Preface

Chapter 1
Database Overview
Supported Database Platforms
Supported Platforms Summary Table
Support for Software Patches and Upgrades
Database Maintenance Rules
Permitted Database Changes
Non-Permitted Database Changes

Chapter 2
Installing the Database
Installation Overview
Creating the Database
Oracle Database Installation
Database Scripts and Utilities
Initial Install (Installing v2.6.0.1.0 for the First Time)
Installing the CISADM Schema
Upgrade Install
Demo Install

Chapter 3
Database Design
Database Object Standard
Categories of Data
Naming Standards
Column Data Type and Constraints
User Defined Code
System Assigned Identifier
Date/Time/Timestamp
Number
Fixed Length/Variable Length Character Columns
Null Column Support
XML Type Support
Cache and Key Validation Flags
Table Classification and Table Volume Flags
Default Value Setting
Foreign Key Constraints
Standard Columns
Owner Flag
Version
Chapter 4

Database Implementation Guidelines

Configuration Guidelines ........................................................................................................ 4-1
Index ........................................................................................................................................ 4-1
Table Partitioning Recommendations ..................................................................................... 4-2
Transparent Data Encryption Recommendations ................................................................. 4-2
Data Compression Recommendations .................................................................................... 4-3
Database Vault Recommendations .......................................................................................... 4-6
Oracle Fuzzy Search Support ................................................................................................. 4-7
Information Lifecycle Management (ILM) and Data Archiving Support .................................. 4-7
Storage Recommendations ..................................................................................................... 4-7
Database Configuration Recommendations ............................................................................. 4-8
Database Syntax ...................................................................................................................... 4-8
Database Initialization Parameters ........................................................................................ 4-9

Oracle Database Implementation Guidelines .............................................................................. 4-9
Oracle Partitioning ................................................................................................................ 4-9
Database Statistic ................................................................................................................... 4-10
Materialized View .................................................................................................................. 4-10

Chapter 5

Conversion Tools .................................................................................................................... 5-1

Database Configuration .......................................................................................................... 5-1
Script Installation .................................................................................................................... 5-2
Preparing the Production Database ........................................................................................ 5-3
Preparing the Staging Database .............................................................................................. 5-3

Chapter 6

Information Lifecycle Management and Data Archiving in CCB ............................................. 6-1

ILM Implementation Overview ............................................................................................... 6-1
ILM Implementation Components ........................................................................................... 6-2
ILM Database Administrator’s Tasks ....................................................................................... 6-2
Preparation Phase .................................................................................................................. 6-2
On-going Maintenance Phase ................................................................................................. 6-4
Naming Convention ................................................................................................................ 6-6

Appendix A

Sample SQL for Enabling ILM in CCB (Initial Install) .............................................................. A-1

Maintenance Object: TO DO ENTRY ...................................................................................... A-1
Parent Table: CI_TD_ENTRY ..................................................................................................... A-1
Child Table: CI_TD_DRLKEY ................................................................................................... A-4
Child Table: CI_TD_ENTRY_CHA ............................................................................................ A-5
Child Table: CI_TD_LOG ........................................................................................................ A-5
Child Table: CI_TD_MSG_PARM ............................................................................................ A-6
Child Table: CI_TD_SRTKEY ................................................................................................... A-7

Maintenance Object: F1-SYNCREQIN .................................................................................... A-7
Parent Table: F1_SYNC_REQ_IN ............................................................................................. A-7
Child Table: F1_SYNC_REQ_IN_CHAR .................................................................................. A-12
Child Table: F1_SYNC_REQ_IN_EXCP .................................................................................. A-13
Child Table: F1_SYNC_REQ_IN_EXCP_PARM ..................................................................... A-13
Child Table: F1_SYNC_REQ_IN_LOG .................................................................................... A-14
Child Table: F1_SYNC_REQ_IN_LOG_PARM ........................................................................ A-15
Child Table: F1_SYNC_REQ_IN_REL_OBJ .......................................................................... A-15

Appendix B

Sample SQL For Enabling ILM in CCB (Existing Installation) .................................................. B-1

Appendix C

Sample SQL for Periodic Maintenance ................................................................................... C-1
Add Partition ........................................................................................................................... C-1
Appendix D
Sample SQL for ILM in CCB................................................................. D-1
  Maintenance Object: Adjustment .................................................. D-1
  Parent Table: CI_ADJ ................................................................ D-1
  Parent Table: CI_BSEG .......................................................... D-8

Appendix E
Sample Scripts for Customer Contact Enhancement.......................... E-1
  Updating Customer Contact Account and Premise........................ E-1
  Updating Preferred Contact Method on Legacy Values................ E-6

Appendix F
Upgrades to the Oracle Utilities Customer Care and Billing 2.6.0.1.0 Database................................. F-1
  Schema Changes ....................................................................... F-1
  Column Format Changes .......................................................... F-1
  New System Data ................................................................. F-2
    New Tables ........................................................................ F-2
    New Columns ................................................................. F-2
    New Indexes .................................................................. F-2
    New Functions .............................................................. F-2
    New Batch Control Application Services............................. F-3
    Conversion Batch Control Application Services.................. F-10
    Validation Batch Control Application Services ................ F-21
    Purge Batch Control Application Services ....................... F-22
    ILM Batch Control Application Services ......................... F-22

Appendix G
Upgrades to the Oracle Utilities Application Framework Database ............................................. G-1
  Upgrading from Oracle Utilities Application Framework v4.3.0.1.0 to v4.3.0.2.0............... G-1
  Upgrading from Oracle Utilities Application Framework v4.3.0.2.0 to v4.3.0.3.0............... G-3
  Upgrading from Oracle Utilities Application Framework v4.3.0.3.0 to v4.3.0.4.0............... G-4
  Upgrading from Oracle Utilities Application Framework v4.3.0.4.0 to v4.3.0.5.0............... G-6

Appendix H
Oracle Application Framework System Table Guide........................................ H-1
  System Table Standards ........................................................ H-2
  Business Configuration Tables ............................................... H-3
  Development and Implementation System Tables ..................... H-5
Preface

This guide provides instructions for installing and maintaining the database for Oracle Utilities Customer Care and Billing.

Audience

Database Administrator’s Guide is intended for database administrators who will be installing and maintaining the database for Oracle Utilities Customer Care and Billing.

Related Documents

For more information, refer to these Oracle documents:

Installation Guides and Release Notes
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Release Notes
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Quick Install Guide
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Installation Guide
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Database Administrator’s Guide
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Optional Products Installation Guide
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Licensing Information User Manual

Administrative and Business User Guides
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Administrative User Guide
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Business User Guide

Supplemental Documents
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Server Administration Guide
- Oracle Utilities Customer Care and Billing V2.6.0.1.0 Security Guide
Updates to this Documentation

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

Conventions

The following text conventions are used in this document:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>boldface</td>
<td>Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.</td>
</tr>
<tr>
<td>italic</td>
<td>Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.</td>
</tr>
<tr>
<td>monospace</td>
<td>Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.</td>
</tr>
</tbody>
</table>
Chapter 1
Database Overview

This section provides an overview of the Oracle Utilities Customer Care and Billing database, including:

- Supported Database Platforms
- Database Maintenance Rules

Supported Database Platforms

This section defines the platforms on which Oracle Utilities Customer Care and Billing is verified to operate.

Supported Platforms Summary Table

Oracle Utilities Customer Care and Billing is supported on the following platforms:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Database Versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX 7.2 TL4 (POWER 64-bit)</td>
<td></td>
</tr>
<tr>
<td>Linux 7.1 (64-bit) x86_64 (64-bit)</td>
<td>Oracle DB 12.1.0.2.+ (64-bit)/ Oracle 12.2.0.1.+ (64-bit)</td>
</tr>
<tr>
<td>Solaris 11 (SPARC 64-bit)</td>
<td></td>
</tr>
<tr>
<td>HP-UX 11.31 (64-bit)</td>
<td></td>
</tr>
</tbody>
</table>

* Oracle Utilities Customer Care and Billing is tested on both Oracle Database Enterprise Edition and Standard Edition. Some features, such as Advanced Compression and Partitioning, require the Enterprise Edition.

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
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 Customer Care and Billing 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 Customer Care and Billing production environment.

The exceptions from this rule are Hibernate version 4.0 GA and Oracle Client version 12.1.0.2. These should not be upgraded.

Always contact Oracle Utilities Customer Care and Billing 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.

Permitted Database Changes

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. Please make sure to prefix new items with “CM” (for customer modification).
- 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.

Non-Permitted Database Changes

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
Installing the Database

This section provides the instructions for installing or upgrading the Oracle Utilities Customer Care and Billing database. This section includes:

- Installation Overview
- Oracle Database Installation

Installation Overview

Refer to Supported Database Platforms for information about the supported platforms on which Oracle Utilities Customer Care and Billing is verified to operate.

The following types of installation are available for Oracle Utilities Customer Care and Billing:

- **Initial Install** — a database with no demo data.
- **Upgrade Install** — a database upgrade to version 2.6.0.1.0 from versions 1.5.10, 1.5.15, 1.5.20, 2.0.5, 2.1.0, 2.2.0, 2.2.0.10, 2.3.1.10, 2.4.0.0, 2.4.0.1, 2.4.0.2, 2.4.0.3, 2.5.0, 2.5.0.1, 2.5.0.2, and 2.6.0.0.
- **Demo Install** — a database populated with demo data.

The database installation requires a supported version of the Java Development Kit Version 8.0 and Oracle 12.1.0.2(+) 32-bit client installed on the Windows 64-bit or 32-bit desktop where the install package is staged and run.

Creating the Database

For an initial install or demo install you will create an empty database on the Unix or Windows database server on which you operate the production instance of Oracle Utilities Customer Care and Billing.

1. Create the database using the Database Configuration Assistant (DBCA).

Refer to the article *Master Note: Overview of Database Configuration Assistant (DBCA) (Doc ID 1488770.1)* on My Oracle Support for more information. Make sure to set character set for database as AL32UTF8.

**Note:** While prior versions of the product have included the cdxdba programs (cdxdba.plx for UNIX or CDXDBA.exe for Windows), this is
Creating the Database

Installing the Database

2. Enable the mandatory software options.
   • Oracle Spatial OR Oracle Locator
   • Oracle Text

3. Run the following SQL to make sure it is successful.

   ```sql
   SELECT COMP_NAME, STATUS FROM DBA_REGISTRY WHERE COMP_NAME IN ('Spatial', 'Oracle Text');
   ```

4. Create the default tablespace `CISTS_01` and the required users and roles as follows.

   ```sql
   CREATE TABLESPACE CISTS_01 LOGGING DATAFILE '/<db_file_location>/oradata/<DB_NAME>/cists01.dbf' SIZE 1024M REUSE AUTOEXTEND ON NEXT 8192K MAXSIZE UNLIMITED EXTENT MANAGEMENT LOCAL UNIFORM SIZE 1M;
   ```

5. Create the required roles as follows:

   ```sql
   CREATE ROLE CIS_USER;
   CREATE ROLE CIS_READ;
   ```

6. Create the users as follows:

   ```sql
   CREATE USER CISADM IDENTIFIED BY CISADM DEFAULT TABLESPACE CISTS_01 TEMPORARY TABLESPACE TEMP PROFILE DEFAULT;
   GRANT UNLIMITED TABLESPACE TO CISADM WITH ADMIN OPTION;
   GRANT SELECT ANY TABLE TO CISADM;
   GRANT CREATE DATABASE LINK TO CISADM;
   GRANT CONNECT TO CISADM;
   GRANT RESOURCE TO CISADM;
   GRANT DBA TO CISADM WITH ADMIN OPTION;
   GRANT CREATE ANY SYNONYM TO CISADM;
   GRANT SELECT ANY DICTIONARY TO CISADM;
   ```

   ```sql
   CREATE USER CISUSER PROFILE DEFAULT IDENTIFIED BY CISUSER DEFAULT TABLESPACE CISTS_01 TEMPORARY TABLESPACE TEMP;
   GRANT SELECT ANY TABLE TO CISUSER;
   GRANT CIS_USER TO CISUSER;
   GRANT CIS_READ TO CISUSER;
   GRANT CONNECT TO CISUSER;
   ```

   ```sql
   CREATE USER CISOPR PROFILE DEFAULT IDENTIFIED BY OPRPLUS DEFAULT TABLESPACE CISTS_01 TEMPORARY TABLESPACE TEMP;
   GRANT CONNECT,RESOURCE,EXP_FULL_DATABASE TO CISOPR;
   ```

   ```sql
   CREATE USER CISREAD IDENTIFIED BY CISREAD DEFAULT TABLESPACE CISTS_01 TEMPORARY TABLESPACE TEMP;
   GRANT SELECT ANY TABLE TO CISREAD;
   GRANT CIS_READ TO CISREAD;
   GRANT CONNECT TO CISREAD;
   ```

7. Review the Storage.xml file under the FW43050\Install-Upgrade folder prior to an initial install or upgrade install. This file allocates all base tables and indexes to the default tablespace `CISTS_01` and the required users and roles. Information in this file is used by ORADBI while installing the Oracle Utilities Customer Care and Billing database objects. Refer to Updating Storage.xml for more details on updating this file.

   **Note:** You will need to review the Storage.xml file, prior to an initial install, to update the default values to custom values (for example:
TableSpace Name). OraDBI can be executed by a non-schema owner in order to upgrade the database. The Initial Install still needs to be done by the schema owner.

If you decide to allocate some tables or indexes outside of the default tablespace, change the tablespace name from the default value to a custom value in the Storage.xml file.

For instance, if you decide to allocate table CI_ACCT in a tablespace MyTablespace, change Storage.xml as shown:

```xml
<CI_ACCT>
  <TABLESPACE>MyTablespace</TABLESPACE>
</CI_ACCT>
```

For optimum storage allocation, database administrators should create multiple tablespaces with extents sized to store different types of tables/indexes. They can then edit the storage.xml file before install process, to spread tables and indexes across these tablespaces. Tables and indexes can be created in parallel by editing degree of parallelism. Tablespace, storage options, secure file options, Advanced Compression, and parallel information are used only for new objects. Therefore, for initial installs, information for each object should be reviewed. Be careful while editing this file. Make sure that tablespace names being used exist in the database. Do not change the basic format of this file.

