Please refer to the supported platforms table in Chapter 1 for more information on supported platforms.

Database Scripts and Utilities

Follow these steps before you begin installing the database:

1. Unzip the database.zip file to your local machine.The database folder contains several files that will be referred to in the installation process.

2. Set up a Microsoft Windows desktop with the Oracle Client installed.

Initial Install

This section describes an initial installation of the database.

    Note: You must have a supported version of the Java Development Kit installed on the Windows desktop where you stage and run the database installation package. Refer to the Oracle Utilities Meter Data Management Installation Guide for more information.

Create Database

The Initial install requires the following before the installation can be started:

- You must create a database. Use site standard techniques or tools to create the database. The templates for creating the database are located under the relevant database version subdirectory of the DatabaseCreation directory:

    - createdb.sql - Create Database

    - createdbcatalog.sql - Build database catalog tables.

    - createdbfiles.sql - Create data files for tablespaces

    - init.ora - Sample initialization parameters for the database

    - createcdxusers.sql - Create users

    - restartdb.sql - DB restart

- The users and roles for the product. Templates for this activity are located under the relevant database version subdirectory of the DatabaseCreation directory as createcdxusers.sql.

    Note: Please alter a copy of the above files for site specific changes.

The CDXDBA utility provided in the DatabaseCreation folder may be used to automate the process. See **Creating the Database** on page 2-9 for more details. For an initial install, do not import the demo install data when you create the database.

Install the Database

Install Oracle Utilities Application Framework V4.1.0 prior toOracle Utilities Meter Data Management 2.0.1.

The files for Oracle Utilities Application Framework installation are located in the FW410 folder:

1. Install base FW V4.1.0 by running the CdxDBI.exe from under the FW410/Install-Upgrade folder.

2. Apply prerequisite Framework DB single fixes. See the *Oracle Utilities Meter Data Management Installation Guide* for more details.

The files for the Initial Install of Oracle Utilities Meter Data Management 2.0.1 are located in the Install-Upgrade folder under MDF and MDM.

The process prompts you for the names of three database users:

- A user that will own the application schema (for example, CISADM).

- A user that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CISUSER).

- A user with read-only privileges to the objects in the application schema. (for example, CISREAD).

- A database role that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CIS_USER).

- A database role with read-only privileges to the objects in the application schema. (for example, CIS_READ).

- Location for jar files. (The Jar files are bundled with the database package.)

- Java Home (For example, C:/Java/jdk1.6.0_18)

To install the Oracle Utilities Meter Data Management database, follow these steps:

1. Run CDXDBI.exe from MDF/Install-Upgrade. The utility prompts you to enter values for the following parameters:

    - The name of the target database.

    - The password for the SYSTEM user account in the database (in silent mode).

    - The name of the owner of the Database Schema.

    - The location of Java Home.

    - The location of TUGBU JAR files.

    - The password for the user (in silent mode).

    - The Oracle user with read-write privileges to the Database Schema.

    - The Oracle user with read-only privileges to the Database Schema.

    - The Oracle database role with read-write privileges to the Database Schema.

    - The Oracle database role with read-only privileges to the Database Schema.

2. If you chose to continue, CDXDBI first checks for the existence of each of the users specified and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.

3. After setting up roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

4. Run CDXDBI.exe from MDM/Install-Upgrade. The utility prompts you to enter values for the following parameters:

- The name of the target database.

- The password for the SYSTEM user account in the database (in silent mode).

- The name of the owner of the Database Schema.

- The location of Java Home.

- The location of TUGBU JAR files.

- The password for the user (in silent mode).

- The Oracle user with read-write privileges to the Database Schema.

- The Oracle user with read-only privileges to the Database Schema.

- The Oracle database role with read-write privileges to the Database Schema.

- The Oracle database role with read-only privileges to the Database Schema.

5. If you chose to continue, CDXDBI first checks for the existence of each of the users specified and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.

6. After setting up roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

CDXDBI performs the following tasks:

- Interacts with the user to collect information about the name of Oracle account that will own the application schema (for example, CISADM), password of this account, password of the SYSTEM account in the database, and the name of the Oracle account that the application user will use (for example, CISUSER), and the name of the Oracle account that will be assigned read-only privileges to the application schema (for example, CISREAD).

- Connects to the database as SYSTEM account, checks whether the user already has the application schema installed to verify whether this is an initial installation.

- Verifies whether tablespace names already exist in Storage.xml file (if not, the process will abort).

- Installs the schema, installs the system data, and configures security.

- Maintains upgrade log tables in the database.

- Updates release ID when the upgrade is completed successfully.

- If an error occurs while executing a SQL script or another utility, it logs and displays the error message and allows you to re-execute the current step. Log files CDXDBI###.log are created in the same folder as CDXDBI and contains all the SQL commands executed against the database along with the results. The log files are incremental so that the results are never overwritten. If warning messages are generated during the upgrade, CDXDBI prompts the user at the end of the process. Users should check the log files to verify the warning messages. Warning messages are only alerts and do not necessary mean a problem exists.

- Stores the Schema owner and password in the feature configuration table. The password is stored in encrypted format.

Post-Install Tasks:

Refer to **Populating Language Data** on page 2-12 if the application is to run in another language other than English.

Database Statistics Generation

During an install process, new database objects may be added to the target database. Before starting to use the database, generate the complete statistics for these new objects using the DBMS_STATS package.

Upgrade Install

The following section assumes an existing Oracle Utilities Meter Data Management V2.0 installation on top of an Oracle Utilities Application Framework V4.0.2 installation.

Install

Install Oracle Utilities Application Framework V4.1.0 prior to Oracle Utilities Meter Data Management 2.0.1.

The files for Oracle Utilities Application Framework installation are located in the FW410 folder.

1. Install base FW V4.1.0 by running the CdxDBI.exe from the Install-Upgrade folder under FW410.

2. Apply prerequisite Framework DB single fixes. See the *Oracle Utilities Meter Data Management Installation Guide f*or more details.

The files for the Upgrade Install of Oracle Utilities Meter Data Management 2.0.1 are located in the Install-Upgrade folder under MDF and MDM.

The installation process prompts you for the names of three database users during this process:

- A user that will own the application schema (for example, CISADM).

- A user that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CISUSER).

- A user with read-only privileges to the objects in the application schema. (for example, CISREAD).

- A database role that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CIS_USER).

- A database role with read-only privileges to the objects in the application schema. (for example, CIS_READ).

- The location for jar files. (The Jar files are bundled with the database package.)

- Java Home (For example, C:/Java/jdk1.6.0_18)

To upgrade the database, follow these steps:

1. Review and edit the Storage.xml file in the MDF/Install-Upgrade folder to set the various options discussed previously. The instructions for editing the file are included in the file itself.

2. Run CDXDBI.exefrom the MDF/Install-Upgrade folder. The utility prompts you to enter values for the following parameters:

   - The name of the target database.

   - The password for the SYSTEM user account in the database (in silent mode).

   - The name of the owner of the Database Schema.

   - The location of Java Home

- TUGBU JAR files location.

- The password for the user (in silent mode).

- The Oracle user with read-write privileges to the Database Schema.

- The Oracle user with read-only privileges to the Database Schema.

- The Oracle database role with read-write privileges to the Database Schema.

- The Oracle database role with read-only privileges to the Database Schema.

3. The utility at this point is ready to perform the upgrade install and prompts you for permission to start the process.

4. If you chose to continue, CDXDBI first checks for the existence of each of the users specified earlier and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.

5. After setting up the roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

6. Run CDXDBI.exe from under the MDM/Install-Upgrade folder. The utility prompts you to enter values for the following parameters:

- The name of the target database.

- The password for the SYSTEM user account in the database (in silent mode).

- The name of the owner of the Database Schema.

- The location of Java Home

- TUGBU JAR files location.

- The password for the user (in silent mode).

- The Oracle user with read-write privileges to the Database Schema.

- The Oracle user with read-only privileges to the Database Schema.

- The Oracle database role with read-write privileges to the Database Schema.

- The Oracle database role with read-only privileges to the Database Schema.

7. The utility at this point is ready to perform the upgrade install and prompts you for permission to start the process.

8. If you chose to continue, CDXDBI first checks for the existence of each of the users specified earlier and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.

9. After setting up the roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

CDXDBI performs the following tasks:

- Interacts with the user to collect information about the name of Oracle account that will own the application schema (for example, CISADM), password of this account, password of the SYSTEM account in the database, and the name of the Oracle account that the application user will use (for example, CISUSER), and the name of the Oracle account that will be assigned read-only privileges to the application schema (for example, CISREAD).

- Connects to the database as SYSTEM account, checks whether the user already has the application schema installed to verify whether this is an upgrade installation.

- Verifies whether the upgrade path from the current release id to the target release id is supported by the upgrade.

- Verifies whether the tablespace names already exist in Storage.xml file (the process aborts, if not).

- Upgrades the schema, upgrades the system data, and configures security.

- Maintains upgrade log tables in the database.

- Updates release id when the upgrade is completed successfully.

- If an error occurs while executing a SQL script or another utility, it logs and displays the error message and allows you to re-execute the current step. Log files CDXDBI###.log are created in the same folder as CDXDBI and contains all the SQL commands executed against the database along with the results. The log files are incremental so that the results are never overwritten. If warning messages are generated during the upgrade, CDXDBI prompts the user at the end of the process. Users should check the log files to verify the warning messages. Warning messages are only alerts and do not necessary mean a problem exists.

- Stores the Schema owner and password in feature configuration table. The password will be stored in encrypted format.

Post-Install

Refer to the **Populating Language Data** on page 2-12 if the application is to run in another language other than English.

Database Statistics Generation

During an install process, new database objects may be added to the target database. Before starting to use the database, generate the complete statistics for these new objects using the DBMS_STATS package.

Environment Registration

> **Note:** If the target database is registered as a configuration laboratory or archiving database in another database, or another database has been registered as a configuration laboratory or archiving database in this database, it is required that you upgrade the registration at this stage.

The detailed instructions for environment registration can be found in the Oracle Utilities Meter Data Management user documentation. Please refer to this documentation before executing the environment registration utility EnvSetup.exe included in the post-install folder.

Demo Install

Before the installation can be started:

- A database must be created. Site standard techniques or tools may be used to create the database. The templates for creating the database are located under the relevant database version subdirectory of the MDM/DatabaseCreation directory under:

    - createdb.sql - Create Database

    - createdbcatalog.sql - Build database catalog tables.

    - createdbfiles.sql - Create data files for tablespaces

    - init.ora - Sample initialization parameters for the database

    - createcdxusers.sql - Create Users

    - restartdb.sql - restart database

- The users and roles for the product. Templates for this activity are located under the relevant database version subdirectory of the DatabaseCreation directory as createcdxusers.sql.

    > **Note:** Please alter a copy of the above files for site specific changes.

Create the Database and Import Demo Data

The CDXDBA utility provided in the "Database Creation" folder may be used to automate the process. Complete the steps in **Creating the Database** on page 2-9 to create the database and import the Demo Install data into the database. The Database Creation folder contains the instructions for the import of the Demo Install data.

Creating the Database

This process is not required if you are performing a database upgrade from a previous version of the application. See **Upgrade Install** for instructions on upgrading the database.

> **Note:** The Unix and Windows installs will create an empty database and at least one tablespace for storing the application objects before running the install. The default name of the application tablespace is CISTS_01. If you do not use the default name or want to spread application objects across multiple tablespaces, you must create the tablespaces of your choice and edit the Storage.xml file, supplied with the install package, before starting the installation process.

Unix

The files are located in MDM/DatabaseCreation/Unix.

Follow these steps to create a database:

1. FTP the contents of the Database Creation folder to a temporary directory on the UNIX server.

2. To create the database set the ORACLE_HOME and ORACLE_BASE variables.

3. Execute the utility cdxdba.plx by entering following command:

   ```
   perl cdxdba.plx
   ```

4. The script will prompt for parameter values:

   • Enter the instance name (DEMO):

   • Enter ORACLE_BASE: the directory where the setup files for the database will be created (/orasw/app/oracle):

   • Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (/orasw/app/oracle/product/):

   • Enter ORACLE_DATA: the directory where the data files for the database will be created (/db05/oradata):

   • Enter the character set for the database (AL32UTF8):

   Note: AL32UTF8 is the recommended database character set. The application also supports character sets for multi-languages.

5. Enter the values based on the settings of your database server. You can also accept the default values displayed if they match your database server settings. You will be prompted to confirm the settings and select Y or N to create the database.

   ```
   ORACLE_SID: DEMO
   ORACLE_HOME: /orasw/app/oracle/product/
   ORACLE_BASE: /orasw/app/oracle
   ORACLE_DATA: /db05/oradata
   Character Set: AL32UTF8
   Do you want to continue (Y/N)?
   ```

6. Once the database has been created, you will be prompted to either exit the utility or to install the demo database:

```
     Do you want to import a demo database dump into this database (Y/
N)?
```

- For an initial install, select N to exit the database utility. Follow the steps in **Initial Install** on page 2-3 to complete the database installation.

- For a demo install, select Y to import the demo database.

For the Demo Install use the dump file exp_demo.dmp.

```
     Do you want to import a demo database dump into this database (Y/
N)? Y
```

- Enter the name of the dump file (exp_demo.dmp):

- Enter the name of the dump file directory (data_pump_dir):

- Enter the name of the log file (exp_demo.log):

```
     Ready to import the CISADM schema into the database, do you want to
continue (Y/N)? Y
```

> **Notes:**
>
> - The data_pump_dir must exist in the database created above before continuing with the import. You should also copy the exp_demo.dmp file to the data_pump_dir.
>
> - Update the oratab, tnsnames.ora and listener.ora files for the new database and check the connectivity to this database from another server and from your desktop.

After importing the demo install data, the demo install of the database is complete. You can now install the application server as described in the installation guide.

Windows

The files are located in MDM\DatabaseCreation\Windows. You should be logged in as a user who is a member of local ORA_DBA group on that server. The ORA_DBA group should have "administrator" privileges assigned to it.

1. To create a database, run the utility CDXDBA.exe located in the Windows folder.

    The utility will display a list with the following options:

    E - Export a schema from the database

    R - Refresh a schema with a database dump.

    C - Create/Recreate a local database.

    H - See help for the command line options.

    Q - Quit.

2. Select option C to create an empty database on your machine.

    Follow the prompts to complete the creation of the database.

3. Once the database has been created you can exit the utility or select "R - Refresh a schema with a database dump file" to load the Demo Install data.

    Note: Do not load the demo install data for an initial install. Follow the steps in **Initial Install** on page 2-3 to complete the initial install of the database.

    - Option R causes the utility to drop all the objects from the schema and import the schema from a database dump file.

    - Enter the instance name (DEMO): <DB name>

    - Is it a LOCAL database (exists on the same machine) (Y/N): <Please provide Y or N>

- Enter the name of the Oracle account that owns that application schema (spladm):
  CISADM

- Enter password for CISADM (spladm): CISADM

- Enter the character set of the database (AL32UTF8): AL32UTF8

- Enter the name of data pump directory (DATA_PUMP_DIR): DATA_PUMP_DIR

- Enter the name of the dump file (expspladm.dmp):exp_demo.dmp

- Enter the name of the log file (impspladm.log):exp_demo.log

- For the DB user system, the password is manager.

  Notes:

  - For the Demo Install use the dump file exp_demo.dmp. The data_pump_dir must exist in the database created above before continuing with the import. You should also copy the exp_demo.dmp file to the data_pump_dir.

  - Update the oratab, tnsnames.ora and listener.ora files for the new database and check the connectivity to this database from another server and from your desktop.

After importing the demo install data, the demo install of the database is complete. You can now install the application server as described in the installation guide.

Security Configuration

The configuration utility and scripts are located in the Security folder.

To configure security, execute the OraGenSec.exe utility.

The script will prompt you for parameter values:

```
Enter the application read-only user or Schema Owner in the
database (e.g CISADM or CISREAD):

Enter the password for the user:

Enter the name of the Oracle Database: database name

Enter a comma-separated list of Oracle users in which synonyms need
to be created (e.g. cisuser,cisread): cisuser,cisread

Select the following options:
(A/a): Generate security for All objects in the Database (e.g. A or
a for all objects)
(O/o): Generate security for specific Objects inputted in this
terminal (e.g. CI_ACCT,CI_ACCT_K)
Generate security for specific objects generated from an input File
(e.g. Security_Objects.txt)
```

The utility configures security for the CISADM schema objects

> **Note:** If you run Oragensec in Interactive Mode (without using the command line options), it will by default grant permissions to CIS_USER and CIS_READ Role. If you prefer to use site-specific roles then execute Oragensec after providing command line options.

> For example:

```
(Oragensec.exe -d [Schema Owner],[Schema Owner's
Password],[Database Name] -u [Read/Write User],[Read Only User] -r
[Read Only Role],[Read Write Role] -a A -l [Logfile Name)
```

Note: Database vault must be disabled before running

Populating Language Data

At this point, the Oracle Utilities Meter Data Management demo database is ready for use. Please note that this database contains data in the ENGLISH language only. If you use any other supported language, you can run the F1-LANG batch program to duplicate the entries for new language records. For more information on running this batch program, refer to the user documentation section "Defining Background Processes."

You can also install the language specific demo data packages (if available) into the database. Please contact your Oracle representative to receive information on these packages

Installing Service Packs and Patches

Periodically, Oracle Utilities releases a service pack of single fixes for its products. A service pack is an update to an existing release that includes solutions to known problems and other product enhancements. A service pack is not a replacement for an installation, but a pack consisting of a collection of changes and additions for it. The service pack may include changes to be applied to the application server, the database, or both. The service pack includes all files necessary for installing the collection of changes, including installation instructions. For more information about installing the current service pack, see **Chapter 3: Database Installation for V2.0.1 Service Pack 9** on page 3-1.

Between services packs, Oracle Utilities releases patches to fix individual bugs. For information on installing patches, see knowledge base article ID 974985.1 on My Oracle Support.

Service packs and patches can be downloaded from My Oracle Support (https://support.oracle.com/).

Chapter 3

Database Installation for V2.0.1 Service Pack 9

This section provides the steps required to install or upgrade the Oracle Utilities Meter Data Management database, including:

- **Installation Overview**
- **Oracle Database Installation**

Installation Overview

> **Note:** Refer to the *Oracle Utilities Meter Data Management Installation Guide* for the hardware and software versions required for the installation on Unix or Windows. This section contains steps for installation of Oracle Utilities Meter Data Management V2.0.1 service pack 9 and the upgrade of Oracle Utilities Meter Data Management V2.0.1.x to V2.0.1.9.0

The following type of installation is available for Oracle Utilities Meter Data Management:

•   **Initial Install —** a database with no demo data.

•   **Upgrade Install —** a database upgrade.

•   **Demo Install —** a database populated with demo data.

The database installation requires a supported version of the Java Development Kit to be installed on the Windows desktop where the install package is staged and run from. Refer to the Supported Platform section of the *Oracle Utilities Meter Data Management Installation Guide f*or the required version of Java.

For an Initial Install or Demo Install you will create an empty database on the Unix or Windows server and then populate the database with data. For a database Upgrade Install you will upgrade your current Oracle Utilities Meter Data Management database.

Review the Storage.xml file prior to an Initial Install or Upgrade Install. Information in this file is used by CDXDBI while installing and upgrading the Oracle Utilities Meter Data Management database objects.

For optimum storage allocation, database administrators should create multiple tablespaces with extents sized to store different types of tables/indexes. They can then edit this file before each upgrade and install process, to spread tables and indexes across these tablespaces. Tables and indexes can be created in parallel by editing degree of parallelism.

Tablespace, storage options, securefile options, Advanced Compression, and parallel information are used only for new objects. Therefore, for initial installs, information for each object should be reviewed.For upgrades, only tablespace information for objects added in the current release needs to be reviewed. Be careful while editing this file. Make sure that tablespace names being used exist in the database. Do not change the basic format of this file.

> **Note:** Prior to the installation of the database schema for the product, please ensure that the Database Management System software is installed according to your site standards and the installation guide provided by the database vendor.

Oracle Database Installation

This section describes how to install the Oracle Database for Oracle Utilities Meter Data Management V2.0.1 Service Pack 9. It contains the following topics:

- **Database Scripts and Utilities**

- **Initial Install, or Installing MDM Version 2.0.1 For the First Time**

- **Upgrade Install**

- **Demo Install**

> **Note:** The installation tools outlined in this guide run on Windows and UNIX/Linux only. Please refer to the supported platforms table in Chapter 1 for more information on supported platforms.

Database Scripts and Utilities

Follow these steps before you begin installing the database:

1. Unzip the MDM-V2.0.1.9.0-Database.zip file to your local machine. The database folder contains several files that will be referred to in the installation process.

2. Set up a Microsoft Windows desktop with the Oracle Client installed.

Initial Install, or Installing MDM Version 2.0.1 For the First Time

This section describes an initial installation of the database.

> **Note:** You must have a supported version of the Java Development Kit installed on the Windows desktop where you stage and run the database installation package. Refer to the Oracle Utilities Meter Data Management Installation Guide for more information.

For customers who have not previously installed MDM V2.0.1.0, follow the install procedures in the sequence described below:

- Installing MDM v2.0.1

- Upgrading MDM v2.0.1 to MDM v2.0.1 Service Pack 9

Installing MDM v2.0.1

Each of the following components should be installed during an initial installation.

- Install Oracle Utilities Application Framework V4.1.0

- Apply prerequisite Framework DB single fixes

- Install Oracle Utilities Meter Data Framework V2.0.1

- Install Oracle Utilities Meter Data Management V2.0.1

For details on how to install the above components, refer to **Chapter 2: Database Installation for V2.0.1.0** on page 2-1.

Upgrading MDM v2.0.1 to MDM v2.0.1 Service Pack 9

Install Oracle Utilities Application Framework V4.1.0.2.0 prior to Oracle Utilities Meter Data Management 2.0.1.9.0.

The files for Oracle Utilities Application Framework installation are located in the FW410 folder:

- Install FW V4.1.0.2.0 by running the CdxDBI.exe from under the FW410/Install-Upgrade folder.

The files for the Install of Oracle Utilities Meter Data Management 2.0.1.9.0 are located in the Install-Upgrade folder under MDF and MDM.

The process prompts you for the names of three database users:

- A user that will own the application schema (for example, CISADM).

- A user that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CISUSER).

- A user with read-only privileges to the objects in the application schema. (for example, CISREAD).

- A database role that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CIS_USER).

- A database role with read-only privileges to the objects in the application schema. (for example, CIS_READ).

- Location for jar files. (The Jar files are bundled with the database package.)

- Java Home (For example, C:/Java/jdk1.6.0_18)

To install the Oracle Utilities Meter Data Management database, follow these steps:

1. Run CDXDBI.exe from MDF/Install-Upgrade. The utility prompts you to enter values for the following parameters:

    - The name of the target database.

    - The password for the SYSTEM user account in the database (in silent mode).

    - The name of the owner of the Database Schema.

    - The location of Java Home.

    - The location of TUGBU JAR files.

    - The password for the user (in silent mode).

    - The Oracle user with read-write privileges to the Database Schema.

    - The Oracle user with read-only privileges to the Database Schema.

    - The Oracle database role with read-write privileges to the Database Schema.

    - The Oracle database role with read-only privileges to the Database Schema.

2. If you chose to continue, CDXDBI first checks for the existence of each of the users specified and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.

3. After setting up roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

4. Run CDXDBI.exe from MDM/Install-Upgrade. The utility prompts you to enter values for the following parameters:

    - The name of the target database.

    - The password for the SYSTEM user account in the database (in silent mode).

    - The name of the owner of the Database Schema.

    - The location of Java Home.

    - The location of TUGBU JAR files.

- The password for the user (in silent mode).

- The Oracle user with read-write privileges to the Database Schema.

- The Oracle user with read-only privileges to the Database Schema.

- The Oracle database role with read-write privileges to the Database Schema.

- The Oracle database role with read-only privileges to the Database Schema.

5. If you chose to continue, CDXDBI first checks for the existence of each of the users specified and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.

6. After setting up roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

7. This is an optional step and should be executed if you have installed Oracle Utilities Meter Data Analytics 2.4.0 Service Pack 4, or plans to install it in the future.

   - Go to ..MDM\Post-Upgrade folder and run Materialized_View_Creation.sql from sql prompt as follows.

   - Connect to Database Owner Schema e.g. <CISADM>/<CISADM>@<SID>

   - Run Materialized_View_Creation.sql as @Materialized_View_Creation.sql from sql prompt.

   - Go to ..MDM\Security folder and run oragensec.bat after changing the appropriate database role and users details.

CDXDBI performs the following tasks:

- Interacts with the user to collect information about the name of Oracle account that will own the application schema (for example, CISADM), password of this account, password of the SYSTEM account in the database, and the name of the Oracle account that the application user will use (for example, CISUSER), and the name of the Oracle account that will be assigned read-only privileges to the application schema (for example, CISREAD).

- Connects to the database as SYSTEM account, checks whether the user already has the application schema installed to verify whether this is an initial installation.

- Verifies whether tablespace names already exist in Storage.xml file (if not, the process will abort).

- Installs the schema, installs the system data, and configures security.

- Maintains upgrade log tables in the database.

- Updates release ID when the upgrade is completed successfully.

- If an error occurs while executing a SQL script or another utility, it logs and displays the error message and allows you to re-execute the current step. Log files CDXDBI###.log are created in the same folder as CDXDBI and contains all the SQL commands executed against the database along with the results. The log files are incremental so that the results are never overwritten. If warning messages are generated during the upgrade, CDXDBI prompts the user at the end of the process. Users should check the log files to verify the warning messages. Warning messages are only alerts and do not necessary mean a problem exists.

- Stores the Schema owner and password in the feature configuration table. The password is stored in encrypted format.

Post-Install Tasks

Refer to **Populating Language Data** on page 2-12 if the application is to run in another language other than English.

Database Statistics Generation

During an install process, new database objects may be added to the target database. Before starting to use the database, generate the complete statistics for these new objects using the DBMS_STATS package.

Upgrade Install

The following section assumes an existing Oracle Utilities Meter Data Management V2.01.x installation on top of an Oracle Utilities Application Framework V4.1.0 installation.

Install

Install Oracle Utilities Application Framework V4.1.0.2.0 prior to Oracle Utilities Meter Data Management 2.0.1.9.0

The files for Oracle Utilities Application Framework installation are located in the FW410 folder.

- Install FW V4.1.0.2.0 by running the CdxDBI.exe from the Install-Upgrade folder under FW410.

The files for the Upgrade Install of Oracle Utilities Meter Data Management 2.0.1.9.0 are located in the Install-Upgrade folder under MDF and MDM.

The installation process prompts you for the names of three database users during this process:

- A user that will own the application schema (for example, CISADM).

- A user that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CISUSER).

- A user with read-only privileges to the objects in the application schema. (for example, CISREAD).

- A database role that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CIS_USER).

- A database role with read-only privileges to the objects in the application schema. (for example, CIS_READ).

- The location for jar files. (The Jar files are bundled with the database package.)

- Java Home (For example, C:/Java/jdk1.6.0_18) To upgrade the database, follow these steps:

1. Review and edit the Storage.xml file in the MDF/Install-Upgrade folder to set the various options discussed previously. The instructions for editing the file are included in the file itself.

2. Run CDXDBI.exe from the MDF/Install-Upgrade folder. The utility prompts you to enter values for the following parameters:

    - The name of the target database.

    - The password for the SYSTEM user account in the database (in silent mode).

    - The name of the owner of the Database Schema.

    - The location of Java Home

    - TUGBU JAR files location.

    - The password for the user (in silent mode).

    - The Oracle user with read-write privileges to the Database Schema.

    - The Oracle user with read-only privileges to the Database Schema.

    - The Oracle database role with read-write privileges to the Database Schema.

- The Oracle database role with read-only privileges to the Database Schema.

