

# **Oracle Utilities Smart Grid Gateway**

Database Administrator's Guide

Release 2.0.0 Service Pack 8

**E20526-10**

November 2012

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# Preface

This guide provides instructions for installing and maintaining the database for Oracle Utilities Smart Grid Gateway.

This preface contains these topics:

- **Audience**
- **Related Documents**
- **Updates to this Documentation**
- **Conventions**

## Audience

Oracle Utilities Smart Grid Gateway Database Administrator's Guide is intended for database administrators who will be installing and maintaining the database for Oracle Utilities Smart Grid Gateway.

## Related Documents

For more information, see these Oracle documents:

- *Oracle Utilities Smart Grid Gateway Quick Install Guide*
- *Oracle Utilities Smart Grid Gateway 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.

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# Conventions

The following text conventions are used in this document:

| Convention      | Meaning                                                                                                                                |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>boldface</b> | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.         |
| <i>italic</i>   | 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 Smart Grid Gateway database, including:

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

**Note:** This service pack is intended to be installed on top of an existing Oracle Utilities Smart Grid Gateway. Please refer to the **Readme.txt** file included with the release package for information about installing the database for this service pack.

## Supported Database Platforms

This section defines the platforms on which Oracle Utilities Smart Grid Gateway is verified to operate.

### Supported Platforms Summary Table

Oracle Utilities Smart Grid Gateway 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 Smart Grid Gateway 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 Smart Grid Gateway production environment.

The exceptions from this rule are Hibernate software version 3.3.2 ga and the Oracle Client version 11.2.0.1. These versions should not be upgraded.

Always contact Oracle Utilities Smart Grid Gateway 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

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## Installing the Oracle Utilities Smart Grid Gateway Database

This section provides the instructions for installing the Oracle Utilities Smart Grid Gateway database. This section includes:

- **Installation Overview**
- **Initial Install**
- **Demo Install**
- **Populating Language Data**
- **Installing Service Packs and Patches**

**Note:** This service pack is intended to be installed on top of an existing Oracle Utilities Smart Grid Gateway. Please refer to the **Readme.txt** file included with the release package for information about installing the database for this service pack.

## Installation Overview

Refer to **Supported Database Platforms** on page 1-2 for information about the supported platforms on which Oracle Utilities Smart Grid Gateway is verified to operate.

The following types of installation is available for Oracle Utilities Smart Grid Gateway:

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

## Initial Install

This section describes how to install the database components of Oracle Utilities Smart Grid Gateway, including:

- **Copying and Decompressing Install Media**
- **Creating the Database**
- **Installing the CISADM Schema**
- **Generating Database Statistics**

## Copying and Decompressing Install Media

To copy and decompress the Oracle Utilities Smart Grid Gateway database:

1. Download the Oracle Utilities Smart Grid Gateway v2.0.0.8.0 Oracle database from the Oracle Software Delivery Cloud.
2. Unzip the SGG-D8-V2.0.0.8.0-Database-MultiPlatform.zip file to a temporary folder. This file contains the database components required to install the Oracle Utilities Smart Grid Gateway database.

## Creating the Database

**Note:** You must have Oracle Database Server 11.2.0.1 installed on your machine in order to create the database.

You can create a database using the database creation tool (cdxdba.plx for UNIX or CDXDBA.exe for Windows) that is packaged with product.

The UNIX and Windows database creation utilities create an empty database with AL32UTF8 character set and at least one tablespace for storing the application objects before running the installation. The default name of the application tablespace is CISTS\_01.

- **Creating the Database on Unix**
- **Creating the Database on Windows**

### Creating the Database on Unix

The files for creating the database are located in the ../SGG/DatabaseCreation/Unix directory.