**Note:** Prior to the installation of the database schema for the product, please ensure that the Database Management System software is installed according to your site standards and the installation guide provided by the database vendor. Also please make sure that you have necessary licenses to use some of the advanced database features such as Advanced Compression.

---

**Oracle Database Installation**

This section describes how to install the Oracle database for Oracle Utilities Customer Care and Billing 2.6.0.1.0. It contains the following topics:

- Database Scripts and Utilities
- Initial Install (Installing v2.6.0.1.0 for the First Time)
- Upgrade Install
- Demo Install

**Note:** The installation tools outlined in this guide run on Windows and UNIX/Linux only. Please refer to Supported Database Platforms for more information on supported platforms.

**Database Scripts and Utilities**

Follow these steps before you begin installing the database:

1. Copy FW-V4.3.0.5.0-Oracle-Database-Multiplatform, CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform and CCB-V2.6.0.1.0-Oracle-Database-Multiplatform directories to your local machine.
These database folders contain several files that will be referred to in the installation process.

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

**Initial Install (Installing v2.6.0.1.0 for the First Time)**

This section describes an initial installation of the v2.6.0.1.0 database:

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

The section includes:
- Copying and Decompressing Install Media
- Database Creation
- Installing the CISADM Schema

**Copying and Decompressing Install Media**

To copy and decompress the Oracle Utilities Customer Care and Billing database:

1. Download Oracle Utilities Application Framework V4.3.0.5.0 Oracle Database, Oracle Utilities Application Framework V4.3.0.5.0 Database Single Fix Prerequisite Rollup for CCB V2.6.0.1.0 and Oracle Utilities Customer Care and Billing V2.6.0.1.0 Oracle Database from the Oracle Software Delivery Cloud.

2. Copy FW-V4.3.0.5.0-Oracle-Database-Multiplatform, CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform and CCB-V2.6.0.1.0-Oracle-Database-Multiplatform directories to your local machine.

These files contain all the database components required to install the Oracle Utilities Application Framework and Customer Care and Billing database.

**Database Creation**

*Note:* You must have Oracle Database Server installed on your machine in order to create the database. This step is not required if you are performing a database upgrade from a previous version of Oracle Utilities Customer Care and Billing.

**Creating the Database on UNIX**

Create the database using the Database Configuration Assistant (DBCA).

Refer to the article *Master Note: Overview of Database Configuration Assistant (DBCA) (Doc ID 1488770.1)* on My Oracle Support for more information. Make sure to set character set for database as AL32UTF8.

Refer to Creating the Database for steps to create the database.

**Creating the Database on Windows**

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.
Refer to the article Master Note: Overview of Database Configuration Assistant (DBCA) (Doc ID 1488770.1) on My Oracle Support for more information. Make sure to set character set for database as AL32UTF8.

Refer to Creating the Database for steps to create the database.

Database Globalization Support Consideration
Oracle Utilities Application Framework is a multilingual capable application that supports the storage, processing, and retrieval of data in multiple languages by leveraging the Oracle Database globalization support architecture. Use of the AL32UTF8 Unicode character encoding system allows the database to support multiple languages. If your application supports multiple languages with any one of which being multibyte, then consider the use of Character Length Semantics to store data in database columns in terms of CHARACTERS rather than in terms of BYTES.

At this time, Oracle Utilities Application Framework only supports CHAR NLS_LENGTH_SEMANTICS setting at the instance level. Since this is an instance wide setting, great care should be taken and a thorough evaluation should be performed if custom or third party components utilize the same database instance as the Framework application.

Limitations
The application will only allow for half of the number of characters if the characters are four bytes. In Java, four-byte characters consume two characters in memory. Due to Legacy Program support and performance considerations, the Framework will allocate storage based on the size defined by the Field.

For example, a Field defined as 12 characters will only be able to store 6 four-byte characters. This does not apply to two- or three-byte characters: in those cases, all 12 of the two- or three-byte characters would fit into the allocated memory. This is not a database limitation - but an application limitation.

MAX_STRING_SIZE of EXTENDED is not supported at this time.

By default, the database is created with BYTE length semantics. To store data using CHARACTER length semantics, follow the procedure below:

Initial Install
1. Execute the following statement to set nls_length_semantics=CHAR.
   
   SQL> ALTER SYSTEM SET nls_length_semantics=CHAR SCOPE=BOTH;

2. Restart the database.

3. Verify that the nls_length_semantics is CHAR using the following command:
   
   SQL> SHOW PARAMETER nls_length_semantics

   Note: For pluggable databases ensure to set nls_length_semantics=CHAR.

There are multiple ways to migrate a database from BYTE to CHAR length semantics:

- **By Script:** Refer to the Doc ID 313175.1 on My Oracle Support.

- **Alternative procedure:** The following is an alternate way to create a schema with character-length semantics, and then importing the date from a byte-based export.
Migrating from BYTE Based Storage to CHARACTER Based Storage

1. Create a database using DBCA.

2. Execute the following statement to set nls_length_semantics=CHAR.
   
   ```sql
   SQL> ALTER SYSTEM SET nls_length_semantics=CHAR SCOPE=BOTH;
   ```

3. Restart the database.

4. Ensure nls_length_semantics is CHAR using the following command:
   
   ```sql
   SQL> SHOW PARAMETER nls_length_semantics
   ```

   **Note:** For pluggable database ensure to set nls_length_semantics=CHAR.

5. Export schema from the database that has nls_length_semantics=BYTE.
   
   ```
   expdp userid=system/<code>@<SID> directory=<DIR_NAME>
   schemas=<schema_name> dumpfile=<schema_name>.dmp
   logfile=<schema_name>.log
   ```

6. Generate DDL from dump file using Oracle impdp utility.
   
   ```
   impdp userid=system/<code>@<SID> directory=<DIR_NAME>
   DUMPFILE=<schema_name>.dmp SCHEMAS=<schema_name>
   SQLFILE=<schema_name>_DDL.sql
   ```

7. Replace “Byte” with “Char” in `<schema_name>_DDL.sql`.
   
   For vi editor (in Linux), use the following command to replace Byte to Char.
   
   ```
   :%s/BYTE/CHAR/g
   ```

8. Replace the schema name also if it is required for environment.

9. Execute `<schema_name>_DDL.sql` (generated in step 6) that creates objects in the schema.

   Execute the following command to ensure the number of objects at source and target are equal.
   
   ```sql
   SQL>select OWNER||'  '||OBJECT_TYPE||'  '| |COUNT(*)||'  '||STATUS FROM DBA_OBJECTS WHERE OWNER in ('<SCHEMA_NAME>') GROUP
   BY OWNER, OBJECT_TYPE , STATUS ORDER BY OBJECT_TYPE;
   ```

10. If an object is missing for any reason, create it by fixing DDL manually (DDL for each object is available in the file which was created in step 6).

    Execute DDL for the objects that are not created.

11. Generate DDL to disable triggers using following command:
    
    ```sql
    SQL> SELECT 'ALTER TABLE' ||'  '||TABLE_NAME ||'  '| |'DISABLE ALL
    TRIGGERS;' FROM USER_TABLES;
    ```

12. Execute the script generated from step 11 to disable all triggers.

13. Import the data only.

    Use the following command to import data only into the schema created to support CHAR based database storage.
Installing the CISADM Schema

You will install the Oracle Utilities Application Framework V4.3.0.5.0 and Oracle Utilities Application Framework V4.3.0.5.0 Database Single Fix Prerequisite Rollup for CCB V2.6.0.1.0 prior to Oracle Utilities Customer Care and Billing 2.6.0.1.0.

The files for Oracle Utilities Application Framework installers are located in the ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade folder.

The installation process prompts you for the following information:

• The target database name in which the product is to be installed.
• A database user that will own the application schema (Example: CISADM).
• A database user that has read-write (select/update/insert/delete) privileges to the objects in the application schema. (Example: CISUSER).

The application will access the database as this user.

• A database user with read-only privileges to the objects in the application schema. (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. (Example: CIS_USER).
• A database role with read-only privileges to the objects in the application schema. (Example: CIS_READ).
• Location for jar files. (The Jar files are bundled with the database package.)
• Java Home (Example: C:\Java\jdk1.8)

Installing the Oracle Utilities Application Framework Database Component

Note: Oracle Utilities Application Framework Database Component can be installed using OraDBI.java. While prior versions of the product have included OraDBI.exe, this is no longer supported going forward as this does not support latest functionality/features introduced in OraDBI.java. OraDBI.jar is delivered in directory jarfiles.

The section below includes the instructions to install the database component.
Installing the Oracle Utilities Application Framework Database Component Using OraDBI.java

OraDBI.java is a new tool to install and upgrade database components. Before installing the database component, ensure the following prerequisites are met.

- JDK 1.8
- Oracle Database
- Schema (such as CISADM) should exist in the database

To install the Oracle Utilities Application Framework v4.3.0.5.0, follow these steps:

1. Install Framework database component using command prompt utility of Windows from ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade directory.

2. Prepare the configuration parameters listed below:
   - DB_SERVER – Name of the database server
   - SID- Name of the target database
   - PORT – Port number
   - DBUSER – Name of the owner of the database schema
   - DBPASS – Password for the user
   - RWUSER – Oracle user with read-write privileges, such as CISUSER
   - RUSER – Oracle user with read-only privileges, such as CISREAD
   - RW_USER_ROLE - Oracle database role with read-write privileges such as CIS_USER
   - USER_ROLE – Oracle database role with read-only privileges such as CIS_READ
   - JAVA_HOME – Location of JDK 1.8, such as C:\Program Files\Java\jdk1.8.0
   - CLASS_PATH – Location of Jarfiles, such as C:\ FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*

3. There are two options to run OraDBI.java. Choose any of the two options - Using Interactive Mode or Command on Command Line.
   - **To run OraDBI using Interactive Mode:**
     a. Open command prompt / command line on Windows environment.
     b. Set Java Home.
        In the following example, JDK 1.8 is installed at directory C:\Program Files\Java\jdk1.8.0_101.
        
        ```
        SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101
        ```
     c. Set Class Path.
        In the following example, the required jarfiles (including OraDBI.jar) are available in the directory C:\ FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
        
        ```
        SET CLASS_PATH= C:\ FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
        ```
d. Execute the following command at command prompt in Windows environment.

Using variable parameters:

```
"%JAVA_HOME%\bin\java -Xmx1500M -cp %CLASS_PATH%
com.oracle.ouaf.oem.install.OraDBI
```

Using absolute path of Java home and Jar files:

```
"C:\Program Files\Java\jdk1.8.0_101\bin\java -Xmx1500M -cp
SET CLASS_PATH= C:\ FW-V4.3.0.5.0-Oracle-Database-
Multiplatform\FW\jarfiles\*
com.oracle.ouaf.oem.install.OraDBI
```

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

- Enter the database server hostname:<SERVER NAME>
- Enter the database port number:<PORT>
- Enter the database name/SID:<DB NAME>
- Enter your database username:<CISADM>
- Enter your password for username CISADM:
- Enter the location for Java Home:<C:\Program
  Files\Java\jdk1.8.0_101>
- Enter the Oracle user with read-write privileges to Database
  Schema:<CISUSER>
- Enter the Oracle user with read-only privileges to Database
  Schema:<CISREAD>
- Enter the database role with read-write privileges to Database
  Schema:<CIS_USER>
- Enter the database role with read-only privileges to Database
  Schema:<CIS_READ>
- Enter the name of the target Schema where you want to install or
  upgrade:<CISADM>
- Enter the password for CISADM schema:

To run OraDBI using Command on Command Line:

Run the following command with defined parameters on the command prompt
using either absolute value or variable parameters.

Using variable parameters:

```
"%JAVA_HOME%\bin\java -Xmx1500M -cp %CLASS_PATH%
com.oracle.ouaf.oem.install.OraDBI -d
jdbc:oracle:thin:@<DB_SERVER>:<PORT>/
<SID>,<DBUSER>,<DBPASS>,<R_USER>,<RW_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j <JAVA HOME>
```

Using absolute path of Java home and Jar files:

```
"C:\Program Files\Java\jdk1.8.0_101\bin\java -Xmx1500M -cp SET
CLASS_PATH= C:\ FW-V4.3.0.5.0-Oracle-Database-
Multiplatform\FW\jarfiles\*
```
Installing the CISADM Schema

Installing the Database

Oracle Utilities Customer Care and Billing
Database Administrator’s Guide

com.oracle.ouaf.oem.install.OraDBI -d
jdbc:oracle:thin:@<DB_SERVER>:<PORT>/
<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"

Note: As there is an empty space between the two words ‘Program’ and ‘Files’, it is enclosed in the double quotes in the command above.

This process generates log files in the directory Install-Upgrade\logs.

4. Ensure to check the log files for any errors.

Note: For OraDBI java, you may receive the following message in the display output or logs. These errors can be safely ignored and the process should proceed to completion.

...
This file is either provided by the property com.oracle.ouaf.system.keystore.file or expected to exist at the default file location null Attempting to use the legacy cryptography.


Installing Prerequisite Database Single Fixes

Before installing Oracle Utilities Customer Care and Billing, you must install Oracle Utilities Framework Prerequisite DB Hot Fixes.

Note: While prior versions of the product have included the cdxpatch.exe programs for applying DB Hot Fixes, this is no longer supported going forward, and the ouafDatabasePatch.cmd or ouafDatabasePatch.sh should be used instead.

To install the Framework Prerequisite DB Hot Fixes, follow these steps:

Applying Hot Fixes from a Windows Machine

Note: Java 8 JDK should be installed on the machine to use the command. Ensure to install the JDK that is supported for your platform.