3. The utility at this point is ready to perform the upgrade install and prompts you for permission to start the process.

4. If you chose to continue, CDXDBI first checks for the existence of each of the users specified earlier and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.

5. After setting up the roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

6. Run CDXDBI.exe from under the MDM/Install-Upgrade folder. The utility prompts you to enter values for the following parameters:

   - The name of the target database.

   - The password for the SYSTEM user account in the database (in silent mode).

   - The name of the owner of the Database Schema.

   - The location of Java Home

   - TUGBU JAR files location.

   - The password for the user (in silent mode).

   - The Oracle user with read-write privileges to the Database Schema.

   - The Oracle user with read-only privileges to the Database Schema.

   - The Oracle database role with read-write privileges to the Database Schema.

   - The Oracle database role with read-only privileges to the Database Schema.

7. The utility at this point is ready to perform the upgrade install and prompts you for permission to start the process.

8. If you chose to continue, CDXDBI first checks for the existence of each of the users specified earlier and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.

9. After setting up the roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

10. This is an optional step and should be executed if you have installed Oracle Utilities Meter Data Analytics 2.4.0 Service Pack 4, or plan to install it in the future.

    - Go to ..MDM\Post-Upgrade folder and run Materialized_View_Creation.sql from sql prompt as follows.

    - Connect to Database Owner Schema e.g. <CISADM>/<CISADM>@<SID>

    - Run Materialized_View_Creation.sql as @Materialized_View_Creation.sql from sql prompt.

    - Go to ..MDM\Security folder and run oragensec.bat after changing the appropriate database role and users details.

CDXDBI performs the following tasks:

- Interacts with the user to collect information about the name of Oracle account that will own the application schema (for example, CISADM), password of this account, password of the SYSTEM account in the database, and the name of the Oracle account that the application user will use (for example, CISUSER), and the name of the Oracle account that will be assigned read-only privileges to the application schema (for example, CISREAD).

- Connects to the database as SYSTEM account, checks whether the user already has the application schema installed to verify whether this is an upgrade installation.

- Verifies whether the upgrade path from the current release id to the target release id is supported by the upgrade.

- Verifies whether the tablespace names already exist in Storage.xml file (the process aborts, if not).

- Upgrades the schema, upgrades the system data, and configures security.

- Maintains upgrade log tables in the database.

- Updates release id when the upgrade is completed successfully.

- If an error occurs while executing a SQL script or another utility, it logs and displays the error message and allows you to re-execute the current step. Log files CDXDBI###.log are created in the same folder as CDXDBI and contains all the SQL commands executed against the database along with the results. The log files are incremental so that the results are never overwritten. If warning messages are generated during the upgrade, CDXDBI prompts the user at the end of the process. Users should check the log files to verify the warning messages. Warning messages are only alerts and do not necessary mean a problem exists.

- Stores the Schema owner and password in feature configuration table. The password will be stored in encrypted format.

Post-Install

Refer to the **Populating Language Data** on page 2-12 if the application is to run in another language other than English.

Database Statistics Generation

During an install process, new database objects may be added to the target database. Before starting to use the database, generate the complete statistics for these new objects using the DBMS_STATS package.

Environment Registration

> **Note:** If the target database is registered as a configuration laboratory or archiving database in another database, or another database has been registered as a configuration laboratory or archiving database in this database, it is required that you upgrade the registration at this stage.

The detailed instructions for environment registration can be found in the Oracle Utilities Meter Data Management user documentation. Please refer to this documentation before executing the environment registration utility EnvSetup.exe included in the post-install folder.

Demo Install

This section describes how to install the demo component of Oracle Utilities Meter Data Management.

Refer to **Demo Install** on page 2-8 for details. Use the MDM-V2.0.1.9.0-Database.zip database package instead of MDM-V2.0.1-Database.zip database package.

> **Notes:**
>
> Ensure that you use MDM v2.0.1 Service Pack 9 installer for demo installation and not the MDM 2.0.1 installers.
>
> The Demo dump file import will end with one error (Job "SYSTEM"."SYS_IMPORT_SCHEMA_01" completed with 1 error(s)). You can ignore the error message.

Chapter 4

Database Design

This section provides a standard for database objects such as tables, columns, and indexes, for products using the Oracle Utilities Application Framework. This standard helps smooth integration and upgrade processes by ensuring clean database design, promoting communications, and reducing errors. Just as Oracle Utilities Application Framework goes through innovation in every release of the software, it is also inevitable that the product will take advantage of various database vendors' new features in each release. The recommendations in the database installation section include only the ones that have been proved by vigorous QA processes, field tests and benchmarks. This section includes:

- **Database Object Standard**

- **Column Data Type and Constraints**

- **Standard Columns**

Database Object Standard

This section discusses the rules applied to naming database objects and the attributes that are associated with these objects.

Categories of Data

A table can belong to one of the three categories:

- Control (admin)
- Master
- Transaction

For purposes of physical table space design, metadata and control tables can belong to the same category.

Example of tables in each category:

- **Control:** SC_USER, CI_ADJ_TYPE, F1_BUS_OBJ
- **Master:** CI_PER, CI_PREM,
- **Transaction:** F1_FACT, CI_FT

All tables have the category information in their index name. The second letter of the index carries this information. See **Indexes** on page 4-3 for more information.

Naming Standards

The following naming standards must be applied to database objects.

Table

Table names are prefixed with the owner flag value of the product. For customer modification **CM** must prefix the table name. The length of the table names must be less than or equal to 30 characters. A language table should be named by suffixing **_L** to the main table. The key table name should be named by suffixing **_K** to the main table.

It is recommended to start a table name with the 2-3 letter acronym of the subsystem name that the table belongs to. For example, **MD** stands for metadata subsystem and all metadata table names start with **CI_MD**.

Some examples are:

- CI_ADJ_TYPE
- CI_ADJ_TYPE_L

A language table stores language sensitive columns such as a description of a code. The primary key of a language table consists of the primary key of the code table plus language code (LANGAGUE_CD).

A key table accompanies a table with a surrogate key column. A key value is stored with the environment id that the key value resides in the key table.

The tables prior to V2.0.0 are prefixed with CI_ or SC_.

Columns

The length of a column name must be less than or equal to 30 characters. The following conventions apply when you define special types of columns in the database.

- Use the suffix **FLG** to define a lookup table field. Flag columns must be CHAR(4). Choose lookup field names carefully as these column names are defined in the lookup table (CI_LOOKUP_FLD) and must be prefixed by the product owner flag value.

- Use the suffix **CD** to define user-defined codes. User-defined codes are primarily found as the key column of the admin tables.

- Use the suffix **ID** to define system assigned key columns.

- Use the suffix **SW** to define Boolean columns. The valid values of the switches are 'Y' or 'N'. The switch columns must be CHAR(1)

- Use the suffix **DT** to define Date columns.

- Use the suffix **DTTM** to define Date Time columns.

- Use the suffix **TM** to define Time columns.

Some examples are:

- ADJ_STATUS_FLG

- CAN_RSN_CD

Indexes

Index names are composed of the following parts:

[OF][_application specific prefix_**][C/M/T]NNN[P/S]n**

- **OF**- Owner Flag. Prior to Version 4.1.0 of the framework the leading character of the base Owner Flag was used. From 4.1.0 on the first two characters of product's owner flag value should be used. For client specific implementation of index, use CM for Owner Flag.

- Application specific prefix could be C, F, T or another letter.

- **C/M/T** - The second character can be either C or M or T. C is used for control tables (Admin tables). M is for the master tables. T is reserved for the transaction tables.

- **NNN** - A three-digit number that uniquely identifies the table on which the index is defined.

- **P/S** - P indicates that this index is the primary key index. S is used for indexes other than primary keys.

- **n** is the index number, unique across all indexes on a given table (0 for primary and 1, 2, etc., for the secondary indexes).

Some examples are:

- F1C066P0

- F1C066S1

- CMT206S2

> Warning! Do not use index names in the application as the names can change due to unforeseeable reasons.

Updating Storage.xml

The storage.xml file that comes with the product allocates all base tables and indexes to the default tablespace CISTS_01. If you decide to allocate some tables or indexes outside of the default tablespace, then this has to be reflected in the storage.xml file by changing the tablespace name from the default value to a custom value, according to the format shown below:

Format:

```
<Table_Name>
  <TABLESPACE>CISTS_01</TABLESPACE>
  <PARALLEL>1</PARALLEL>
```

```
       - <LOB>
       - <Column Name>
         <TABLESPACE>CISTS_01</TABLESPACE>
         <SECUREFILE>Y</SECUREFILE>
         <CHUNK>8192</CHUNK>
         <CACHE>N</CACHE>
         <LOGGING>Y</LOGGING>
         <INROW>Y</INROW>
         <COMPRESS>N</COMPRESS>
         </Column Name>
         </LOB>
         </Table_Name>
```

Where Paralcel defines the number of threads, that Oracle DB Server will use to access a table or create an index.

For instance, if a DBA decided to allocate table CI_ACCT in a tablespace MyTablespace, then they would have to change the storage.xml as follows:

```
<CI_ACCT>
<TABLESPACE>**MyTablespace**</TABLESPACE>
</CI_ACCT>
```

The cdxdbi process uses the storage.xml file to place the new database objects into defined tablespaces. A tablespace referenced in the storage.xml file must exist in the database.

The storage.xml file has to be adjusted before each upgrade and/or new installation as required to allocate the tables and indexes across those tablespaces.

Table name is included as a comment for each of the indexes for clarity.

For initial installs, information for each object should be reviewed by a DBA. For upgrades, only tablespace information for the objects added in the new release needs to be reviewed by a DBA.

Be careful while editing this file. Make sure that the tablespace names being used exist in the database. Do not change the basic format of this file.

Sequence

The base sequence name must be prefixed with the owner flag value of the product.

The sequence numbers should be named as below

1. If the Sequence is used for a specific Table then use the following sequence name:

    [OF][C/M/T]NNN_SEQ

*   OF stands for Owner Flag. For example, Framework its F1. Other examples are M1,C1,D1,D2, etc.

*   C/M/T stands for Control (Admin)/Master/Transaction Tables.

*   NNN is a three digit unique Identifier for a Table on which the Sequence is defined.

    For Example: F1T220_SEQ

2. If more than one Sequence is used for a specific Table then use the following Sequence Name:

    [OF][C/M/T]NNN_Column_Name_SEQ

*   OF stands for Owner Flag. For example, the framework is F1. Other examples are M1,C1,D1,D2, etc.

*   C/M/T stands for Control (Admin)/Master/Transaction tables.

*   NNN is a three digit unique identifier for a table on which the sequence is defined.

For Example: F1T220_BO_STATUS_CD_SEQ and F1T220_BUS_OBJ_CD_SEQ

3. If sequence is used for a generic requirement and not specific to a table, then use the following sequence name.

[OF]Column_Name_SEQ

- OF stands for Owner Flag. For example, the framework is F1. Other examples are M1,C1,D1,D2, etc.

For Example: F1FKVALID_SEQ

Trigger

The base trigger name must be prefixed with the owner flag value of the product.

When implementers add database objects, such as tables, triggers and sequences, the name of the objects should be prefixed by CM.

Column Data Type and Constraints

This section discusses the rules applied to column data type and constraints, and the attributes that are associated with these objects.

User Defined Code

User Defined Codes are defined as CHAR type. The length can vary by the business requirements but a minimum of eight characters is recommended. You will find columns defined in less than eight characters but with internationalization in mind new columns should be defined as CHAR(10) or CHAR(12). Also note that when the code is referenced in the application the descriptions are shown to users in most cases.

System Assigned Identifier

System assigned random numbers are defined as CHAR type. The length of the column varies to meet the business requirements. Number type key columns are used when a sequential key assignment is allowed or number type is required to interface with external software. For example, Notification Upload Staging ID is a Number type because most EDI software uses a sequential key assignment mechanism. For sequential key assignment implementation, the DBMS sequence generator is used in conjunction with Number Type ID columns.

Date/Time/Timestamp

Date, Time and Timestamp columns are defined physically as DATE in Oracle. Non-null constraints are implemented only for the required columns.

Number

Numeric columns are implemented as NUMBER type in Oracle. The precision of the number should always be defined. The scale of the number might be defined. Non-null constraints are implemented for all number columns.

Fixed Length/Variable Length Character Columns

When a character column is a part of the primary key of a table define the column in CHAR type. For the non-key character columns, the length should be the defining factor. If the column length should be greater than 10, use VARCHAR2 type in Oracle.

Null Column Support

Oracle Utilities Application Framework 4.1.0, Group Fix 2, supports Nullable columns. This means that the application can write NULLs instead of a blank space or zero (for numeric columns) by using NULLABLE_SW on CI_MD_TBL_FLD. If REQUIRED_SW is set to 'N' and the NULLABLE_SW is set to 'Y', the application will write a NULL in that column. The artifact generator will create hibernate mapping files with appropriate parameters so that the framework hibernate mapping types will know if a given property supports a null value.

NULLABLE_SW is not new, but has previously been used for certain fields such as dates, and some string and number foreign-key columns. Because of this, there is the possibility that there is incorrect metadata for some columns, and that turning on this new feature could result in incorrect behavior when using that metadata. The upgrade script added to FW410 Group Fix 2 fixes the metadata to make sure that the existing tables will not be affected.

This new feature only supports tables maintained by Java. Thus, enhancing any existing tables to use null columns must be done only after making sure that the tables are maintained by Java, and not COBOL.

Cache and Key Validation Flags

By default, the Cache Flag is set to NONE. For most of the admin tables the CACHE Flag should be 'Cached for Batch'. This specifies that the table is cached as L2 cache to reduce database trips.

By default the Key Validation Flag is set to ALL. For tables which have the user defined keys, the KEY_VALIDATION_FLG should be set as 'ALL'. This checks the existence of the key before inserting a new one.

Default Value Setting

The rules for setting the database default values are as follows:

*   When a predefined default value is not available, set the default value of Non-null CHAR or VARCHAR columns to blank except the primary key columns.

*   When a predefined default value is not available, set the default value Non-null Number columns to 0 (zero) except the primary key columns.

*   No database default values should be assigned to the Non Null Date, Time, and Timestamp columns.

Foreign Key Constraints

Referential integrity is enforced by the application. In the database do not define FK constraints. Indexes are created on most of Foreign Key columns to increase performance.

Standard Columns

This section discusses the rules applied to standard columns and the attributes that are associated with these objects.

Owner Flag

Owner Flag (OWNER_FLG) columns exist on the system tables that are shared by multiple products. Oracle Utilities Application Framework limits the data modification of the tables that have owner flag to the data owned by the product.

Version

The Version column is used to for optimistic concurrency control in the application code. Add the Version column to all tables that are maintained by a Row Maintenance program irrespective of the language used (COBOL or JAVA).

Chapter 5

Database Implementation Guidelines

The following section outlines the general implementation guidelines for the database components, including:

- **Configuration Guidelines**

    > **Note:** Refer to My Oracle Support for more information.

See **Appendix D**: **Partitioning Recommendations for Oracle Utilities Meter Data Management** for additional information about configuring the Oracle Utilities Meter Data Management database.

Configuration Guidelines

This section includes general recommendations for configuring various database objects and includes a brief syntax overview. It covers the general aspects of the database objects and does not cover any specific implementation requirements.

Index

Index recommendations specify points that need to be considered when creating indexes on a table.

1. Indexes on a table should be created according to the functional requirements of the table and not in order to perform SQL tuning.

2. The foreign keys on a table should be indexes.

In an Oracle Utilities Application Framework environment, always make sure that the optimization parameters are set as follows:

```
optimizer_index_cost_adj=1
optimizer_index_caching=100
```

This will make sure that the optimizer gives a higher priority to index scans.

Table Partitioning Recommendations

Oracle Utilities recommends using a minimum of 'n' partitions for selective database objects, where 'n' is number of RAC nodes.

Transparent Data Encryption Recommendations

Oracle Utilities supports Oracle Transparent Data Encryption (TDE). Oracle 11gR1 supports tablespace level encryption. The application supports tablespace level encryption for all Application data. Make sure that the hardware resources are sufficiently sized for this as TDE uses additional hardware resources. The Oracle Advanced Security license is a prerequisite for using TDE.

Please consider the following when implementing TDE:

- Create a wallet folder to store the master key. By default, the wallet folder should be created under $ORACLE_BASE/admin/<sid>.

- The wallet containing the master key can be created using the following command:

```
 alter system set encryption key authenticated by "keypasswd"
```

- The wallet can be closed or opened using the following commands:

```
alter system set wallet open identified by "keypasswd";
alter system set wallet close;
```

- Column level encryption can be achieved using the following commands:

```
create table <table_name>
(name varchar2(200) default ' ' not null,
bo_data_area CLOB encrypt using 'AES128',
bo_status_cd char(12)    encrypt using 'AES128')
lob (bo_data_area) store as securefile (cache compress)
tablespace <tablespace_name>;
```

- AES128 is the default encryption algorithm.

- Tablespace level encryption is also supported using the following command:

```
Create tablespace <tablespace_name> logging datafile '<datafile
location>' size <initial size> reuse autoextend on next <next size>
maxsize unlimited extent management local uniform size
<uniform size> encryption using 'AES128' default storage(encrypt) ;
```

- Indexed columns can only be encrypted using the NO SALT Option. Salt is a way to strengthen the security of encrypted data. It is a random string added to the data before it is encrypted, causing repetition of text in the clear to appear different when encrypted.

Data Compression Recommendations

Oracle Utilities supports Advanced Data Compression, available with Oracle 11gR1 onwards, to reduce the database storage footprint. Make sure that your resources are sufficiently sized for this as it uses additional system resources. Compression can be enabled at the Tablespace level or at the Table level.

For Exadata hardware the compression recommendations are:

- For the Final Measurement table (D1_MSRMT), keep the current table partition uncompressed. All of the older partitions will be compressed based on QUERY HIGH compression.

- For the Initial Measurement Data table (D1_INIT_MSMRT_DATA), always keep CLOBs in securefile and medium compressed. Also keep the current table partition uncompressed. All of the older partitions will be compressed based on QUERY HIGH compression.

- Load data into the uncompressed table partitions using a conventional load and then, once data is loaded using a CTAS operation, load into a temporary heap table. Then truncate the original partition. Alter the original partition into HCC compressed and then partition exchange this with the temporary heap table.

- All multi column Indexes (primary as well as secondary) will be compressed using the default compression. HCC or OLTP compression is not applicable on the top of compressed Indexes.

For non-Exadata hardware the recommendations are the same as above, except that you cannot use HCC compression (it is only available in Exadata database machine). Instead of HCC you can use any other compression tool available to you for non-Exadata hardware.

All CLOB fields should be stored as SecureFiles and Medium compressed. This requires a separate license for Advanced Data Compression. As a part of the schema, we create the product-owned tables with compression turned OFF at the LOB level . If you have the license for Advanced Data Compression, you can enable compression by updating the storage.xml.

Database Vault Recommendations

We support Database Vault from the Oracle Utilities Application Framework 4.1.0. All non-application User IDs can be prevented from using DDL or DML statements against the application schema. So SYS and SYSTEM cannot issue DDL or DML statements against CISADM schema.

The application-specific administration account can issue DDL statements but should not be able to perform any DML or DCL statements.

Application user must be given DML only permissions.

Database Vault can be used to control access during patch process and Install/Upgrade process. Configuration is also supported beginning with the Oracle Utilities Application Framework 4.1.0 patch application with Database Vault.

Storage Recommendations

This section specifies recommended options for storing the database objects.

SecureFile for Storing LOBs

Beginning with Oracle 11g, tables having fields with data type of CLOB or BLOBS should have the LOB Columns stored as SecureFiles.

*   The storage options with SecureFiles for Heap Tables should be ENABLE STORAGE IN ROW, CACHE and COMPRESS.

*   For the IOT Table the PCTTHRESHOLD 50 OVERFLOW clause should be specified and the storage options with SecureFiles should be ENABLE STORAGE IN ROW, CACHE and COMPRESS.

*   The PCTTHRESHOLD should be specified as a percentage of the block size. This value defines the maximum size of the portion of the row that is stored in the Index block when an overflow segment is used.

*   The CHUNK option for storage, which is the data size used when accessing or modifying LOB values, can be set to higher than one database block size if big LOBs are used in the IO Operation.

*   For SecureFiles, make sure that the initialization parameter db_securefile is set to ALWAYS.

*   The Tablespace where you are creating the SecureFiles should be enabled with Automatic Segment Space Management (ASSM). In Oracle Database 11g, the default mode of Tablespace creation is ASSM so it may already be set for the Tablespace. If it's not, then you have to create the SecureFiles on a new ASSM Tablespace.

    Note: To enable compression on SecureFiles, you must have an Oracle Advanced Compression license in addition to Oracle Database Enterprise Edition. This feature is not available for the standard edition of the Oracle database.

    If you are using Oracle Database Enterprise Edition, please ensure that the "COMPRESS" flag is turned on by setting it to "Y" in Storage.xml.

See **Database Syntax** on page 5-5 for more information on SecureFiles.

Database Configuration Recommendations

This section specifies the recommended methods for configuring the database with a focus on specific functional area.

Large Redo Log File Sizes

The Redo Log files are written by the Log Writer Background process. These Log files are written in a serial manner. Once a Log File is full, a Log Switch occurs and the next Log file starts getting populated.

It is recommended that the size of the Redo Log files should be sufficiently high so that you do not see frequent Log Switches in the Alert logs of the database. Frequent Log Switches impact the IO performance and can be avoided by having a larger Redo log File size.

Frequent Log Switches impacts the IO performance and can be avoided by having a bigger Redo log File Size.

Database Syntax

SecureFile

```
CREATE TABLE <Table_Name>
    ( COLUMN1 ….,
      COLUMN2 (CLOB)
    )
LOB(COLUMN2) STORE AS SECUREFILE (CACHE COMPRESS);

CREATE TABLE <Table_Name>
    ( COLUMN1 ….,
      COLUMN2 (CLOB)
      CONTRAINT <> PRIMARY KEY(…)
    )
ORGANIZATION INDEX PCTTHRESHOLD 50 OVERFLOW
LOB(COLUMN2) STORE AS SECUREFILE (ENABLE STORAGE IN ROW CHUNK CACHE
COMPRESS);
```

Database Initialization Parameters

The recommended Initialization Parameters are given below. These parameters are a starting point for database tuning. An optimal value for a production environment may differ from one customer deployment to another.

db_block_size=8192

log_checkpoint_interval=0

db_file_multiblock_read_count=8

transactions=3000

open_cursors=3000

db_writer_processes=12

optimizer_index_cost_adj=1

optimizer_index_caching=100

db_files=1024

dbwr_io_slaves=10   (Only if Asynchronous IO is not Supported)

sessions=4500

memory_target=0

memory_max_target=0

sec_case_sensitive_logon=FALSE

processes=3000

dml_locks=4860

_b_tree_bitmap_plans=FALSE

Appendix A

Upgrades to the Oracle Utilities Meter Data Management Database

This document highlights the changes made to Oracle Utilities Meter Data Management database from V2.0.0.1 to V2.0.1 In the last section of this document you will find a list of the schema objects added or dropped in MDM 2.0.1.

This section includes:

- **Automatic Data Upgrade**

- **Schema Change**

- **New System Data**

Automatic Data Upgrade

This section describes what the upgrade script will populate in new tables and columns to preserve the existing base product application functions of the previous version of Oracle Utilities Application Framework.

Set Business Status for Measurement Data

As life cycle is added to BO an upgrade script is used to update the business status code in all existing customer records.

MO Algorithm Moved

An upgrade script is used to delete existing customer records that have been moved to base product.

Schema Change

New Tables

The following new tables are added to Oracle Utilities Meter Data Management V2.0.1.

Tables	Description
D1_SP_MSRMT_CYC_SCHED_RTE	SP/Measurement Cycle Schedule Route

Dropped Tables

None

Unsupported Tables

None

Added Columns

The following Table Columns are added to Oracle Utilities Meter Data Management V2.0.1:

- D1_COMM_TYPE :COMM_TYPE_STAT_FLG

- D1_DVC_EVT :DVC_EVT_END_DTTM

- D1_INIT_MSRMT_DATA:IMD_CTRL_DC_ID

- D1_INIT_MSRMT_DATA:IMD_CTRL_MC_ID

- D1_SP_MSRMT_CYC_SCHED_RTE:BO_STATUS_CD

- D1_SP_MSRMT_CYC_SCHED_RTE:BO_STATUS_REASON_CD

- D1_SP_MSRMT_CYC_SCHED_RTE:BUS_OBJ_CD

- D1_SP_MSRMT_CYC_SCHED_RTE:CRE_DTTM

- D1_SP_MSRMT_CYC_SCHED_RTE:D1_SP_ID

- D1_SP_MSRMT_CYC_SCHED_RTE:MSRMT_CYC_CD

- D1_SP_MSRMT_CYC_SCHED_RTE:MSRMT_CYC_RTE_CD

- D1_SP_MSRMT_CYC_SCHED_RTE:SCHED_SELECTION_DT

- D1_SP_MSRMT_CYC_SCHED_RTE:STATUS_UPD_DTTM

- D1_SP_MSRMT_CYC_SCHED_RTE:VERSION

Dropped Columns

The following columns are dropped in this release.

- D1_COMM_TYPE:ACTIVITY_TYPE_STAT_FLG

- D1_COMM_TYPE:OUTMSG_TYPE_CD

Unsupported Table Columns

None

Column Format Change

None

New System Data

This section lists the new system data that are added for business process configuration.

Algorithm Type

The following algorithm types are new to V2.0.1.