Follow these steps to create a database:

1. FTP the contents of the DatabaseCreation folder to a temporary directory on the UNIX server.
2. Set the ORACLE\_HOME and ORACLE\_BASE variables.
3. Run the utility cdxdba.plx by executing the following command:

```
perl cdxdba.plx
```

4. Provide the following parameter values when prompted:

- Instance name (DEMO):
- ORACLE\_BASE: the directory where the setup files for the database will be created (/orasw/app/oracle):
- ORACLE\_HOME: the folder where the current version of Oracle software is installed (/orasw/app/oracle/product/):
- ORACLE\_DATA: the directory where the data files for the database will be created (/db05/oradata):
- Character set for the database (AL32UTF8):

Enter the parameter 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 then to 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)?
```

5. When the database has been created, you will be prompted with the following question:

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

Select N to exit the database utility.

## Creating the Database on Windows

The files for creating the database are located in the ..\SGG\DatabaseCreation\Windows directory.

You should be logged in as a user who is a member of the local ORA\_DBA group on that server. The ORA\_DBA group should have “administrator” privileges assigned to it.

Follow these steps to create the database:

1. From a command prompt, run the utility CDXDBA.exe, located in the Windows folder.

The utility displays 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.

Provide the following values.

- Provide the instance name (DEMO): <DB Name> For example, SGG\_DB
- Enter the character set of the database (AL32UTF8): AL32UTF8
- Enter ORACLE\_BASE: the directory where the setup files for the database will be created (c:\oracle): <Oracle\_Base> For example, c:\app\oracle
- Enter ORACLE\_HOME: the folder where the current version of Oracle software is installed (c:\oracle\product\11.1.0.6\Db\_1):< Oracle\_Home> For example, c:\app\oracle\db\_home

- Enter ORACLE\_DATA: the directory where the data files for the database will be created (c:\app\oracle\oradata): <Directory where data files will be created>
3. Select option Q to exit the utility after the database is created.

## Installing the CISADM Schema

You will install the Oracle Utilities Application Framework V4.1.0.1.0 prior to Oracle Utilities Smart Grid Gateway 2.0.0.8.0. The files for Oracle Utilities Application Framework installation are located in the FW41010 folder. The installation process will prompt you for the following information:

- A database user that will own the application schema (for example, CISADM).
- A database 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 database 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\_20)

To install the CISADM schema for Oracle Utilities Smart Grid Gateway 2.0.0.8.0, follow these steps:

1. Run CdxDBI.exe from the ..\FW41010\Install-Upgrade directory. Please run the utility from the command prompt.

**Note:** Be sure to run CdxDBI.exe from a Window 32-bit desktop that has the Oracle 11.2.0.1 client and Java Development Kit Version 6.0 Update 20 or later. The database should already be listed in the local file tnsnames.ora

The utility prompts you to enter values for the following parameters:

- Name of the target database:<DB NAME>
  - Password for the SYSTEM user account in the database (in silent mode)
  - Name of the owner of the Database Schema:<CISADM>
  - Location of Java Home: <..\jdk1.6.0\_20>
  - Location of TUGBU Jar files: <..\FW41010\jarfiles>
  - Password for the user (in silent mode)
  - Oracle user with read-write privileges to the Database Schema:<CISUSER>
  - Oracle user with read-only privileges to the Database Schema:<CISREAD>
  - Oracle database role with read-write privileges to the Database Schema:<CIS\_USER>
  - Oracle database role with read-only privileges to the Database Schema:<CIS\_READ>
2. Run CdxDBI.exe from the ..\MDF\Install-Upgrade directory. The utility prompts you to enter values for the following parameters:
    - Name of the target database:<DB NAME>



- Password for the SYSTEM user account in the database (in silent mode)
  - Name of the owner of the Database Schema:<CISADM>
  - Location of Java Home: <..\jdk1.6.0\_20>
  - Location of TUGBU Jar files: <..\FW41010\jarfiles>
  - Password for the user (in silent mode)
  - Oracle user with read-write privileges to the Database Schema:<CISUSER>
  - Oracle user with read-only privileges to the Database Schema:<CISREAD>
  - Oracle database role with read-write privileges to the Database Schema:<CIS\_USER>
  - Oracle database role with read-only privileges to the Database Schema:<CIS\_READ>
3. Oracle Utilities Smart Grid Gateway Adapter for Itron OpenWay 2.0.0.8.0 requires additional Oracle Utilities Meter Data Framework patches 14739746 and 14775734. Please download the patches from <https://support.oracle.com>.
  4. Run CdxDBI.exe from the ..\SGG\Install-Upgrade directory. The utility prompts you to enter values for the following parameters:
    - Name of the target database:<DB NAME>
    - Password for the SYSTEM user account in the database (in silent mode)
    - Name of the owner of the Database Schema:<CISADM>
    - Location of Java Home: <..\jdk1.6.0\_20>
    - Location of TUGBU Jar files: <..\FW41010\jarfiles>
    - Password for the user (in silent mode)
    - Oracle user with read-write privileges to the Database Schema:<CISUSER>
    - Oracle user with read-only privileges to the Database Schema:<CISREAD>
    - Oracle database role with read-write privileges to the Database Schema:<CIS\_USER>
    - Oracle database role with read-only privileges to the Database Schema:<CIS\_READ>

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.

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 the 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.

## Generating Database Statistics

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 by using the DBMS\_STATS package.

## Demo Install

This section describes how to install the demo database components for Oracle Utilities Smart Grid Gateway, including:

- **Copying and Decompressing Install Media**
- **Creating the Database and Importing Dump File**
- **Configuring Security**

### Copying and Decompressing Install Media

To to copy and decompress the Oracle Utilities Smart Grid Gateway database:

1. Download the Oracle Utilities Smart Grid Gateway V2.0.0.8.0 Oracle database from the Oracle Software Delivery Cloud.
2. Unzip the SGG-D8-V2.0.0.8.0-Database-MultiPlatform.zip file to a temporary folder. This file contains the database components required to install the Oracle Utilities Smart Grid Gateway database.

### Creating the Database and Importing Dump File

You can use the database creation tool (cdxdba.plx for UNIX or CDXDBA.exe for Windows) to create the demo database with AL32UTF8 character set.

The UNIX and Windows database creation utilities create an empty database with AL32UTF8 character set and at least one tablespace for storing the application objects before running the installation. The default name of the application tablespace is CISTS\_01.

- **Creating the Demo Database on Unix**
- **Creating the Demo Database on Windows**

#### Creating the Demo Database on Unix

The files for creating the database are located in ../SGG/DatabaseCreation/Unix directory.

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. Set the ORACLE\_HOME and ORACLE\_BASE variables.
3. Run the utility cdxdba.plx by executing the following command:  