1. Copy the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Windows, under c:\dbpatch_tools and extract the db_patch_standalone.jar using below command:

   cd c:\dbpatch_tools
   jar xvf db_patch_standalone.jar

2. SET TOOLSBIN=c:\dbpatch_tools\bin

3. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.cmd utility from the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix directory. The utility will prompt you for the value of the following parameters:

   • Enter the target database type (O/M/D) [O]:
• Enter the username that owns the schema: <CISADM>
• Enter the password for the cisadm user: <CISADM Password>
• Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>

Applying Hotfixes from a Unix Standalone Server

Note: Java 8 JDK should be installed on the machine to use the command. Ensure to install the JDK that is supported for your platform.

1. Copy the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Unix server, under /tmp/dbpatch_tools and extract the db_patch_standalone.jar using below command:
   ```
   cd /tmp/dbpatch_tools
   jar xvf db_patch_standalone.jar
   ```

2. Export TOOLSBIN=/tmp/dbpatch_tools/bin.

3. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.sh utility from the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix directory.

The utility will prompt you for the value of the following parameters:

• Enter the target database type (O/M/D) [O]:
• Enter the username that owns the schema: <CISADM>
• Enter the password for the cisadm user: <CISADM Password>
• Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>

Installing Oracle Utilities Customer Care and Billing Database Component

Oracle Utilities Customer Care and Billing Database Component can be installed using OraDBI.java. While prior versions of the product have included OraDBI.exe, this is no longer supported going forward as this does not support latest functionality/features introduced in OraDBI.java. OraDBI.jar is delivered in directory jarfiles.

Installing the Oracle Utilities Customer Care and Billing Database Component Using OraDBI.java

OraDBI.java is a new tool to install and upgrade database components. Before installing the Oracle Utilities Customer Care and Billing v2.6.0.1.0, ensure the following prerequisites are met.

• JDK 1.8
• Oracle Database
• Schema (such as CISADM) should exist in the database
To install the Oracle Utilities Customer Care and Billing v2.6.0.1.0, follow these steps:

1. Install the Customer Care and Billing database component using the command prompt utility of Windows from ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Install-Upgrade\.

2. Prepare the configuration parameters listed below:
   - DB_SERVER – Name of the database server
   - SID - Name of the target database
   - PORT – Port No.
   - DBUSER – Name of the owner of the Database Schema
   - DBPASS – Password for the user
   - RWUSER – Oracle user with read-write privileges such as CISUSER
   - RUSER – Oracle user with read-only privileges such as CISREAD
   - RW_USER_ROLE - Oracle database role with read-write privileges, such as CIS_USER
   - USER_ROLE – Oracle database role with read-only privileges, such as CIS_READ
   - JAVA_HOME – Location of JDK 1.8, such as C:\Program Files\Java\jdk1.8.0
   - CLASS_PATH – Location of jarfiles, such as C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*

3. There are two options to run OraDBI.java. Choose any of the two options - Using Interactive Mode or Command on Command Line.

   - **To run OraDBI using Interactive Mode:**
     a. Open command prompt / command line on Windows environment.
     
     In the following example, JDK 1.8 is installed at directory C:\Program Files\Java\jdk1.8.0_101.
     
     SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101
     
     c. Set Class Path.
     
     In the following example, the required jarfiles (including OraDBI.jar) are available in the directory C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*.
     
     SET CLASS_PATH= C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
     
     d. Execute the following command at command prompt in Windows environment.
     
     Using variable parameters:

     "%JAVA_HOME%\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI
Installing the CISADM Schema

Installing the Database

Oracle Utilities Customer Care and Billing
Database Administrator's Guide

Using absolute path of Java home and Jar files:

"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles* com.oracle.ouaf.oem.install.OraDBI

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

• Enter the database server hostname: <SERVER NAME>
• Enter the database port number: <PORT>
• Enter the database name/SID: <DB NAME>
• Enter your database username: <CISADM>
• Enter your password for username CISADM:
• Enter the location for Java Home: <C:\Program Files\Java\jdk1.8.0_101>
• Enter the Oracle user with read-write privileges to Database Schema: <CISUSER>
• Enter the Oracle user with read-only privileges to Database Schema: <CISREAD>
• Enter the database role with read-write privileges to Database Schema: <CIS_USER>
• Enter the database role with read-only privileges to Database Schema: <CIS_READ>
• Enter the name of the target Schema where you want to install or upgrade: <CISADM>
• Enter the password for CISADM schema:

To run OraDBI using Command on Command Line:

Run the following command with defined parameters on the command prompt using either absolute value or variable parameters.

Using variable parameters:

"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/:<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<RUSER ROLE>,<DBUSER> -l 1,2 -j <JAVA HOME>

Using absolute path of Java home and Jar files:

"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles* com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/:<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<RUSER ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"

Note: As there is an empty space between the two words ‘Program’ and ‘Files’, it is enclosed in the double quotes in the command above.

This process generates log files in the directory Install-Upgrade\logs.
4. Ensure to check the log files for any errors.

   **Note:** For OraDBI java, you may receive the following message in the
   display output or logs. These errors can be safely ignored and the
   process should proceed to completion.

   - 2016-05-23 16:31:38,315 [main] ERROR
     (common.cryptography.KeyStoreWrapperFactory) The keystore file
     '<filename>' does not exist.…

     …

     This file is either provided by the property
     com.oracle.ouaf.system.keystore.file or expected to exist at the default
     file location null Attempting to use the legacy cryptography.


   **ORADBI 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, 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).

   - 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 OraDBI###.log are created in the same folder as OraDBI 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, OraDBI 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.

   - OraDBI can be executed by a non-schema owner.

**Post-installation Tasks**

- **Enable USER_LOCK Package**

- **Generating Database Statistics**
Enable USER_LOCK Package
For inbound web services to work the USER_LOCK must be enabled at the database level. This is a one-time step. If this is not already enabled, please do so using the following steps.

1. Login as SYS user.
2. On SQL prompt run:
   @?/rdbms/admin/userlock.sql
3. Grant permission by running the following SQL:
   grant execute on USER_LOCK to public;

Please note that grant can also be made to the database user which the Application connects to only instead of to public. For example: cisuser

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.

Upgrade Install

This section describes how to upgrade the database components for Oracle Utilities Customer Care and Billing, including:

- Copying and Decompressing Install Media
- Upgrading the CISADM Schema to v2.6.0.1.0

Copying and Decompressing Install Media
To copy and decompress the Oracle Utilities Customer Care and Billing database:

1. Download Oracle Utilities Application Framework V4.3.0.5.0 Oracle Database, Oracle Utilities Application Framework V4.3.0.5.0 Database Single Fix Prerequisite Rollup for CCB V2.6.0.1.0 and Oracle Utilities Customer Care and Billing V2.6.0.1.0 Oracle Database from the Oracle Software Delivery Cloud.
2. Copy FW-V4.3.0.5.0-Oracle-Database-Multiplatform, CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform and CCB-V2.6.0.1.0-Oracle-Database-Multiplatform directories to your local machine. These files contain all the database components required to install the Oracle Utilities Application Framework and Customer Care and Billing database.

Upgrading the CISADM Schema to v2.6.0.1.0
Before upgrading to 2.6.0.1.0 from Oracle Utilities Customer Care and Billing 2.5.0.2 or below, trim the data for these columns:

a. UOM_CD,FINAL_UOM_CD,GRAPH_UOM_CD,SQI_CD,FINAL_SQI_CD,TOU_CD,FINAL_TOU_CD,SVC_TYPE_CD,FINAL_SQI on tables CI_ADJ,CALC_LN,CI_BCHG_READ,CI_BCHG_SQ,CI_BCHG_UP_REA,D,CI_BCHG_UP_SQ,CI_BSEG_CALC_LN,CI_BSEG_ITEM,CI_BSEG_RXAD,CI_REG,CI_RR_STAGE_UP,CI_TREND,CI_BSEG_SQ.
Choose one of the two options below:

**Data Trim Option 1:**

Use this if you think that the tables mentioned above DO NOT contain much data. Else, use option 2. This should also be executed after running the upgrade.

1. Open a command prompt.
2. Change the directory to ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Install-Upgrade.
3. Connect to SQLPLUS as the schema owner.
4. Execute the file as follows:
   ```sql
   @CCB_TRIM_DATA.sql
   ```

**Data Trim Option 2:**

Use this if you think that the table(s) mentioned above contain(s) large data. This should be executed before running the upgrade.

1. Create a new table with the correct data type of the column. (for example: CI_BSEG_ITEM_COPY).
   Populate using INSERT /*+APPEND*/ but already trim the data.
2. Create indexes on the copy table with temporary names.
   ```sql
   DROP TABLE CI_BSEG_ITEM
   RENAME TABLE CI_BSEG_ITEM_COPY TO CI_BSEG_ITEM
   ```
3. Rename indexes.
   ```sql
   ALTER INDEX <temporary name> RENAME TO <original name>;
   ```

This section assumes an existing Oracle Utilities Customer Care and Billing on top of Oracle Utilities Application Framework. The following upgrade paths are described:

- Upgrading from Version 2.6.0 to 2.6.0.1.0
- Upgrading from Version 2.5.0 or 2.5.0.1 or 2.5.0.2 to 2.6.0.1.0
- Upgrading from Version 2.4.0.2 or 2.4.0.3 to 2.6.0.1.0
- Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0
- Upgrading from Version 2.3.1.10 to 2.6.0.1.0
- Upgrading from Version 2.2.0.10 to 2.6.0.1.0
- Upgrading from Version 2.2.0 to 2.6.0.1.0
- Upgrading from Version 2.1.0 to 2.6.0.1.0
- Upgrading from Version 2.0.5 to 2.6.0.1.0
- Upgrading from Version 1.5.20 to 2.6.0.1.0
- Upgrading from Version 1.5.10 or 1.5.15 to 2.6.0.1.0
Upgrading from Version 2.6.0 to 2.6.0.1.0
You must install the Oracle Utilities Application Framework V4.3.0.5.0 and Oracle Utilities Application Framework V4.3.0.5.0 Database Single Fix Prerequisite Rollup for CCB V2.6.0.1.0 prior to Oracle Utilities Customer Care and Billing 2.6.0.1.0. The files for Oracle Utilities Application Framework installer is located in ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade folder.

Upgrading the Database as Non-Schema Owner
The product allows Non-Schema owners to run the database upgrade.

To perform upgrade, the non-schema owner must have the following database grants:

- grant connect, CREATE SESSION to <Non-Schema owner>;
- grant select on <Schema owner>.CI_WFM to <Non-Schema owner>;
- grant select on <Schema owner>.CI_WFM_OPT to <Non-Schema owner>;

Installing the Oracle Utilities Application Framework Database Component
Follow the instructions in the sections below to install the database component.

Note: Oracle Utilities Application Framework Database Component can be installed using OraDBI.java. While prior versions of the product have included OraDBI.exe, this is no longer supported going forward as this does not support latest functionality/features introduced in OraDBI.java. OraDBI.jar is delivered in directory jarfiles.

Installing the Oracle Utilities Application Framework Database Component Using OraDBI.java
OraDBI.java is a new tool to install and upgrade database components. Before installing the database component, ensure the following prerequisites are met.

- JDK 1.8
- Oracle Database
- Schema (such as CISADM) should exist in the database

To install the Oracle Utilities Application Framework v4.3.0.5.0, follow these steps:

1. Install Framework database component using command prompt utility of Windows from ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade directory.

2. Prepare the configuration parameters listed below:

- DB_SERVER – Name of the database server
- SID- Name of the target database
- PORT – Port number
- DBUSER – Name of the owner of the Database Schema
- DBPASS – Password for the user
- RWUSER – Oracle user with read-write privileges (such as CISUSER)
- RUSER – Oracle user with read-only privileges (such as CISREAD)
- RW_USER_ROLE - Oracle database role with read-write privileges (such as CIS_USER)
• USER_ROLE – Oracle database role with read-only privileges (such as CIS_READ)
• JAVA_HOME – Location of JDK 1.8 (such as C:\Program Files\Java\jdk1.8.0)
• CLASS_PATH – Location of Jarfiles (such as FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*)

3. There are two options to run OraDBI.java. Choose any of the two options - using Interactive Mode or Command on Command Line.

• **To run OraDBI using Interactive Mode:**
  a. Open command prompt / command line on Windows environment.
  b. Set Java Home.

    In the following example, JDK 1.8 is installed at directory C:\Program Files\Java\jdk1.8.0_101.

    ```
    SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101
    ```
  c. Set Class Path.

    In the following example, the required jarfiles (including OraDBI.jar) are available in the directory FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*.

    ```
    SET CLASS_PATH= C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
    ```
  d. Execute the following command at command prompt in Windows environment.

    Using variable parameters:

    ```
    "%JAVA_HOME%\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI
    ```

    Using absolute path of Java home and Jar files:

    ```
    "C:\Program Files\Java\jdk1.8.0_101\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\* com.oracle.ouaf.oem.install.OraDBI
    ```
  e. The utility prompts you to enter values for the following parameters:

    • Enter the database server hostname:<SERVER NAME>
    • Enter the database port number:<PORT>
    • Enter the database name/SID:<DB NAME>
    • Enter your database username:<CISADM>
    • Enter your password for username CISADM:
    • Enter the location for Java Home: <C:\Program Files\Java\jdk1.8.0_101>
    • Enter the Oracle user with read-write privileges to Database Schema:<CISUSER>
• Enter the Oracle user with read-only privileges to Database Schema:<CISREAD>

• Enter the database role with read-write privileges to Database Schema:<CIS_USER>

• Enter the database role with read-only privileges to Database Schema:<CIS_READ>

• Enter the name of the target Schema where you want to install or upgrade:<CISADM>

• Enter the password for CISADM schema:

**To run OraDBI using Command on Command Line:**

Run the following command with defined parameters on the command prompt using either absolute value or variable parameters.

**Using variable parameters:**

```
"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/ <SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j <JAVA HOME>
```

**Using absolute path of Java home and Jar files:**

```
"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\* com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/ <SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"
```

**Note:** As there is an empty space between the two words ‘Program’ and ‘Files’, it is enclosed in the double quotes in the command above.

This process generates log files in the directory Install-Upgrade\logs.

4. Ensure to check the log files for any errors.

**Note:** For OraDBI java, you may receive the following message in the display output or logs. These errors can be safely ignored and the process should proceed to completion.