Algorithm Type	Description
D1-ADDLOGSE	Add MO Log for Sync Request Seeder
D1-ADDLTRANS	Perform Additional Install Event Transformation
D1-ADEVTTVAL	Active Device Event Type Validation
D1-AMIDIOCRT	AMI Device Identifier Outbound Communication Creation
D1-AUD-QTYUE	Audit IMD Quantity Changes and Set User-Edited Flag
D1-AUD-UEFLG	Set user-edited flag
D1-BODIFFDT	BO Differs By Device Type
D1-CCINPVAL	Cancel Command Input Validation
D1-CCOUTMSG	Create Outbound Message (Connect/Disconnect)
D1-CCRSRTBO	Transform to Command Request or Service Request Transaction BO
D1-CECD	Check for existing future Connects or Disconnects
D1-CHKIMD	Check for Initial Measurement Data
D1-CHKMST	Check for existing Measurements
D1-CHKSREXST	Check Inbound Sync Request Existence
D1-CLEAREXCP	Sync Request Clear Exception
D1-CMOCC	Commission Outbound Communication Creation
D1-COBCA	Create Outbound Communication for Activities
D1-COCE	Cancel Outstanding Completion Events
D1-COCOMMCF	Create Outbound Communication based on Completion Flag
D1-CODROC	Create On-Demand Read Outbound Communication
D1-COMMINFO	Communication Information
D1-COMPDE-TD	Complete Device Event To Do

Algorithm Type	Description
D1-COOC	Cancel Outstanding Outbound Communication
D1-COUTMSG	Create Outbound Message
D1-CRAINFO	Command Request Activity Information
D1-CRE-TDNVE	Create IMD To Do for Error States
D1-CREATELOG	Create Log Entries for Device Event Seeder
D1-CREATTODO	Create Device Event To Do
D1-CRENEGACK	Create Negative Acknowledgement
D1-CREPOSACK	Create Positive Acknowledgement
D1-DCVALDEC	Default Configuration Validation of Device Event Category
D1-DDACINFO	Device Activity with Duration - Information
D1-DDR	Determine Device and Recipient
D1-DEFSYNCTZ	Default Sync Request Inbound Time Zone
D1-DETBOID	Device Event Type and Business Object Identification
D1-DETBOSYNC	Determine BO for Synchronized Objects
D1-DETSYNRBO	Determine Sync Request BO
D1-DETTARGBO	Determine Sync Request Inbound Target BO
D1-DETTARIEI	Determine IE Target BO and Check for Smart Device - Initial Sync
D1-DETTARIEO	Determine IE Target BO and Check for Smart Device - Ongoing Sync
D1-DEVICEID	Device Identification
D1-DFLSYNCBO	Default Composite Sync Request BO
D1-DFTSTDTTM	Default Start Date/Time
D1-DIFDVEVTC	Method Differs By Device Event Category
D1-DMRO	Default Measurement Requested
D1-DMT	Default Measurement Type
D1-DRDTBO	Determine Read Device Transaction BO
D1-DSCPRDEVT	Discard Pair of Events
D1-DVCEVTVAL	Validate Device Event Processing Method Configuration

Algorithm Type	Description
D1-DVEVTINFO	Device Event Info
D1-EVCRBONSC	Event Creation Based on Status Codes - Additional
D1-EXCMPEVTS	Execute Completion Events
D1-FAILPA	Fail Parent Activity
D1-FINDCMD	Find Command to Cancel
D1-FRER	Send Fail Response to External Requester
D1-GINPVAL	Common Input Validation
D1-HLPRDDEVT	Hold Paired Device Event
D1-IMD-RETRY	Retry Initial Measurement Data Processing
D1-IMD-SD-TR	IMD Seeder Transition Determinant
D1-IMD-TRNS	IMD Transition - No Log Entries
D1-INITACT	Initiate Activity
D1-OCDDT	Outbound Communication Differs by Device Type
D1-PASSPA	Pass Parent Activity
D1-PBSCMTOCC	Priority-Based Status Code Mapping to Condition Codes
D1-REPRDVCET	Reprocess Device Event
D1-RESLVKEYS	Resolve Keys
D1-RFINSC	Retrieve Scalar Final Measurements
D1-RFINTM	Retrieve Interval Final Measurements
D1-RIINTM	Retrieve Interval Initial Measurements
D1-RMVCE	Retrieve Measurements via Create IMD Completion Events
D1-RRER	Send Received Response to External Requester
D1-RSINIMS	Retrieve Scalar Initial Measurements
D1-RSTEXPDT	Reset Date Time
D1-SANFS	Alert - Activities Exist in a Non-Final State
D1-SENDTOSUB	Send to Subscribers
D1-SETCMPIND	Set Composite Indicator Value
D1-SETERRFLG	Set Error Flag
D1-SETTRANDT	Setup Transformed Data
D1-SHEVTDTTM	Shift Event Date/Times to Standard

Algorithm Type	Description
D1-SNDDVSTCK	Send Device Status Check Notification to Edge Application
D1-SNDRDTEA	Send On Demand Read to Edge Application
D1-SODRTEA	Send On-Demand Read to Edge Application
D1-SPLCONSMO	Split into Constituent Device Configuration and MC Sync Requests
D1-SPRID	Service Provider Identification
D1-SR-CRSEED	Instantiate a Sync Request Seeder
D1-SR-PREADD	Sync Request Pre-Add Data
D1-SR-UPDDAT	Sync Request Update Data
D1-SRCNTEA	Send Connect or Disconnect Notification to Edge Application
D1-SRER	Send Success Response to External Requester
D1-TERMACT	Terminate Activity
D1-TIMEOUT	Time Out - Outbound Communication
D1-TPATOF	Transition Parent Activity To Failed
D1-TRANRELCS	Transition Related Composite Sync Request
D1-TRANTONEG	Do Not Clear Exceptions and Transition to Negative State
D1-TRNIESTAT	Translate Install Event Status
D1-TRNONOFF	Translate/Suppress On/Off History
D1-UPAEDT	Update Parent Activity's Event Date Time
D1-VALACTTDI	Validate Activity Type and Transition to Error State If Invalid
D1-VALCOMTP	Validate Communication Type
D1-VALDEVMC	Validate that Device has appropriate Measuring Component
D1-VALDEXEVT	Validate External Event Name
D1-VALDVCEVT	Validate Device Event
D1-VALDVCNAC	Validate Device Not Already Commissioned
D1-VALDVCNAD	Validate Device Not Already Decommissioned

Algorithm Type	Description
D1-VALDVCSTS	Validate Install Event Status
D1-VALIDCMD	Validate Head-End's Capability to Perform Command
D1-VALIMPINT	Validate Start and End Date Time
D1-VALMAXRT	Validate Maximum Retries If Retry Frequency Is Populated
D1-VALMDEST	Validate Measurement Destination
D1-VALMREQO	Validate Measurement Requested
D1-VALOUTCOM	Validate Outbound Communication
D1-VALSCHTRU	Validate Schema
D1-VALSTCOND	Validate State Condition of Smart Device
D1-VALSYNCBO	Perform BO Validation
D1-VLPREVTTY	Validate Paired Event Device Event Type
D1-VSEDTMT	Validate Interval Start Date Time and Interval End Date Time
D1-WAITCONSY	Wait for Constituent Sync Requests
D1-WAITEFFDT	Wait for Effective Date
D1-WFMTO	Wait for Measurement Time Out
D1-WTTMOUT	Wait Time Out
D2-ADS-INFO	Aggregator Creator Postal and Service Type - Information
D2-ADS-TR	Check if Aggregator Creator has Performed a Scan
D2-AGG-MC	Aggregate Measurements of Aggregator's Constituent MCs
D2-AMC-INFO	Service Type and Postal Aggregator - Information
D2-CRE-AGGMC	Aggregator MC Creation for Postal Code and Service Type
D2-DET-CMC	Find Constituent Measuring Components Based on Service Type and Postal
D2-DETUSID	Determine Usage Subscription ID
D2-DETUTBO	Determine Usage Transaction Business Object
D2-BLDSUMSQ	Build Summary SQs
D2-CALUSGSUB	Calculate Usage (Sub Usage Transaction)
D2-CHKSUBUT	Check Sub Usage Transactions

Algorithm Type	Description
	D2-CRE-UTSD
D2-CHKTRNPUT	Set Try To Transition Parent Usage Transaction to Yes
D2-DET-UTDT	Determine Usage Transaction Period
D2-OACHKVAL	Zero Consumption Outage Activity Validation
D2-RETRY	Retry
D2-SEND-EROR	Send Error Notification
D2-TNAFCALCH	Transition After Calculation (Sub Usage Transaction)
D2-TNORBATCH	Proceed With Calculation Or Defer Calculation
D2-TRNRATESC	Transform Rate Schedule
D2-VAL-AMCT	Validate Aggregator Measuring Component Type
D2-VALMATH	Validate Math
D2-ZEROCNCHK	Zero Consumption Check
D2-MATH	Math
D2-SEND-SUBC	Send Subsequent Correction Notification
D2-TRNUSGPNT	Try to Transition Parent Usage Transaction
D2-TRNUS	Transform Usage Subscription
D2-UTSEEDLOG	Create Usage Transaction Seeder Log Entries
D2-UTSEEDVAL	Usage Transaction Seeder Validation

Algorithm

The following algorithms are new to V2.0.1.

Algorithm	Description
D1-ADDLOGSE	Add MO Log for Sync Request Seeder
D1-ADDLTRANS	Perform Additional Install Event Transformation
D1-ADEVTTVAL	Active Device Event Type Validation
D1-AMIDIOCRT	AMI Device Identifier Outbound Communication Creation
D1-AUD-QTYUE	Audit IMD Quantity Changes and Set User-Edited Flag

Algorithm	Description
D1-AUD-UEFLG	Audit User Edited Flag
D1-BODIFFDT	BO Differs By Device Type
D1-CCINPVAL	Cancel Command Input Validation
D1-CCSRER	Cancel Command Send Success Response to External Requester
D1-CDCCSRTBO	Transform to Connect Command Request or Connect Service Request Transaction BO
D1-CDCOBC	Create Decommission Outbound Communication for Activities
D1-CDDCSRTBO	Transform to Disconnect Command Request or Disconnect Service Request Transaction BO
D1-CECD	Check for existing future Disconnects
D1-CECONNECT	Check for existing future Connects
D1-CHKIMD	Check For IMD
D1-CHKMST	Check for existing Measurements
D1-CHKSREXST	Check Inbound Sync Request existence
D1-CLCOC	Create Load Check Outbound Communication
D1-CLEAREXCP	Sync Request Clear Exception
D1-CMOCC	Commission Outbound Communication Creation
D1-COBCA	Create Outbound Communication for On-Demand Read (Interval)
D1-COCE	Cancel Outstanding Completion Events
D1-CODROC	Create On-Demand Read for Start Measurement
D1-CODROCD	Create On-Demand Read for Final Measurement
D1-COMMINFO	Communication Information
D1-COMPDE-TD	Complete Device Event To Do
D1-COOC	Cancel Outstanding Outbound Communication
D1-COUTMSG	Create Outbound Message
D1-CRAINFO	Command Request Activity Information
D1-CRCOC	Create Remote Connect Outbound Communication

Algorithm	Description
D1-CRDOC	Create Remote Disconnect Outbound Communication
D1-CRE-TDNVE	Create IMD To Do for Error States
D1-CREATELOG	Create Log Entries
D1-CREATTODO	Create Device Event To Do
D1-CREDVSTCK	Create Device Status Check Outbound Communication
D1-CREDVSTLD	Create Device Status Check Outbound Communication
D1-CRENEGACK	Create Negative Acknowledgement
D1-CREPOSACK	Create Positive Acknowledgement
D1-CROBCA	Create Outbound Communication for On-Demand Read (Scalar)
D1-CTDEBOE	Create To Do Entry for BO in Error
D1-DCVALDEC	Default Configuration Validation of Device Event Category
D1-DDACINFO	Device Activity with Duration - Information
D1-DDR	Determine Device and Recipient
D1-DEFSYNCTZ	Default Sync Request Inbound Time Zone
D1-DETBOID	Device Event Type and Business Object Identification
D1-DETBOSYNC	Determine BO for Synchronized Objects
D1-DETSYNRBO	Determine Sync Request BO
D1-DETTARGCN	Determine Sync Request Target BO - Contact
D1-DETTARGDC	Determine Sync Request Target BO - Device Configuration
D1-DETTARGDV	Determine Sync Request Target BO - Device
D1-DETTARGMC	Determine Sync Request Target BO - Measuring Component
D1-DETTARGSP	Determine Sync Request Target BO - Service Point
D1-DETTARIEI	Determine Install Event Target BO - Initial
D1-DETTARIEO	Determine Install Event Target BO - Ongoing
D1-DEVICEID	Device Identification

Algorithm	Description
D1-DFLSYNCBO	Default Composite Sync Request BO
D1-DFTSTDTTM	Default Start Date/Time
D1-DIFDVEVTC	Method Differs By Device Event Category
D1-DMRO	Default Measurement Requested
D1-DMT	Default Measurement Type
D1-DRDTBO	Determine Read Device Transaction BO
D1-DSCFRER	Send Fail Response to External Requester
D1-DSCPRDEVT	Discard Pair of Events
D1-DSCRRER	Send Received Response to External Requester
D1-DVCEVTVAL	Validate Device Event Processing Method Configuration
D1-DVEVTINFO	Device Event Info
D1-EXCMPEVTS	Execute Completion Events
D1-FAILPA	Fail Parent Activity
D1-FINDCMD	Find Command to Cancel
D1-FRER	Send Fail Response to External Requester
D1-GINPVAL	Common Input Validation
D1-HECAPVAL	Validate Head-End's Capability to Perform Activity
D1-HLPRDDEVT	Hold Paired Device Event
D1-IMD-RETRY	Retry Initial Measurement Data Processing
D1-IMD-SD-TR	Transition Determinant
D1-IMD-TRNS	IMD Transition - No Log Entries
D1-INITACT	Initiate Activity
D1-OCDDT	Outbound Communication Differs by Device Type
D1-PASSPA	Pass Parent Activity
D1-PBSCMTOCC	Interval Status Code Mapping to Condition Codes
D1-RBOE	Retry BO in Error
D1-REPRDVCET	Reprocess Device Event
D1-RESKEYFAL	Resolve Keys - Ongoing Sync
D1-RESKEYTRU	Resolve Keys - Initial Sync
D1-RFINSC	Retrieve Scalar Final Measurements

Algorithm	Description
D1-RFINTM	Retrieve Interval Final Measurements
D1-RIINTM	Retrieve Interval Initial Measurements
D1-RMVCE	Retrieve Measurements via Completion Events
D1-RMVCERC	Retrieve Measurements via Completion Events Remote Connect
D1-RRER	Send Received Response to External Requester
D1-RSINIMS	Retrieve Scalar Initial Measurements
D1-RSTEXPDT	Reset Expiration Date Time
D1-SANFS	Alert - Show Activities in Non-Final State
D1-SENDTOSUB	Send to Subscribers
D1-SETCMPIND	Set Composite Indicator Value
D1-SETERRFLG	Set Error Flag
D1-SETTRANDT	Setup Transformed Data
D1-SFMTEA	Send Final Measurement to Edge Application
D1-SHEVTDTTM	Shift Event Date/Times to Standard
D1-SNDDVSTCK	Send Device Status Check Notification to Edge Application
D1-SNDRDTEA	Send On Demand Read to Edge Application
D1-SODRTEA	Send Start Measurement to Edge Application
D1-SPLCONSMO	Split into Constituent MOs
D1-SPRID	Service Provider Identification
D1-SR-CRSEED	Instantiate a Sync Request Seeder
D1-SR-PREADD	Sync Request Pre-Add Data
D1-SR-UPDDAT	Sync Request Update Data
D1-SRCNTEA	Send Remote Connect Notification to Edge Application
D1-SRDNTEA	Send Remote Disconnect Notification to Edge Application
D1-SRER	Send Success Response to External Requester
D1-TDCREATE	Sync Request To Do Entry Creation
D1-TERMACT	Terminate Activity

Algorithm	Description
D1-TIMEOUT	Time Out
D1-TODOCOMPL	Generic To Do Completion
D1-TODORETRY	Sync Request Retry for To Do's
D1-TPATOF	Transition Parent Activity To Failed
D1-TRANRELCS	Transition Related Composite Sync Request
D1-TRANTONEG	Do Not Clear Exceptions and Transition to Negative State
D1-TRNIESTAT	Translate Install Event Status
D1-TRNONOFF	Translate/Suppress On/Off History
D1-UPAEDT	Update Parent Activity's Event Date Time
D1-VALACTTDI	Validate Activity Type and Transition to Error State If Invalid
D1-VALCOMTP	Validate Communication Type
D1-VALDEVMC	Validate that Device has appropriate Measuring Component
D1-VALDEVMCS	Validate that Device has appropriate Measuring Component
D1-VALDEXEVT	Validate External Event Name
D1-VALDMDEST	Validate Measurement Destination
D1-VALDVCEVT	Validate Device Event
D1-VALDVCNAC	Validate Device Not Already Commissioned
D1-VALDVCNAD	Validate Device Not Already Decommissioned
D1-VALDVCNCD	Validate Device is not already Connected
D1-VALDVCNDC	Validate Device is not already Disconnected
D1-VALHECPRD	Validate Head-end's Capability to perform Remote Disconnect
D1-VALIDCMD	Validate Headend's capability to perform On Demand Read (Interval)
D1-VALIDCMDS	Validate Headend's capability to perform On Demand Read (Scalar)
D1-VALIMPINT	Validate Start and End Date Time
D1-VALMAXRT	Validate Maximum Retries If Retry Frequency Is Populated

Algorithm	Description
D1-VALMDEST	Validate Measurement Destination
D1-VALMREQO	Validate Measurement Requested
D1-VALOUTCOM	Validate Outbound Communication
D1-VALSCHTRU	Validate Schema
D1-VALSTCOND	Validate State Condition of Smart Device
D1-VALSYNCBO	Perform BO Validation
D1-VHCPCD	Validate Head-end's Capability to perform Connect Disconnect
D1-VHCPCOMMS	Validate Head-End's Capability to Commission Device
D1-VHCPDCOMM	Validate Head-end's Capability to perform Decommission Device
D1-VHCPODR	Validate Head-end's Capability to perform On-Demand Read
D1-VLPREVTTY	Validate Paired Event Device Event Type
D1-VSEDTMT	Validate Interval Start Date Time and Interval End Date Time
D1-WAITCONSY	Wait for Constituent Sync Requests
D1-WAITEFFDT	Wait for Effective Date
D1-WFMTO	Wait for Measurement Time Out
D1-WTTMOUT	Wait Time Out
D2-ADS-INFO	Aggregator Dimension Scanner Information
D2-ADS-TR	Activity Dimension Scanner Monitor
D2-AGG-MC	Aggregate Measurements of Aggregator's Constituent MCs
D2-AMC-INFO	Service Type and Postal Aggregator - Information
D2-BLDSUMSQ	Build Summary SQs
D2-CALUSGSUB	Calculate Usage (Sub Usage Transaction)
D2-CHKSUBUT	Check Sub Usage Transactions
D2-CHKTRNPUT	Set Try To Transition Parent Usage Transaction to Yes
D2-CRE-AGGMC	Aggregator MC Creation for Postal Code and Service Type
D2-CRE-UTSD	Attempt to Reprocess Usage Transaction Seeder

Algorithm	Description
D2-DET-CMC	Find Constituent Measuring Components Based on Service Type and Postal
D2-DET-UTDT	Determine Usage Transaction Period
D2-DETTARGUS	Determine Sync Request Target BO - Usage Subscription
D2-DETUSID	Determine Usage Subscription ID
D2-DETUTBO	Determine Usage Transaction Business Object
D2-INTADJSCA	Interval Adjustment Based on Related Scalar Measurement
D2-MATH	Math
D2-OACHKVAL	Zero Consumption Outage Activity Validation
D2-RETRY	Retry
D2-SCAPROEST	Estimate Scalar Based on Profile Data
D2-SEND-EROR	Send Error Notification
D2-SEND-SUBC	Send Subsequent Correction Notification
D2-TNAFCALCH	Transition After Calculation (Sub Usage Transaction)
D2-TNORBATCH	Proceed With Calculation Or Defer Calculation
D2-TRNRATESC	Transform Rate Schedule
D2-TRNUS	Transform Usage Subscription
D2-TRNUSGPNT	Try to Transition Parent Usage Transaction
D2-UTSE-TODO	Create Usage Transaction Seeder Exception To Do
D2-UTSEEDVAL	Usage Transaction Seeder Validation
D2-VAL-AMCT	Validate Aggregator Measuring Component Type
D2-VALMATH	Validate Math
D2-ZEROCNCHK	Zero Consumption Check
D2-UTSEEDLOG	Create Usage Transaction Seeder Log Entries

Application Service

The following Application Services are new to V2.0.1

Application Service	Description
D1-COMMISSIONDVCBOAS	Device Commission BO
D1-DECOMMDVCBOAS	Device Decommission BO
D1-DEVICEEVENTBOAS	Device Event BO
D1-DVCEVENTBOAS	Device Event Seeder BO
D1-DVCSTATCHKBOAS	Device Status Check BO
D1-DVCWITHDURATNBOAS	Device Activity with Duration BO
D1-ODRDBOAS	On-Demand Read BO
D1-REMOTECONNECTBOAS	Remote Connect BO
D1-REMOTEDISCONBOAS	Remote Disconnect BO
D1-SPMCSR	SP / Measurement Cycle Schedule Route MO
D1-SPMCSRBOAS	SP / Measurement Cycle Schedule Route BO
D1-STDDVCEVENTBOAS	Standard Device Event BO
D1-SYNCADDDVCBOAS	Device Synchronization Add BO
D1-SYNCADDDVCFGBOAS	Device Config Synchronization Add BO
D1-SYNCADDIEBOAS	Install Event Synchronization Add BO
D1-SYNCADDMCBOAS	Measuring Component Synchronization Add BO
D1-SYNCADDSPBOAS	SP Synchronization Add BO
D1-SYNCREQCOMPBOAS	Composite Sync Request BO
D1-SYNCREQININITBOAS	Sync Request Inbound Initial BO
D1-SYNCREQINONGOBOAS	Sync Request Inbound Ongoing BO
D1-SYNCREQSEEDBOAS	Sync Request Seeder BO
D1-SYREQININITSPBOAS	Sync Request Inbound Initial BO
D1CEVT	Completion Event Portal
D1CEVTQ	Completion Event Query Portal
D1COMM	Communication Portal
D1COMMQ	Communication Query Portal
D1COMMTY	Communication Type Portal
D1DETYP	Device Event Type Portal
D1DVCEVQ	Device Event Query Portal

Application Service	Description
D1DVCEVT	Device Event Portal
D1DVCEVTTYP	Device Type Portal
D1MCTYQ	Measuring Component Type Query
D1SYNCIN	Sync Request Inbound Portal
D1SYNCIQ	Sync Request Inbound Query Portal
D1SYNCRINM	Sync Request Portal
D1SYNCRINQ	Sync Request Query Portal
D1SYRINE	Sync Request Inbound Exceptions Portal
D2-AGGBOAS	Aggregator Measuring Component BO
D2-AGGDSBOAS	Agg Dimension Scanner Activity BO
D2-SYNCADDUSBOAS	US Synchronization Add BO
D2-USAGETRANSUBBOAS	Usage Transaction Sub BO
D2-USGTRNSEEDERBOAS	Usage Transaction Seeder BO
D2360ADD	360 Search by Address
D2360DEV	360 Search by Device
D2360NAM	360 Search by Name
D2TOTR	Total and Trends Portal
D2TOTRMT	Total and Trends View Portal
D2_VEEEME	VEE Exceptions

Batch Control

The following Batch Controls are new to V2.0.1.

Batch Control	Description
D1-CMSYN	Composite Sync Request
D1-CRERR	Command Request Error - Retry
D1-CRWT	Command Request Wait - Monitor
D1-CSPSR	Create SP Msrmt Cycle Schedule Rte Records
D1-DVEVS	Device Event Seeder Monitor Process
D1-GNIMD	Generic IMD Monitor
D1-ICERR	Inbound Communication Error - Retry
D1-OCERR	Outbound Communication Error - Retry

Batch Control	Description
D1-OCWT	Outbound Communication Wait - Monitor
D1-PSPSR	Process SP / MC Schedule Route Records
D1-SIIER	Initial Sync Request - Error
D1-SIKCN	Initial Sync Request - Resolve Keys Contact
D1-SIKDC	Initial Sync Request - Resolve Keys DC
D1-SIKDV	Initial Sync Request - Resolve Keys Device
D1-SIKIE	Initial Sync Request - Resolve Keys IE
D1-SIKMC	Initial Sync Request - Resolve Keys MC
D1-SIKSP	Initial Sync Request - Resolve Keys SP
D1-SIKUS	Initial Sync Request - Resolve Keys US
D1-SILCN	Initial Sync Request - Load Data Contact
D1-SILDC	Initial Sync Request - Load Data DC
D1-SILDV	Initial Sync Request - Load Data Device
D1-SILIE	Initial Sync Request - Load Data IE
D1-SILMC	Initial Sync Request - Load Data MC
D1-SILSP	Initial Sync Request - Load Data SP
D1-SILUS	Initial Sync Request - Load Data US
D1-SIOER	Ongoing Sync Request - Error
D1-SIOPE	Ongoing Sync Request - Pending
D1-SRSDE	Sync Request Seeder - Error
D1-UTCD	Usage Transaction Calculate Defer Monitor
D1-UTID	Usage Transaction Issue Detected Monitor
D1-UTSED	Usage Transaction Seeder - Error
D2-ADS	Aggregator Dimension Scanner Monitor
D2-AGG	Aggregation Monitor
D2-SIKUS	Initial Sync Request - Resolve Keys US
D2-SILUS	Initial Sync Request - Load Data US

Business Object

The following Business Objects are new to V2.0.1.

Business Object	Description
D1-ActivityLite	Activity LITE

Business Object	Description
D1-AuditList	IMD - Audit List Section Only (Lite)
D1-BusinessObject	Business Object
D1-BusinessObjectMO	Business Object MO
D1-CancelCommand	Cancel Command
D1-CancelCommandType	Cancel Command Type
D1-CommInLite	Inbound Communication Lite
D1-CommOutLite	Outbound Communication Lite
D1-CommTypeBundlingAddBO	Bundling Add BO for Communication Type
D1-CommunicationLite	Communication Lite
D1-CommunicationTypePhysicalBO	Physical BO for Communication Type
D1-CompositeSyncRequest	Composite Sync Request
D1-CompositeSyncRequestDC	Device Config Composite Sync Request
D1-DeviceCommission	Device Commissioning
D1-DeviceCommissionType	Device Commission Type
D1-DeviceDecommission	Device Decommissioning
D1-DeviceDecommissionType	Device Decommission Type
D1-DeviceEvent	Device Event
D1-DeviceEventMappingLookup	Device Event Mapping
D1-DeviceEventSeeder	Device Event Seeder
D1-DeviceLiteAMI	BO to Get AMI related details for Device
D1-DeviceStatusCheck	Device Status Check
D1-DeviceStatusCheckType	Device Status Check Type
D1-DeviceWithDurationActParent	Device Activity with Duration Parent
D1-DeviceWithDurationActType	Device Activity with Duration Type
D1-DeviceWithDurationActivity	Outage Activity with Duration
D1-DvcCommunicationStatLookup	Device Communication Status
D1-DvcConnectionStatLookup	Device Connection Status
D1-DvcEventCategoryLookup	Device Event Category
D1-DvcEventTypeBundlingAddBO	Bundling Add BO for Device Event Type
D1-DvcEventTypePhysicalBO	Phyisical BO for Device Event Type
D1-DvcFunctionalStateLookup	Device Functional State
D1-ExecutionPriorityLookup	Execution Priority

Business Object	Description
D1-ExternalActTypeIdentifier	External Activity Type Identifier
D1-ExternalCommTypeLookup	External Communication Type
D1-GenericConnect	Generic Connect Device
D1-GenericDisconnect	Generic Disconnect Device
D1-HeadendUOMLookup	Headend UOM Code to Standard UOM
D1-HowToProcDvcEvtsInformation	How to Process Device Event Related Info
D1-HowToProcessDeviceInfo	How to Process Device Related Information
D1-IBCommunicationTypeBasis	Inbound Communication Type Basis
D1-IMDRawData	Initial Measurement Data Raw Lite
D1-IMDRetry	IMD Retry BO
D1-IMDSeederLite	IMD Seeder Lite
D1-InitialSyncRequestContact	Contact Initial Sync Request
D1-InitialSyncRequestDC	Device Configuration Initial Sync Request
D1-InitialSyncRequestDevice	Device Initial Sync Request
D1-InitialSyncRequestIE	Install Event Initial Sync Request
D1-InitialSyncRequestMC	Measuring Component Initial Sync Request
D1-InitialSyncRequestSP	Service Point Initial Sync Request
D1-IntStsCodeToCondMapLookup	Interval Status Code to Condition Mapping
D1-LoadActionCodeLookup	Load Action Code
D1-MCScratchpadLite	MC Lite Scratchpad
D1-MCStandAlone	Measuring Component Standalone Lite
D1-MCTypeValueIdentifiers	Measuring Component Type Value Identifiers
D1-MaintenanceObjectLITE	Maintenance Object
D1-OBCommunicationTypeBasis	Outbound Communication Type Basis
D1-OnDemandReadAbstract	On-Demand Read Abstract Parent
D1-OnDemandReadInterval	On-Demand Read Interval
D1-OnDemandReadIntervalType	On-Demand Read Interval Type
D1-OnDemandReadScalar	On-Demand Read Scalar
D1-OnDemandReadScalarType	On-Demand Read Scalar Admin BO
D1-OngoingSyncReqAckMsg	Ongoing Sync Request Acknowledgement
D1-OngoingSyncRequestContact	Contact Ongoing Sync Request

Business Object	Description
D1-OngoingSyncRequestDC	Device Configuration Ongoing Sync Request
D1-OngoingSyncRequestDevice	Device Ongoing Sync Request
D1-OngoingSyncRequestIE	Install Event Ongoing Sync Request
D1-OngoingSyncRequestMC	Measuring Component Ongoing Sync Request
D1-OngoingSyncRequestSP	Service Point Ongoing Sync Request
D1-PairedEventFirstDeviceEvent	Device Event - Paired Event (First)
D1-PairedEventFirstDvcEvtType	Device Event Type - Paired Event (First)
D1-PairedEventLastDeviceEvent	Device Event - Paired Event (Last)
D1-PairedEventLastDvcEvtType	Device Event Type - Paired Event (Last)
D1-RemoteConnect	Remote Connect
D1-RemoteConnectType	Remote Connect Type
D1-RemoteDisconnect	Remote Disconnect
D1-RemoteDisconnectType	Remote Disconnect Type
D1-SPMsrmtCycScheduleRoute	SP / Measurement Cycle Schedule Route
D1-SeederSyncMasterConfig	Seeder Sync Request Master Configuration
D1-StandardDeviceEvent	Standard Device Event
D1-StandardDeviceEventType	Standard Device Event Type
D1-StdEventNameLookup	Standard Event Name
D1-SyncRequestSeeder	Sync Request Seeder
D1-SynchronizationAddContact	Contact Synchronization Add
D1-SynchronizationAddDC	Device Configuration Synchronization Add
D1-SynchronizationAddDevice	Device Synchronization Add
D1-SynchronizationAddIE	Install Event Synchronization Add
D1-SynchronizationAddMC	Measuring Component Synchronization Add
D1-SynchronizationAddSP	Service Point Synchronization Add
D1-YesNoLookup	Yes/No
D2-ActivityAggDimScanner	Aggregator Creator - Postal / Service Type
D2-ActivityTypeAggDimScanner	Aggregator Dimension Scanner Activity Type
D2-Aggregator	Aggregator - Postal and Service Type
D2-AggregatorLite	Aggregator Lite

Business Object	Description
D2-AggregatorType	Aggregator Type
D2-AggregatorTypeLite	Aggregator Type - Lite
D2-CCBRateScheduleLookup	CCB Rate Schedule
D2-HowToSendUSInfoBatch	How To Send US Related Information Batch
D2-HowToSendUSInfoOnline	How To Send US Information - Online
D2-InitialSyncRequestUS	Usage Subscription Initial Sync Request
D2-Math	Usage Rule - Math
D2-SubUsageTransaction	Sub Usage Transaction
D2-USMainContactLITE	Usage Subscription Main Contact Lite
D2-UsageTranOutboundMesg	Usage Transaction Outbound Message
D2-UsgTranChkSubLITE	Usage Transaction Check Sub LITE
D2-UsgTranErrDtlOutboundMesg	Usage Trans Error Details Outbound Message
D2-UsgTranSeeder	Usage Transaction Seeder
D2-UsgTranSubCorrectOutbound	Usage Trans Subsequent Correction Outbound
D2-OngoingSyncRequestUS	Usage Subscription Ongoing Sync Request
D2-UsgTranRetryLITE	Usage Transaction Retry LITE
D2-SynchronizationAddUS	US Synchronization Add
D2-UsageTransactionStatusLite	Usage Transaction Status LITE
D2-UsgTranDeferLITE	Usage Transaction Defer LITE
D2-UsgTranSubLITE	Usage Transaction Sub LITE
D2-ZeroConsumptionCheck	Zero Consumption Check
WX-MDMMasterConfig	Self-Service (Meter Data Management)

FK Reference

The following FK References are new to V2.0.1.