```
perl cdxdba.plx
```
4. When prompted, provide the following parameter values:
  - Instance name (DEMO):
  - ORACLE\_BASE: the directory where the setup files for the database will be created (/orasw/app/oracle):
  - ORACLE\_HOME: the folder where the current version of Oracle software is installed (/orasw/app/oracle/product/):
  - ORACLE\_DATA: the directory where the data files for the database will be created (/db05/oradata):
  - Character set for the database (AL32UTF8):

Enter the parameter 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 then to 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)?
```

5. When the database has been created, you will be prompted with the following questions:

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

Select Y to import the Demo Install data.

For the demo installation use the dump file exp\_demo.dmp.

**Note:** 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. Decompress the exp\_demo.dmp.gz file first to extract the exp\_demo.dmp file. This file is in ..\SGG\Demo directory.

```
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):
```

6. Update the oratab file for the new database and then check the connectivity to this database from another server and from your desktop after updating local tnsnames.ora file.

After a successful database creation, demo data can also be imported by using by following these steps:

1. Set the correct ORACLE\_SID and ORACLE\_HOME.
2. Run following command to import demo dump:

```
impdp directory= data_pump_dir dumpfile= exp_demo.dmp
logfile=exp_demo.log schemas=CISADM
```

## Creating the Demo Database on Windows

The files for creating the database are located in the ..\SGG\DatabaseCreation\Windows directory.

You should be logged in as a user who is a member of the local ORA\_DBA group on that server. The ORA\_DBA group should have “administrator” privileges assigned to it.

Follow these steps to create the database:

1. From a command prompt, run the utility CDXDBA.exe, located in the Windows folder.

The utility displays 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.

Provide the following values:

- Provide the instance name (DEMO): <DB Name> For example, SGG\_DB
  - Enter the character set of the database (AL32UTF8): AL32UTF8
  - Enter ORACLE\_BASE: the directory where the setup files for the database will be created (c:\oracle): <Oracle\_Base> For example, c:\app\oracle
  - Enter ORACLE\_HOME: the folder where the current version of Oracle software is installed (c:\oracle\product\11.1.0.6\Db\_1):< Oracle\_Home> For example, c:\app\oracle\db\_home
  - Enter ORACLE\_DATA: the directory where the data files for the database will be created (c:\app\oracle\oradata): <Directory where data files will be created>
3. Once the database has been created, select the R - Refresh a schema option with a database dump file to load the Demo Install data.
- Select an option: R
  - 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 (cisadm): CISADM
  - Enter password for CISADM (cisadm): 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 (exp\_demo.dmp):exp\_demo.dmp
  - Enter the name of the log file (imp\_demo.log):exp\_demo.log

For the DB user **system**, the password is **manager**. Option R causes the utility to drop all the objects from the schema and import the schema from a database dump file. For the Demo Installation, use the dump file exp\_demo.dmp.