This file is either provided by the property com.oracle.ouaf.system.keystore.file or expected to exist at the default file location null Attempting to use the legacy cryptography.


---

**Installing Prerequisite Database Single Fixes**

Before installing Oracle Utilities Customer Care and Billing, you must install Oracle Utilities Framework Prerequisite DB Hot Fixes.
Note: While prior versions of the product have included the cdxpatch.exe programs for applying DB Hot Fixes, this is no longer supported going forward, and the ouafDatabasePatch.cmd or ouafDatabasePatch.sh should be used instead.

To install the Framework Prerequisite DB Hot Fixes, follow the instructions in the section below.

**Applying Hot Fixes from a Windows Machine**

Note: You must have Java 8 JDK installed on the machine to use the command. Ensure to install the JDK that is supported for your platform.

1. Copy the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Windows, under c:\dbpatch_tools and extract the db_patch_standalone.jar using below command:

   ```bash
cd c:\dbpatch_tools
jar xvf db_patch_standalone.jar
SET TOOLSBIN=c:\dbpatch_tools\bin
```

2. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.cmd utility from the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix directory.

   The utility prompts you to enter the value of the following parameters:
   - Enter the target database type (O/M/D) [O]:
   - Enter the username that owns the schema: <CISADM>
   - Enter the password for the cisadm user: <CISADM Password>
   - Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>

**Applying Hotfixes from a Unix Standalone server**

Note: You must have Java 8 JDK installed on the machine to use the command. Ensure to install the JDK that is supported for your platform.

1. Copy the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Unix server, under /tmp/dbpatch_tools and extract the db_patch_standalone.jar using below command:

   ```bash
cd /tmp/dbpatch_tools
jar xvf db_patch_standalone.jar
export TOOLSBIN=/tmp/dbpatch_tools/bin
```

2. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.sh utility from the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix directory.

   The utility will prompt you for the value of the following parameters:
   - Enter the target database type (O/M/D) [O]:
   - Enter the username that owns the schema: <CISADM>
   - Enter the password for the cisadm user: <CISADM Password>
• Enter the name of the Oracle Database Connection String:
  <DB_Server:DBPORT:ORACLE_SID>

Installing the Oracle Utilities Customer Care and Billing Database Component

Note: Oracle Utilities Customer Care and Billing Database Component can be installed using OraDBI.java. While prior versions of the product have included OraDBI.exe, this is no longer supported going forward as this does not support latest functionality/features introduced in OraDBI.java. OraDBI.jar is delivered in directory jarfiles.

The following sections include the instructions to install the database component.

Installing the Oracle Utilities Customer Care and Billing Database Component Using OraDBI.java

OraDBI.java is a new tool to install and upgrade database components. Before installing the Oracle Utilities Customer Care and Billing v2.6.0.1.0, ensure the following prerequisites are met.

• JDK 1.8
• Oracle Database
• Schema (such as CISADM) should exist in the database

To install the Oracle Utilities Customer Care and Billing v2.6.0.1.0, follow these steps:

1. Install the Customer Care and Billing database component using command prompt utility of Windows from ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Install-Upgrade\.

2. Prepare the configuration parameters listed below:

• DB_SERVER – Name of the database server
• SID - Name of the target database
• PORT – Port No
• DBUSER – Name of the owner of the Database Schema
• DBPASS – Password for the user
• RWUSER – Oracle user with read-write privileges (such as CISUSER)
• RUSER – Oracle user with read-only privileges (such as CISREAD)
• RW_USER_ROLE - Oracle database role with read-write privileges (such as CIS_USER)
• USER_ROLE – Oracle database role with read-only privileges (such as CIS_READ)
• JAVA_HOME – Location of JDK 1.8 (such as C:\Program Files\Java\jdk1.8.0)
• CLASS_PATH – Location of Jarfiles (such as C:\ FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*)

3. There are two options to run OraDBI.java. Choose any of the two options - using Interactive Mode or Command on Command Line.

• To run OraDBI using Interactive Mode:
  a. Open command prompt / command line on Windows environment.
b. Set Java Home.

In the following example, JDK 1.8 is installed at directory C:\Program Files\Java\jdk1.8.0_101.

SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101

c. Set Class Path.

In the following example, the required jarfiles (including OraDBI.jar) are available in the directory C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*.

SET CLASS_PATH= C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*

d. Execute the following command at command prompt in Windows environment.

Using variable parameters:

"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI

Using absolute path of Java home and Jar files:

"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\* com.oracle.ouaf.oem.install.OraDBI

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

- Enter the database server hostname:<SERVER NAME>
- Enter the database port number:<PORT>
- Enter the database name/SID:<DB NAME>
- Enter your database username:<CISADM>
- Enter your password for username CISADM:
- Enter the location for Java Home:<C:\Program Files\Java\jdk1.8.0_101>
- Enter the Oracle user with read-write privileges to Database Schema:<CISUSER>
- Enter the Oracle user with read-only privileges to Database Schema:<CISREAD>
- Enter the database role with read-write privileges to Database Schema:<CIS_USER>
- Enter the database role with read-only privileges to Database Schema:<CIS_READ>
- Enter the name of the target Schema where you want to install or upgrade:<CISADM>
- Enter the password for CISADM schema:
• **To run OraDBI using Command on Command Line:**

Run the following command with defined parameters on the command prompt using either absolute value or variable parameters.

**Using variable parameters:**

```
"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/:<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j <JAVA HOME>
```

**Using absolute path of Java home and Jar files:**

```
"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles* com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/:<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"
```

**Note:** As there is an empty space between the two words ‘Program’ and ‘Files’, it is enclosed in the double quotes in the command above.

This process generates log files in the directory Install-Upgrade\logs.

4. Ensure to check the log files for any errors.

**Note:** For OraDBI java, you may receive the following message in the display output or logs. These errors can be safely ignored and the process should proceed to completion.

```
- 2016-05-23 16:31:38,315 [main] ERROR (common.cryptography.KeyStoreWrapperFactory) The keystore file '<filename>' does not exist. ...
```

This file is either provided by the property com.oracle.ouaf.system.keystore.file or expected to exist at the default file location null Attempting to use the legacy cryptography.

```
```

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.

**Generating Database Statistics**

**ORADBI 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).

- 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 ORADBI###.log are created in the same folder as ORADBI 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, ORADBI 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 necessarily mean a problem exists.

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

Upgrading from Version 2.5.0 or 2.5.0.1 or 2.5.0.2 to 2.6.0.1.0
You must install the Oracle Utilities Application Framework version 4.3.0.5.0 and Oracle Utilities Application Framework V4.3.0.5.0 Database Single Fix Prerequisite Rollup for CCB V2.6.0.1.0 prior to Oracle Utilities Customer Care and Billing 2.6.0.1.0. The files for Oracle Utilities Application Framework installer is located in ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade folder.

Upgrading the Database as Non-Schema Owner
The product allows Non-Schema owners to run the database upgrade.

To perform upgrade, the non-schema owner must have the following database grants:

• grant connect, CREATE SESSION to <Non-Schema owner>;

• grant select on <Schema owner>.CI_WFM to <Non-Schema owner>;

• grant select on <Schema owner>.CI_WFM_OPT to <Non-Schema owner>;

Installing the Oracle Utilities Application Framework Database Component
Follow the instructions in the sections below to install the database component.

Note: Oracle Utilities Application Framework Database Component can be installed using OraDBI.java. While prior versions of the product have included OraDBI.exe, this is no longer supported going forward as this does not support latest functionality/features introduced in OraDBI.java. OraDBI.jar is delivered in directory jarfiles.

Installing the Oracle Utilities Application Framework Database Component Using OraDBI.java
OraDBI.java is a new tool to install and upgrade database components. Before installing the database component, ensure the following prerequisites are met.

• JDK 1.8

• Oracle Database

• Schema (such as CISADM) should exist in the database
To install the Oracle Utilities Application Framework v4.3.0.5.0, follow these steps:

1. Install Framework database component using command prompt utility of Windows from ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade directory.

2. Prepare the configuration parameters listed below:
   - DB_SERVER – Name of the database server
   - SID - Name of the target database
   - PORT – Port number
   - DBUSER – Name of the owner of the Database Schema
   - DBPASS – Password for the user
   - RWUSER – Oracle user with read-write privileges such as CISUSER
   - RUSER – Oracle user with read-only privileges such as CISREAD
   - RW_USER_ROLE - Oracle database role with read-write privileges (such as CIS_USER)
   - USER_ROLE – Oracle database role with read-only privileges (such as CIS_READ)
   - JAVA_HOME – Location of JDK 1.8 (such as C:\Program Files\Java\jdk1.8.0)
   - CLASS_PATH – Location of jarfiles (such as FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*)

3. There are two options to run OraDBI.java. Choose any of the two options - using Interactive Mode or Command on Command Line.
   - **To run OraDBI using Interactive Mode:**
     a. Open command prompt / command line on Windows environment.
     b. Set Java Home.
        
        In the following example, JDK 1.8 is installed at directory C:\Program Files\Java\jdk1.8.0_101.
        
        SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101
     c. Set Class Path.
        
        In the following example, the required jarfiles (including OraDBI.jar) are available in the directory FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*.
        
        SET CLASS_PATH= C:\ FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
     d. Execute the following command at command prompt in Windows environment.
        
        Using variable parameters:
        "%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI
Using absolute path of Java home and Jar files:
"C:\Program Files\Java\jdk1.8.0_101\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
com.oracle.ouaf.oem.install.OraDBI

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

- Enter the database server hostname:<SERVER NAME>
- Enter the database port number:<PORT>
- Enter the database name/SID:<DB NAME>
- Enter your database username:<CISADM>
- Enter your password for username CISADM:
- Enter the location for Java Home: <C:\Program Files\Java\jdk1.8.0_101>
- Enter the Oracle user with read-write privileges to Database Schema:<CISUSER>
- Enter the Oracle user with read-only privileges to Database Schema:<CISREAD>
- Enter the database role with read-write privileges to Database Schema:<CIS_USER>
- Enter the database role with read-only privileges to Database Schema:<CIS_READ>
- Enter the name of the target Schema where you want to install or upgrade:<CISADM>
- Enter the password for CISADM schema:

- To run OraDBI using Command on Command Line:

Run the following command with defined parameters on the command prompt using either absolute value or variable parameters.

Using variable parameters:
"%JAVA_HOME%\bin\java -Xmx1500M -cp %CLASS_PATH% 
<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j <JAVA_HOME>

Using absolute path of Java home and Jar files:
"C:\Program Files\Java\jdk1.8.0_101\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"

Note: As there is an empty space between the two words 'Program' and 'Files', it is enclosed in the double quotes in the command above.

This process generates log files in the directory Install-Upgrade\logs.
4. Ensure to check the log files for any errors.

**Note:** For OraDBI java, you may receive the following message in the display output or logs. These errors can be safely ignored and the process should proceed to completion.

```

... 
```

This file is either provided by the property com.oracle.ouaf.system.keystore.file or expected to exist at the default file location null Attempting to use the legacy cryptography.

```
```

**Installing Prerequisite Database Single Fixes**

Before installing Oracle Utilities Customer Care and Billing, you must install Oracle Utilities Framework Prerequisite DB Hot Fixes.

**Note:** While prior versions of the product have included the cdxpatch.exe programs for applying DB Hot Fixes, this is no longer supported going forward, and the ouafDatabasePatch.cmd or ouafDatabasePatch.sh should be used instead.

To install the Framework Prerequisite DB Hot Fixes, follow the instructions in the section below.

**Applying Hot Fixes from a Windows Machine**

**Note:** You must have Java 8 JDK installed on the machine to use the command. Ensure to install the JDK that is supported for your platform.

1. Copy the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Windows, under c:\dbpatch_tools and extract the db_patch_standalone.jar using below command:

   ```
   cd c:\dbpatch_tools
   jar xvf db_patch_standalone.jar
   SET TOOLSBIN=c:\dbpatch_tools\bin
   ```

2. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.cmd utility from the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix directory.

   The utility prompts you to enter the value of the following parameters:
   - Enter the target database type (O/M/D) [O]:
   - Enter the username that owns the schema: <CISADM>
   - Enter the password for the cisadm user: <CISADM Password>
   - Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>
Applying Hotfixes from a Unix Standalone server
Note: You must have Java 8 JDK installed on the machine to use the command. Ensure to install the JDK that is supported for your platform.

1. Copy the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Unix server, under /tmp/dbpatch_tools and extract the db_patch_standalone.jar using below command:
   cd /tmp/dbpatch_tools
   jar xvf db_patch_standalone.jar
   export TOOLSBIN=/tmp/dbpatch_tools/bin

2. Apply prerequisite Framework DB single fixes by running the ouatDatabasePatch.sh utility from the the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix directory.

   The utility will prompt you for the value of the following parameters:
   • Enter the target database type (O/M/D) [O]:
   • Enter the username that owns the schema: <CISADM>
   • Enter the password for the cisadm user: <CISADM Password>
   • Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>

Installing the Oracle Utilities Customer Care and Billing Database Component
Note: Oracle Utilities Customer Care and Billing Database Component can be installed using OraDBI.java. While prior versions of the product have included OraDBI.exe, this is no longer supported going forward as this does not support latest functionality/features introduced in OraDBI.java. OraDBI.jar is delivered in directory jarfiles.

The following sections include the instructions to install the database component.

Installing the Oracle Utilities Customer Care and Billing Database Component Using OraDBI.java
OraDBI.java is a new tool to install and upgrade database components. Before installing the Oracle Utilities Customer Care and Billing v2.6.0.1.0, ensure the following prerequisites are met.

   • JDK 1.8
   • Oracle Database
   • Schema (such as CISADM) should exist in the database

To install the Oracle Utilities Customer Care and Billing v2.6.0.1.0, follow these steps:

1. Install the Customer Care and Billing database component using command prompt utility of Windows from ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Install-Upgrade\.

2. Prepare the configuration parameters listed below:
   • DB_SERVER – Name of the database server
   • SID - Name of the target database
3. There are two options to run OraDBI.java. Choose any of the two options - using Interactive Mode or Command on Command Line.