FK Reference	Description
D1-ESSRC	External System with Search Zone
D1-MOSRC	MO with Search Zone
D1-SRQIN	Sync Request Inbound
D1-TBSRC	Table with Search Zone

FK Reference	Description
D1CE-BO	Valid Completion Event Business Object
D1SA-BO	BO Option - Measurement Log BO
D1VB-BO	BO Option - Valid Command Request BO
D1VC-BO	BO Option - Valid Completion Event
D1-USGRE	Usage Transaction Parent

Lookups

The following Lookups are new to V2.0.1.

Lookup Field Name	Field Value	Language	Description
ACCESS_MODE	D1AD	ENG	Additional Processing
ACCESS_MODE	D1AP	ENG	Process
ACCESS_MODE	D1CM	ENG	Communication in Progress
ACCESS_MODE	D1CR	ENG	Connection Ready
ACCESS_MODE	D1DT	ENG	Transformed
ACCESS_MODE	D1FK	ENG	Resolved
ACCESS_MODE	D1HD	ENG	Hold
ACCESS_MODE	D1KA	ENG	Key Allocated
ACCESS_MODE	D1KR	ENG	Keys Resolved
ACCESS_MODE	D1LD	ENG	Loaded
ACCESS_MODE	D1MR	ENG	Commission Ready
ACCESS_MODE	D1NK	ENG	Acknowledgement Sent
ACCESS_MODE	D1PA	ENG	Pre-Added
ACCESS_MODE	D1RE	ENG	Retry
ACCESS_MODE	D1SP	ENG	Split
ACCESS_MODE	D1SS	ENG	Send
ACCESS_MODE	D1UP	ENG	Updating
ACCESS_MODE	D1VD	ENG	Data Transformed / Basic Schema Validated
ACCESS_MODE	D1VL	ENG	Validate
ACCESS_MODE	D1WT	ENG	Waiting for Effective Date
ACCESS_MODE	D1WW	ENG	Wait
ACTIVITY_REL_OBJ_TYPE_FLG	D1EE	ENG	Ending Event

Lookup Field Name	Field Value	Language	Description
ACTIVITY_REL_OBJ_TYPE_FLG	D1IE	ENG	Initiating Event
ACTIVITY_REL_TYPE_FLG	D1CN	ENG	Cancel
ACTIVITY_TYPE_CAT_FLG	D1DE	ENG	Device Event Activity
AUTO_RETRY_FLG	D1NO	ENG	No
AUTO_RETRY_FLG	D1YS	ENG	Yes
BAR_DATA_TYPE_FLG	D1DE	ENG	Device Events
BO_TR_COND_FLG	D1AC	ENG	Active
BO_TR_COND_FLG	D1DR	ENG	Discard
BO_TR_COND_FLG	D1IN	ENG	Inactive
BO_TR_COND_FLG	D1VE	ENG	VEE State
BUS_OBJ_OPT_FLG	D1CC	ENG	Create Completion Events
BUS_OBJ_OPT_FLG	D1CS	ENG	Channel Status Code Mapping
BUS_OBJ_OPT_FLG	D1IS	ENG	Interval Status Code to Condition Mapping
BUS_OBJ_OPT_FLG	D1SA	ENG	Synchronization Add BO
BUS_OBJ_OPT_FLG	D1VB	ENG	Valid Command Request BO
BUS_OBJ_OPT_FLG	D1VS	ENG	Valid State Change Code
COMM_REL_OBJ_TYPE_FLG	D1OB	ENG	Inititating Outbound Communication
COMM_REL_OBJ_TYPE_FLG	D1PA	ENG	Initiating Activity
COMM_TYPE_STAT_FLG	D1AC	ENG	Active
COMM_TYPE_STAT_FLG	D1IN	ENG	Inactive
CONTACT_ID_TYPE_FLG	D1EI	ENG	External ID
D1_CLEAR_EXCEPTIONS_FLG	D1CL	ENG	Clear Exception
D1_CLEAR_EXCEPTIONS_FLG	D1DC	ENG	Do Not Clear Exception
D1_COMM_TYPE_DUP_STA_FLG	D1AC	ENG	Create as Active, Deactivate Original
D1_COMM_TYPE_DUP_STA_FLG	D1IN	ENG	Create as Inactive

Lookup Field Name	Field Value	Language	Description
D1_EVT_DUR_FLG	D1CN	ENG	Continuous
D1_EVT_DUR_FLG	D1IN	ENG	Individual
D1_SHOW_ALL_COMMT_FLG	D1YE	ENG	Yes
D1_SHOW_ALL_DVC_EVT_TYP_FLG	D1YE	ENG	Yes
D1_SHOW_ALL_SYNC_REQ_IN	D1YS	ENG	Yes
DATE_TIME_STANDARD_FLG	D1NO	ENG	No
DATE_TIME_STANDARD_FLG	D1YS	ENG	Yes
DVC_EVT_ACTION_FLG	D1SB	ENG	Subscribe
DVC_EVT_ACTION_FLG	D1US	ENG	Unsubscribe
DVC_EVT_OUTCOME_FLG	D1SB	ENG	Subscribed
DVC_EVT_OUTCOME_FLG	D1US	ENG	Unscubscribed
DVC_ID_TYPE_FLG	D1EI	ENG	External ID
F1_COMPOSITE_SYNC_FLG	D1SD	ENG	Seeder Sync Request
LOAD_ACTION_CODE_FLG	D1AR	ENG	Armed
LOAD_ACTION_CODE_FLG	D1CL	ENG	Closed
LOAD_ACTION_CODE_FLG	D1CN	ENG	Connect
LOAD_ACTION_CODE_FLG	D1DC	ENG	Disconnect
LOAD_ACTION_CODE_FLG	D1OP	ENG	Open
LOAD_ACTION_CODE_FLG	D1PL	ENG	Initiate Power Limitation
LOAD_ACTION_CODE_FLG	D1UN	ENG	Unknown
MC_ID_TYPE_FLG	D1EI	ENG	External ID
MSRMT_TYPE_FLG	D1IN	ENG	Interval

Lookup Field Name	Field Value	Language	Description
MSRMT_TYPE_FLG	D1SC	ENG	Scalar
PROCESS_FLG	D1NP	ENG	Do Not Process
PROC_ROLE_FLG	D1AM	ENG	Obtain AMI Device Identifier
PROC_ROLE_FLG	D1DC	ENG	Device Commission
PROC_ROLE_FLG	D1DD	ENG	Device Decommission
PROC_ROLE_FLG	D1DM	ENG	Device Event Mapping
PROC_ROLE_FLG	D1DS	ENG	Device Status Check
PROC_ROLE_FLG	D1EP	ENG	Event Processing Default Configuration
PROC_ROLE_FLG	D1IN	ENG	On-Demand Read (Interval)
PROC_ROLE_FLG	D1LC	ENG	Load Check
PROC_ROLE_FLG	D1RC	ENG	Remote Connect
PROC_ROLE_FLG	D1RD	ENG	Remote Disconnect
PROC_ROLE_FLG	D1SC	ENG	On-Demand Read (Scalar)
PROC_ROLE_FLG	D1SD	ENG	Send Device Event
PROC_ROLE_FLG	D1UM	ENG	UOM Mapping
REL_OBJ_TYPE_FLG	D1CM	ENG	Composite Sync Request
REPROCESS_PERFORMED_FLG	D1NO	ENG	No
REPROCESS_PERFORMED_FLG	D1YS	ENG	Yes
SMART_DEVICE_INDICATOR_FLG	D1NO	ENG	No
SMART_DEVICE_INDICATOR_FLG	D1YS	ENG	Yes
ACCESS_MODE	D2CD	ENG	Calculate Defer
ACCESS_MODE	D2CE	ENG	Calculated
ACCESS_MODE	D2CI	ENG	Calculate In Progress
APPLY_TOU_MAP_DRV_VEC_FLG	D2NO	ENG	No
APPLY_TOU_MAP_DRV_VEC_FLG	D2YS	ENG	Yes
BO_TR_COND_FLG	D2CD	ENG	Calculate Defer
BO_TR_COND_FLG	D2CI	ENG	Calculate In Progress
DEFER_CALC_FLG	D2NO	ENG	No
DEFER_CALC_FLG	D2YS	ENG	Yes

Lookup Field Name	Field Value	Language	Description
FALSE_ACTION_FLG	D2AT	ENG	Apply False Formula
FALSE_ACTION_FLG	D2CN	ENG	Check Next Condition
INSERT_SQ_ENTRY_ FLG	D2NO	ENG	No
INSERT_SQ_ENTRY_ FLG	D2YS	ENG	Yes
INTV_SET_FLG	D2FV	ENG	FV - Final Vector Interval Value
INTV_SET_FLG	D2V1	ENG	IV1 - Vector 1 Interval Value
INTV_SET_FLG	D2V2	ENG	IV2 - Vector 2 Interval Value
INTV_SET_FLG	D2V3	ENG	IV3 - Vector 3 Interval Value
INTV_SET_FLG	D2V4	ENG	IV4 - Vector 4 Interval Value
INTV_SET_FLG	D2V5	ENG	IV5 - Vector 5 Interval Value
IS_ESTIMATE_FLG	D2NO	ENG	No
IS_ESTIMATE_FLG	D2YS	ENG	Yes
OUTAGE_CHECK_IF _ZERO_CONS_FLG	D2NO	ENG	No
OUTAGE_CHECK_IF _ZERO_CONS_FLG	D2YS	ENG	Yes
PROC_ROLE_FLG	D2EB	ENG	Usage Trans Error Notification - Batch
PROC_ROLE_FLG	D2EO	ENG	Usage Trans Error Notification - Online
PROC_ROLE_FLG	D2UB	ENG	Usage Transaction Notification - Batch
PROC_ROLE_FLG	D2UO	ENG	Usage Transaction Notification - Online
PROC_ROLE_FLG	D2US	ENG	Usg Tran Subsequent Correction Notification
REQUEST_MODE_F LG	D2BB	ENG	Batch
REQUEST_MODE_F LG	D2OB	ENG	Online
SAVE_DRV_VEC_FL G	D2NO	ENG	No
SAVE_DRV_VEC_FL G	D2YS	ENG	Yes
SCALAR_SET_FUNC_ FLG	D2AV	ENG	Average
SCALAR_SET_FUNC_ FLG	D2CT	ENG	Count

Lookup Field Name	Field Value	Language	Description
SCALAR_SET_FUNC_FLG	D2MN	ENG	Min
SCALAR_SET_FUNC_FLG	D2MX	ENG	Max
SCALAR_SET_FUNC_FLG	D2TL	ENG	Total
SET_FUNC_DRV_VEC_FLG	D2AV	ENG	Average
SET_FUNC_DRV_VEC_FLG	D2CT	ENG	Count
SET_FUNC_DRV_VEC_FLG	D2MN	ENG	Min
SET_FUNC_DRV_VEC_FLG	D2MX	ENG	Max
SET_FUNC_DRV_VEC_FLG	D2TL	ENG	Total
SQ_ENTRY_QTY_SRC_FLG	D2DV	ENG	Set Function Against Derived Vector
SQ_ENTRY_QTY_SRC_FLG	D2SC	ENG	Scalar Formula Result
SUB_UT_EXISTS_FLG	D2NO	ENG	No
SUB_UT_EXISTS_FLG	D2YS	ENG	Yes
TRUE_ACTION_FLG	D2AT	ENG	Apply True Formula
TRUE_ACTION_FLG	D2CN	ENG	Check Next Condition
TRY_TRANSIT_PARENT_UT_FLG	D2NO	ENG	No
TRY_TRANSIT_PARENT_UT_FLG	D2YS	ENG	Yes
USE_PR_MSR_VAL_FLG	D2NO	ENG	No
USE_PR_MSR_VAL_FLG	D2YS	ENG	Yes
VAR_MATH_TYPE_FLG	D2FA	ENG	Factor
VAR_MATH_TYPE_FLG	D2SF	ENG	Set Function
VAR_MATH_TYPE_FLG	D2SQ	ENG	Usage Transaction Service Quantity

Lookup Field Name	Field Value	Language	Description
VECTOR_TYPE_FLG	D2MC	ENG	Specific Measuring Component
VECTOR_TYPE_FLG	D2PF	ENG	Profile Factor
VECTOR_TYPE_FLG	D2US	ENG	Channels Linked To Usage Subscription
VECTOR_TYPE_FLG	D2UT	ENG	Usage Transaction Service Quantity
VEC_FORMULA_SRC _FLG	D2CV	ENG	Conditional Vector Formula
VEC_FORMULA_SRC _FLG	D2SV	ENG	Simple Vector Formula

Maintenance Object

The following Maintenance Objects are new to V2.0.1.

MO code	Description
D1-SPMCSR	SP / Measurement Cycle Schedule Route

Script

The following Scripts are new to V2.0.1.

Script	Description
D1-ADEvtTVal	Active Device Event Type Validation
D1-AMIDIOCRT	AMI Device Identifier Outbound Communication Creation
D1-ActTreeVi	Activity Tree Visibility
D1-AddCCBAlg	Insert CCB-specific algorithms to Sync Request BOs (MDF)
D1-AddCCBSS	Insert CCB-specific algorithms to Sync Request BOs
D1-AddComLog	Communication - Add User Log Entry
D1-AddDELog	Device Event - Add User Log Entry
D1-AddLogSE	Add MO Log for Seeder Error
D1-AddSynLog	Sync Request Inbound - Add User Log Entry
D1-AddlTrans	Perform Additional Install Event Transformation
D1-AqFltrVal	Activity Query Validate Identifier Filters
D1-AuditList	Retrieve Audit List

Script	Description
D1-AuditVis	Should Show if Audit List has an entry
D1-BoFltrVal	Validate Identifier Filters
D1-CCInpVal	Cancel Command Input Validation
D1-CCOUTMSG	Create OutBound message (Connect/Disconnect)
D1-CECD	Check for existing future Connects or Disconnects
D1-CEvtGoTo	Completion Event - Go to Completion Event
D1-CEvtRetDt	Completion Event - Retrieve Details for Display
D1-CHKIMD	Check for IMD
D1-CHKMST	Check Existence of Measurements
D1-CLCOC	Create Outbound Communication with Completion Flag
D1-CMOCC	Commission Outbound Communication Creation
D1-CODROC	Create On-Demand Read Outbound Communication
D1-COMMINFO	Communication Information
D1-COUTMSG	Create Outbound message
D1-CRAINFO	Command Request Activity Information
D1-CROUTMSG	Create Outbound Message - Generic Service Script
D1-CevtMain	Completion Event Maintenance
D1-ChkSRExst	Check Inbound Sync Request existence
D1-CnclCmd	Cancel Command
D1-CnclCmdDt	Retrieve Cancel Command Details for Display
D1-ComTreeVi	Communication Tree Visibility
D1-CommCxt	Highlight Communication in Context
D1-CommInfo	Communication - Information
D1-CommMain	Communication - Maintenance
D1-CommTMain	Communication Type - Maintenance
D1-CreNegAck	Create Negative Acknowledgement
D1-CrePosAck	Create Positive Acknowledgement

Script	Description
D1-CreSRSeed	Instantiate a Sync Request Seeder
D1-CreSyRSdr	Create Sync Request Seeder from Error Record
D1-DCVALDEC	Default Configuration Validation of Device Event C
D1-DDACINFO	Device Activity with Duration - Information
D1-DEvtMain	Device Event - Maintenance
D1-DEvtTMain	Device Event Type - Maintenance
D1-DIFDVEVTC	Method Differs By Device Event Category
D1-DMRO	Default Measurement Requested
D1-DVCEVTVAL	Validate Device Event Parameters
D1-DVEVTINFO	Device Event Info
D1-DefSyncTZ	Default Sync Request Inbound Time Zone Value based on Installation Option
D1-DetSynRBO	Determine Sync Request BO
D1-DetTarIEI	Determine Install Event Target BO - Initial
D1-DetTarIEO	Determine Install Event Target BO - Ongoing
D1-DetTargBo	Determine Sync Request Inbound Target BO
D1-DetTypeBO	Determine Type BO for Savepoint
D1-DflSynCBO	Default Composite Sync Request BO
D1-DrvSyncIE	Derive Install Event Target BO for Data Sync
D1-DscPrdEvt	Discard Pair of Events
D1-FindCmd	Find Command
D1-FltrDiscR	Filter Discard Reason
D1-GINPVAL	Common Input Validation
D1-GenSPDBoA	Generic Invoke BO Add from Savepoint Dispatcher
D1-GenSPDBoR	Generic Invoke BO Replace from Savepoint Dispatcher
D1-GenSPDBoU	Generic Invoke BO Update from Savepoint Dispatcher
D1-GetStCol	Get BO Status Option Color
D1-IMD-Trns	Do not create log entries on transition

Script	Description
D1-IMDEvUpld	Multiple IMD and Event Upload
D1-IMDEvtUpl	IMD and Event Upload
D1-IMDUpPosM	Online IMD and Event Upload: Post Map Processing
D1-IMDUpPosP	Online IMD and Event Upload: Post Processing
D1-INITACT	Initiate Activity
D1-InitCmd	Initiate Meter Command
D1-MeasValDe	Get Measurement Value Descriptions
D1-MsrmtDisp	Measurement Data Display
D1-MsrmtMain	Measurement Maintenance
D1-RFINSC	Retrieve Scalar Final Measurements
D1-RFINTM	Retrieve Interval Final Measurements
D1-RIINTM	Retrieve Interval Initial Measurements
D1-RMVCE	Retrieve Measurements via Create IMD Completion Events
D1-RSINIMS	Retrieve Scalar Initial Measurements
D1-RelCEvtSh	Zone Visibility - Related Completion Event Should Show Zone
D1-ReslvKeys	Resolve Keys
D1-RetCCRR	Retrieve Cancel Command Requesters and Recipients
D1-RetCevt	Retrieve Completion Events
D1-RetODRDet	Retrieve On Demand Read Details
D1-RetRqster	Retrieve Requesters
D1-RtDCDtls	Device Commission - Retrieve Details for Display
D1-RtDDADtls	Device Activity with Duration - Retrieve Details for Display
D1-RtDDDtls	Device Decommission - Retrieve Details for Display
D1-RtDEDtls	Device Event - Retrieve Details for Display
D1-RtDESDtls	Device Event Seeder - Retrieve Details for Display
D1-RtDSCDtls	Device Status Check - Retrieve Details for Display
D1-RtNextSts	Retrieve Next States

Script	Description
D1-RtODRDtls	Retrieve Details On Demand Read Display
D1-RtODRSCDt	Retrieve Details On Demand Read Scalar Display
D1-RtRCDtls	Remote Connect - Retrieve Details for Display
D1-RtRDDtls	Remote Disconnect - Retrieve Details for Display
D1-SANFS	Alert - Show Non-Final Activities linked to MC, US, Device, MC, Contac
D1-SNDRDTEA	Send On Demand Read to Edge Application
D1-SODRTEA	Send On-Demand Read to Edge Application
D1-SRCNTEA	Send Connect or Disconnect Notification to Edge Application
D1-SRIExcDtl	Sync Request Inbound Exception Details - Display
D1-SRPreAdd	Sync Request Pre-Add Data
D1-SRUpdData	Sync Request Update Data
D1-SRUpdSP	Sync Request Update SP Data
D1-SendToSub	Send to Subscribers
D1-SetCmpInd	Set Composite Indicator Value
D1-SetErrFlg	Set Error Flag
D1-SetPrmKey	Move Prime Key to transform group
D1-SetTranDt	Setup Transformed Data
D1-SndDvStCk	Send Device Status Check Notification to Edge Application
D1-SplConsMO	Split into Constituent MOs
D1-SynInDisp	Sync Request Inbound - Retrieve Details for Display
D1-SynInExcp	Sync Request Inbound Exceptions
D1-SynInMain	Sync Request Inbound - Maintenance
D1-SyncFlVal	Validate Sync Request Filters
D1-TIMEOUT	Time Out - Outbound Communication
D1-TPATOF	Transition Parent Activity To Failed
D1-TermAct	Terminate Activity for Device Event

Script	Description
D1-TranRelCS	Transition Related Composite Sync Request
D1-TranToNeg	Do Not Clear Exceptions and Transition to Negative State
D1-TrnIEStat	Translate Install Event Status
D1-TrnOnOff	Translate/Suppress On/Off History
D1-VALCOMTP	Validate Communication Type
D1-VALDEVMC	Validate that Device has appropriate MC
D1-VALDVCEVT	Validate Device Event
D1-VALDVCNAC	Validate Device Not Already Commissioned
D1-VALDVCNAD	Validate Device Not Already Decommissioned
D1-VALDVCSTS	Validate Install Event Status
D1-VALIDCMD	Validate Head-end's Capability to perform Command
D1-VALIMPINT	Validate Start and End Date Time
D1-VALMDEST	Validate Measurement Destination
D1-VALMREQO	Validate Measurement Requested
D1-VALOUTCOM	Validate Outbound Communication
D1-VLPREVTTY	Validate Paired Event Device Event Type
D1-VSEDTMT	Validate Interval Start Date Time and Interval End Date Time
D1-ValDExEvt	Validate External Event Name
D1-ValMaxRt	Populate Maximum Retries when retry Frequency is populated
D1-ValSchTru	Validate Schema
D1-ValStCond	Validate State Condition of Smart Device
D1-ValSyncBO	Perform BO Validation
D1-WFMTO	Wait for Measurement Time Out
D1-WaitConSy	Wait for Constituent Sync Requests
D1IBCommNav	Navigate to Communication with Inbound Communication Id
D1OBCommNav	Navigate to Communication with Outbound Communication Id
d1-NavAct	Navigate to Activity

Script	Description
D2-ADS-Info	Aggregator Dimension Scanner Information
D2-ADS-TR	Check if Aggregator Creator has Performed a Single Scan
D2-AMC-Info	Service Type and Postal Aggregator - Information
D2-ActDisp	Retrieve Activity Details
D2-AddCCBAlg	Insert CCB-specific algorithms to Sync Request BOs (MDM)
D2-AddCCBSS	Insert CCB-specific algorithms to Sync Request BOs
D2-AggDisp	Retrieve Service Type and Potal Aggregator Details
D2-AggFltVal	Validate Aggregator Identifier Filters
D2-AggMCMain	Aggregator Measuring Component Maintenance
D2-ChkTrnPUT	Set Try To Transition Parent Usage Transaction to Yes
D2-Cre-AggMC	Aggregator MC Creation for Postal Code and Service Type
D2-DetUsgDT	Determine Usage Transaction Period
D2-MCSumGoTo	Measuring Component - Go To 360 View or Total & Trends
D2-MathDisp	Math Display
D2-MathPost	Math Post processing
D2-MathPre	Math Pre processing
D2-OACHKVAL	Zero Consumption Outage Activity Validation
D2-SendError	Send Error Notification
D2-SendSubC	Send Subsequent Correction Notification
D2-SubUTVis	Visibility Service Script for Sub Usage Transaction
D2-SubUsgDts	Sub Usage Retrieve Details for Display
D2-TrnRateSc	Transform Rate Schedule
D2-TrnUS	Transform Usage Subscription
D2-UTScalVis	Visibility Service Script for Scalar Details
D2-UTSeedPre	Usage Transaction Seeder Pre-Processing

Script	Description
D2-UTSeedVal	Usage Transaction Seeder Validation
D2-UsgTraPre	Usage Transaction Pre-Processing
D2-V360Addr	Validate Address filters
D2-V360Dvc	Validate Device filters
D2-V360Name	Validate Name filters
D2-Val-AMCT	Validate Aggregator Measuring Component Type
D2_MCCalcInf	Get MC Calc Information
D2_QtyInfo	Format the quantity information
D2_SEDttmInf	Format the start and end date/time information
D2_SEQtyInfo	Format the start and end quantity information
D2_SPCalcInf	Get SP Calc Information
D2_UTScalVis	Visibility Service Script for ScalarDetails

To do Type

The following To Do type is new to V2.0.1.

To Do Type	Description
D1-SYNIN	Sync Request Inbound Error
D1-IBCTD	Inbound Communication To Do Type
D1-OBCTD	Outbound Communication To Do Type
D1-DETD	Device Event To Do Type

Portal

The following Portal is new to V2.0.1.