**Note:** 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. Decompress the exp\_demo.dmp.gz file to extract the exp\_demo.dmp file. This file is in the ..\SGG\Demo directory.

Check the connectivity to this database from another server and from your desktop after updating local tnsnames.ora file

## Configuring Security

The configuration utility and scripts are located in the ..\SGG\Security folder. To configure security, follow these steps to execute the OraGenSec.bat utility:

**Note:** Database vault must be disabled before running.

1. Navigate to the ..\SGG\Security folder.
2. Edit the OraGenSec.bat file and replace the parameter *database-name* with the name of your database. This file is provided for your convenience and executes the Oragensec.exe utility based on the parameters passed into it.

**Note:** Be sure to run OraGenSec.bat from a Windows 32-bit desktop that has the Oracle 11.2.0.1 client installed. Your database should already be listed in the local file tnsnames.ora.

The script will execute as the following:

```
oragensec -d CISADM,CISADM,database-name -r  
CIS_READ,CIS_USER -a A -u  
CISUSER,CISREAD
```

3. Execute the edited OraGenSec.bat file.

The utility configures security for the CISADM schema objects

## Populating Language Data

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.

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 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 3-3 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 (CL\_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 Parallel 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 4

---

## 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 C: Partitioning Recommendations for Oracle Utilities Smart Grid Gateway** for additional information about configuring the Oracle Utilities Smart Grid Gateway 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 `PERMITTED` (the default).
- 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 4-5 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)
  CONSTRAINT <> 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 Application Framework Database

This document describes the database upgrade process for the Oracle Utilities Application Framework database from the last released blueprint version of V4.1.0 Group Fix-2 to V4.1.0 Group Fix-3. 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 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 section. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V4.1.0 Group Fix-3 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-3 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**

# 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.

## Configurable Conversion of OUAF Datetime Format

Currently all outbound messages are sent out in OUAF datetime format. This format is ambiguous in that it does not convey to the external system the respective time zone the date/time value is in. While XAI can accept the unambiguous xsd:dateTime format, the system cannot currently produce date/times in that format. This design will make sure you send outbound messages in xsd:dateTime format. A new required field DTTM\_FORMAT\_FLG is added to F1\_EXTSYS\_OUTMSG\_PROF table. The valid values for datetime format flag are ouaf (F1OU) and xsd (XSD). As a part of the upgrade Process DTTM\_FORMAT\_FLG is set to 'F1OU'. This will make sure that existing OUAF datetime format is supported.

## Allow CM to Add Char Values to Base Owned Char Types

Currently both Char Type and Char Type Value have owner flag. However, the UI does not currently grant the 'CM' user the ability to extend product delivered Char Types with their own Char Type Values. This effectively locks us out from shipping Char Types (of the Char Type Value subclass). This new feature adds a field named CUSTOM\_SW on CL\_CHAR\_TYPE table. If the custom switch is set then the char type is customizable and CM can add char values on the product owner char types. As a part of the upgrade Process CUSTOM\_SW is set to 'N'. This will make sure that existing char types will be not be Cmable.

# Schema Change

## New Tables

None

## New Views

| Views            | Description     |
|------------------|-----------------|
| F1_ATTACHMENT_VW | Attachment View |

## 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_SVC_TASK               | BO_STATUS_REASO<br>N_CD | N        |                                                       |
| F1_SVC_TASK_LOG           | BO_STATUS_REASO<br>N_CD | N        |                                                       |
| F1_EXTSYS_OUTMS<br>G_PROF | DTTM_FORMAT_FL<br>G     | N        | Configurable conversion<br>of OUAF datetime<br>format |