- To run OraDBI using Interactive Mode:
  a. Open command prompt / command line on Windows environment.
  b. Set Java Home.

    In the following example, JDK 1.8 is installed at directory C:\Program Files\Java\jdk1.8.0_101.

    SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101

  c. Set Class Path.

    In the following example, the required jarfiles (including OraDBI.jar) are available in the directory C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*.

    SET CLASS_PATH= C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*

  d. Execute the following command at command prompt in Windows environment.

    Using variable parameters:

    "%JAVA_HOME%\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI

    Using absolute path of Java home and Jar files:

    "C:\Program Files\Java\jdk1.8.0_101\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles* com.oracle.ouaf.oem.install.OraDBI"

c. The utility prompts you to enter values for the following parameters:
   - Enter the database server hostname:<SERVER NAME>
   - Enter the database port number:<PORT>
- Enter the database name/SID:<DB NAME>
- Enter your database username:<CISADM>
- Enter your password for username CISADM:
- Enter the location for Java Home: <C:\Program Files\Java\jdk1.8.0_101>
- Enter the Oracle user with read-write privileges to Database Schema:<CISUSER>
- Enter the Oracle user with read-only privileges to Database Schema:<CISREAD>
- Enter the database role with read-write privileges to Database Schema:<CIS_USER>
- Enter the database role with read-only privileges to Database Schema:<CIS_READ>
- Enter the name of the target Schema where you want to install or upgrade:<CISADM>
- Enter the password for CISADM schema:

**To run OraDBI using Command on Command Line:**

Run the following command with defined parameters on the command prompt using either absolute value or variable parameters.

**Using variable parameters:**

```
"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j <JAVA HOME>
```

**Using absolute path of Java home and Jar files:**

```
"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\* com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"
```

**Note:** As there is an empty space between the two words ‘Program’ and ‘Files’, it is enclosed in the double quotes in the command above.

This process generates log files in the directory Install-Upgrade\logs.

4. Ensure to check the log files for any errors.

**Note:** For OraDBI java, you may receive the following message in the display output or logs. These errors can be safely ignored and the process should proceed to completion.


...
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.

ORADBI 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).
• 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 ORADBI###.log are created in the same folder as ORADBI 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, ORADBI 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.

Upgrading from Version 2.4.0.2 or 2.4.0.3 to 2.6.0.1.0
You must install the Oracle Utilities Application Framework version 4.3.0.5.0 and Oracle Utilities Application Framework V4.3.0.5.0 Database Single Fix Prerequisite Rollup for CCB V2.6.0.1.0 prior to Oracle Utilities Customer Care and Billing 2.6.0.1.0. The files for Oracle Utilities Application Framework installer is located in ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade folder.

Upgrading the Database as Non-Schema Owner
The product allows Non-Schema owners to run the database upgrade.

To perform upgrade, the non-schema owner must have the following database grants:
• grant connect, CREATE SESSION to <Non-Schema owner>;
• grant select on <Schema owner>.CI_WFM to <Non-Schema owner>;
• grant select on <Schema owner>.CI_WFM_OPT to <Non-Schema owner>;

**Installing the Oracle Utilities Application Framework Database Component**

Follow the instructions below to install the database component.

**Note:** Oracle Utilities Application Framework Database Component can be installed using OraDBI.java. While prior versions of the product have included OraDBI.exe, this is no longer supported going forward as this does not support latest functionality/features introduced in OraDBI.java. OraDBI.jar is delivered in directory jarfiles.

**Installing the Oracle Utilities Application Framework Database Component Using OraDBI.java**

OraDBI.java is a new tool to install and upgrade database components. Before installing the database component, ensure the following prerequisites are met.

- JDK 1.8
- Oracle Database
- Schema (such as CISADM) should exist in the database

To install the Oracle Utilities Application Framework v4.3.0.5.0, follow these steps:

1. Install Framework database component using command prompt utility of Windows from ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade directory.

2. Prepare the configuration parameters listed below:
   - DB_SERVER – Name of the database server
   - SID- Name of the target database
   - PORT – Port Number
   - DBUSER – Name of the owner of the Database Schema
   - DBPASS – Password for the user
   - RWUSER – Oracle user with read-write privileges (such as CISUSER)
   - USER – Oracle user with read-only privileges (such as CISREAD)
   - RW_USER_ROLE - Oracle database role with read-write privileges (such as CIS_USER)
   - USER_ROLE – Oracle database role with read-only privileges (such as CIS_READ)
   - JAVA_HOME – Location of JDK 1.8 (such as C:\Program Files\Java\jdk1.8.0)
   - CLASS_PATH – Location of Jarfiles (such as C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*)

3. There are two options to run OraDBI.java. Choose any of the two options - Using Interactive Mode or Command on Command Line.
• **To run OraDBI using Interactive Mode:**
  
a. Open command prompt / command line on Windows environment.

b. Set Java Home.

  In the following example, JDK 1.8 is installed at directory C:\Program Files\Java\jdk1.8.0_101.

  SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101

c. Set Class Path.

  In the following example, the required jarfiles (including OraDBI.jar) are available in the directory C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*

  SET CLASS_PATH= C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*

d. Execute the following command at command prompt in Windows environment.

Using variable parameters:

"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI

Using absolute path of Java home and Jar files:

"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\* com.oracle.ouaf.oem.install.OraDBI

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

- Enter the database server hostname:<SERVER NAME>
- Enter the database port number:<PORT>
- Enter the database name/SID:<DB NAME>
- Enter your database username:<CISADM>
- Enter your password for username CISADM:
- Enter the location for Java Home: <C:\Program Files\Java\jdk1.8.0_101>
- Enter the Oracle user with read-write privileges to Database Schema:<CISUSER>
- Enter the Oracle user with read-only privileges to Database Schema:<CISREAD>
- Enter the database role with read-write privileges to Database Schema:<CIS_USER>
- Enter the database role with read-only privileges to Database Schema:<CIS_READ>
- Enter the name of the target Schema where you want to install or upgrade:<CISADM>
• Enter the password for CISADM schema:

• To run OraDBI using Command on Command Line:

Run the following command with defined parameters on the command prompt using either absolute value or variable parameters.

Using variable parameters:

"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "<JAVA_HOME>"

Using absolute path of Java home and Jar files:

"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*com.oracle.ouaf.oem.install.OraDBI -d jdbc:oracle:thin:@<DB_SERVER>:<PORT>/<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"

Note: As there is an empty space between the two words ‘Program’ and ‘Files’, it is enclosed in the double quotes in the command above.

This process generates log files in the directory Install-Upgrade\logs.

4. Ensure to check the log files for any errors.

Note: For OraDBI java, you may receive the following message in the display output or logs. These errors can be safely ignored and the process should proceed to completion.


...

This file is either provided by the property com.oracle.ouaf.system.keystore.file or expected to exist at the default file location null Attempting to use the legacy cryptography.


Before installing Oracle Utilities Customer Care and Billing, you must install Oracle Utilities Framework Prerequisite DB Hot Fixes.

Note: While prior versions of the product have included the cdxpatch.exe programs for applying DB Hot Fixes, this is no longer supported going forward, and the ouafDatabasePatch.cmd or ouafDatabasePatch.sh should be used instead.

To install the Framework Prerequisite DB Hot Fixes, follow these steps.

Applying Hot Fixes from a Windows Machine

Note: You must have Java 8 JDK installed on the machine to use the command. Be sure to install the JDK that is supported for your platform.
1. Copy ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Windows, under c:\dbpatch_tools and extract the db_patch_standalone.jar using below command:

   cd c:\dbpatch_tools
   jar xvf db_patch_standalone.jar

2. SET TOOLSBIN=c:\dbpatch_tools\bin

3. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.cmd utility from the ..\FW\FW43050\FW43050-HFix directory.

   The utility will prompt you for the value of the following parameters:
   - Enter the target database type (O/M/D) [O]:
   - Enter the username that owns the schema: <CISADM>
   - Enter the password for the cisadm user: <CISADM Password>
   - Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>

Applying Hotfixes from a Unix Standalone Server

   Note: You must have Java 8 JDK installed on the machine to use the command. Be sure to install the JDK that is supported for your platform.

1. Copy ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Unix server, under /tmp/dbpatch_tools and extract the db_patch_standalone.jar using below command:

   cd /tmp/dbpatch_tools
   jar xvf db_patch_standalone.jar

2. export TOOLSBIN=/tmp/dbpatch_tools/bin

3. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.sh utility from the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix directory. The utility will prompt you for the value of the following parameters:
   - Enter the target database type (O/M/D) [O]:
   - Enter the username that owns the schema: <CISADM>
   - Enter the password for the cisadm user: <CISADM Password>
   - Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>

Installing the Oracle Utilities Customer Care and Billing Database Component

   Note: Oracle Utilities Customer Care and Billing Database Component can be installed using OraDBI.java. While prior versions of the product have included OraDBI.exe, this is no longer supported going forward as this does not support latest functionality/features introduced in OraDBI.java. OraDBI.jar is delivered in directory jarfiles.

   Follow the section below for instructions on installing the database component.
Installing the Oracle Utilities Customer Care and Billing Database Component Using OraDBI.java

OraDBI.java is a new tool to install and upgrade database components. Before installing the Oracle Utilities Customer Care and Billing v2.6.0.1.0, ensure the following prerequisites are met.

- JDK 1.8
- Oracle Database
- Schema (such as CISADM) should exist in the database

To install the Oracle Utilities Customer Care and Billing v2.6.0.1.0, follow these steps:

1. Install the Customer Care and Billing database component using command prompt utility of Windows from ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Install-Upgrade\.

2. Prepare the configuration parameters listed below:
   - DB_SERVER – Name of the database server
   - SID - Name of the target database
   - PORT – Port Number
   - DBUSER – Name of the owner of the Database Schema
   - DBPASS – Password for the user
   - RWUSER – Oracle user with read-write privileges (such as CISUSER)
   - RUSER – Oracle user with read-only privileges (such as CISREAD)
   - RW_USER_ROLE - Oracle database role with read-write privileges (such as CIS_USER)
   - USER_ROLE – Oracle database role with read-only privileges (such as CIS_READ)
   - JAVA_HOME – Location of JDK 1.8 (such as C:\Program Files\Java\jdk1.8.0)
   - CLASS_PATH – Location of Jarfiles (such as C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*)

3. There are two options to run OraDBI.java. Choose any of the two options - using Interactive Mode or Command on Command Line.
   - **To run OraDBI using Interactive Mode:**
     a. Open command prompt / command line on Windows environment.
     b. Set Java Home.

     In the following example, JDK 1.8 is installed at directory C:\Program Files\Java\jdk1.8.0_101.

     ```
     SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101
     ```

     c. Set Class Path.

     In the following example, the required jarfiles (including OraDBI.jar) are available in the directory C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*.
d. Execute the following command at command prompt in Windows environment.

Using variable parameters:
"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH%
com.oracle.ouaf.oem.install.OraDBI

Using absolute path of Java home and Jar files:
"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-
Multiplatform\FW\jarfiles\*
com.oracle.ouaf.oem.install.OraDBI

e. The utility prompts you to enter values for the following parameters:
   • Enter the database server hostname:<SERVER NAME>
   • Enter the database port number:<PORT>
   • Enter the database name/SID:<DB NAME>
   • Enter your database username:<CISADM>
   • Enter your password for username CISADM:
   • Enter the location for Java Home: <C:\Program
     Files\Java\jdk1.8.0_101>
   • Enter the Oracle user with read-write privileges to Database
     Schema:<CISUSER>
   • Enter the Oracle user with read-only privileges to Database
     Schema:<CISREAD>
   • Enter the database role with read-write privileges to Database
     Schema:<CIS_USER>
   • Enter the database role with read-only privileges to Database
     Schema:<CIS_READ>
   • Enter the name of the target Schema where you want to install or
     upgrade:<CISADM>
   • Enter the password for CISADM schema:
   • To run OraDBI using Command on Command Line:

Run the following command with defined parameters on the command prompt
using either absolute value or variable parameters.

Using variable parameters:
"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH%
com.oracle.ouaf.oem.install.OraDBI -d
jdbc:oracle:thin:@<DB_SERVER>:<PORT>/
<SID>,<DBUSER>,<DBPASS>,<R_USER>,<RW_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j <JAVA HOME>
Using absolute path of Java home and Jar files:

"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles/*
com.oracle.ouaf.oem.install.OraDBI -d
jdbc:oracle:thin:@<DB_SERVER>:<PORT>/
<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"

Note: As there is an empty space between the two words 'Program' and 'Files', it is enclosed in the double quotes in the command above.

This process generates log files in the directory Install-Upgrade\logs.

4. Ensure to check the log files for any errors.

Note: For OraDBI java, you may receive the following message in the display output or logs. These errors can be safely ignored and the process should proceed to completion.

- 2016-05-23 16:31:38,315 [main] ERROR
  (common.cryptography.KeyStoreWrapperFactory) The keystore file '<filename>' does not exist.
...

This file is either provided by the property
com.oracle.ouaf.system.keystore.file or expected to exist at the default file location null Attempting to use the legacy cryptography.


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.

ORADBI 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).

- 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 ORADBI###.log are created in the same folder as ORADBI 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, ORADBI 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.

### Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0
This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 2.4.0.0 to version 2.6.0.1.0 or from version 2.4.0.1 to version 2.6.0.1.0.

The files for this upgrade are located in the following directory: `..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Upgrade-From-v2400-v2401`.