Portal	Description
D1CEVT	Completion Event
D1CEVTL	Completion Event Log
D1CEVTQ	Completion Event Query
D1COMM	Communication
D1COMMLOG	Communication Log

Portal	Description
D1COMMQ	Communication Query
D1COMMTY	Communication Type
D1DETYP	Device Event Type
D1DVCEVQ	Device Event Query
D1DVCEVT	Device Event
D1DVCEVTL	Device Event Log
D1MCTYQ	Measuring Component Type Query
D1SYNCILOG	Sync Request Inbound Log
D1SYNCIN	Sync Request Inbound
D1SYNCIQ	Sync Request Inbound Query
D1SYRINE	Sync Request Inbound Exceptions
D2360ADD	360 Search by Address
D2360DEV	360 Search by Device
D2360NAM	360 Search by Name
D2TOTR	Total and Trends
D2TOTRMT	Total and Trends View

Portal Zone

The following Portal Zones are added to V2.0.1

Portal	Zone
D1ACT	D1-ACTRELCVT
D1ACT	D1-ACTTREE
D1CEVT	D1-CEVTDISP
D1CEVT	D1-CEVTRELOB
D1CEVTL	D1-CEVTLOG
D1CEVTQ	D1-CEVTQRY
D1COMM	D1-COMMDISP
D1COMM	D1-COMMTREE
D1COMMLOG	D1-COMMLOG
D1COMMQ	D1-COMMQRY
D1COMMTY	D1-COMMTDISP
D1COMMTY	D1-COMMTLIST

Portal	Zone
D1DETYP	D1-DETYPDISP
D1DETYP	D1-DETYPLIST
D1DVCEVQ	D1-DVCEVTQRY
D1DVCEVT	D1-DVEVTDISP
D1DVCEVTL	D1-DVCEVTLOG
D1DVCTYP	D1-DETYPDISP
D1IMDSA	D1-MSRMTIM
D1IMLOG	D1-AUDLSDISP
D1MC	D1-MSRMTS
D1MCTYQ	D1-MCTYQRY
D1SP	D1-SPMCSRLST
D1SYNCILOG	D1-SYNINLOG
D1SYNCIN	D1-SYNINDISP
D1SYNCIN	D1-SYNINEXCZ
D1SYNCIQ	D1-SYNRINQRY
D1SYRINE	D1-SYNCRINED
D1SYRINE	D1-SYNCRINES
D1UTNM	D2-SUBUTLIST
D1UTNM	D2_UTSCLARDT
D2360ADD	D2-360SRCAD
D2360DEV	D2-360SRCDV
D2360NAM	D2-360SRCNM
D2360VWM	D1-MSRMTS
D2TOTR	D2-AGGMCQRY
D2TOTRMT	D1-MCDISP
D2TOTRMT	D1-MSRMTS
D2TOTRMT	D2-FIAOVLY
D2TOTRMT	D2-FVOVLY
D2TOTRMT	D2-TOUOVLY

UI Map

The following UI Maps are new to V2.0.1.

Map	Description
D1- DvcDurnActTypeDisp	Device Activity with Duration Type - Disp
D1- DvcDurnActTypeMaint	Device Activity with Duration Type - Maint
D1-ActivityCommonOnClick	Activity Type Common On Click Actions
D1-ActivityTypeCommonAction	Activity Type Common Action Buttons
D1-ActivityTypeCommonOnClick	Activity Type Common On Click Actions
D1-ActivityTypeMaintCommon1	Activity Type Maintenance Common Fragment
D1-ActivityTypeMaintCommon2	Activity Type Maintenance Common Fragment
D1-AuditListDisplay	Audit List - Display
D1-CevtRelObjFKQryFltr	Completion Evt Rlt Obj Foreign Key Filter
D1-CmdRqstDisplayCmdInfo	Command Request Display Info
D1-CmdRqstDisplayMain	Command Request Display Main
D1-CmdRqstDisplayRecordInfo	Command Request Display Record Info
D1-CmdRqstMaintCommon	Command Request Maintenance Common
D1-CmdRqstTypeDispMain	Command Request Type Display Main
D1-CmdRqstTypeDispRecordInfo	Command Req Type Display Record Info
D1-CmdRqstTypeExcpHandlingDisp	Command Request Type Exception Handling Display
D1-CmdRqstTypeExcpHandlingMain	Command Request Type Exception Handling Maint
D1-CnclCmdDisp	Cancel Command - Display UI Map
D1-CnclCmdDisplayCmdInfo	Cancel Command Request Display Info
D1-CnclCmdDisplayMain	Command Request Display Main
D1-CnclCmdMaint	Cancel Command Maintenance
D1-CnclCmdMaintCommon	Cancel Command Maintenance Common
D1-CnclCmdQryFltr	Cancel Command Query Filter
D1-CnclCmdTypDisp	Cancel Command Type - Display UI Map
D1-CnclCmdTypMaint	Cancel Command Type Maintenance
D1-CommAddUserLog	Communication - Add User Log Entry
D1-CommDvcSearchQryFltr	Communication - Device Query
D1-CommIdentifierSearchQryFltr	Communication - Identifier Query

Map	Description
D1-CommNmAdrDtQryFltr	Communication - Name Address Date Query
D1-CommTypeCommonAction	Communication Type Common Action Buttons
D1-CommTypeCommonMaint	Communication Type Common Maintenance
D1-CommTypeCommonOnClick	Communication Type Common On Click Actions
D1-CommTypeMainDisp	Communication Type Common Display - Main
D1-CommTypeRecordInfoDisp	Comm Type Common Display - Record Info
D1-CommonIMDMainDisplay	Common Initial Measurement Data Fragment
D1-CommunicationCommonOnClick	Communication Common On Click Actions
D1-CommunicationInOnAddEdit	Comm Fields displayed on Add or Edit act
D1-CommunicationOnAddEdit	Comm Fields displayed on Add or Edit act
D1-CommunicationOutOnAddEdit	Comm Fields displayed on Add or Edit act
D1-CompletionEventAddUserLog	Completion Event - Add User Log Entry
D1-DeviceCommissionDisplay	Device Commission - Display
D1-DeviceCommissionMaint	Device Commission - Maintenance
D1-DeviceCommissionTypeDisplay	Device Commission Type - Display
D1-DeviceCommissionTypeMaint	Device Commission Type Maintenance Map
D1-DeviceDecommissionDisp	Decommission Device Display
D1-DeviceDecommissionMaint	Decommission Device Maintenance
D1-DeviceDecommissionTypeDisp	Decommission Device Type - Display
D1-DeviceDecommissionTypeMaint	Decommission Device Type - Maintenance
D1-DeviceEventEventInfoDisp	Device Event - Event Information Display
D1-DeviceEventEventInfoMaint	Device Event - Event Information Maint
D1-DeviceEventMainDisp	Device Event Main Display
D1-DeviceEventMainMaint	Device Event Main Maintenance
D1-DeviceEventMappingDisp	Device Event Mapping - Display
D1-DeviceEventMappingMaint	Device Event Mapping - Maintenance
D1-DeviceEventRecordInfoDisp	Device Event Record Info Display

Map	Description
D1-DeviceEventSeederDisp	Device Event Seeder - Display
D1-DeviceEventSeederMainDisp	Device Event Seeder Main Display
D1-DeviceEventSeederMainMaint	Device Event Seeder Main Maintenance
D1-DeviceEventSeederMaint	Device Event Seeder - Maintenance
D1-DeviceEventSenderDisp	Device Event Sender Display
D1-DeviceEventSenderMaint	Device Event Sender Maintenance
D1-DeviceEventTypeDisp	Device Event Type Main Display
D1-DeviceEventTypeMaint	Device Event Type Main Maintenance
D1-DeviceStatusCheckDisplay	Device Status Check - Display
D1-DeviceStatusCheckMaint	Device Status Check - Maintenance
D1-DeviceStatusCheckTypDisplay	Device Status Check Type - Display
D1-DeviceStatusCheckTypMaint	Device Status Check Type - Maintenance
D1-DisplayRecordInfoHeader	Record Action Header HTML Fragment
D1-DuplicateCommunicationType	Duplicate Communication Type Status
D1-DvcCommStatusLookupDisplay	SGG Dvc Communication Stat Lkup - Display
D1-DvcCommStatusLookupMaint	SGG Dvc Comm Stat Lkup - Maintenance
D1-DvcConnStatusLookupDisplay	SGG Device Connection Stat Lkup - Display
D1-DvcConnStatusLookupMaint	SGG Device Conn Stat Lkup - Maintenance
D1-DvcDurActMainDisp	Device Activity with Duration Main Display
D1-DvcDurActMainMaint	Device Activity with Duration Maintenance
D1-DvcDurActRecordInfoDisp	Dvc Activity with Duration Record Info Disp
D1-DvcEventAddUserLog	Device Event - Add User Log Entry
D1-DvcEventCategoryLookupDisp	Device Event Category Lookup - Display
D1-DvcEventCategoryLookupMaint	Device Event Category Lookup - Maintenance
D1-DvcEventQ1Filter	Device ID Query Filter
D1-DvcEventQ2Filter	Device Event ID Query Filter
D1-DvcFuncStateLookupDisplay	SGG Device Functional State Lkup - Display

Map	Description
D1-DvcFuncStateLookupMaint	SGG Device Func State Lkup - Maintenance
D1-DvcWithDuratnActivityDisp	Device Activity with Duration - Display
D1-DvcWithDuratnActivityMaint	Device Activity with Duration - Maint
D1-EnterDiscardReason	Enter Discard Reason
D1-EventBarDeviceEventType	Event Bar Device Event Type Grid
D1-ExcHndlMaint	Exception Handling Maintenance
D1-ExecutionPriorityDisplay	Execution Priority Lookup - Display
D1-ExecutionPriorityLookupDisp	Execution Priority Lookup Display
D1-ExecutionPriorityMaint	Execution Priority Lookup Maintenance
D1-ExtActTypeIdentifierDisplay	External Activity Type Identifier - Display
D1-ExtActTypeIdentifierMaint	External Activity Type Identifier - Maint
D1-ExtEvtNameFilter	External Event Name Search
D1-ExtReferenceIdUIMapFilter	Sync Request - External Reference Id Query
D1-ExternalCommTypeLookupDisp	External Commn Type lookup - Display
D1-ExternalCommTypeLookupMaint	External Commn Type Lookup - Maintenance
D1-HeadendUOMLookupDisplay	Create Headend UOM Code - Display
D1-HeadendUOMLookupMaint	Maintenance UI Map for the Head-end UOM
D1-HowToCreateActivityOBComm	How to Create OB Communication/Send OB Message
D1-HowToDeviceEventRelInfoMain	How To Send Device Events - Maint
D1-HowToProcessDeviceRelInfo	How To Process Device Related Info - Maint
D1-HowToSendActivityResponse	How To Send Activity Response Maintenance
D1-IBCommCommonMaint	Inbound Communication Maintenance Common
D1-IBCommMainDisplay	Inbound Communication Common Display Main
D1-IBCommRecordInfoDisp	Inbound Communication Common Record Info
D1-IMDRecordActionDisplay	IMD Record Action Header Fragment
D1-IMDRecordInfoDisplay	IMD Record Information Fragment
D1-IMDUpload	Online IMD and Event Upload

Map	Description
D1-IMDUploadDispRslt	Online IMD and Event Upload Results
D1-IntStsCodeToCondMapDisp	Interval Status Code to Condition Mapping Lookup - Display
D1-IntStsCodeToCondMapMaint	Interval Status Code to Condition Mapping - Maintenance
D1-LoadActionCodeLookupDisplay	Load Action Code Lookup - Display
D1-LoadActionCodeLookupMaint	Load Action Code Lookup - Maintenance
D1-MCMeasurementsFilter	Measurements Filter Fragment
D1-NoValidCEvtForActivity	No valid Completion events For Activity
D1-OBCommCmdInfoDisp	Outbound Communication Display Command Inf
D1-OBCommCommonMaint	Outbound Communication Maintenance Common
D1-OBCommMainDisplay	Outbound Communication Common Display Main
D1-OBCommRecordInfoDisp	Outbound Communication Common Record Info
D1-OnDemandReadIntTypeDisp	On Demand Read Interval Type - Display
D1-OnDemandReadIntTypeMaint	On Demand Read Interval Type - Maintenance
D1-OnDmdReadIntDisp	On Demand Read Interval - Display
D1-OnDmdReadIntMaint	On Demand Read Interval - Maintenance
D1-OnDmdReadSclrDisp	On Demand Read Scalar - Display
D1-OnDmdReadSclrMaint	On Demand Read Scalar - Maintenance
D1-OnDmdReadSclrTypeDisp	On Demand Read Scalar Type - Display
D1-OnDmdReadSclrTypeMaint	On Demand Read Scalar Type - Maintenance
D1-PairedEventFirstDvcEvtMaint	Paired Event Device Evt First - Maintenance
D1-PairedEventLastDvcEvtMaint	Paired Event Device Evt Last - Maintenance
D1-PairedEvtFrstDvcEvtTypDisp	DeviceEventType PairedEvent(First) - Disp
D1-PairedEvtFrstDvcEvtTypMaint	Dvc Evt Typ PairedEvt(First) - Maintenance
D1-PairedEvtLastDvcEvtTypDisp	Dvc Evt Typ - Paired Evt (Last) - Display
D1-PairedEvtLastDvcEvtTypMaint	Dvc Evt Typ Paired Evt(Last) - Maintenance

Map	Description
D1-ParentActQryFltr	Parent Activity Query Filter
D1-ProcessingMethodCommonMaint	Processing Method Common Maintenance
D1-RemoteConnectDisplay	Remote Connect - Display
D1-RemoteConnectMaint	Remote Connect - Maintenance
D1-RemoteConnectTypeDisplay	Remote Connect Type - Display
D1-RemoteConnectTypeMaint	Remote Connect Type Maintenance Map
D1-RemoteDisconnectDisplay	Remote Disconnect - Display
D1-RemoteDisconnectMaint	Remote Disconnect - Maintenance
D1-RemoteDisconnectTypeDisplay	Remote Disconnect Type - Display Map
D1-RemoteDisconnectTypeMaint	Remote Disconnect Type - Maintenance Map
D1-SeederSyncConfigMaint	Seeder Sync Master Config - Maintenance
D1-SelCmdReq	Select a Command Request to Initiate
D1-SelectCompletionEvent	Select Completion Event BO
D1-ServiceProviderFilter	Service Provider Query
D1-StandardDeviceEventDisp	Standard Device Event - Display
D1-StandardDeviceEventMaint	Standard Device Event - Maintenance
D1-StandardDeviceEventTypDisp	Standard Device Event Type - Display
D1-StandardDeviceEventTypMaint	Standard Device Event Type - Maintenance
D1-StdEventNameLookupDisplay	Standard Event Name Lookup - Display
D1-StdEventNameLookupMaint	Standard Event Name Lookup - Maintenance
D1-StdEvtNameFilter	Standard Event Name Filter
D1-SyncConfigMaint	Master Data Sync Configuration - Maint
D1-SyncExternalRefdUIMapFilter	Sync Request - External Reference Id Query
D1-SyncInRequestException	Sync request Inbound Exception Details
D1-SyncRequestIdUIMapFilter	Sync Request - Id Query
D1-SyncRequestInAddUserLog	Sync Request Inbound - Add User Log Entry
D1-SyncRequestInExceptions	Sync Request Inbound Exceptions
D1-SyncRequestInUIMapFilter	Inbound Sync Request Filter
D1-SyncRequestInboundDisplay	Sync Request Inbound - Display
D1-YesNoLookupDisplay	Yes/No Lookup - Display

Map	Description
D1-YesNoLookupMaint	Lookup Maintenance - Yes/No
This is a Maintenance UI Map f	Maintenance UI Map for the Head-end UOM
D2-360AddressSearchFilter	360 Search by Address Filter Area
D2-360DeviceSearchFilter	360 Search by Device Filter Area
D2-360NameSearchFilter	360 Search by Name/Address Filter Area
D2-AggDimScannerActDisp	Aggregator DS Activity-Display
D2-AggDimScannerActMaint	Aggregator DS Activity-Maintenance
D2-AggDimScannerActTypeDisp	Aggregator DS Activity Type - Display
D2-AggDimScannerActTypeMaint	Aggregator DS Activity Type - Maintenance
D2-AggMCDisp	Service Type and Postal Aggregator-Display
D2-AggMCIdUIMapFilter	Agg MC - Identifier Query Filter
D2-AggMCMaint	Service Type and Postal Aggregator-Maintenance
D2-AggMCTypeDisp	Aggregator Type - Display
D2-AggMCTypeMaint	Aggregator Type - Maintenance
D2-CCBRateScheduleLookupDisp	CCB Rate Schedule Lookup - Display
D2-CCBRateScheduleLookupMaint	CCB Rate Schedule Lookup - Maintenance
D2-HowToSendUSInfoDisplay	How To Send US Related Info - Display
D2-MathDisplay	Usage Rule - Math Display
D2-MathMaint	Usage Rule - Math Maintenance
D2-SubUsageTranDisplay	Sub Usage Transaction - Display
D2-SubUsageTranDummyMaint	Sub Usage Tran Dummy - Maintenance
D2-UsageTranSeederDisplay	Usage Transaction Seeder - Display
D2-UsageTranSeederMaint	Usage Transaction Seeder - Maintenance
D2-ZeroConsumptionCheckDisplay	Zero Consumption Check - Display
D2-ZeroConsumptionCheckMaint	Zero Consumption Check - Maintenance
WX-MDMMasterConfigMaint	Self-Service Maintenance

XAI Inbound Service

The following XAI Inbound Services are new to V2.0.1.

XAI Inbound Service name	Description
D103879193	Device Event Seeder
D107437309	Used by OSB to instantiate an IMD
D114674062	Meter Read Download Activity
D119704947	Remote Connect
D130153938	Test determine service providers and methods
D132550639	D1-OnDemandReadScalar
D141768727	D1-RemoteConnect
D161300300	Sync Request Inbound Composite
D169413887	Sync Request Inbound
D174889044	Remote Disconnect
D178529520	Determine eligible command Inbound service
D184212267	BUG 10288293
D195447956	D1-HowToProcessDeviceInfo D1-HowToProcessDeviceInfo
D234847829	IMD Seeder
D264745327	Usage Transaction Request Inbound
D290400889	Test Interval Measurement Counter
D299648337	Test VEE Processor

Zone

The following new Zones are added to V2.0.1.

Zone	Zone Type	Description
D1-AUDLSDISP	F1-MAPEXPL	Audit List
D1-COMMDISP	F1-MAPDERV	Communication
D1-COMMQ1	F1-DE-QUERY	Name and Address
D1-COMMTLIST	F1-DE	Communication Type List
D1-DETYPDISP	F1-MAPDERV	Device Event Type
D1-EXTEVTQRY	F1-DE-QUERY	External Event Name Search
D1-MSRMTS	F1-DE	Measurements

Zone	Zone Type	Description
D1-OMSPEXT	F1-DE-SINGLE	Build Service Provider Outbound Message Type
D1-RETCRSIE	F1-DE-SINGLE	Retrieve bo and Arming Status for IE
D1-RETDCINSY	F1-DE-SINGLE	Get related Device Config Sync Request
D1-RETLATLOG	F1-DE-SINGLE	Retrieve latest log entry
D1-RETSTCOND	F1-DE-SINGLE	Validate State Condition of Smart Device
D1-SYNCRINED	F1-MAPEXPL	Sync Request Inbound Exception Details
D1-CHKSREXST	F1-DE-SINGLE	Check Sync Request Inbound existence
D1-COMMLOG	F1-DE	Communication Log
D1-DETCOMTYP	F1-DE-SINGLE	Get CommunicationType given Transaction BO
D1-DETOMSGTP	F1-DE-SINGLE	Determine Outbound Message Type BO
D1-DVCEVTQ1	F1-DE-QUERY	Device
D1-MSGSRCHQ1	F1-DE-QUERY	Message Search
D1-RETCONSSR	F1-DE-SINGLE	Retrieve Constituent Sync Requests
D1-RETRC	F1-DE-SINGLE	Retrieve Recipients
D1-RETRELACT	F1-DE-SINGLE	Retrieve Related Activities
D1-RETSPFIE	F1-DE-SINGLE	Retrieve Service Point for Install Event
D1-SPMCSRLST	F1-DE-SINGLE	SP/ Measurement Cycle Schedule Routes List
D1-SYNINEXCZ	F1-MAPEXPL	Sync Request Inbound Exceptions
D1-CHECKDMC	F1-DE-SINGLE	Device should have one Measuring Component
D1-DETMSTRBO	F1-DE-SINGLE	Determine Master BO
D1-ESSRCH	F1-DE-QUERY	External System Search
D1-GETCHARTY	F1-DE-SINGLE	Get Char type given char type flg,entity
D1-GETEXSOMT	F1-DE-SINGLE	Get External System - Outbound Message Type
D1-GETGENPR	F1-DE	Get general procesing id for device event
D1-MSRMTIM	F1-DE-SINGLE	Measurements of Initial Measurement
D1-RETACT	F1-DE-SINGLE	Retrieve Active Activity
D1-RETMCIDDT	F1-DE-SINGLE	Retrieve Measuring Component ID, latest DT
D1-RETPOBCOM	F1-DE-SINGLE	Retrieve Outbound Communication(s)

Zone	Zone Type	Description
D1-SYNCRINES	F1-DE-SINGLE	Sync Request Inbound Exception Summary
D1-SYNINEXCP	F1-DE-SINGLE	Sync Request Exception Details
D1-SYNRINQ2	F1-DE-QUERY	Sync Request Inbound Id
D1-TBLSRCH	F1-DE-QUERY	Table Search
D1-COMMQ2	F1-DE-QUERY	Device Information
D1-COMMQ3	F1-DE-QUERY	Communication Identifier
D1-DETYPLIST	F1-DE-SINGLE	Device Event Type List
D1-DVCEVTQ2	F1-DE-QUERY	Device Event ID
D1-RETCEVT	F1-DE-SINGLE	Retrieve Completion Event
D1-RETDEACTT	F1-DE-SINGLE	Retrieve Device Event Activity Types
D1-RETDETSEV	F1-DE-SINGLE	Retrieve Dvc Evt Type for Standard Event
D1-SYNINEXPM	F1-DE-SINGLE	Retrieve Sync Request Exception Parameters
D1-SYNRINQ3	F1-DE-QUERY	External Reference Id
D1-COMMTDISP	F1-MAPDERV	Communication Type
D1-DEVTTYQRY	F1-DE-QUERY	Device Event Type Search
D1-GETACTTYP	F1-DE-SINGLE	Get Type for Admin ,TransactionBO,category
D1-MSRMTFRIM	F1-DE-SINGLE	Measurements of Initial Measurement
D1-OUTMSGTSH	F1-DE-QUERY	Outbound Message Type Search - Query Zone
D1-RETCC	F1-DE-QUERY	Retrieve Command to Cancel
D1-RETDVCEVT	F1-DE-SINGLE	Retrieve Device Event for Activity
D1-RETMOONBO	F1-DE	Retrieves the MO value on the BO
D1-RETOBCOMM	F1-DE-SINGLE	Retrieve Outbound Communication(s)
D1-RETSPID	F1-DE-SINGLE	Retrieve Service Point from Service Point External Id
D1-STEVTNMQR	F1-DE-QUERY	Standard Event Name Search
D1-SYNRINQ1	F1-DE-QUERY	Sync Request Inbound Information
D1-USACT	F1-DE	Service Point Activities
D1-BOBYMO	F1-DE-QUERY	Business Object Search Query Zone
D1-DVCEVTQRY	F1-DE-MULQRY	Device Event Search
D1-DVEVTDISP	F1-MAPDERV	Device Event
D1-RETDVCCOM	F1-DE	Retrieve related device for communication

Zone	Zone Type	Description
D1-RETRR	F1-DE-SINGLE	Retrieve Requesters
D1-SYNEXCDET	F1-DE-SINGLE	Sync Request Exception Details
D1-CEVTRELOB	F1-DE	Completion Event Related Objects
D1-COMMQRY	F1-DE-MULQRY	Communication Search
D1-DETMCTYP	F1-DE-SINGLE	Determine Measuring Component Type
D1-EXTACT	F1-DE-SINGLE	Retrieve Activity from External Activity
D1-MCTYQ1	F1-DE-QUERY	Measuring Component Type Search
D1-MCTYQRY	F1-DE-MULQRY	Measuring Component Type Search
D1-RETDDVCBO	F1-DE-SINGLE	Retrieve latest Device Config by BO effdt
D1-RETDVCAMI	F1-DE-SINGLE	Retrieve Device ID for AMI Device ID Type
D1-RETMCIDS	F1-DE-SINGLE	Retrieve Measuring Component IDs
D1-RETMRIMD	F1-DE-SINGLE	Retrieve the most recent interval IMD
D1-RETRLNACT	F1-DE-SINGLE	Retrieve Related Non-Final Activities
D1-RETSYNCDT	F1-DE-SINGLE	Get related Device Type
D1-SYNINDISP	F1-MAPDERV	Sync Request Inbound
D1-SYNINLOG	F1-DE	Sync Request Inbound Log
D1-ACTTREE	F1-DE	Activity Hierarchy Tree
D1-BLDDISCRS	F1-DE-SINGLE	Build Discard Reason
D1-CEVTLOG	F1-DE	Completion Event Log
D1-CNTADEVT	F1-DE-SINGLE	Count Active Device Event Type
D1-COMMTREE	F1-DE	Communication Tree
D1-COMTYPQRY	F1-DE-QUERY	Communication Type Search
D1-DVCEVTLOG	F1-DE	Device Event Log
D1-FINDCMD	F1-DE-SINGLE	Find Command
D1-GETCMPEVT	F1-DE-SINGLE	Retrieve Completion Events
D1-ICOROCDT	F1-DE	Retrieves IC linked OC for Device Commis
D1-MOSRCH	F1-DE-QUERY	Maintenance Object Search
D1-PARENTACT	F1-DE-QUERY	Parent Activity Search
D1-SANFS	F1-DE	Alert - Activities in Non-Final State
D1-SRVPRVQRY	F1-DE-QUERY	Service Provider Search
D1-SYNCREQEX	F1-DE-SINGLE	Retrieve Parameter List - Sync Request Exception

Zone	Zone Type	Description
D1-SYNRINQRY	F1-DE-MULQRY	Sync Request Inbound Search
D2-TMDPRD	F1-DE-SINGLE	Date Period for which TOU Map Data Exists
D2-AGGMCQRY	F1-DE-MULQRY	Aggregator Search
D2-UTSUB	F1-DE-SINGLE	Obtain list of Sub Usage Transaction
D2_UTSCLARDT	F1-DE	Usage Transaction Scalar Details
D2_GETSCLSP	F1-DE-SINGLE	Retrieve SP Details From Usage Scalar Details
D2-360SRCAD	F1-DE	Search by Address
D2_GETSCLMC	F1-DE-SINGLE	Retrieve MC Details From Usage Scalar Details
D2-RETAGGMCT	F1-DE-SINGLE	Retrieve MC Types for Aggregator MC class
D2-360SRCDV	F1-DE	Search by Device
D2-STPCQ1	F1-DE-QUERY	Service Type and Postal
D2_CHKUTSCAL	F1-DE-SINGLE	Check For Usage Transaction Scalar Details
D2-360SRCNM	F1-DE	Search by Name
D2-RETSVCTPC	F1-DE-SINGLE	Retrieve distinct Service Type and Postal
D2-SUBUTLIST	F1-DE	Sub Usage Transaction

Appendix B

Upgrades to the Oracle Utilities Application Framework Database

This document describes the database upgrade process for the Oracle Utilities Application Framework database from last released blueprint version of V4.1.0 to V4.1.0 Group Fix 2 It highlights changes made to the administrative tables and how those changes should be applied to the data in order for your current database to work with the V4.1.0.2 Group Fix 2 application, and to preserve the business logic implemented in the previous version of the application. The changes that do not require data upgrade are not described in this document. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V4.1.0 Group Fix 2 is not the scope of this documentation. The upgrade scripts do not turn on the newly added functionality by default. For new functionality, refer the V4.1.0 Group Fix 2 User Guides. In the last section of this document you will find a list of the new tables that are added in V4.1.0 Group Fix-2.