## Dropped Columns

None

## Unsupported Table Columns

None

## Column Format Change

| Table Name     | Column Name      | From     | To       |
|----------------|------------------|----------|----------|
| F1_BNDL        | EXT_REFERENCE_ID | CHAR: 30 | CHAR: 36 |
| F1_OBJ_REV     | EXT_REFERENCE_ID | CHAR: 30 | CHAR: 36 |
| F1_SYNC_REQ_IN | EXT_REFERENCE_ID | CHAR: 30 | CHAR: 36 |





# Appendix B

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## Oracle Application Framework System Table Guide

This section lists the system tables owned by the Oracle Utilities Application Framework V4.1.0.3 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,<br>CI_DB_INSTR, CI_DB_INSTR_L, L,<br>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,<br>CI_INSTALL_ALG, CI_INSTALL_MSG,<br>CI_INSTALL_MSG_L,<br>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_DTM) 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,<br>F1_BUS_OBJ_ALG, F1_BUS_OBJ_OPT,<br>F1_BUS_OBJ_STATUS,<br>F1_BUS_OBJ_STATUS_L,<br>F1_BUS_OBJ_STATUS_ALG,<br>F1_BUS_OBJ_STATUS_OPT,<br>F1_BUS_OBJ_STATUS_RSN,<br>F1_BUS_OBJ_STATUS_RSN_L,<br>F1_BUS_OBJ_STATUS_RSN_CHAR<br>F1_BUS_OBJ_TR_RULE,<br>F1_BUS_OBJ_TR_RULE_L                                                                                                                       |
| Standard Data Fields  | Business Object (BUS_OBJ_CD)                                                                                                                                                                                                                                                                                                                                                                                            |
| Customer Modification | Batch Control (BATCH_CD), Alert<br>(BO_ALERT_FLG), Sequence<br>(SORT_SEQ5), Status Reason<br>(STATUS_REASON_FLG) fields on<br>Business Object Status Table<br>(F1_BUS_OBJ_STATUS). Instance<br>Control (INSTANCE_CTRL_FLG),<br>Application Service (APP_SVC_ID) on<br>Business Object Table (F1_BUS_OBJ).<br>Status Reason Selection<br>(STATUS_REASON_SELECT_FLG) on<br>Status Reason Table<br>(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,<br>CI_CHAR_ENTITY, CI_CHAR_VAL,<br>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_ENTTTY) |

## 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,<br>CI_LOOKUP_VAL,<br>CI_LOOKUP_VAL_L,<br>F1_EXT_LOOKUP_VAL,<br>F1_EXT_LOOKUP_VAL_L |



| Properties            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard Data Fields  | <p>Field Name (FIELD_NAME)</p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p>Field Value (FIELD_VALUE)</p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul> <p>Introduced in V 4.0.1:<br/>Value (F1_EXT_LOOKUP_VALUE)</p> <ul style="list-style-type: none"> <li>This will allow storing longer value keys rather than the normal 4byte lookup values.</li> </ul> |
| 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,<br>F1_MANAG_CONTENT_L |
| Standard Data Fields  | Managed Content<br>(MANAG_CONTENT_CD)   |
| Customer Modification | None                                    |

## Messages

| Properties | Description                                             |
|------------|---------------------------------------------------------|
| Tables     | CI_MSG_CATEGORY,<br>CI_MSG_CATEGORY_L, CI_MSG, CI_MSG_L |

| Properties           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard Data Fields | <p>Message Category (MESSAGE_CAT_NBR)</p> <ul style="list-style-type: none"> <li>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.</li> <li>Oracle Utilities Customer Care and Billing and Oracle Utilities Business Intelligence - 00001 thru 00100</li> <li>Oracle Utilities Application Framework Java - 11001 thru 11100</li> <li>Oracle Utilities Customer Care and Billing Java - 11101 thru 11200</li> <li>Oracle Utilities Business Intelligence Java - 11201 thru 11300</li> <li>Implementer COBOL - 90000</li> <li>Implementer WSS - 90001</li> <li>Implementer Java - 90002</li> <li>Reserved for Tests - 99999</li> </ul> <p>Message Number (MESSAGE_NBR) for COBOL message categories</p> <ul style="list-style-type: none"> <li>Message numbers below 1000 are reserved for common messages. Implementers must not use message numbers below 1000.</li> </ul> <p>Message Number (MESSAGE_NBR) for Java message categories</p> <ul style="list-style-type: none"> <li>Subsystem Standard Messages - 00001 thru 02000</li> <li>Reserved - 02001 thru 09999</li> <li>Published Messages - 10001 thru 11000</li> <li>Package Messages - 10001 thru 90000</li> <li>Reserved - 90001 thru 99999</li> <li>Each package is allocated 100 message numbers, each starting from 101.</li> <li>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</li> <li>Reserved message number ranges are for future use and therefore must not be used by all products.</li> </ul> |