1. **Apply Framework version 4.2.0.2 and Oracle Utilities Customer Care and Billing 2.4.0.2 from Step_1_Upgrade_to_v2402 folder:**
   - **Note:** Ensure to run OraDBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle 11.1.0.1 32-bit client. The database should already be listed in the local file tnsnames.ora.
   a. Apply Framework version 4.2.0.2.0 by running ORADBI.exe from the `\01_FW420_SP2` folder.
   b. Apply Framework version 4.2.0.2.0 Rollup by running CDXPATCH.exe from the `\02_FW420_SP2_Rollup` folder.
   c. Execute the CCB2402_Trim_SRCH_CHAR_VAL.sql script from `\03_CCB_TRIM_SRCH_VAL` folder.
      a. Login as CISADM user.
      b. On SQL prompt, run CCB2402_Trim_SRCH_CHAR_VAL.sql.
         ```sql
         @CCB2402_Trim_SRCH_CHAR_VAL.sql
         ```
         This generates a file called CCB_TRIM_SRCH_CHAR_VAL.sql.
      c. Run the generated CCB_TRIM_SRCH_CHAR_VAL.sql script.
         ```sql
         @CCB_TRIM_SRCH_CHAR_VAL.sql
         ```
   d. Apply Customer Care and Billing 2.4.0 Service Pack 2 by running the ORADBI.exe from the `\04_CCB240_SP2` folder.
   e. Execute the FW4202_Trim_SRCH_CHAR_VAL.sql script from `\05_FW_TRIM_SRCH_VAL` folder.
      a. Login as CISADM user.
      b. On SQL prompt, run FW4202_Trim_SRCH_CHAR_VAL.sql.
         ```sql
         @FW4202_Trim_SRCH_CHAR_VAL.sql
         ```
         This will generate a file called TRIM_SRCH_CHAR_VAL.sql.
      c. Run the generated TRIM_SRCH_CHAR_VAL.sql script.
         ```sql
         @TRIM_SRCH_CHAR_VAL.sql
         ```
f. Enable USER_LOCK Package.
   
   For in-bound Web services to work the USER_LOCK must be enabled at the
database level. This is a one-time step. If this is not already enabled, please do so
using the following steps:
   
   a. Login as SYS user. On SQL prompt run:

   
   @%/rdbms/admin/userlock.sql
   
   b. Grant permission by running the following SQL:

   
   grant execute on USER_LOCK to public;

   Note that grant can also be made to the database user which the application
connects to only instead of to public. For example: cisuser.

2. Upgrade to Oracle Utilities Customer Care and Billing 2.6.0.1.0 by following the steps
in the Upgrading from Version 2.4.0.2 or 2.4.0.3 to 2.6.0.1.0 section.

Upgrading from Version 2.3.1.10 to 2.6.0.1.0
To upgrade Oracle Utilities Customer Care and Billing version 2.3.1.10 to version
2.6.0.1.0, you must install the Oracle Utilities Application Framework version 4.3.0.5.0
and Oracle Utilities Application Framework V4.3.0.5.0 Database Single Fix Prerequisite
Rollup for CCB V2.6.0.1.0 prior to Oracle Utilities Customer Care and Billing 2.6.0.1.0.
The files for the Oracle Utilities Application Framework 4.3.0.5.0 installation are located
in the ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade folder.

   Note: There is a known issue with CI_BILL and CI_PAY_EVENT
tables with high volume of data; hence please follow steps documented
in Doc ID 2153482.1 (My Oracle Support), prior to running the
upgrade.

Upgrading the Database as Non-Schema Owner
The product allows Non-Schema owners to run the database upgrade.

To perform upgrade, the non-schema owner must have the following database grants:

   • grant connect, CREATE SESSION to <Non-Schema owner>;
   
   • grant select on <Schema owner>.CI_WFM to <Non-Schema owner>;
   
   • grant select on <Schema owner>.CI_WFM_OPT to <Non-Schema owner>;

Installing the Oracle Utilities Application Framework Database Component

   Note: Oracle Utilities Application Framework Database Component
can be installed using OraDBI.java. While prior versions of the product
have included OraDBI.exe, this is no longer supported going forward as
this does not support latest functionality/features introduced in
OraDBI.java.OraDBI.jar is delivered in directory jarfiles. Follow these
instructions on installing the database component:

Installing the Oracle Utilities Application Framework Database Component Using
OraDBI.java
OraDBI.java is a new tool to install and upgrade database components. Before installing
the database component, ensure the following prerequisites are met.

   • JDK 1.8
To install the Oracle Utilities Application Framework v4.3.0.5.0, follow these steps:

1. Install Framework database component using command prompt utility of Windows from ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade directory.

2. Prepare the configuration parameters listed below:
   - DB_SERVER – Name of the database server
   - SID - Name of the target database
   - PORT – Port Number
   - DBUSER – Name of the owner of the Database Schema
   - DBPASS – Password for the user
   - RWUSER – Oracle user with read-write privileges such as CISUSER
   - RUSER – Oracle user with read-only privileges such as CISREAD
   - RW_USER_ROLE - Oracle database role with read-write privileges such as CIS_USER
   - USER_ROLE – Oracle database role with read-only privileges such as CIS_READ
   - JAVA_HOME – Location of JDK 1.8 such as C:\Program Files\Java\jdk1.8.0
   - CLASS_PATH – Location of Jarfiles such as C:\ FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*

3. There are two options to run OraDBI.java. Choose any of the two options - Using Interactive Mode or Command on Command Line.

   **To run OraDBI using Interactive Mode:**
   a. Open command prompt / command line on Windows environment.
   b. Set Java Home.
      
      In the following example, JDK 1.8 is installed at directory C:\Program Files\Java\jdk1.8.0_101.
      
      SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101
   c. Set Class Path.
      
      In the following example, the required jarfiles (including OraDBI.jar) are available in the directory C:\ FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*.
      
      SET CLASS_PATH=C:\ FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
   d. Execute the following command at command prompt in Windows environment.
Using variable parameters:
"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH%
com.oracle.ouaf.oem.install.OraDBI

Using absolute path of Java home and Jar files:
"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
com.oracle.ouaf.oem.install.OraDBI

e. The utility prompts you to enter values for the following parameters:
   - Enter the database server hostname:<SERVER NAME>
   - Enter the database port number:<PORT>
   - Enter the database name/SID:<DB NAME>
   - Enter your database username:<CISADM>
   - Enter your password for username CISADM:
   - Enter the location for Java Home: <C:\Program Files\Java\jdk1.8.0_101>
   - Enter the Oracle user with read-write privileges to Database Schema:<CISUSER>
   - Enter the Oracle user with read-only privileges to Database Schema:<CISREAD>
   - Enter the database role with read-write privileges to Database Schema:<CIS_USER>
   - Enter the database role with read-only privileges to Database Schema:<CIS_READ>
   - Enter the name of the target Schema where you want to install or upgrade:<CISADM>
   - Enter the password for CISADM schema:

To run OraDBI using Command on Command Line:
Run the following command with defined parameters on the command prompt using either absolute value or variable parameters.

Using variable parameters:
"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH%
jdbc:oracle:thin:@<DB_SERVER>:<PORT>/<SID>,<DBUSER>,<DBPASS>,<R_USER>,<RW_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j <JAVA HOME>

Using absolute path of Java home and Jar files:
"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
jdbc:oracle:thin:@<DB_SERVER>:<PORT>/<SID>,<DBUSER>,<DBPASS>,<R_USER>,<RW_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"
**Note:** As there is an empty space between the two words ‘Program’ and ‘Files’, it is enclosed in the double quotes in the command above.

This process generates log files in the directory Install-Upgrade\logs.

4. Ensure to check the log files for any errors.

**Note:** For OraDBI java, you may receive the following message in the display output or logs. These errors can be safely ignored and the process should proceed to completion.


…

This file is either provided by the property
com.oracle.ouaf.system.keystore.file or expected to exist at the default
file location null Attempting to use the legacy cryptography.

**Optional: Execute CCB2401_BpSchema2.SQL**

This step is recommended to improve the performance of the upgrade process.

Before executing this script, verify the script and note that these operations are long-running and the script specifies a default level of parallelism that can be tailored to the implementation's hardware. Also, note that CCB2401_BpSchema2.SQL can be executed well in advance of the upgrade to CCB 2.4.0.2 as these changes are compatible with Oracle Utilities Customer Care and Billing 2.2.0 and 2.3.1:

1. Open a command prompt.
2. Change directory to ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform.
3. Connect to SQLPLUS.
4. Execute the file as follows:

   @CCB2401_BpSchema2.SQL

**Optional: Execute CCB2401_BpSchema3.SQL**

This step is recommended to improve the performance of the upgrade process.

Before executing this script, please verify the script and make a note that these operations are long-running and the script specifies a default level of parallelism that can be tailored to the implementation's hardware.

1. Open a command prompt.
2. Change directory to ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Install-Upgrade.
3. Connect to SQLPLUS.
4. Execute the file as follows:

   @CCB2401_BpSchema3.SQL
Installing Prerequisite Database Single Fixes

Before installing Oracle Utilities Customer Care and Billing, you must install Oracle Utilities Framework Prerequisite DB Hot Fixes.

**Note:** While prior versions of the product have included the cdxpatch.exe programs for applying DB Hot Fixes, this is no longer supported going forward, and the ouafDatabasePatch.cmd or ouafDatabasePatch.sh should be used instead.

To install the Framework Prerequisite DB Hot Fixes, follow these steps:

### Applying Hot Fixes from a Windows Machine

**Note:** You must have Java 8 JDK installed on the machine to use the command. Ensure to install the JDK that is supported for your platform.

1. Copy the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Windows, under c:\dbpatch_tools and extract the db_patch_standalone.jar using below command:

   ```
   cd c:\dbpatch_tools
   jar xvf db_patch_standalone.jar
   ```

2. SET TOOLSBIN=c:\dbpatch_tools\bin

3. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.cmd utility from the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix directory. The utility will prompt you for the value of the following parameters:

   - Enter the target database type (O/M/D) [O]:
   - Enter the username that owns the schema: <CISADM>
   - Enter the password for the cisadm user: <CISADM Password>
   - Enter the name of the Oracle Database Connection String:
     <DB_Server:DBPORT:ORACLE_SID>

### Applying Hotfixes from a Unix Standalone Server

**Note:** You must have Java 8 JDK installed on the machine to use the command. Be sure to install the JDK that is supported for your platform.

1. Copy the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix\db_patch_standalone.jar to a directory on Unix server, under /tmp/dbpatch_tools and extract the db_patch_standalone.jar using below command:

   ```
   cd /tmp/dbpatch_tools
   jar xvf db_patch_standalone.jar
   export TOOLSBIN=/tmp/dbpatch_tools/bin
   ```

2. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.sh utility from the ..\CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform\FW43050-HFix directory.

   The utility will prompt you for the value of the following parameters:

   - Enter the target database type (O/M/D) [O]:


• Enter the username that owns the schema: <CISADM>
• Enter the password for the cisadm user: <CISADM Password>
• Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>

Installing the Oracle Utilities Customer Care and Billing Database Component

Note: Oracle Utilities Customer Care and Billing Database Component can be installed using OraDBI.java. While prior versions of the product have included OraDBI.exe, this is no longer supported going forward as this does not support latest functionality/features introduced in OraDBI.java. OraDBI.jar is delivered in directory jarfiles.

Follow the instructions in the section below to install the database component.

Installing the Oracle Utilities Customer Care and Billing Database Component Using OraDBI.java

OraDBI.java is a new tool to install and upgrade database components. Before installing the Oracle Utilities Customer Care and Billing v2.6.0.1.0, ensure the following prerequisites are met.

• JDK 1.8
• Oracle Database
• Schema (such as CISADM) should exist in the database

To install the Oracle Utilities Customer Care and Billing v2.6.0.1.0, follow these steps:

1. Install the Customer Care and Billing database component using command prompt utility of Windows from ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Install-Upgrade\.

2. Prepare the configuration parameters listed below:

• DB_SERVER – Name of the database server
• SID - Name of the target database
• PORT – Port Number
• DBUSER – Name of the owner of the Database Schema
• DBPASS – Password for the user
• RWUSER – Oracle user with read-write privileges such as CISUSER
• RUSER – Oracle user with read-only privileges such as CISREAD
• RW_USER_ROLE - Oracle database role with read-write privileges such as CIS_USER
• USER_ROLE – Oracle database role with read-only privileges such as CIS_READ
• JAVA_HOME – Location of JDK 1.8 such as C:\Program Files\Java\jdk1.8.0
• CLASS_PATH – Location of Jarfiles such as C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*

3. There are two options to run OraDBI.java. Choose any of the two options - Using Interactive Mode or Command on Command Line.
• To run OraDBI using Interactive Mode:
  
a. Open command prompt / command line on Windows environment.
  
b. Set Java Home.

      In the following example, JDK 1.8 is installed at directory C:\Program
      Files\Java\jdk1.8.0_101.
      SET JAVA_HOME=C:\Program Files\Java\jdk1.8.0_101
  
c. Set Class Path.

      In the following example, the required jarfiles (including OraDBI.jar) are
      available in the directory C:\ FW-V4.3.0.5.0-Oracle-Database-
      Multiplatform\FW\jarfiles\*.  
      SET CLASS_PATH= C:\ FW-V4.3.0.5.0-Oracle-Database-
      Multiplatform\FW\jarfiles\*
  
d. Execute the following command at command prompt in Windows
      environment.

      Using variable parameters:

      "%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH%
      com.oracle.ouaf.oem.install.OraDBI

      Using absolute path of Java home and Jar files:

      "C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp
      C:\ FW-V4.3.0.5.0-Oracle-Database-
      Multiplatform\FW\jarfiles\*
      com.oracle.ouaf.oem.install.OraDBI
  
e. The utility prompts you to enter values for the following parameters:

      • Enter the database server hostname:<SERVER NAME>
      • Enter the database port number:<PORT>
      • Enter the database name/SID:<DB NAME>
      • Enter your database username:<CISADM>
      • Enter your password for username CISADM:
      • Enter the location for Java Home: <C:\Program
        Files\Java\jdk1.8.0_101>
      • Enter the Oracle user with read-write privileges to Database
        Schema:<CISUSER>
      • Enter the Oracle user with read-only privileges to Database
        Schema:<CISREAD>
      • Enter the database role with read-write privileges to Database
        Schema:<CIS_USER>
      • Enter the database role with read-only privileges to Database
        Schema:<CIS_READ>
      • Enter the name of the target Schema where you want to install or
        upgrade:<CISADM>
• Enter the password for CISADM schema:

**To run OraDBI using Command on Command Line:**

Run the following command with defined parameters on the command prompt using either absolute value or variable parameters.