This section includes:

• **Automatic Data Upgrade**

• **Schema Change**

• **New System Data**

Automatic Data Upgrade

This section describes what the upgrade script will populate in new tables and columns to preserve the existing base product application functions of the previous version of Oracle Utilities Application Framework.

Nullable column support

Oracle Utilities Application Framework 4.1.0, Group Fix 2, supports Nullable columns. This means that the application can write NULLs instead of a blank space or zero (for numeric columns) by using NULLABLE_SW on CI_MD_TBL_FLD. If REQUIRED_SW is set to 'N' and the NULLABLE_SW is set to 'Y', the application will write a NULL in that column. The artifact generator will create hibernate mapping files with appropriate parameters so that the framework hibernate mapping types will know if a given property supports a null value.

NULLABLE_SW is not new, but has previously been used for certain fields such as dates, and some string and number foreign-key columns. Because of this, there is the possibility that there is incorrect metadata for some columns, and that turning on this new feature could result in incorrect behavior when using that metadata. The upgrade script added to FW410 Group Fix 2 fixes the metadata to make sure that the existing tables will not be affected.

This new feature only supports tables maintained by Java. Thus, enhancing any existing tables to use null columns must be done only after making sure that the tables are maintained by Java, and not COBOL.

Schema Change

New Tables

The following new tables are added to Oracle Utilities Application Framework V4.1.0.

Tables	Description
F1_GENERIC_GTT	Generic Global Temporary Table
F1_SVC_TASK	Service Task
F1_SVC_TASK_CHAR	Service Task Characteristics
F1_SVC_TASK_K	Service Task Key
F1_SVC_TASK_LOG	Service Task Log
F1_SVC_TASK_LOG_PARM	Service Task Log Parameters
F1_SVC_TASK_REL_OBJ	Service Task Related Objects
F1_SVC_TASK_TYPE	Service Task Type
F1_SVC_TASK_TYPE_CHAR	Service Task Type Characteristics
F1_SVC_TASK_TYPE_L	Service Task Type Language
F1_SYNC_REQ_EXTRACT	Sync Request Extract

New Views

None

Dropped Tables

None

Unsupported Tables

None

Added Columns

The following Table Columns are added to Oracle Utilities Application Framework V4.1.0.

Table	Column	Required	Upgrade Note
F1_ATTACHMENT	ATTACHMENT_FILE_NAME	N	
F1_ATTACHMENT	BO_DATA_AREA	N	
F1_SYNC_REQ	BO_STATUS_REASON_CD	N	
F1_SYNC_REQ_LOG	BO_STATUS_REASON_CD	N	

Dropped Columns

None

Unsupported Table Columns

None

Column Format Change

None

New System Data

This section lists the new system data that are added for business process configuration.

Algorithm Type

The following algorithm types are new to V4.1.0 Group Fix2.

Algorithm Type	Description
F1-ATCHM-INF	Attachment Information
F1-BOSTATFS	Take BO Status/Reason Final Snapshot
F1-CMPSNAPSR	Compare Initial and Final Snapshot. Populate Status Reason if discarded
F1-DECRT-INF	Decision Report Information
F1-EXTL-CDCP	Extendable Lookup Change Data Capture
F1-FINALSNAP	Take Final Snapshot
F1-INITSNAPS	Take Initial Snapshot
F1-LDAPIMPRT	Ldap Import callback after manipulating user, group, or membership
F1-PRPETDATA	Prepare Extract Data
F1-TRNDF-CS	Transition to Default Next State if Custom Snapshot is False
F1-WAITFRSRE	Wait for Finalized Related Sync Request to be Extracted

Algorithm

The following Algorithms are Framework Owned system data in V4.1.0 Group Fix2.

Algorithm	Description
F1-ATCHM-INF	Attachment Information
F1-BOSTATFS	Take BO Status/Reason Final Snapshot
F1-CMPSNAPSR	Compare Sync Request Snapshots, populate status reason if discarded.
F1-DECRT-INF	Decision Report Information
F1-FINALSNAP	Take Final Snapshot
F1-INITSNAPS	Take Initial Snapshot
F1-LDAPIMPRT	LDAP Import Sample Algorithm
F1-PRPETDATA	Prepare Extract Data
F1-TRNDF-CS	Transition to Default Next State if Custom Snapshot is False

Algorithm	Description
F1-WAITFRSRE	Wait for Finalized Related Sync Request to be Extracted

Application Service

The following Application Services are new to V4.1.0 Group Fix2.

Application Service	Description
F1-ATTACHMENTBOAS	Attachment Based BO
F1-STASKTYPE	Service Task Type MO
F1-SVCTASK	Service Task MO

Access Mode Added to Application Service

The following Access Mode is added to existing Application Services and is new to V4.1.0 Group Fix2.

Application Service	Description	Access Mode
F1-DFLTS	Default Application Service	Execute (F1EX)

Batch Control

The following Batch Controls are new to V4.1.0 Group Fix2.

Batch Control	Description
F1-LDAP	Ldap Import
F1-LKPIL	Standard Lookup Initial Load
F1-STKDF	Service Task Scheduled Monitor Process(Deferred)
F1-STKTR	Service Task Periodic Monitor Process
F1-SYNEF	Sync Request Extract
F1-SYNIL	Sync Request Initial Load
F1-XMLPG	Completed/in error XAI upload staging records cleanup
LDAPIMP	ZZ Ldap Import Example
WX-NOTIF	Self-Service Notification Monitor

Business Object

The following Business Objects are Framework Owned system data in V4.1.0 Group Fix2.

Business Object	Description
F1-BIGeneralMasterConfig	Generic BI Configuration
F1-GenericBISyncRequest	Generic BI Sync Request
F1-JpegImage	Jpeg Image
F1-Mp3Audio	MP3 Audio
F1-ServiceTaskTypeBundlingAdd	Bundling Add BO for Service Task Type
F1-ServiceTaskTypePhysical	Physical BO for Service Task Type
F1-Text	Text Document
F1-WavAudio	Wav Audio

FK Reference

The following FK References are new to V4.1.0 Group Fix2.

FK Reference	Description
F1-ATHVW	Attachment View
F1-STASK	Service Task
F1-STKTY	Service Task Type
F1BO-BO	BO Option - Business Object to Read
F1DA-BO	BO Options - Snapshot Data Area
F1ET-BO	BO Options - Batch Process for Extract
F1MC-BO	BO Option - Managed Content XSL
F1PS-BO	BO Option - Post Script For Extract
F1SR-BO	BO Option - Status Reason Business Object
F1SY-BO	BO Option - Star Schema Type

Lookups

The following Lookups are added to Oracle Utilities Application Framework V4.1.0 Group Fix2.

Lookup Field Name	Field Value	Language	Description
ALG_ENTITY_FLG	F1LD	ENG	Installation - Ldap Import

Lookup Field Name	Field Value	Language	Description
ALG_ENTITY_FLG	F1SE	ENG	Sync Request - Initial Load Eligibility
ALG_ENTITY_FLG	F1SF	ENG	Sync Request - Initial Load Filter
BUS_OBJ_OPT_FLG	F1BI	ENG	Binary
BUS_OBJ_OPT_FLG	F1BO	ENG	Business Object to Read
BUS_OBJ_OPT_FLG	F1CT	ENG	Content Type
BUS_OBJ_OPT_FLG	F1DA	ENG	Snapshot Data Area
BUS_OBJ_OPT_FLG	F1EP	ENG	Element Population Rule
BUS_OBJ_OPT_FLG	F1ET	ENG	Batch Process for Extract
BUS_OBJ_OPT_FLG	F1MC	ENG	Managed Content XSL
BUS_OBJ_OPT_FLG	F1PS	ENG	Post Service Script For Extract
BUS_OBJ_OPT_FLG	F1SE	ENG	Supported File Extension
BUS_OBJ_OPT_FLG	F1SY	ENG	Star Schema Type
CHANGE_TYPE_FLG	D	ENG	Delete
CHANGE_TYPE_FLG	I	ENG	Update / Insert
CHAR_ENTITY_FLG	F1SK	ENG	serviceTask
CHAR_ENTITY_FLG	F1SL	ENG	serviceTaskLog
CHAR_ENTITY_FLG	F1ST	ENG	serviceTaskType
F1GC_OPT_TYP_FLG	F1BI	ENG	Data Source Indicator
F1LF_OPT_TYP_FLG	F1DO	ENG	Display XSL Override
F1LF_OPT_TYP_FLG	F1EO	ENG	Edit XSL Override
F1QM_OPT_TYP_FLG	F1XR	ENG	Disable Role Validation On Completion
F1_STAR_SCHEMA_TYPE_FLG	F1DM	ENG	Dimension
F1_STAR_SCHEMA_TYPE_FLG	F1FC	ENG	Fact
F1_STASK_TYPE_STATUS_FLG	F1AC	ENG	Active
F1_STASK_TYPE_STATUS_FLG	F1IN	ENG	Inactive
F1_SVC_TASK_CL_FLG	C1OC	ENG	Outage Call
F1_SVC_TASK_CL_FLG	F1DF	ENG	Default
F1_SVC_TASK_CL_FLG	WXSS	ENG	Self-service

Lookup Field Name	Field Value	Language	Description
INS_ALG_ENTITY_FLG	F1LD	ENG	Ldap Import
NAV_OPT_TYPE_FLG	F1AT	ENG	Attachment
NBR_GRP_SYMBOL	Z	ENG	South Asian
RCVR_CTXT_FLG	JMSP	ENG	JMS Password
RCVR_CTXT_FLG	JMSU	ENG	JMS User
SENDER_CTXT_FLG	JMSH	ENG	JMS Header
UI_MAP_TYPE_FLG	F1XL	ENG	Complete XHTML Document
UI_MAP_TYPE_FLG	F1XR	ENG	XHTML Fragment
XAI_OPTION_FLG	ALOC	ENG	WSDL service address location

Maintenance Object

The following Maintenance Objects are new to V4.1.0 Group Fix2.

MO code	Description
F1-STASKTYPE	Service Task Type
F1-SVCTASK	Service Task

Script

The following Scripts are Framework-owned system data in V4.1.0 Group Fix2.

Script	Description
F1-BOStatFS	Take BO Status/Reason Final Snapshot
F1-CFSCGP	Convert Final Snapshots of Sync Request and Create General Process
F1-CmpSnapSR	Compare Initial and Final Snapshot. Populate Status Reason if discarded
F1-DecRptInf	Decision Report - Information
F1-ExtLCDCP	Extendable Lookup Change Data Capture
F1-FinalSnap	Take Final Snapshot
F1-FltrSQL	Zone User Filters - SQL Condition
F1-InitSnaps	Take Initial Snapshot
F1-PrpEtData	Prepare Extract Data
F1-TrnDef-CS	Transition to Default Next State if Custom Snapshot is False

Script	Description
F1-VSyncBoOp	Validate Sync BO Options
F1-WaitFRSRE	Wait for Finalized Related Sync Request to be Extracted
F1-XMLSnapBO	Return XML Snapshot of a BO Instance

To do Type

The following To Do type is new to V4.1.0 Group Fix2.

None

Portal

The following Portal is new to V4.1.0 Group Fix2.

None

Portal Zone

The following Portal Zones are added to V4.1.0 Group Fix2

None

UI Map

The following UI Maps are Framework Owned system data in V4.1.0 Group Fix2.

Map	Description
F1-BIGeneralMasterConfigDisp	Master configuration for BI - Display
F1-BIGeneralMasterConfigMaint	Master configuration for BI - Maint

XAI Inbound Service

The following XAI Inbound Service is new to V4.1.0 Group Fix2.

XAI Inbound Service name	Description
F1-ORAGEOCD	Geocode Address XAI Inbound Service

Zone Type

The following Zone Types are new to V4.1.0 Group Fix2.

None

Zone

The following new Zones are added to V4.1.0 Group Fix2.

Zone	Zone Type	Description
F1-BOMOSRC	F1-DE-QUERY	Business Object Search for MO
F1-GETBOSTRS	F1-DE-SINGLE	Get BO statuses, conditions and reasons
F1-GETFINLSR	F1-DE-SINGLE	Get Finalized Sync Request

Appendix C

Oracle Application Framework System Table Guide

This section lists the system tables owned by the Oracle Utilities Application Framework V4.1.0 and explains the data standards of the system tables. The data standards are required for the installation of Oracle Utilities Application Framework, development within the Oracle Utilities Application Framework, and the configuration and customization of Oracle Utilities products. Adhering to the data standards is a prerequisite for seamless upgrade to future releases.

This section includes:

* **About the Application Framework System Tables**

* **System Table Standards**

* **Guidelines for System Table Updates**

* **System Table List**

About the Application Framework System Tables

System tables are a subset of the tables that must be populated at the time the product is installed. They include Metadata and configuration tables. The data stored in the system tables are the information that Oracle Utilities Application Framework product operations are based on.

As the product adds more functionality, the list of system tables can grow. The complete list of the system tables can be found in the **System Table List** section.

System Table Standards

System table standards must be observed for the following reasons:

- The product installation and upgrade process and customer modification data extract processes depend on the data prefix and owner flag values to determine the system data owned by each product.

- The standards ensure that there will be no data conflict in the product being developed and the future Oracle Utilities Application Framework release.

- The standards ensure that there will be no data conflict between customer modifications and future Oracle Utilities product releases.

- The data prefix is used to prevent test data from being released to production.

    Developer's Note: All test data added to the system data tables must be prefixed by ZZ (all upper case) in order for the installation and upgrade utility to recognize them as test data.

Guidelines for System Table Updates

This section describes guidelines regarding the updating of the system table properties.

Business Configuration Tables

The majority of data in the tables in this group belongs to the customer. But these tables are shipped with some initial data in order for the customer to login to the system and begin configuring the product. Unless specified otherwise, the initial data is maintained by Oracle Utilities Application Framework and subject to subsequent upgrade.

Application Security and User Profile

These tables define the access rights of a User Group to Application Services and Application Users.

Properties	Description
Tables	SC_ACCESS_CNTL, SC USER, SC_USR_GRP_PROF, SC_USR_GRP_USR, SC_USER_GROUP, SC_USER_GROUP_L
Initial Data	User Group All SERVICES and default system user SYSUSER. Upon installation the system default User Group All SERVICES is given unrestricted accesses to all services defined in Oracle Utilities Application Framework.

Developer's Note: When a new service is added to the system, all actions defined for the service must be made available to the User Group All SERVICES.

Currency Code

The ISO 4217 three-letter codes are taken as the standard code for the representation of each currency.

Properties	Description
Tables	CI_CURRENCY_CD, CI_CURRENCY_CD_L
Initial Data	United States Dollar (USD).

DB Process

Properties	Description
Tables	CI_DB_PROC, CI_DB_PROC_L, CI_DB_INSTR, CI_DB_INSTR_L, L, CI_DB_INSTR_OVRD
Initial Data	Copy DB Process (CL-COPDB). This DB process allows users to copy a DB process from one database to another using Config Lab utility.

Display Profile

The Display Profile Code is referenced in the User (SC_USER) table.

Properties	Description
Tables	CI_DISP_PROF, CI_DISP_PROF_L
Initial Data	North America (NORTHAM) and Europe (EURO).

Installation Options

Installation Option has only one row that is shipped with the initial installation of the Oracle Utilities Application Framework. The updatable columns in these tables are customer data and will not be overridden by the upgrade process unless a special script is written and included in the upgrade process.

Properties	Description
Tables	F1_INSTALLATION, CI_INSTALL_ALG, CI_INSTALL_MSG, CI_INSTALL_MSG_L, CI_INSTALL_PROD
Initial Data	Option 11111.

> **Developer's Note:** The system data owner of an environment is defined in the Installation Option. This Owner Flag value is stamped on all system data that is added to this environment. The installation default value is Customer Modification (CM). This value must be changed in the base product development environments.

Language Code

Language Code must be a valid code defined in ISO 639-2 Alpha-3. Adding a new language code to the table without translating all language dependent objects in the system can cause errors when a user chooses the language.

Properties	Description
Tables	CI_LANGUAGE
Initial Data	English (ENG).

To Do Priority and Role

New To Do Types released will be linked to the default To Do Role and set to the product assigned priority value initially. These initial settings can be overridden by the implementation.

Properties	Description
Tables	CI_ROLE(L), CI_TD_VAL_ROLE
Initial Data	F1_DFLT

Development and Implementation System Tables

This section defines the standards for the system tables that contain data for application development. The data in these tables implement business logic and UI functions shared by various products and product extensions in the same database.

Standards

When adding new data, the owner flag value of the environment must prefix certain fields of these tables. For example, when a developer adds a new algorithm type to an Oracle Utilities Customer Care and Billing environment, C1 should prefix the new Algorithm Type code. The fields that are subject to this rule are listed in Standard Data Fields property.

The data that is already in these tables cannot be modified if the data owner is different than the environment owner. This prevents the developers from accidentally modifying system data that belongs to the Oracle Utilities application framework or the base products. However, some fields are exempt from this rule and can be modified by Customer Modification. These fields are listed in the Customer Modification Fields property.

Starting with version 2.2 of the framework a new system data upgrade rule was introduced - Override Owner flag. If duplicate data rows (data row with same primary key values) are found at the time of upgrade, the owner flag values will get overridden. The lower level application system data will override the upper level system data. For example, F1 overrides C1, F1&C1 override CM, and so on. This rule will be applied to the following tables: CI_CHAR_ENTITY, CI_MD_MO_ALG, F1_BUS_OBJ_ALG, F1_BUS_OBJ_STATUS_ALG, CI_MD_MO_OPT, F1_BUS_OBJ_OPT, F1_BUS_OBJ_STATUS_OPT, F1_BUS_OBJ_STATUS, F1_BUS_OBJ_STATUS_L

Algorithm Type

Properties	Description
Tables	CI_ALG_TYPE, CI_ALG_TYPE_L, CI_ALG_TYPE_PRM, CI_ALG_TYPE_PRM_L
Standard Data Fields	Algorithm Type (ALG_TYPE_CD)
Customer Modification	None

Algorithm

Properties	Description
Tables	CI_ALG, CI_ALG_L, CI_ALG_PARM, CI_ALG_VER
Standard Data Fields	Algorithm (ALG_CD)
Customer Modification	None

Application Security

Properties	Description
Tables	SC_APP_SERVICE, SC_APP_SERVICE_L, CI_APP_SVC_ACC
Standard Data Fields	Application Service ID (APP_SVC_ID). Customer care and billing products prior to version 2.0 will continue to use CI as a prefix for the application service.
Customer Modification	None

Batch Control

Properties	Description
Tables	CI_BATCH_CTRL, CI_BATCH_CTRL_L, CI_BATCH_CTRL_P, CI_BATCH_CTRL_P_L
Standard Data Fields	Batch Process (BATCH_CD), Program Name (PROGRAM_NAME)
Customer Modification	Next Batch Number (NEXT_BATCH_NBR), Last Update Instance (LAST_UPDATE_INST), Last Update Date time (LAST_UPDATE_DTTM) and the batch process update these columns. Time Interval (TIMER_INTERVAL), Thread Count (BATCH_THREAD_CNT), Maximum Commit Records (MAX_COMMIT_RECS), User (USER_ID), Language (LANGUAGE_CD), Email Address (EMAILID), Start program debug tracing (TRC_PGM_STRT_SW), End Program Debug trace (TRC_PGM_END_SW), SQL debug tracing (TRC_SQL_SW) and Standard debug tracing (TRC_STD_SW) on CI_BATCH_CTRL Table. Batch Parameter Value (BATCH_PARM_VAL) on Batch Control Parameters Table (CI_BATCH_CTRL_P)

Business Object

Properties	Description
Tables	F1_BUS_OBJ, F1_BUS_OBJ_L, F1_BUS_OBJ_ALG, F1_BUS_OBJ_OPT, F1_BUS_OBJ_STATUS, F1_BUS_OBJ_STATUS_L, F1_BUS_OBJ_STATUS_ALG, F1_BUS_OBJ_STATUS_OPT, F1_BUS_OBJ_STATUS_RSN, F1_BUS_OBJ_STATUS_RSN_L, F1_BUS_OBJ_STATUS_RSN_CHAR F1_BUS_OBJ_TR_RULE, F1_BUS_OBJ_TR_RULE_L
Standard Data Fields	Business Object (BUS_OBJ_CD)
Customer Modification	Batch Control (BATCH_CD), Alert (BO_ALERT_FLG), Sequence (SORT_SEQ5), Status Reason (STATUS_REASON_FLG) fields on Business Object Status Table (F1_BUS_OBJ_STATUS). Instance Control (INSTANCE_CTRL_FLG), Application Service (APP_SVC_ID) on Business Object Table (F1_BUS_OBJ). Status Reason Selection (STATUS_REASON_SELECT_FLG) on Status Reason Table (F1_BUS_OBJ_STATUS_RSN)

Business Service

Properties	Description
Tables	F1_BUS_SVC, F1_BUS_SVC_L
Standard Data Fields	Business Service (BUS_SVC_CD)
Customer Modification	Application Service (APP_SVC_ID)

Characteristics

Properties	Description
Tables	CI_CHAR_TYPE, CI_CHAR_TYPE_L, CI_CHAR_ENTITY, CI_CHAR_VAL, CI_CHAR_VAL_L
Standard Data Fields	Characteristic Type (CHAR_TYPE_CD)

Properties	Description
Customer Modification	Adhoc Characteristic Value Validation Rule (ADHOC_VAL_ALG_CD) on Characteristic Entity Table (CI_CHAR_ENTITY)

Data Area

Properties	Description
Tables	F1_DATA_AREA, F1_DATA_AREA_L
Standard Data Fields	Data Area Code (DATA_AREA_CD)
Customer Modification	None

Display Icon

Properties	Description
Tables	CI_DISP_ICON, CI_DISP_ICON_L
Standard Data Fields	Display Icon Code (DISP_ICON_CD)
Customer Modification	None

Foreign Key Reference

Properties	Description
Tables	CI_FK_REF, CI_FK_REF_L
Standard Data Fields	FK reference code (FK_REF_CD)
Customer Modification	Info Program Name (INFO_PRG), Zone (ZONE_CD)

Lookup

Properties	Description
Tables	CI_LOOKUP_FIELD, CI_LOOKUP_VAL, CI_LOOKUP_VAL_L, F1_EXT_LOOKUP_VAL, F1_EXT_LOOKUP_VAL_L

Properties	Description
Standard Data Fields	Field Name (FIELD_NAME) • A lookup field name must have corresponding field metadata. The name of the lookup field column must be assigned to avoid conflicts among different products. If you follow the standards for database field names, a Customer Modification lookup field name will be automatically Customer Modification prefixed. Field Value (FIELD_VALUE) • If a lookup field is customizable, Customer Modification can insert new lookup values. X or Y must prefix when implementers introduce a new lookup value. • Product development can extend the Oracle Utilities Application Framework owned lookup field's value with caution. When it needs to be extended, prefix the first letter of the Owner Flag to the value. For example, when adding a new value to the algorithm entity flag (ALG_ENTITY_FLG), prefix with C1 if you are developing an Oracle Utilities Customer Care and Billing product. Introduced in V 4.0.1: Value (F1_EXT_LOOKUP_VALUE) • This will allow storing longer value keys rather than the normal 4byte lookup values.
Customer Modification	Override Description (DESCR_OVRD) on Lookup Field Value Language Table (CI_LOOKUP_VAL_L)

A new Feature option is defined through adding a value to EXT_SYS_TYP_FLG. The field value for this look up field must be prefixed by the Owner flag value.

Map

Properties	Description
Tables	F1_MAP, F1_MAP_L
Standard Data Fields	UI Map (MAP_CD)
Customer Modification	None

Managed Content

Properties	Description
Tables	F1_MANAG_CONTENT, F1_MANAG_CONTENT_L
Standard Data Fields	Managed Content (MANAG_CONTENT_CD)
Customer Modification	None

Messages

Properties	Description
Tables	CI_MSG_CATEGORY, CI_MSG_CATEGORY_L, CI_MSG, CI_MSG_L

Properties	Description
Standard Data Fields	Message Category (MESSAGE_CAT_NBR) • Messages are grouped in categories and each category has message numbers between 1 and 99999. A range of message categories is assigned to a product. You must use only the assigned category for your product. • Oracle Utilities Customer Care and Billing and Oracle Utilities Business Intelligence - 00001 thru 00100 • Oracle Utilities Application Framework Java - 11001 thru 11100 • Oracle Utilities Customer Care and Billing Java - 11101 thru 11200 • Oracle Utilities Business Intelligence Java - 11201 thru 11300 • Implementer COBOL - 90000 • Implementer WSS - 90001 • Implementer Java - 90002 • Reserved for Tests - 99999 Message Number (MESSAGE_NBR) for COBOL message categories • Message numbers below 1000 are reserved for common messages. Implementers must not use message numbers below 1000. Message Number (MESSAGE_NBR) for Java message categories • Subsystem Standard Messages - 00001 thru 02000 • Reserved - 02001 thru 09999 • Published Messages - 10001 thru 11000 • Package Messages - 10001 thru 90000 • Reserved - 90001 thru 99999 • Each package is allocated 100 message numbers, each starting from 101. • Published Messages are messages that are special-interest messages that implementations need to know about and are therefore published in the user docs. Examples of these include messages that are highly likely to be changed for an implementation, or messages that are embedded into other texts/messages and therefore the message number is never shown • Reserved message number ranges are for future use and therefore must not be used by all products.

Properties	Description
Customer Modification	Override Description (DESCRLONG_OVRD), Message Text Override (MESSAGE_TEXT_OVRD)

Meta Data - Table and Field

Properties	Description
Tables	CI_MD_TBL, CI_MD_TBL_FLD, CI_MD_TBL_L, CI_MD_TBL_FLD_L, CI_MD_FLD, CI_MD_FLD_L, F1_DB_OBJECTS_REPO
Standard Data Fields	Table Name (TBL_NAME) • Table names must match with the physical table name or view name in the database. • Field Name (FLD_NAME)Field name must match with the physical column name in the database unless the field is a work field. Field name does not have to follow the prefixing standard unless the field is a work field or customer modification field. • F1_DB_OBJECTS_REPO Table stores information about Indexes, Sequences, Triggers and other database objects excluding Tables and Fields (as they are already stored in the other Metadata tables)
Customer Modification	Audit Switches (AUDIT_INSERT_SW, AUDIT_UPDATE_SW, AUDIT_DELETE_SW), Override label (OVRD_LABEL) on MD Table Field Table (CI_MD_TBL_FLD). Audit Program Name (AUDIT_PGM_NAME), Audit Table Name (AUDIT_TBL_NAME), Audit Program Type (AUDIT_PGM_TYPE_FLG), Key Validation (KEY_VALIDATION_FLG) and Caching strategy (CACHE_FLG) on MD Table (CI_MD_TBL). Override Label (OVRD_LABEL) and Customer Specific Description (DESCRLONG_OVRD) on Field Table.

Meta Data - Constraints

Properties	Description
Tables	CI_MD_CONST, CI_MD_CONST_FLD
Standard Data Fields	Constraint Id (CONST_ID) • Index Name for Primary Constraints • <Index Name>Rnn for Foreign Key Constraints Where • nn: integer, 01 through 99
Customer Modification	None

Meta Data - Menu

Menus can be extended to support multiple products by adding a new menu line to an existing menu. The sequence number on the menu line language table (CI_MD_MENU_LINE_L) determines the order the menu lines appear. Within the same sequence, alphabetic sorting is used.