| Properties            | Description                                                                            |
|-----------------------|----------------------------------------------------------------------------------------|
| Customer Modification | Override Description (DESCRLONG_OVRD),<br>Message Text Override<br>(MESSAGE_TEXT_OVRD) |

## Meta Data - Table and Field

| Properties            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tables                | CI_MD_TBL, CI_MD_TBL_FLD,<br>CI_MD_TBL_L, CI_MD_TBL_FLD_L,<br>CI_MD_FLD, CI_MD_FLD_L,<br>F1_DB_OBJECTS_REPO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Standard Data Fields  | <p>Table Name (TBL_NAME)</p> <ul style="list-style-type: none"> <li>Table names must match with the physical table name or view name in the database.</li> <li>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.</li> <li>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)</li> </ul> |
| Customer Modification | <p>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.</p>                                                                                                                                                                            |

## Meta Data - Constraints

| Properties            | Description                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tables                | CI_MD_CONST, CI_MD_CONST_FLD                                                                                                                                                                                                                                               |
| Standard Data Fields  | Constraint Id (CONST_ID) <ul style="list-style-type: none"> <li>Index Name for Primary Constraints</li> <li>&lt;Index Name&gt;Rnn for Foreign Key Constraints Where               <ul style="list-style-type: none"> <li>nn: integer, 01 through 99</li> </ul> </li> </ul> |
| 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,<br>CI_NAV_OPT_CTXT,<br>CI_NAV_OPT_USG, CI_MD_NAV |
| Standard Data Fields  | Navigation Option Code<br>(NAV_OPT_CD), Navigation Key<br>(NAVIGATION_KEY) |
| Customer Modification | None                                                                       |

## Portal and Zone

| Properties            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tables                | CI_PORTAL, CI_PORTAL_L,<br>CI_PORTAL_ZONE, CI_ZONE,<br>CI_ZONE_L, CI_ZONE_PRM,<br>CI_ZONE_HDL, CI_ZONE_HDL_L,<br>CI_ZONE_HDL_PRM,<br>CI_ZONE_HDL_PRM_L,<br>CI_UI_ZONE                                                                                                                                                                                                                                                                                                                             |
| Standard Data Fields  | Portal Code (PORTAL_CD), Zone Code (ZONE_CD), Zone Type Code (ZONE_HDL_CD) <ul style="list-style-type: none"> <li>A new Zone can be added to the Product owned Portal Pages.</li> <li>The existing Zones cannot be removed from the Product owned Portal Pages.</li> </ul>                                                                                                                                                                                                                        |
| 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)<br>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,<br>CI_SCR_CRT_GRP,<br>CI_SCR_CRT_GRP_L, CI_SCR_DA,<br>CI_SCR_FLD_MAP, CI_SCR_PRMP, CI_SCR_PRMP_L,<br>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,<br>CI_TD_SRTKEY_TY,<br>CI_TD_DRLKEY_TY,<br>CI_TD_SRTKEY_TY_L                                                         |
| Standard Data Fields  | To Do Type Code (TD_TYPE_CD)                                                                                                                   |
| Customer Modification | Creation Batch Code (CRE_BATCH_CD),<br>Route Batch Code (RTE_BATCH_CD),<br>Priority Flag (TD_PRIORITY_FLG) on<br>To Do Type Table (CI_TD_TYPE) |