**Using variable parameters:**

```
"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH%
com.oracle.ouaf.oem.install.OraDBI -d
jdbc:oracle:thin:@<DB_SERVER>:<PORT>/
<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "<JAVA HOME>"
```

**Using absolute path of Java home and Jar files:**

```
"C:\Program Files\Java\jdk1.8.0_101"\bin\java -Xmx1500M -cp C:\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\jarfiles\*
com.oracle.ouaf.oem.install.OraDBI -d
jdbc:oracle:thin:@<DB_SERVER>:<PORT>/
<SID>,<DBUSER>,<DBPASS>,<RW_USER>,<R_USER>,<RW_USER_ROLE>,<R_USER_ROLE>,<DBUSER> -l 1,2 -j "C:\Program Files\Java\jdk1.8.0_101"
```

**Note:** As there is an empty space between the two words ‘Program’ and ‘Files’, it is enclosed in the double quotes in the command above.

This process generates log files in the Install-Upgrade\logs directory.

4. Ensure to check the log files for any errors.

**Note:** For OraDBI java, you may receive the following message in the display output or logs. These errors can be safely ignored and the process should proceed to completion.


... This file is either provided by the property com.oracle.ouaf.system.keystore.file or expected to exist at the default file location null Attempting to use the legacy cryptography.


**ORADBI 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).

- 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 ORADBI###.log are created in the same folder as ORADBI 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, ORADBI 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 necessarily mean a problem exists.

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

**Execute CCB2401_APDATA1.sql**
Before executing this script, please verify the script and make a note that these SQLs can be run in chunks across multiple sqlplus sessions in parallel. The execution process below explains how to run the script at once.

1. Open a command prompt.
2. Change directory to ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Install-Upgrade.
3. Connect to SQLPLUS.
4. Execute the file as follows:
   @CCB2401_APDATA1.sql

**Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables**
1. Login as CISADM user.
2. On SQL prompt, run FW4202_Trim_SRCH_CHAR_VAL.sql from the ..\FW-V4.3.0.5.0-Oracle-Database-Multiplatform\FW\Install-Upgrade directory.
   @FW4202_Trim_SRCH_CHAR_VAL.sql
   This generates a file called TRIM_SRCH_CHAR_VAL.sql.
3. Run the generated TRIM_SRCH_CHAR_VAL.sql script.
   @TRIM_SRCH_CHAR_VAL.sql

**Enable USER_LOCK Package**
For in-bound web services to work the USER_LOCK must be enabled at the database level. This is a one-time step. If this is not already enabled please do so using the following steps.

1. Login as SYS user
2. On SQL prompt run:
   @?/rdbms/admin/userlock.sql
3. Grant permission by running the following SQL:
   grant execute on USER_LOCK to public;
   Please note that grant can also be made to the database user which the Application connects to only instead of to public. For example, cisuser.
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.

Upgrading from Version 2.2.0.10 to 2.6.0.1.0
This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 2.2.0.10 to version 2.6.0.1.0. The files for this upgrade are located in the following directory:

..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Upgrade-From-v210-v220\From-v220-Upgrade-to-v26010.

Note: Ensure to run OraDBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle 11.1.0.1 32-bit client. The database should already be listed in the local file tnsnames.ora.

1. Apply Framework version 4.2.0.2 from the \Step_2_Upgrade_to_v2402 folder:
   a. Apply Framework version 4.2.0 Service Pack 2 by running OraDBI.exe from the \01_FW420_SP2 folder.
   b. Apply Framework version 4.2.0 Service Pack 2 rollup by running CDPATCH.exe from the \02_FW420_SP2_Rollup folder.

2. Optional: Execute CCB2401_BpSchema2.SQL
   This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

3. Optional: Execute CCB2401_BpSchema3.SQL
   This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

4. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables. Execute the CCB2402_Trim_SRCH_CHAR_VAL.sql
   Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

5. Apply Customer Care and Billing 2.4.0 Service Pack 2 by running the OraDBI.exe from the \04_CCB240_SP2 folder.

6. Execute CCB2401_APDATA1.sql
   Before executing this script, please verify the script and make a note that these Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

7. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables. Execute the FW4202_Trim_SRCH_CHAR_VAL.sql
   Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

8. Enable USER_LOCK Package
   Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.
9. Upgrade to Oracle Utilities Customer Care and Billing 2.6.0.1.0 by following the steps in the Section “Upgrading from Version 2.4.0.2 or 2.4.0.3 to 2.6.0.1.0”.

**Upgrading from Version 2.2.0 to 2.6.0.1.0**
This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 2.2.0 to version 2.6.0.1.0. The files for this upgrade are located in the following directory:

```
..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Upgrade-From-v210-v220\From-v220-Upgrade-to-v26010.
```

**Note:** For steps 1 and 2, be sure to run OraDBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle 11.1.0.1 32-bit client. The database should already be listed in the local file tnsnames.ora

1. **Apply Framework version 2.2.0 and Customer Care and Billing 2.2.0 Service Packs from the Step_1_Apply_v220_SP10 folder:**
   a. Apply Framework version 2.2.0 Service Pack 1 by running CDXDBI.exe from the \01_FW22_SP1 folder.
   b. Apply Framework version 2.2.0 Service Pack 18 by running CDXPATCH.exe from the \02_FW_220_SP18 folder.
      **Note:** Use the -q parameter to prevent CDXPATCH tool from prompting to apply the patch for every patch included in the service pack.
   c. Apply Framework version 220 Service Pack 18 Rollup by running the CDXPATCH.exe from the \03_FW_220_SP18_Rollup folder.
      **Note:** Use the -q parameter to prevent CDXPATCH tool from prompting to apply the patch for every patch included in the service pack.
   d. Apply Customer Care and Billing 2.2.0 Service Pack 10 by running the CDXPATCH.exe from the \04_CCB_220_SP10 folder.

2. **Apply Framework version 4.2.0 Service Pack 2 and Customer Care and Billing 2.4.0 Service Packs 2 from the Step_2_Upgrade_to_v2402 folder:**
   a. Apply Framework version 4.2.0 Service Pack 2 by running OraDBI.exe from the \01_FW420_SP2 folder.
   b. Apply Framework version 4.2.0 Service Pack 2 rollup by running CDXPATCH.exe from the \02_FW420_SP2_Rollup folder.
   c. Optional: Execute CCB2401_BpSchema2.SQL
      This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.
   d. Optional: Execute CCB2401_BpSchema3.SQL
      This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.
   e. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables.
   f. Execute CCB2402_Trim_SRCH_CHAR_VAL.sql.
Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

g. Apply Customer Care and Billing 2.4.0 Service Pack 2 by running the OraDBI.exe from the \04_CCB240_SP2 folder.

h. Execute CCB2401_APDATA1.sql.

Before executing this script, please verify the script and make a note that these refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

i. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables.

Execute the FW4202_Trim_SRCH_CHAR_VAL.sql.

Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

j. Enable USER_LOCK Package.

Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

3. Upgrade to Oracle Utilities Customer Care and Billing 2.6.0.1.0 by following the steps in the Section “Upgrading from Version 2.4.0.2 or 2.4.0.3 to 2.6.0.1.0”.

Upgrading from Version 2.1.0 to 2.6.0.1.0

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 2.1.0 to version 2.6.0.1.0. The files for this upgrade are located in the following directory: ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Upgrade-From-v210-v220\From-v210-Upgrade-to-v26010.

Note: For steps 1-4, be sure to run OraDBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle 11.1.0.1 32-bit client. The database should already be listed in the local file tnsnames.ora

1. Apply the Framework 2.1.0 and Customer Care and Billing 2.1.0 current rollups from the \Step_1_Apply_210_Current_Rollup folder:

   a. Apply the Framework version 2.1.0 current rollup by running CDXPATCH.exe from the \01_FW210SP7_plus_Rollup folder.

   b. Apply the Customer Care and Billing version 2.1.0 current rollup by running CDXPATCH.exe from the \02_CCB210SP7_plus_Rollup folder.

2. Upgrade to Framework version 2.2.0 and Customer Care and Billing version 2.2.0 by running CDXDBI.exe from the \Step_2_Upgrade_to_v220\Upgrade-Install folder.

3. Apply Framework version 2.2.0 and Customer Care and Billing 2.2.0 Service Packs from the \Step_3_Apply_v220_SP10 folder.

   a. Apply Framework version 2.2.0 Service Pack 1 by running CDXDBI.exe from the \01_FW22_SP1 folder.

   b. Apply Framework version 2.2.0 Service Pack 18 by running CDXPATCH.exe from the \02_FW_220_SP18 folder.

Note: Use the -q parameter to prevent CDXPATCH tool from prompting to apply the patch for every patch included in the service pack.
c. Apply Framework version 220 Service Pack 18 Rollup by running the CDXPATCH.exe from the \03_FW_220_SP18_Rollup folder.

**Note:** Use the -q parameter to prevent CDXPATCH tool from prompting to apply the patch for every patch included in the service pack.

d. Apply Customer Care and Billing 2.2.0 Service Pack 10 by running the CDXPATCH.exe from the \04_CCB_220_SP10 folder.

4. Apply Framework version 4.2.0 Service Pack 2 and Customer Care and Billing 2.4.0 Service Packs 2 from the \Step_4_Upgrade_to_v2402 folder:

a. Apply Framework version 4.2.0 Service Pack 2 by running OraDBI.exe from the \01_FW420_SP2 folder.

b. Apply Framework version 4.2.0 Service Pack 2 rollup by running CDXPATCH.exe from the \02_FW420_SP2_Rollup folder.

c. Optional: Execute CCB2401_BpSchema2.SQL.

This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

d. Optional: Execute CCB2401_BpSchema3.SQL.

This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

e. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables.

Execute CCB2402_Trim_SRCH_CHAR_VAL.sql.

Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

f. Apply Customer Care and Billing 2.4.0 Service Pack 2 by running the OraDBI.exe from the \04_CCB240_SP2 folder.

g. Execute CCB2401_APDATA1.sql.

Before executing this script, please verify the script and make a note that these Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

h. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables.

Execute the FW4202_Trim_SRCH_CHAR_VAL.sql.

Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

i. Enable USER_LOCK Package

Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

5. Upgrade to Oracle Utilities Customer Care and Billing 2.6.0.1.0 by following the steps in the Section “Upgrading from Version 2.4.0.2 or 2.4.0.3 to 2.6.0.1.0”.

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Oracle Utilities Customer Care and Billing Database Administrator’s Guide
Upgrading from Version 2.0.5 to 2.6.0.1.0

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 2.0.5 to version 2.6.0.1.0. The files for this upgrade are located in the following directory:

..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Upgrade-From-v205\n
**Note:** For steps 1-5, be sure to run OraDBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle 11.1.0.1 32-bit client. The database should already be listed in the local file tnsnames.ora

1. Upgrade to Customer Care and Billing 2.1.0 by running CDXDBI.exe from \Step_1_Upgrade_to_v210\Upgrade-Install folder.
2. Apply the Framework 2.1.0 and Customer Care and Billing 2.1.0 current rollups from the \Step_2_Apply_210_Current_Rollup folder:
   a. Apply the Framework version 2.1.0 current rollup by running CDXPATCH.exe from the \01_FW210SP7_plus_Rollup folder.
   b. Apply the Customer Care and Billing version 2.1.0 current rollup by running CDXPATCH.exe from the \02_CCB210SP7_plus_Rollup folder.
3. Upgrade to Framework version 2.2.0 and Customer Care and Billing version 2.2.0 by running CDXDBI.exe from the \Step_3_Upgrade_to_v220\Upgrade-Install folder.
4. Apply Framework version 2.2.0 and Customer Care and Billing 2.2.0 Service Packs from the \Step_4_Apply_v220_SP10 folder:
   a. Apply Framework version 2.2.0 Service Pack 1 by running CDXDBI.exe from the \01_FW22_SP1 folder.
   b. Apply Framework version 2.2.0 Service Pack 18 by running CDXPATCH.exe from the \02_FW220_SP18 folder.
      **Note:** Use the -q parameter to prevent CDXPATCH tool from prompting to apply the patch for every patch included in the service pack.
   c. Apply Framework version 220 Service Pack 18 Rollup by running the CDXPATCH.exe from the \03_FW220_SP18_Rollup folder.
      **Note:** Use the -q parameter to prevent CDXPATCH tool from prompting if you would like to apply the patch for every patch included in the service pack.
   d. Apply Customer Care and Billing 2.2.0 Service Pack 10 by running the CDXPATCH.exe from the \04_CCB220_SP10 folder.
5. Apply Framework version 4.2.0 Service Pack 2 and Customer Care and Billing 2.4.0 Service Packs 2 from the \Step_5_Upgrade_to_v2402 folder:
   a. Apply Framework version 4.2.0 Service Pack 2 by running OraDBI.exe from the \01_FW420_SP2 folder.
   b. Apply Framework version 4.2.0 Service Pack 2 rollup by running CDXPATCH.exe from the \02_FW420_SP2_Rollup folder.
   c. Optional: Execute CCB2401_BpSchema2.SQL
This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

d. Optional: Execute CCB2401_BpSchema3.SQL

This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

e. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables.

Execute the CCB2402_Trim_SRCH_CHAR_VAL.sql

Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

f. Apply Customer Care and Billing 2.4.0 Service Pack 2 by running the OraDBI.exe from the \04_CCB240_SP2 folder.

g. Execute CCB2401_APDATA1.sql

Before executing this script, please verify the script and make a note that these

Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

h. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables.

Execute the FW4202_Trim_SRCH_CHAR_VAL.sql

Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

i. Enable USER_LOCK Package

Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

6. Upgrade to Oracle Utilities Customer Care and Billing 2.6.0.1.0 by following the steps in the Section “Upgrading from Version 2.4.0.2 or 2.4.0.3 to 2.6.0.1.0”.

**Upgrading from Version 1.5.20 to 2.6.0.1.0**

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 1.5.20 to version 2.6.0.1.0. The files for this upgrade are located in the following directory: ..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Upgrade-From-v1.5.10-v1.5.15\  

Note: For steps 1-7, be sure to run OraDBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle 11.1.0.1 32-bit client. The database should already be listed in the local file tnsnames.ora.