Properties	Description
Tables	CI_MD_MENU, CI_MD_MENU_L, CI_MD_MENU_ITEM, CI_MD_MENU_ITEM_L, CI_MD_MENU_LINE, CI_MD_MENU_LINE_L
Standard Data Fields	Menu Name (MENU_NAME), Menu Item Id (MENU_ITEM_ID), Menu Line Id (MENU_LINE_ID)
Customer Modification	Override Label (OVRD_LABEL) on Menu Line Language Table (CI_MD_MENU_LINE_L)

Meta Data - Program, Location and Services

Properties	Description
Tables	CI_MD_PRG_COM, CI_MD_PRG_LOC, CI_MD_SVC, CI_MD_SVC_L, CI_MD_SVC_PRG, CI_MD_PRG_REF, CI_MD_PRG_MOD, CI_MD_PRG_EL_AT, CI_MD_PRG_ELEM, CI_MD_PRG_SEC, CI_MD_PRG_SQL, CI_MD_PRG_VAR, CI_MD_PRG_TAB

Properties	Description
Standard Data Fields	Program Component Id (PROG_COM_ID), Location Id (LOC_ID), Program Component Name (PROG_COM_NAME), Service Name (SVC_NAME), Navigation Key (NAVIGATION_KEY)
Customer Modification	User Exit Program Name (USER_EXIT_PGM_NAME) on Program Components Table (CI_MD_PRG_COM),

Meta Data - Maintenance Object

Properties	Description
Tables	CI_MD_MO, CI_MD_MO_L, CI_MD_MO_TBL, CI_MD_MO_OPT, CI_MD_MO_ALG
Standard Data Fields	Maintenance Object (MAINT_OBJ_CD)
Customer Modification	None

Meta Data - Work Tables

Properties	Description
Tables	CI_MD_WRK_TBL, CI_MD_WRK_TBL_L, CI_MD_WRK_TBLFLD, CI_MD_MO_WRK
Standard Data Fields	Work Table Name (WRK_TBL_NAME)
Customer Modification	None

Meta Data - Search Object

Properties	Description
Tables	CI_MD_SO, CI_MD_SO_L, CI_MD_SO_RSFLD, CI_MD_SO_RSFLDAT, CI_MD_SOCG, CI_MD_SOCG_FLD, CI_MD_SOCG_FLDAT, CI_MD_SOCG_L, CI_MD_SOCG_SORT
Standard Data Fields	Search Object (SO_CD)
Customer Modification	None

Navigation Option

Properties	Description
Tables	CI_NAV_OPT, CI_NAV_OPT_L, CI_NAV_OPT_CTXT, CI_NAV_OPT_USG, CI_MD_NAV
Standard Data Fields	Navigation Option Code (NAV_OPT_CD), Navigation Key (NAVIGATION_KEY)
Customer Modification	None

Portal and Zone

Properties	Description
Tables	CI_PORTAL, CI_PORTAL_L, CI_PORTAL_ZONE, CI_ZONE, CI_ZONE_L, CI_ZONE_PRM, CI_ZONE_HDL, CI_ZONE_HDL_L, CI_ZONE_HDL_PRM, CI_ZONE_HDL_PRM_L, CI_UI_ZONE
Standard Data Fields	Portal Code (PORTAL_CD), Zone Code (ZONE_CD), Zone Type Code (ZONE_HDL_CD) • A new Zone can be added to the Product owned Portal Pages. • The existing Zones cannot be removed from the Product owned Portal Pages.
Customer Modification	Sort Sequence (SORT_SEQ) on Context Sensitive Zone Table (CI_UI_ZONE). Show on Portal Preferences (USER_CONFIG_FLG) on Portal Table (CI_PORTAL). Override Sequence (SORT_SEQ_OVRD) on Portal Zone Table (CI_PORTAL_ZONE). Customer Specific Description (DESCRLONG_OVRD) on Zone Language Table (CI_ZONE_L). Override Parameter Value (ZONE_HDL_PARM_OVRD) on Zone Type Parameters Table (CI_ZONE_HDL_PRM). Override Parameter Value (ZONE_PARM_VAL_OVRD) on Zone Parameters Table (CI_ZONE_PRM).

Sequence

Properties	Description
Tables	CI_SEQ
Standard Data Fields	Sequence Name (SEQ_NAME)
Customer Modification	Sequence Number (SEQ_NBR) This field is updated by the application process and must be set to 1 initially.

Schema

Properties	Description
Tables	F1_SCHEMA
Standard Data Fields	Schema Name (SCHEMA_NAME)
Customer Modification	None

Script

Properties	Description
Tables	CI_SCR, CI_SCR_L, CI_SCR_CRT, CI_SCR_CRT_GRP, CI_SCR_CRT_GRP_L, CI_SCR_DA, CI_SCR_FLD_MAP, CI_SCR_PRMPT, CI_SCR_PRMPT_L, CI_SCR_STEP, CI_SCR_STEP_L
Standard Data Fields	Script (SCR_CD)
Customer Modification	None

To Do Type

Properties	Description
Tables	CI_TD_TYPE, CI_TD_TYPE_L, CI_TD_SRTKEY_TY, CI_TD_DRLKEY_TY, CI_TD_SRTKEY_TY_L
Standard Data Fields	To Do Type Code (TD_TYPE_CD)
Customer Modification	Creation Batch Code (CRE_BATCH_CD), Route Batch Code (RTE_BATCH_CD), Priority Flag (TD_PRIORITY_FLG) on To Do Type Table (CI_TD_TYPE)

XAI configuration

Properties	Description
Tables	CI_XAI_ADAPTER, CI_XAI_ADAPTER_L, CI_XAI_CLASS, CI_XAI_CLASS_L, CI_XAI_ENV_HNDL, CI_XAI_ENV_HNDL_L, CI_XAI_FORMAT, CI_XAI_FORMAT_L, CI_XAI_RCVR, CI_XAI_RCVR_L,CI_XAI_RCVR_CTX, CI_XAI_RCVR_RSP, CI_XAI_RCVR_RGRP, CI_XAI_SENDER, CI_XAI_SERNDER_L, CI_XAI_SNDR_CTX, CI_XAI_OPTION
Standard Data Fields	Adapter Id (XAI_ADAPTER_ID), Class Id (XAI_CLASS_ID), Envelope Handler Id (XAI_ENV_HNDL_ID), XAI Format Id (XAI_FORMAT_ID), Receiver Id (XAI_RCVR_ID), Sender Id (XAI_SENDER_ID)
Customer Modification	Option Value (OPTION_VALUE on XAI Option Table (CI_XAI_OPTION)

The following XAI tables might have system data installed upon the initial installation but a subsequence system data upgrade process will not update the content of these table unless the change is documented in the database upgrade guide : CI_XAI_RCVR, CI_XAI_RCVR_L, CI_XAI_RCVR_CTX, CI_XAI_RCVR_RSP, CI_XAI_RCVR_RGRP, CI_XAI_SENDER, CI_XAI_SERNDER_L, CI_XAI_SNDR_CTX

XAI Services

Properties	Description
Tables	CI_XAI_IN_SVC, CI_XAI_IN_SVC_L, CI_XAI_SVC_PARM
Standard Data Fields	XAI Inbound Service Id (XAI_IN_SVC_ID), XAI Inbound Service Name (XAI_IN_SVC_NAME)
Customer Modification	XAI Version (XAI_VERSION_ID), Trace (TRACE_SW), Debug (DEBUG_SW), Request XSL (INPUT_XSL), Response XSL (RESPONSE_XSL), Record XSL (RECORD_XSL and Post Error (POST_ERROR_SW) on XAI Inbound Service Table (CI_XAI_IN_SVC)

Oracle Utilities Application Framework Only Tables

All data of the tables in this group belong to the Oracle Utilities Application Framework. No data modification or addition is allowed for these tables by base product development and customer modification. When an environment is upgraded to the next release of the Oracle Utilities Application Framework, the upgrade process will refresh the data in these tables.

- CI_MD_AT_DTL / CI_MD_AT_DTL_L
- CI_MD_ATT_TY
- CI_MD_CTL / CI_MD_CTL_L
- CI_MD_CTL_TMPL
- CI_MD_ELTY / CI_MD_ELTY_L
- CI_MD_ELTY_AT
- CI_MD_LOOKUP / CI_MD_LOOKUP_F
- CI_MD_PDF / CI_MD_PDF_VAL
- CI_MD_MSG / CI_MD_MSG_L
- CI_MD_SRC_TYPE / CI_MD_SRC_TYPE_L
- CI_MD_TMPL / CI_MD_TMPL_L
- CI_MD_TMPL_ELTY
- CI_MD_TMPL_VAR / CI_MD_TMPL_VAR_L
- CI_MD_VAR / CI_MD_VAR_DTL / CI_MD_VAR_DTL_L
- CI_XAI_EXECUTER / CI_XAI_EXECUTER_L

System Table List

This section contains names of system tables, upgrade actions, and a brief description of tables. The upgrade actions are explained below.

Keep (KP): The data in the table in the customer's database is kept untouched. No insert or delete is performed to this table by the upgrade process. The initial installation will add necessary data for the system

Merge (MG): The non-base product data in the table in the database is kept untouched. If the data belongs to the base product, any changes pertaining to the new version of the software are performed.

Refresh (RF): The existing data in the table is replaced with the data from the base product table.

> **Note.** New product data is also inserted into tables marked as 'Merge'. If implementers add rows for a customer specific enhancement, it can cause duplication when the system data gets upgraded to the next version. We strongly recommend following the guidelines on how to use designated range of values or prefixes to segregate the implementation data from the base product data.

Table Name	Upgrade Action	Description
CI_ALG	MG	Algorithm
CI_ALG_L	MG	Algorithm Language
CI_ALG_PARM	MG	Algorithm Parameters
CI_ALG_TYPE	MG	Algorithm Type
CI_ALG_TYPE_L	MG	Algorithm Type Language
CI_ALG_TYPE_PRM	MG	Algorithm Type Parameter
CI_ALG_TYPE_PRM_L	MG	Algorithm Type Parameter Language
CI_ALG_VER	MG	Algorithm Version
CI_APP_SVC_ACC	MG	Application Service Access Mode
CI_BATCH_CTRL	MG	Batch Control
CI_BATCH_CTRL_ALG	KP	Batch Control Algorithm
CI_BATCH_CTRL_L	MG	Batch Control Language
CI_BATCH_CTRL_P	MG	Batch Control Parameters
CI_BATCH_CTRL_P_L	MG	Batch Control Parameters Language
CI_CHAR_ENTITY	MG	Characteristic Type Entity
CI_CHAR_TYPE	MG	Characteristic Type
CI_CHAR_TYPE_L	MG	Characteristic Type Language
CI_CHAR_VAL	MG	Characteristic Type Value
CI_CHAR_VAL_L	MG	Characteristic Type Value Language

Table Name	Upgrade Action	Description
CI_CURRENCY_CD	KP	Currency Code
CI_CURRENCY_CD_L	KP	Currency Code Language
CI_DB_INSTR	KP	DB Process Instruction
CI_DB_INSTR_ALG	KP	DB Process Instruction Algorithm
CI_DB_INSTR_L	KP	DB Process Instruction Language
CI_DB_INST_OVRD	KP	DB Process Instruction Override
CI_DB_PROC	KP	DB Process
CI_DB_PROC_L	KP	DB Process Language
CI_DISP_ICON	MG	Display Icon
CI_DISP_ICON_L	MG	Display Icon Language
CI_DISP_PROF	KP	Display Profile
CI_DISP_PROF_L	KP	Display Profile Language
CI_FK_REF	MG	Foreign Key Reference
CI_FK_REF_L	MG	Foreign Key Reference Language
CI_LANGUAGE	MG	Language Code
CI_LOOKUP_FIELD	MG	Lookup Field
CI_LOOKUP_VAL	MG	Lookup Field Value
CI_LOOKUP_VAL_L	MG	Lookup Field Value Language
CI_MD_ATT_TY	RF	MD Element Attribute Type
CI_MD_AT_DTL	RF	MD Element Attribute Type Detail
CI_MD_AT_DTL_L	RF	MD Element Attribute Type Detail Language
CI_MD_CONST	MG	Constraints
CI_MD_CONST_FLD	MG	Constraint Fields
CI_MD_CTL	RF	Generator Control
CI_MD_CTL_L	RF	Generator Control Language
CI_MD_CTL_TMPL	RF	Generator Control Template
CI_MD_ELTY	RF	MD Element Type
CI_MD_ELTY_AT	RF	Element Type Attributes
CI_MD_ELTY_L	RF	Element Type Language
CI_MD_FLD	MG	Field
CI_MD_FLD_L	MG	Field Language

Table Name	Upgrade Action	Description
CI_MD_LOOKUP	RF	MD Lookup Field Value
CI_MD_LOOKUP_F	RF	MD Lookup Field
CI_MD_MENU	MG	Menu Information
CI_MD_MENU_IMOD	MG	Menu Item Module Maint
CI_MD_MENU_ITEM	MG	Menu Item
CI_MD_MENU_ITEM_L	MG	Menu Item Language
CI_MD_MENU_L	MG	Menu Language
CI_MD_MENU_LINE	MG	Menu Line
CI_MD_MENU_LINE_L	MG	Menu Line Language
CI_MD_MENU_MOD	MG	Menu Product Components
CI_MD_MO	MG	Maintenance Object
CI_MD_MO_ALG	MG	Maintenance Object Algorithm
CI_MD_MO_L	MG	Maintenance Object Language
CI_MD_MO_OPT	MG	Maintenance Object Option
CI_MD_MO_TBL	MG	Maintenance Object Table
CI_MD_MO_WRK	MG	Maintenance Object Work Tables
CI_MD_MSG	RF	MD Message
CI_MD_MSG_L	RF	MD Message Language
CI_MD_NAV	MG	Navigation Key
CI_MD_PDF	RF	Predefined Fields
CI_MD_PDF_VAL	RF	Predefined Values
CI_MD_PRG_COM	MG	Program Components
CI_MD_PRG_ELEM	MG	UI Page Elements
CI_MD_PRG_EL_AT	MG	UI Page Element Attributes
CI_MD_PRG_LOC	MG	Program Location
CI_MD_PRG_MOD	MG	Program Module
CI_MD_PRG_SEC	MG	UI Page Sections
CI_MD_PRG_SQL	MG	MD SQL Meta Data
CI_MD_PRG_TAB	MG	UI Tab Meta Data
CI_MD_PRG_VAR	MG	Program Variable
CI_MD_SO	MG	Search Object
CI_MD_SOCG	MG	Search Object Criteria Group

Table Name	Upgrade Action	Description
CI_MD_SOCG_FLD	MG	Search Object Criteria Group Field
CI_MD_SOCG_FLDAT	MG	Search Criteria Group Field Attribute
CI_MD_SOCG_L	MG	Search Object Criteria Group Language
CI_MD_SOCG_SORT	MG	Search Criteria Group Result Sort Order
CI_MD_SO_L	MG	Search Object Language
CI_MD_SO_RSFLD	MG	Search Object Result Field
CI_MD_SO_RSFLDAT	MG	Search Object Result Field Attribute
CI_MD_SRC_TYPE	RF	Source Type
CI_MD_SRC_TYPE_L	RF	Source Type Language
CI_MD_SVC	MG	MD Service
CI_MD_SVC_L	MG	MD Service Language
CI_MD_SVC_PRG	MG	MD Service Program
CI_MD_TAB_MOD	MG	UI Tab Module
CI_MD_TBL	MG	MD Table
CI_MD_TBL_FLD	MG	MD Table Field
CI_MD_TBL_FLD_L	MG	MD Table Field Language
CI_MD_TBL_L	MG	MD Table Language
CI_MD_TMPL	RF	Template
CI_MD_TMPL_ELTY	RF	Template Element Types
CI_MD_TMPL_L	RF	Template Language
CI_MD_TMPL_VAR	RF	Template Variable
CI_MD_TMPL_VAR_L	RF	Template Variable Language
CI_MD_VAR	RF	Variable
CI_MD_VAR_DTL	RF	Variable Detail
CI_MD_VAR_DTL_L	RF	Variable Detail Language
CI_MD_WRK_TBL	MG	Work Table
CI_MD_WRK_TBLFLD	MG	Work Table Field
CI_MD_WRK_TBL_L	MG	Work Table Language
CI_MSG	MG	Message
CI_MSG_CATEGORY	MG	Message Category

Table Name	Upgrade Action	Description
CI_MSG_CATEGORY_L	MG	Message Category Language
CI_MSG_L	MG	Message Language
CI_NAV_OPT	MG	Navigation Option
CI_NAV_OPT_CTXT	MG	Navigation Option Context
CI_NAV_OPT_L	MG	Navigation Option Language
CI_NAV_OPT_USG	MG	Navigation Option Usage
CI_PORTAL	MG	Portal
CI_PORTAL_L	MG	Portal Language
CI_PORTAL_ZONE	MG	Portal Zone
CI_SCR	MG	Script
CI_SCR_CRT	MG	Script Criteria
CI_SCR_CRT_GRP	MG	Script Criteria Group
CI_SCR_CRT_GRP_L	MG	Script Criteria Group Language
CI_SCR_DA	MG	Script Data Area
CI_SCR_FLD_MAP	MG	Script Field Mapping
CI_SCR_L	MG	Script Language
CI_SCR_PRMPT	MG	Script Prompt
CI_SCR_PRMPT_L	MG	Script Prompt Language
CI_SCR_STEP	MG	Script Step
CI_SCR_STEP_L	MG	Script Step Language
CI_SEQ	MG	Sequence
CI_TD_DRLKEY_TY	MG	To Do Type Drill Key
CI_TD_SRTKEY_TY	MG	To Do Type Sort Key
CI_TD_SRTKEY_TY_L	MG	To Do Type Sort Key Language
CI_TD_TYPE	MG	To Do Type
CI_TD_TYPE_L	MG	To Do Type Language
CI_USR_NAV_LINK	MG	User Favorite Links
CI_USR_PORTAL	KP	User Portal
CI_USR_ZONE	KP	User Zone
CI_XAI_ADAPTER	MG	XAI Adapter
CI_XAI_ADAPTER_L	MG	XAI Adapter Lang
CI_XAI_CLASS	MG	XAI Class
CI_XAI_CLASS_L	MG	XAI Class Language

Table Name	Upgrade Action	Description
CI_XAI_ENV_HNDL	MG	XAI Envelope Handler
CI_XAI_ENV_HNDL_L	MG	XAI Envelope Handler Language
CI_XAI_EXECUTER	RF	XAI Executer
CI_XAI_EXECUTER_L	RF	XAI Executer Language
CI_XAI_FORMAT	RF	XAI Format
CI_XAI_FORMAT_L	RF	XAI Format Language
CI_XAI_IN_SVC	MG	XAI Inbound Service
CI_XAI_IN_SVC_L	MG	XAI Inbound Service Language
CI_XAI_JNDI_SVR	KP	XAI JNDI Server
CI_XAI_JNDI_SVR_L	KP	XAI JNDI Server Language
CI_XAI_OPTION	KP	XAI Option
CI_XAI_RCVR	KP	XAI Receiver
CI_XAI_RCVR_CTX	KP	XAI Receiver Context
CI_XAI_RCVR_L	KP	XAI Receiver Language
CI_XAI_RCVR_RGRP	KP	XAI Receiver Rule Group
CI_XAI_RCVR_RSP	KP	XAI Receiver Response
CI_XAI_SENDER	KP	XAI Sender
CI_XAI_SENDER_L	KP	XAI Sender Language
CI_XAI_SNDR_CTX	KP	XAI Sender Context
CI_XAI_SVC_PARM	MG	XAI Inbound Service Parameters
CI_ZONE	MG	Zone
CI_ZONE_HDL	MG	Zone Type
CI_ZONE_HDL_L	MG	Zone Type Language
CI_ZONE_HDL_PRM	MG	Zone Type Parameters
CI_ZONE_HDL_PRM_L	MG	Zone Type Parameters Language
CI_ZONE_L	MG	Zone Language
CI_ZONE_PRM	MG	Zone Parameters
F1_BUS_OBJ	MG	Business Object
F1_BUS_OBJ_ALG	MG	Business Object Algorithm
F1_BUS_OBJ_L	MG	Business Object Language
F1_BUS_OBJ_OPT	MG	Business Object Option
F1_BUS_OBJ_STATUS	MG	Business Object Status

Table Name	Upgrade Action	Description
F1_BUS_OBJ_STATUS_ALG	MG	Business Object Status Algorithm
F1_BUS_OBJ_STATUS_L	MG	Business Object Status Language
F1_BUS_OBJ_STATUS_OPT	MG	Business Object Status Option
F1_BUS_OBJ_STATUS_RSN	MG	Status Reason
F1_BUS_OBJ_STATUS_RSN_CHAR	KP	Status Reason Characteristic
F1_BUS_OBJ_STATUS_RSN_L	MG	Status Reason Language
F1_BUS_OBJ_TR_RULE	MG	Business Object Transition Rule
F1_BUS_OBJ_TR_RULE_L	MG	Business Object Transition Rule Language
F1_BUS_SVC	MG	Business Service
F1_BUS_SVC_L	MG	Business Service Language
F1_DATA_AREA	MG	Data Area
F1_DATA_AREA_L	MG	Data Area Language
F1_DB_OBJECTS_REPO	MG	Database Objects Repository
F1_EXT_LOOKUP_VAL	MG	Extendable Lookup
F1_EXT_LOOKUP_VAL_L	MG	Extendable Lookup Language
F1_INSTALLATION	KP	Installation Option - Framework
F1_MANAG_CONTENT	MG	Managed Content
F1_MANAG_CONTENT_L	MG	Managed Content Language
F1_MAP	MG	UI Map
F1_MAP_L	MG	UI Map Language
F1_SCHEMA	MG	Schema
SC_ACCESS_CNTL	MG	User Group Access Control
SC_APP_SERVICE	MG	Application Service
SC_APP_SERVICE_L	MG	Application Service Language
SC_USER	KP	User
SC_USER_GROUP	KP	User Group
SC_USER_GROUP_L	KP	User Group Language
SC_USR_GRP_PROF	MG	User Group Profile

Table Name	Upgrade Action	Description
SC_USR_GRP_USR	KP	User Group User

Appendix D

Partitioning Recommendations for Oracle Utilities Meter Data Management

This section specifies the partitioning and compression strategies recommended for an initial Oracle Utilities Meter Data Management database configuration on Exadata. It includes the following topics:

* **Partitioning Recommendations**
* **Compression Recommendations**

Partitioning Recommendations

In general, the recommendation is for a minimum of 'n' partitions for selective database objects, where 'n' is number of RAC nodes. The specific table level partitioning recommendations are as follows:

* The Table Partitioning scheme for Transaction tables is focused primarily on tables associated with Measurement MO, Measurement Log MO and Initial-Measurement-Data MO.

* D1_MSRMT, D1_MSRMT_CHAR, D1_MSRMT_LOG, D1_MSRMT_LOG_PARM tables can be partitioned by MSRMT_DTTM (smaller partition better performance). Bi-weekly partitions is a good start. Subpartition these tables by MEASR_COMP_ID (8 subpartitions should be a good number to start with).

* D1_INIT_MSRMT_DATA table can be partitioned by D1_TO_DTTM (smaller partition better performance). Bi-weekly partitions is a good start. Subpartition D1_INIT_MSRMT_DATA table by MEASR_COMP_ID (8 subpartitions should be a good number to start with).

* D1_INIT_MSRMT_DATA_CHAR,D1_INIT_MSRMT_DATA_K,D1_INIT_MSRMT_DATA_LOG,D1_INIT_MSRMT_DATA_LOG_PARM tables can be partitioned by INIT_MSRMT_DATA_ID (8 sub partitions should be a good number to start with).

The following sections gives partition recommendation and can be used as reference. It includes the following:

* **D1_MSRMT**
* **D1_MSRMT_CHAR**
* **D1_MSRMT_LOG**
* **D1_MSRMT_LOG_PARM**
* **D1_INIT_MSRMT_DATA**
* **D1_INIT_MSRMT_DATA_CHAR**

- **D1_INIT_MSRMT_DATA_K**

- **D1_INIT_MSRMT_DATA_LOG**

- **D1_INIT_MSRMT_DATA_LOG_PARM**

D1_MSRMT

```
CREATE TABLE D1_MSRMT
  (
    MEASR_COMP_ID CHAR(12 BYTE) NOT NULL ENABLE,
    MSRMT_DTTM DATE NOT NULL ENABLE,
    BO_STATUS_CD   CHAR(12 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    MSRMT_COND_FLG CHAR(6 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    MSRMT_USE_FLG  CHAR(4 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    MSRMT_LOCAL_DTTM DATE NOT NULL ENABLE,
    MSRMT_VAL          NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    ORIG_INIT_MSRMT_ID CHAR(14 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    PREV_MSRMT_DTTM DATE,
    MSRMT_VAL1  NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    MSRMT_VAL2  NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    MSRMT_VAL3  NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    MSRMT_VAL4  NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    MSRMT_VAL5  NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    MSRMT_VAL6  NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    MSRMT_VAL7  NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    MSRMT_VAL8  NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    MSRMT_VAL9  NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    MSRMT_VAL10 NUMBER(16,6) DEFAULT 0 NOT NULL ENABLE,
    BUS_OBJ_CD  CHAR(30 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CRE_DTTM DATE NOT NULL ENABLE,
    STATUS_UPD_DTTM DATE NOT NULL ENABLE,
    USER_EDITED_FLG CHAR(4 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    VERSION         NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE
  ) TABLESPACE <Tablespace Name>
ENABLE ROW MOVEMENT
  PARTITION BY RANGE (MSRMT_DTTM)
INTERVAL(NUMTOYMINTERVAL(1, 'MONTH'))
SUBPARTITION BY range (MEASR_COMP_ID)
SUBPARTITION TEMPLATE(
subpartition SUB1 values less than (124999999999),
subpartition SUB2 values less than (249999999999),
subpartition SUB3 values less than (374999999999),
subpartition SUB4 values less than (499999999999),
subpartition SUB5 values less than (624999999999),
subpartition SUB6 values less than (744999999999),
subpartition SUB7 values less than (874999999999),
subpartition SUB8 values less than (maxvalue)
)
(PARTITION P1 VALUES LESS THAN(TO_DATE('01/01/2009','DD/MM/YYYY')),
 PARTITION P2 VALUES LESS THAN(TO_DATE('01/02/2009','DD/MM/YYYY')),
PARTITION P3 VALUES LESS THAN(TO_DATE('01/03/2009','DD/MM/YYYY')) ,
PARTITION P4 VALUES LESS THAN(TO_DATE('01/04/2009','DD/MM/YYYY')) ,
PARTITION P5 VALUES LESS THAN(TO_DATE('01/05/2009','DD/MM/YYYY')) ,
PARTITION P6 VALUES LESS THAN(TO_DATE('01/06/2009','DD/MM/YYYY')) ,
PARTITION P7 VALUES LESS THAN(TO_DATE('01/07/2009','DD/MM/YYYY')) ,
PARTITION P8 VALUES LESS THAN(TO_DATE('01/08/2009','DD/MM/YYYY')) ,
PARTITION P9 VALUES LESS THAN(TO_DATE('01/09/2009','DD/MM/YYYY')) ,
PARTITION P10 VALUES LESS THAN(TO_DATE('01/10/2009','DD/MM/YYYY')),
PARTITION P11 VALUES LESS THAN(TO_DATE('01/11/2009','DD/MM/YYYY')) ,
PARTITION P12 VALUES LESS THAN(TO_DATE('01/12/2009','DD/MM/YYYY')) ,
PARTITION P13 VALUES LESS THAN(TO_DATE('01/01/2010','DD/MM/YYYY')) ,
```

```
PARTITION P14 VALUES LESS THAN(TO_DATE('01/02/2010','DD/MM/YYYY')) ,
PARTITION P15 VALUES LESS THAN(TO_DATE('01/03/2010','DD/MM/YYYY')) ,
PARTITION P16 VALUES LESS THAN(TO_DATE('01/04/2010','DD/MM/YYYY')) ,
PARTITION P17 VALUES LESS THAN(TO_DATE('01/05/2010','DD/MM/YYYY')) ,
PARTITION P18 VALUES LESS THAN(TO_DATE('01/06/2010','DD/MM/YYYY')) ,
PARTITION P19 VALUES LESS THAN(TO_DATE('01/07/2010','DD/MM/YYYY'))
);

CREATE UNIQUE INDEX D1T298P0 on D1_MSRMT (MEASR_COMP_ID, MSRMT_DTTM)
TABLESPACE <Tablespace_Name>  local COMPRESS 1;

alter table D1_MSRMT ADD CONSTRAINT D1T298P0 PRIMARY
KEY(MEASR_COMP_ID, MSRMT_DTTM) USING INDEX TABLESPACE
<Tablespace_Name> ;

CREATE INDEX D1T298S2 ON D1_MSRMT   ( ORIG_INIT_MSRMT_ID  )
TABLESPACE<Tablespace_Name>   COMPRESS 1;
```