## XAI configuration

| Properties            | Description                                                                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tables                | CI_XAI_ADAPTER,<br>CI_XAI_ADAPTER_L, CI_XAI_CLASS,<br>CI_XAI_CLASS_L,<br>CI_XAI_ENV_HNDL,<br>CI_XAI_ENV_HNDL_L,<br>CI_XAI_FORMAT,<br>CI_XAI_FORMAT_L, CI_XAI_RCVR,<br>CI_XAI_RCVR_L, CI_XAI_RCVR_CTX,<br>CI_XAI_RCVR_RSP,<br>CI_XAI_RCVR_RGRP,<br>CI_XAI_SENDER,<br>CI_XAI_SERNDER_L,<br>CI_XAI_SNDR_CTX,<br>CI_XAI_OPTION |
| Standard Data Fields  | Adapter Id (XAI_ADAPTER_ID), Class<br>Id (XAI_CLASS_ID), Envelope Handler<br>Id (XAI_ENV_HNDL_ID), XAI Format<br>Id (XAI_FORMAT_ID), Receiver Id<br>(XAI_RCVR_ID), Sender Id<br>(XAI_SENDER_ID)                                                                                                                            |
| Customer Modification | Option Value (OPTION_VALUE on XAI<br>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,<br>CI_XAI_SVC_PARM                                                                                                                                                                                           |
| Standard Data Fields  | XAI Inbound Service Id<br>(XAI_IN_SVC_ID), XAI Inbound Service<br>Name (XAI_IN_SVC_NAME)                                                                                                                                                     |
| Customer Modification | XAI Version (XAI_VERSION_ID), Trace<br>(TRACE_SW), Debug (DEBUG_SW),<br>Request XSL (INPUT_XSL), Response<br>XSL (RESPONSE_XSL), Record XSL<br>(RECORD_XSL and Post Error<br>(POST_ERROR_SW) on XAI Inbound<br>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_PRMP       | MG             | Script Prompt                  |
| CI_SCR_PRMP_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_OPTION                | MG             | Business Object Status Option            |
| F1_BUS_OBJ_STATUS_REASON                | MG             | Status Reason                            |
| F1_BUS_OBJ_STATUS_REASON_CHARACTERISTIC | KP             | Status Reason Characteristic             |
| F1_BUS_OBJ_STATUS_REASON_L              | MG             | Status Reason Language                   |
| F1_BUS_OBJ_TRANSITION_RULE              | MG             | Business Object Transition Rule          |
| F1_BUS_OBJ_TRANSITION_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_REPOSITORY                | 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_CNTRL                         | 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                       |

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| Table Name     | Upgrade Action | Description     |
|----------------|----------------|-----------------|
| SC_USR_GRP_USR | KP             | User Group User |

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# Appendix C

## Partitioning Recommendations for Oracle Utilities Smart Grid Gateway

This section specifies the partitioning strategy recommended for an initial Oracle Utilities Smart Grid Gateway database configuration. This section includes recommendations for partitioning transaction tables.

In general the recommendation is to create a minimum of 'n' partitions for selective database objects, where 'n' is number of RAC nodes. The partitioning recommendations outlined below can be used as reference:

- **Partitioning Recommendations for Transaction Tables**

### Partitioning Recommendations for Transaction Tables

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

- 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 (a smaller partition for better performance). Bi-weekly partitions are suggested. Subpartition these tables by MEASR\_COMP\_ID (For example, 8 subpartitions).
- D1\_INIT\_MSRMT\_DATA table can be partitioned by D1\_TO\_DTTM (smaller partition better performance). Biweekly partitions are suggested. Subpartition D1\_INIT\_MSRMT\_DATA table by MEASR\_COMP\_ID (For example, 8 subpartitions).
- 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 (For example, 8 subpartitions).
- Indexes on these tables should be mostly local. We have mentioned in the below section which Indexes should be local and which should be global.

This section contains partitioning recommendations as a reference:

#### 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)
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'))
);

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> 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)
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'))
);
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> LOCAL 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
    PARTITION BY RANGE (MSRMT_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'))
);
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>;

```



---

## 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)
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'))
);
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,
IMD_BO_DATA_AREA CLOB,
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
) 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;

```

## 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> LOCAL 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>;

```



# Appendix D

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  8. commons-cli-1.1.jar
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  12. commons-httpclient-3.0.1.jar
  13. commons-io-1.3.2.jar
  14. commons-lang-2.2.jar
  15. ehcache-1.2.3.jar
  16. log4j-1.2.15.jar
  17. qdox.1.6.1.jar
  18. serializer-2.7.1.jar
  19. stax2.jar
  20. velocity.1.4.jar
  21. wstx-asl-3.2.1.jar
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