For implementations on Exadata the following D1T298S1 Index is not required-

```
CREATE UNIQUE INDEX D1T298S1 on D1_MSRMT (MEASR_COMP_ID,
MSRMT_DTTM,MSRMT_COND_FLG,MSRMT_USE_FLG,MSRMT_LOCAL_DTTM,MSRMT_VAL,MSR
MT_VAL1,MSRMT_VAL2,USER_EDITED_FLG)  TABLESPACE <Tablespace_Name>
local COMPRESS 1;
```

D1_MSRMT_CHAR

```
CREATE TABLE D1_MSRMT_CHAR
  (
    MEASR_COMP_ID CHAR(12 BYTE) NOT NULL ENABLE,
    MSRMT_DTTM DATE NOT NULL ENABLE,
    CHAR_TYPE_CD   CHAR(8 BYTE) NOT NULL ENABLE,
    SEQ_NUM        NUMBER(3,0) NOT NULL ENABLE,
    CHAR_VAL       CHAR(16 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    ADHOC_CHAR_VAL VARCHAR2(254 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK1   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK2   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK3   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK4   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK5   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    SRCH_CHAR_VAL  VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    VERSION        NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE
  ) TABLESPACE <Tablespace_Name>
ENABLE ROW MOVEMENT
    PARTITION BY RANGE (MSRMT_DTTM)
INTERVAL(NUMTOYMINTERVAL(1, 'MONTH'))
SUBPARTITION BY range (MEASR_COMP_ID)
SUBPARTITION TEMPLATE(
subpartition SUB1 values less than (124999999999),
subpartition SUB2 values less than (249999999999),
subpartition SUB3 values less than (374999999999),
subpartition SUB4 values less than (499999999999),
subpartition SUB5 values less than (624999999999),
subpartition SUB6 values less than (744999999999),
subpartition SUB7 values less than (874999999999),
subpartition SUB8 values less than (maxvalue)
)
(PARTITION P1 VALUES LESS THAN(TO_DATE('01/01/2009','DD/MM/YYYY')),
PARTITION P2 VALUES LESS THAN(TO_DATE('01/02/2009','DD/MM/YYYY')),
PARTITION P3 VALUES LESS THAN(TO_DATE('01/03/2009','DD/MM/YYYY')),
PARTITION P4 VALUES LESS THAN(TO_DATE('01/04/2009','DD/MM/YYYY')),
PARTITION P5 VALUES LESS THAN(TO_DATE('01/05/2009','DD/MM/YYYY')),
PARTITION P6 VALUES LESS THAN(TO_DATE('01/06/2009','DD/MM/YYYY')),
PARTITION P7 VALUES LESS THAN(TO_DATE('01/07/2009','DD/MM/YYYY')),
PARTITION P8 VALUES LESS THAN(TO_DATE('01/08/2009','DD/MM/YYYY')),
PARTITION P9 VALUES LESS THAN(TO_DATE('01/09/2009','DD/MM/YYYY')),
PARTITION P10 VALUES LESS THAN(TO_DATE('01/10/2009','DD/MM/YYYY')),
PARTITION P11 VALUES LESS THAN(TO_DATE('01/11/2009','DD/MM/YYYY')),
PARTITION P12 VALUES LESS THAN(TO_DATE('01/12/2009','DD/MM/YYYY')),
PARTITION P13 VALUES LESS THAN(TO_DATE('01/01/2010','DD/MM/YYYY')),
PARTITION P14 VALUES LESS THAN(TO_DATE('01/02/2010','DD/MM/YYYY')),
PARTITION P15 VALUES LESS THAN(TO_DATE('01/03/2010','DD/MM/YYYY')),
PARTITION P16 VALUES LESS THAN(TO_DATE('01/04/2010','DD/MM/YYYY')),
PARTITION P17 VALUES LESS THAN(TO_DATE('01/05/2010','DD/MM/YYYY')),
PARTITION P18 VALUES LESS THAN(TO_DATE('01/06/2010','DD/MM/YYYY')),
PARTITION P19 VALUES LESS THAN(TO_DATE('01/07/2010','DD/MM/YYYY'))
);

CREATE UNIQUE INDEX  D1T299P0 ON D1_MSRMT_CHAR
  (
    MEASR_COMP_ID, MSRMT_DTTM, CHAR_TYPE_CD, SEQ_NUM
  ) TABLESPACE <Tablespace_Name> local COMPRESS 1;

ALTER TABLE D1_MSRMT_CHAR  ADD CONSTRAINT D1T299P0 PRIMARY KEY
(MEASR_COMP_ID, MSRMT_DTTM, CHAR_TYPE_CD, SEQ_NUM) USING INDEX
TABLESPACE <Tablespace_Name>;
```

```
CREATE INDEX D1T299S1 ON D1_MSRMT_CHAR (SRCH_CHAR_VAL) TABLESPACE
<Tablespace_Name>  COMPRESS 1;
```

D1_MSRMT_LOG

```
CREATE TABLE D1_MSRMT_LOG
  (
    MEASR_COMP_ID CHAR(12 BYTE),
    MSRMT_DTTM DATE,
    SEQNO              NUMBER(5,0),
    ORIG_INIT_MSRMT_ID CHAR(14 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    BUS_OBJ_CD        CHAR(30 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    BO_DATA_AREA CLOB,
    CHAR_TYPE_CD   CHAR(8 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL       CHAR(16 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    ADHOC_CHAR_VAL VARCHAR2(254 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK1   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK2   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK3   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK4   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK5   VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    DESCRLONG      VARCHAR2(4000 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    LOG_DTTM DATE NOT NULL ENABLE,
    MESSAGE_CAT_NBR          NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
    MESSAGE_NBR              NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
    USER_ID                             CHAR(8 BYTE) DEFAULT ' ' NOT
NULL ENABLE,
    VERSION                             NUMBER(5,0) DEFAULT 1 NOT NULL
ENABLE,
    MSRMT_LOG_ENTRY_TYPE_FLG CHAR(4 BYTE) DEFAULT ' ' NOT NULL ENABLE
    )
TABLESPACE <Tablespace_Name>
ENABLE ROW MOVEMENT   LOB   ( BO_DATA_AREA  )
  STORE AS SECUREFILE ( ENABLE STORAGE IN ROW CHUNK 8192 CACHE
<COMPRESS  depending on Advanced Data Compression license > )
      PARTITION BY RANGE (MSRMT_DTTM)
INTERVAL(NUMTOYMINTERVAL(1, 'MONTH'))
SUBPARTITION BY range (MEASR_COMP_ID)
SUBPARTITION TEMPLATE(
subpartition SUB1 values less than (124999999999),
subpartition SUB2 values less than (249999999999),
subpartition SUB3 values less than (374999999999),
subpartition SUB4 values less than (499999999999),
subpartition SUB5 values less than (624999999999),
subpartition SUB6 values less than (744999999999),
subpartition SUB7 values less than (874999999999),
subpartition SUB8 values less than (maxvalue)
)
(PARTITION P1 VALUES LESS THAN(TO_DATE('01/01/2009','DD/MM/YYYY')),
PARTITION P2 VALUES LESS THAN(TO_DATE('01/02/2009','DD/MM/YYYY')),
PARTITION P3 VALUES LESS THAN(TO_DATE('01/03/2009','DD/MM/YYYY')),
PARTITION P4 VALUES LESS THAN(TO_DATE('01/04/2009','DD/MM/YYYY')),
PARTITION P5 VALUES LESS THAN(TO_DATE('01/05/2009','DD/MM/YYYY')),
PARTITION P6 VALUES LESS THAN(TO_DATE('01/06/2009','DD/MM/YYYY')),
PARTITION P7 VALUES LESS THAN(TO_DATE('01/07/2009','DD/MM/YYYY')),
PARTITION P8 VALUES LESS THAN(TO_DATE('01/08/2009','DD/MM/YYYY')),
PARTITION P9 VALUES LESS THAN(TO_DATE('01/09/2009','DD/MM/YYYY')),
PARTITION P10 VALUES LESS THAN(TO_DATE('01/10/2009','DD/MM/YYYY')),
PARTITION P11 VALUES LESS THAN(TO_DATE('01/11/2009','DD/MM/YYYY')),
```

```
                    PARTITION P12 VALUES LESS THAN(TO_DATE('01/12/2009','DD/MM/YYYY')),
                    PARTITION P13 VALUES LESS THAN(TO_DATE('01/01/2010','DD/MM/YYYY')),
                    PARTITION P14 VALUES LESS THAN(TO_DATE('01/02/2010','DD/MM/YYYY')),
                    PARTITION P15 VALUES LESS THAN(TO_DATE('01/03/2010','DD/MM/YYYY')),
                    PARTITION P16 VALUES LESS THAN(TO_DATE('01/04/2010','DD/MM/YYYY')),
                    PARTITION P17 VALUES LESS THAN(TO_DATE('01/05/2010','DD/MM/YYYY')),
                    PARTITION P18 VALUES LESS THAN(TO_DATE('01/06/2010','DD/MM/YYYY')),
                    PARTITION P19 VALUES LESS THAN(TO_DATE('01/07/2010','DD/MM/YYYY'))
                    );

                    CREATE UNIQUE INDEX D1T300P0 ON D1_MSRMT_LOG
                    (
                        MEASR_COMP_ID, MSRMT_DTTM, SEQNO
                    )  TABLESPACE <Tablespace_Name> local COMPRESS 1;

                    ALTER TABLE D1_MSRMT_LOG ADD CONSTRAINT D1T300P0 PRIMARY KEY
                    (MEASR_COMP_ID, MSRMT_DTTM, SEQNO) USING INDEX  TABLESPACE
                    <Tablespace_Name>;

                    CREATE INDEX D1T300S3 ON D1_MSRMT_LOG ( ORIG_INIT_MSRMT_ID  )
                    TABLESPACE<Tablespace_Name>  COMPRESS 1;
```

D1_MSRMT_LOG_PARM

```
                    CREATE TABLE D1_MSRMT_LOG_PARM
                      (
                        MEASR_COMP_ID CHAR(12 BYTE),
                        MSRMT_DTTM DATE,
                        SEQNO             NUMBER(5,0),
                        PARM_SEQ        NUMBER(3,0),
                        MSG_PARM_VAL    VARCHAR2(30 BYTE) DEFAULT ' ' NOT NULL ENABLE,
                        MSG_PARM_TYP_FLG CHAR(4 BYTE) DEFAULT ' ' NOT NULL ENABLE,
                        VERSION             NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE
                      )
                    TABLESPACE <Tablespace_Name>
                    ENABLE ROW MOVEMENT
                    PARTITION BY RANGE (MSRMT_DTTM)
                    INTERVAL(NUMTOYMINTERVAL(1, 'MONTH'))
                    SUBPARTITION BY range (MEASR_COMP_ID)
                    SUBPARTITION TEMPLATE(
                    subpartition SUB1 values less than (124999999999),
                    subpartition SUB2 values less than (249999999999),
                    subpartition SUB3 values less than (374999999999),
                    subpartition SUB4 values less than (499999999999),
                    subpartition SUB5 values less than (624999999999),
                    subpartition SUB6 values less than (744999999999),
                    subpartition SUB7 values less than (874999999999),
                    subpartition SUB8 values less than (maxvalue)
                    )
                    (PARTITION P1 VALUES LESS THAN(TO_DATE('01/01/2009','DD/MM/YYYY')),
                    PARTITION P2 VALUES LESS THAN(TO_DATE('01/02/2009','DD/MM/YYYY')),
                    PARTITION P3 VALUES LESS THAN(TO_DATE('01/03/2009','DD/MM/YYYY')),
                    PARTITION P4 VALUES LESS THAN(TO_DATE('01/04/2009','DD/MM/YYYY')),
                    PARTITION P5 VALUES LESS THAN(TO_DATE('01/05/2009','DD/MM/YYYY')),
                    PARTITION P6 VALUES LESS THAN(TO_DATE('01/06/2009','DD/MM/YYYY')),
                    PARTITION P7 VALUES LESS THAN(TO_DATE('01/07/2009','DD/MM/YYYY')),
                    PARTITION P8 VALUES LESS THAN(TO_DATE('01/08/2009','DD/MM/YYYY')),
                    PARTITION P9 VALUES LESS THAN(TO_DATE('01/09/2009','DD/MM/YYYY')),
```

```
                    PARTITION P10 VALUES LESS THAN(TO_DATE('01/10/2009','DD/MM/YYYY')),
                    PARTITION P11 VALUES LESS THAN(TO_DATE('01/11/2009','DD/MM/YYYY')),
                    PARTITION P12 VALUES LESS THAN(TO_DATE('01/12/2009','DD/MM/YYYY')),
                    PARTITION P13 VALUES LESS THAN(TO_DATE('01/01/2010','DD/MM/YYYY')),
                    PARTITION P14 VALUES LESS THAN(TO_DATE('01/02/2010','DD/MM/YYYY')),
                    PARTITION P15 VALUES LESS THAN(TO_DATE('01/03/2010','DD/MM/YYYY')),
                    PARTITION P16 VALUES LESS THAN(TO_DATE('01/04/2010','DD/MM/YYYY')),
                    PARTITION P17 VALUES LESS THAN(TO_DATE('01/05/2010','DD/MM/YYYY')),
                    PARTITION P18 VALUES LESS THAN(TO_DATE('01/06/2010','DD/MM/YYYY')),
                    PARTITION P19 VALUES LESS THAN(TO_DATE('01/07/2010','DD/MM/YYYY'))
                    );

                    CREATE UNIQUE INDEX D1T301P0 ON D1_MSRMT_LOG_PARM
                    (    MEASR_COMP_ID, MSRMT_DTTM, SEQNO, PARM_SEQ
                    )  INDEX  TABLESPACE <Tablespace_Name> local COMPRESS 1;

                    ALTER TABLE D1_MSRMT_LOG_PARM ADD CONSTRAINT D1T301P0 PRIMARY KEY
                    (MEASR_COMP_ID, MSRMT_DTTM, SEQNO, PARM_SEQ) USING INDEX  TABLESPACE
                    <Tablespace_Name>;
```

D1_INIT_MSRMT_DATA

```
                    CREATE TABLE D1_INIT_MSRMT_DATA
                      (
                        INIT_MSRMT_DATA_ID CHAR(14 BYTE) NOT NULL ENABLE,
                        MEASR_COMP_ID      CHAR(12 BYTE) DEFAULT ' ' NOT NULL ENABLE,
                        D1_FROM_DTTM DATE,
                        D1_TO_DTTM DATE,
                        DATA_SRC_FLG       CHAR(4 BYTE) DEFAULT ' ' NOT NULL ENABLE,
                        TIME_ZONE_CD       CHAR(10 BYTE) DEFAULT ' ' NOT NULL ENABLE,
                        BUS_OBJ_CD         CHAR(30 BYTE) DEFAULT ' ' NOT NULL ENABLE,
                        BO_STATUS_CD       CHAR(12 BYTE) DEFAULT ' ' NOT NULL ENABLE,
                        BO_STATUS_REASON_CD VARCHAR2(30 BYTE) DEFAULT ' ' NOT NULL ENABLE,
                        STATUS_UPD_DTTM DATE NOT NULL ENABLE,
                        CRE_DTTM DATE NOT NULL ENABLE,
                        VERSION    NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
                        IMD_EXT_ID VARCHAR2(120 BYTE),
                        PREVEE_BO_DATA_AREA CLOB,
                        POSTVEE_BO_DATA_AREA CLOB,
                        TRACE_BO_DATA_AREA CLOB,
                        RAW_BO_DATA_AREA CLOB,
                         IMD_BO_DATA_AREA CLOB
                      ) TABLESPACE  <Tablespace_Name>
                    ENABLE ROW MOVEMENT
                      LOB  (PREVEE_BO_DATA_AREA)
                      STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS CACHE)
                      LOB  ( POSTVEE_BO_DATA_AREA )
                      STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS CACHE)
                      LOB (TRACE_BO_DATA_AREA)
                      STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS CACHE)
                      LOB (RAW_BO_DATA_AREA)
                      STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS CACHE)
                      LOB (IMD_BO_DATA_AREA)
                      STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS CACHE)
                    PARTITION BY RANGE (D1_TO_DTTM)
                    SUBPARTITION BY range (MEASR_COMP_ID)
                    SUBPARTITION TEMPLATE(
                    subpartition SUB1 values less than (124999999999),
```

```
                subpartition SUB2 values less than (249999999999),
                subpartition SUB3 values less than (374999999999),
                subpartition SUB4 values less than (499999999999),
                subpartition SUB5 values less than (624999999999),
                subpartition SUB6 values less than (744999999999),
                subpartition SUB7 values less than (874999999999),
                subpartition SUB8 values less than (maxvalue)
                )
                (PARTITION P1 VALUES LESS THAN(TO_DATE('15/12/2010 00:00:01','DD/MM/
                YYYY HH24:MI:SS')),
                 PARTITION P2 VALUES LESS THAN(TO_DATE('01/01/2011 00:00:01','DD/MM/
                YYYY HH24:MI:SS')),
                 PARTITION P3 VALUES LESS THAN(TO_DATE('15/01/2011 00:00:01','DD/MM/
                YYYY HH24:MI:SS')),
                 PARTITION P4 VALUES LESS THAN(TO_DATE('01/02/2011 00:00:01','DD/MM/
                YYYY HH24:MI:SS')),
                 PARTITION P5 VALUES LESS THAN(TO_DATE('15/02/2011 00:00:01','DD/MM/
                YYYY HH24:MI:SS')),
                 PARTITION P6 VALUES LESS THAN(TO_DATE('01/03/2011 00:00:01','DD/MM/
                YYYY HH24:MI:SS')),
                 PARTITION P7 VALUES LESS THAN(TO_DATE('15/03/2011 00:00:01','DD/MM/
                YYYY HH24:MI:SS')),
                 PARTITION P8  VALUES LESS THAN (maxvalue)
                );
                CREATE UNIQUE INDEX D1T304P0 ON D1_INIT_MSRMT_DATA
                  (
                    INIT_MSRMT_DATA_ID
                  ) TABLESPACE <Tablespace_Name>
                 GLOBAL PARTITION BY RANGE (INIT_MSRMT_DATA_ID)
                  (PARTITION PART1 values less than (12499999999999),
                   PARTITION PART2 values less than (24999999999999),
                   PARTITION PART3 values less than (37499999999999),
                   PARTITION PART4 values less than (49999999999999),
                   PARTITION PART5 values less than (62499999999999),
                   PARTITION PART6 values less than (74499999999999),
                   PARTITION PART7 values less than (87499999999999),
                   PARTITION PART8 values less than (maxvalue));

                ALTER TABLE D1_INIT_MSRMT_DATA ADD CONSTRAINT D1T304P0 PRIMARY KEY
                (INIT_MSRMT_DATA_ID) USING INDEX TABLESPACE <Tablespace_Name>;

                CREATE INDEX D1T304S1 ON D1_INIT_MSRMT_DATA
                  ( MEASR_COMP_ID
                    ,BO_STATUS_CD
                    ,BUS_OBJ_CD
                    ,D1_TO_DTTM
                    ,D1_FROM_DTTM
                  ) TABLESPACE <Tablespace_Name> LOCAL COMPRESS 1;

                CREATE UNIQUE INDEX D1T304S2 ON D1_INIT_MSRMT_DATA
                  ( INIT_MSRMT_DATA_ID
                    ,BO_STATUS_CD
                    ,BUS_OBJ_CD
                  ) TABLESPACE <Tablespace_Name> COMPRESS 1;

                CREATE UNIQUE INDEX D1T304S3 ON D1_INIT_MSRMT_DATA
                  (IMD_EXT_ID,
                    INIT_MSRMT_DATA_ID
                  ) TABLESPACE <Tablespace_Name> COMPRESS 1;
```

D1_INIT_MSRMT_DATA_CHAR

```
CREATE TABLE D1_INIT_MSRMT_DATA_CHAR
  (
    INIT_MSRMT_DATA_ID CHAR(14 BYTE),
    CHAR_TYPE_CD       CHAR(8 BYTE),
    SEQ_NUM            NUMBER(3,0),
    CHAR_VAL           CHAR(16 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    ADHOC_CHAR_VAL     VARCHAR2(254 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK1       VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK2       VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK3       VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK4       VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK5       VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    SRCH_CHAR_VAL      VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    VERSION            NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE)
   TABLESPACE <Tablespace_Name>
ENABLE ROW MOVEMENT
  PARTITION BY RANGE (INIT_MSRMT_DATA_ID)
  (PARTITION PART1 values less than (12499999999999),
  PARTITION PART2 values less than (24999999999999),
  PARTITION PART3 values less than (37499999999999),
  PARTITION PART4 values less than (49999999999999),
  PARTITION PART5 values less than (62499999999999),
  PARTITION PART6 values less than (74499999999999),
  PARTITION PART7 values less than (87499999999999),
  PARTITION PART8 values less than (maxvalue));



CREATE UNIQUE INDEX D1T305P0 ON D1_INIT_MSRMT_DATA_CHAR
  (
    INIT_MSRMT_DATA_ID, CHAR_TYPE_CD, SEQ_NUM
  ) TABLESPACE <Tablespace_Name> LOCAL COMPRESS 1;


ALTER TABLE D1_INIT_MSRMT_DATA_CHAR ADD CONSTRAINT D1T305P0 PRIMARY
KEY (INIT_MSRMT_DATA_ID, CHAR_TYPE_CD, SEQ_NUM) USING INDEX
TABLESPACE <Tablespace_Name>;

CREATE INDEX D1T305S1 ON D1_INIT_MSRMT_DATA_CHAR
    (      SRCH_CHAR_VAL
    ) TABLESPACE <Tablespace_Name>  COMPRESS 1;
```

D1_INIT_MSRMT_DATA_K

```
CREATE TABLE D1_INIT_MSRMT_DATA_K
  (
    INIT_MSRMT_DATA_ID CHAR(14 BYTE),
    ENV_ID             NUMBER(6,0) NOT NULL ENABLE,
    CONSTRAINT D1T314P0 PRIMARY KEY (INIT_MSRMT_DATA_ID, ENV_ID) ENABLE
  )
  ORGANIZATION INDEX  TABLESPACE <Tablespace_Name>
ENABLE ROW MOVEMENT
  PARTITION BY RANGE (INIT_MSRMT_DATA_ID)
  (PARTITION PART1 values less than (12499999999999),
  PARTITION PART2 values less than (24999999999999),
  PARTITION PART3 values less than (37499999999999),
  PARTITION PART4 values less than (49999999999999),
  PARTITION PART5 values less than (62499999999999),
```

```
                    PARTITION PART6 values less than (74499999999999),
                    PARTITION PART7 values less than (87499999999999),
                    PARTITION PART8 values less than (maxvalue)) compress 1;
```

D1_INIT_MSRMT_DATA_LOG

```
CREATE TABLE D1_INIT_MSRMT_DATA_LOG
  (
    INIT_MSRMT_DATA_ID  CHAR(14 BYTE),
    SEQNO               NUMBER(5,0),
    BO_STATUS_CD        CHAR(12 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    BO_STATUS_REASON_CD VARCHAR2(30 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_TYPE_CD        CHAR(8 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL            CHAR(16 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    ADHOC_CHAR_VAL      VARCHAR2(254 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK1        VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK2        VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK3        VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK4        VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK5        VARCHAR2(50 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    DESCRLONG           VARCHAR2(4000 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    LOG_DTTM DATE NOT NULL ENABLE,
    LOG_ENTRY_TYPE_FLG CHAR(4 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    MESSAGE_CAT_NBR     NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
    MESSAGE_NBR         NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
    USER_ID             CHAR(8 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    VERSION             NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE
) TABLESPACE <Tablespace_Name>
ENABLE ROW MOVEMENT
  PARTITION BY RANGE (INIT_MSRMT_DATA_ID)
  (PARTITION PART1 values less than (12499999999999),
  PARTITION PART2 values less than (24999999999999),
  PARTITION PART3 values less than (37499999999999),
  PARTITION PART4 values less than (49999999999999),
  PARTITION PART5 values less than (62499999999999),
  PARTITION PART6 values less than (74499999999999),
  PARTITION PART7 values less than (87499999999999),
  PARTITION PART8 values less than (maxvalue)) ;

CREATE UNIQUE INDEX D1T306P0 ON D1_INIT_MSRMT_DATA_LOG
(
    INIT_MSRMT_DATA_ID, SEQNO
) TABLESPACE <Tablespace_Name>LOCAL COMPRESS 1;


ALTER TABLE D1_INIT_MSRMT_DATA_LOG ADD CONSTRAINT D1T306P0 PRIMARY KEY
(INIT_MSRMT_DATA_ID, SEQNO) USING INDEX  TABLESPACE <Tablespace_Name>;
```

D1_INIT_MSRMT_DATA_LOG_PARM

```
CREATE TABLE D1_INIT_MSRMT_DATA_LOG_PARM
  (
    INIT_MSRMT_DATA_ID CHAR(14 BYTE),
    SEQNO              NUMBER(5,0),
    PARM_SEQ           NUMBER(3,0),
    MSG_PARM_VAL       VARCHAR2(30 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    MSG_PARM_TYP_FLG   CHAR(4 BYTE) DEFAULT ' ' NOT NULL ENABLE,
```

```
       VERSION              NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE
     )  TABLESPACE <Tablespace_Name>
ENABLE ROW MOVEMENT
  PARTITION BY RANGE (INIT_MSRMT_DATA_ID)
  (PARTITION PART1 values less than (12499999999999),
  PARTITION PART2 values less than (24999999999999),
  PARTITION PART3 values less than (37499999999999),
  PARTITION PART4 values less than (49999999999999),
  PARTITION PART5 values less than (62499999999999),
  PARTITION PART6 values less than (74499999999999),
  PARTITION PART7 values less than (87499999999999),
  PARTITION PART8 values less than (maxvalue)) ;

CREATE UNIQUE INDEX D1T307P0 ON D1_INIT_MSRMT_DATA_LOG_PARM
(  INIT_MSRMT_DATA_ID, SEQNO, PARM_SEQ)  TABLESPACE <Tablespace_Name>
LOCAL COMPRESS 1;

ALTER TABLE D1_INIT_MSRMT_DATA_LOG_PARM ADD CONSTRAINT D1T307P0
PRIMARY KEY (INIT_MSRMT_DATA_ID, SEQNO, PARM_SEQ) USING INDEX
TABLESPACE <Tablespace_Name>;
```

Compression Recommendations

In general the recommendation is to do QUERY HIGH compression (a part of hybrid columnar compression) on Exadata.

For Final Measurement table (D1_MSRMT) keep current table partition uncompressed. The rest of the older partitions will be compressed based on QUERY HIGH compression.

For Initial Measurement Data table (D1_INIT_MSMRT_DATA) keep CLOBs always in securefile and Medium Compressed. In addition, keep current table partition uncompressed. the rest of the older partitions will be compressed based on QUERY HIGH compression.

All multi column Indexes (primary as well as secondary) will be compressed using the default compression. HCC or OLTP compression is not applicable on the top of compressed Indexes.

Load data into the uncompressed table partitions using a conventional load and then when data is loaded use CTAS operation to load into a temporary heap table. Then truncate the original partition. Alter original partition into HCC compressed and then partition exchange this with the temporary heap table.

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