1. Apply Customer Care and Billing 1.5.20 Service Pack 1 by running CDXPATCH.exe from \Step_2_Apply_ServicePack_v15201 folder.

2. Upgrade to Customer Care and Billing 2.0.5 by executing the following steps from \Step_3_Upgrade_to_v205\Upgrade-Install folder.

   a. Pre-Install: Run CDXDBI.exe from \01_Pre-Install Folder. During this process, Owner Flag information will be upgraded from CI to C1 or F1 on system data.
b. **Install**: Run CDXDBI.exe from \02_Install Folder. This process will complete upgrade of rest of the system data to CCB V2.0.5.

3. Upgrade to Customer Care and Billing 2.1.0 by running CDXDBI.exe from \Step_4_Upgrade_to_v210\Upgrade-Install folder.

4. Apply the Framework 2.1.0 and Customer Care and Billing 2.1.0 current rollups from the \ Step_5_Apply_210_Current_Rollup folder:
   a. Apply the Framework version 2.1.0 current rollup by running CDXPATCH.exe from the \01_FW210SP7_plus_Rollup folder.
   b. Apply the Customer Care and Billing version 2.1.0 current rollup by running CDXPATCH.exe from the \02_CCB210SP7_plus_Rollup folder.

5. Upgrade to Framework version 2.2.0 and Customer Care and Billing version 2.2.0 by running CDXDBI.exe from the \Step_6_Upgrade_to_v220\Upgrade-Install folder.

6. Apply Framework version 2.2.0 and Customer Care and Billing 2.2.0 Service Packs from the \Step_7_Apply_v220_SP10 folder:
   a. Apply Framework version 2.2.0 Service Pack 1 by running CDXDBI.exe from the \01_FW22_SP1 folder.
   b. Apply Framework version 2.2.0 Service Pack 18 by running CDXDBI.exe from the \02_FW_220_SP18 folder.

   **Note**: Use the -q parameter to prevent CDXPATCH tool from prompting to apply the patch for every patch included in the service pack.

   c. Apply Framework version 220 Service Pack 18 Rollup by running the CDXPATCH.exe from the \03_FW_220_SP18_Rollup folder.

   **Note**: Use the -q parameter to prevent CDXPATCH tool from prompting to apply the patch for every patch included in the service pack.

   d. Apply Customer Care and Billing 2.2.0 Service Pack 10 by running the CDXPATCH.exe from the \04_CCB_220_SP10 folder.

   e. Optional: Execute CCB2401_BpSchema2.SQL

6. This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

7. Apply Framework version 4.2.0 Service Pack 2 and Customer Care and Billing 2.4.0 Service Packs 2 from the \Step_8_Upgrade_to_v2402 folder:
   a. Apply Framework version 4.2.0 Service Pack 2 by running OraDBI.exe from the \01_FW420_SP2 folder.
   b. Apply Framework version 4.2.0 Service Pack 2 rollup by running CDXPATCH.exe from the \02_FW420_SP2_Rollup folder.
   c. Optional: Execute CCB2401_BpSchema2.SQL

   This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

   d. Optional: Execute CCB2401_BpSchema3.SQL

   This step is recommended to improve the performance of the upgrade process. Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

   e. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables.
Execute the CCB2402_Trim_SRCH_CHAR_VAL.sql

Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

f. Apply Customer Care and Billing 2.4.0 Service Pack 2 by running the OraDBI.exe from the \04_CCB240_SP2 folder.

g. Execute CCB2401_APDATA1.sql

Before executing this script, please verify the script and make a note that these

Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

h. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char
tables.

Execute the FW4202_Trim_SRCH_CHAR_VAL.sql

Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.

i. Enable USER_J LOCK Package

Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

8. Upgrade to Oracle Utilities Customer Care and Billing 2.6.0.1.0 by following the
steps in the Section “Upgrading from Version 2.4.0.2 or 2.4.0.3 to 2.6.0.1.0”.

Upgrading from Version 1.5.10 or 1.5.15 to 2.6.0.1.0

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing
version 1.5.10 or 1.5.15 to version 2.6.0.1.0. The files for this upgrade are located in the
following directory:

..\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Upgrade\Upgrade-From-v1.5.10-v1.5.15\n
Note: For steps 1-8, be sure to run OraDBI.exe from a Window 32-bit
or 64-bit desktop that has the Oracle 11.1.0.1 32-bit client. The database
should already be listed in the local file tnsnames.ora

1. Upgrade to Customer Care and Billing 1.5.20 by executing the steps below from
\Step_1_Upgrade_to_v1520\Upgrade-Install folder.

a. Pre-Install Steps

The clean-up scripts for each task consist of a "select" SQL and a "delete" SQL
script. The "select" SQL script when executed will display the data that will be
deleted by the "delete" SQL script. All the clean-up scripts spool their results in
output files that have same names as the scripts but with an ".out" extension.

To execute these scripts, users must log in as a database user with delete privileges on
the CC&B schema using SQLPLUS.

1. Open a command prompt.
2. Change directory to ..\01_Pre-Install Folder.
3. Connect to SQLPLUS.
4. Execute the file as follows:
\@ delete_mdf1.sql.sql
@ delete_tddrl.sql
@ delete_tdsrt.sql
@ delete_tde.sql

Users must “commit” the data cleanup transaction explicitly and roll it back if the
script fails for some reason.

The following scripts are included in the \01_Pre-Install folder:

- select_mdfl.sql and delete_mdfl.sql
- select_tddrl.sql and delete_tddrl.sql
- select_tdsrt.sql and delete_tdsrt.sql
- select_tde.sql and delete_tde.sql

After completion of this follow the Install steps below.

b. Install Steps

Upgrade to Customer Care and Billing version 1.5.20 by running CDXDBI.exe
from \02_Install Folder.

c. Post-Install Steps

The following steps are included in the post-install process:

Sequence synchronization

In release 1.4.5, two new sequences CI_MRSTGUPID_SEQ, CI_NTUPID_SEQ were added to ID the primary key columns of
CI_MR_STAGE_UP and CI_NT_UP tables. Because these tables existed in
previous versions of CC&B, we must adjust the "last number" value of the new
sequences to either an existing sequence that you have already been using for the
same purpose or the maximum value of the primary key column of the table(s).
If you have already set these sequences in Release 1.4.5 or later, skip this step and
continue from the next step (if any).

Following are the steps involved in the adjust sequences process:

1. Execute the AdjustSequences.bat utility file under \03_Post-Install folder, by
double-clicking it or running it from command line. The utility prompts you
to enter values for following parameters:

   Enter the username that owns the CC&B schema (e.g. CISADM):
   Enter the password for the CC&B schema owner:
   Enter the name of the Oracle Database:

2. The utility connects to the database and prompts you to continue the
   processing.

3. The utility checks for the two new sequences in the database and for each
   sequence, prompts you to enter the name of an existing sequence that you
   have already been using to ID the primary key column of its corresponding
   table. You can press Enter if you are not using any existing sequence (the
   utility sets its value to the maximum value of the primary key in that case).

   If you choose to adjust a new sequence to an existing sequence, the utility
   sets the new sequence to the current “last number” value of the existing
   sequence, drops the existing sequence, and creates a synonym for the
   dropped sequence. This way the existing sequence is replaced with a CC&B
sequence without breaking any existing code that may be referring to the existing sequence.

4. After sequences are adjusted, the utility reconfigures the security in the database and prompts you to enter the values for following parameters:

   - Enter the Oracle user that owns the schema (e.g. CISADM):
   - Enter the password for the CC&B schema:
   - Enter a comma-separated list of Oracle users in which synonyms need to be created (e.g. cisuser,cisread):
   - Enter the name of the Oracle Database:

This completes the adjust sequences process. The process generates a log file (AdjustSequences.log). You can review the log for the actions performed and any errors that may have occurred during the process.

2. Apply Customer Care and Billing 1.5.20 Service Pack 1 by running CDXPATCH.exe from \Step_2_Apply_ServicePack_v15201 folder.

3. Upgrade to Customer Care and Billing 2.0.5 by executing the following steps from \Step_3_Upgrade_to_v205\Upgrade-Install folder.
   a. **Pre-Install**: Run CDXDBI.exe from \01_Pre-Install Folder. During this process, Owner Flag information will be upgraded from CI to C1 or F1 on system data.
   b. **Install**: Run CDXDBI.exe from \02_Install Folder. This process will complete upgrade of rest of the system data to CC&B V2.0.5.

4. Upgrade to Customer Care and Billing 2.1.0 by running CDXDBI.exe from \Step_4_Upgrade_to_v210\Upgrade-Install folder.

5. Apply the Framework 2.1.0 and Customer Care and Billing 2.1.0 current rollups from the \ Step_5_Apply_210_Current_Rollup folder:
   a. Apply the Framework version 2.1.0 current rollup by running CDXPATCH.exe from the \01_FW210SP7_plus_Rollup folder.
   b. Apply the Customer Care and Billing version 2.1.0 current rollup by running CDXPATCH.exe from the \02_CCB210SP7_plus_Rollup folder.

6. Upgrade to Framework version 2.2.0 and Customer Care and Billing version 2.2.0 by running CDXDBI.exe from the \Step_6_Upgrade_to_v220\Upgrade-Install folder.

7. Apply Framework version 2.2.0 and Customer Care and Billing 2.2.0 Service Packs from the \Step_7_Apply_v220_SP10 folder:
   a. Apply Framework version 2.2.0 Service Pack 1 by running CDXDBI.exe from the \01_FW22_SP1 folder.
   b. Apply Framework version 2.2.0 Service Pack 18 by running CDXPATCH.exe from the \02_FW_220_SP18 folder.

   **Note**: Use the -q parameter to prevent CDXPATCH tool from prompting to apply the patch for every patch included in the service pack.
   c. Apply Framework version 220 Service Pack 18 Rollup by running the CDXPATCH.exe from the \03_FW_220_SP18_Rollup folder.
Note: Use the -q parameter to prevent CDXPATCH tool from prompting to apply the patch for every patch included in the service pack.

d. Apply Customer Care and Billing 2.2.0 Service Pack 10 by running the CDXPATCH.exe from the \04_CCB_220_SP10 folder.

8. Apply Framework version 4.2.0 Service Pack 2 and Customer Care and Billing 2.4.0 Service Packs 2 from the \Step_8_Upgrade_to_v2402 folder:
   a. Apply Framework version 4.2.0 Service Pack 2 by running OraDBI.exe from the \01_FW420_SP2 folder.
   b. Apply Framework version 4.2.0 Service Pack 2 rollup by running CDXPATCH.exe from the \02_FW420_SP2_Rollup folder.
   c. Optional: Execute CCB2401_BpSchema2.SQL
      This step is recommended to improve the performance of the upgrade process.
      Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.
   d. Optional: Execute CCB2401_BpSchema3.SQL
      This step is recommended to improve the performance of the upgrade process.
      Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.
   e. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables.
      Execute the CCB2402_Trim_SRCH_CHAR_VAL.sql.
      Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.
   f. Apply Customer Care and Billing 2.4.0 Service Pack 2 by running the OraDBI.exe from the \04_CCB240_SP2 folder.
   g. Execute CCB2401_APDATA1.sql.
      Before executing this script, please verify the script and make a note that these
      Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.
   h. Installing the upgrade script to trim the SRCH_CHAR_VAL column on the char tables.
      Execute the FW4202_Trim_SRCH_CHAR_VAL.sql
      Refer to the section “Upgrading from Version 2.4.0.0 or 2.4.0.1 to 2.6.0.1.0” on how to execute this step.
   i. Enable USER_LOCK Package
      Refer to the section “Upgrading from Version 2.3.1.10 to 2.6.0.1.0” on how to execute this step.

9. Upgrade to Oracle Utilities Customer Care and Billing 2.6.0.1.0 by following the steps in the Section “Upgrading from Version 2.4.0.2 or 2.4.0.3 to 2.6.0.1.0”.
Demo Install

This section describes how to install the demo database components for Oracle Utilities Customer Care and Billing, including:

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

Copying and Decompressing Install Media
To copy and decompress the Oracle Utilities Customer Care and Billing database:

1. Download Oracle Utilities Application Framework V4.3.0.5.0 Oracle Database, Oracle Utilities Application Framework V4.3.0.5.0 Database Single Fix Prerequisite Rollup for CCB V2.6.0.1.0 and Oracle Utilities Customer Care and Billing V2.6.0.1.0 Oracle Database from the Oracle Software Delivery Cloud.
2. Copy FW-V4.3.0.5.0-Oracle-Databas e-Multiplatform, CCB-V2.6.0.1.0-FW-Database-PREREQ-MultiPlatform and CCB-V2.6.0.1.0-Oracle-Database-Multiplatform directories to your local machine.

These files contain all the database components required to install the Oracle Utilities Application Framework and Customer Care and Billing database.

Creating the Database
Note: You must have Oracle Database Server 12.1.0.2+ installed on your machine in order to create the database.

It is strongly recommended to use DBCA to create the database.

Creating the Database on UNIX
Create the database using the Database Configuration Assistant (DBCA).

Refer to the article Master Note: Overview of Database Configuration Assistant (DBCA) (Doc ID 1488770.1) on My Oracle Support for more information. Make sure to set character set for database as AL32UTF8.

Refer to Creating the Database for steps to create the database.

Creating the Database on Windows
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.

Refer to the article Master Note: Overview of Database Configuration Assistant (DBCA) (Doc ID 1488770.1) on My Oracle Support for more information. Make sure to set character set for database as AL32UTF8.

Refer to Creating the Database for steps to create the database.
Database Storage BYTES / CHARACTER

Database created by default will store data in BYTES. To store data in CHARACTER follow the procedure below:

**Initial Install**

1. Execute the following statement to set nls_length_semantics=CHAR.
   
   ```sql
   SQL> ALTER SYSTEM SET nls_length_semantics=CHAR SCOPE=BOTH;
   ```

2. Restart the database.

3. Ensure nls_length_semantics is CHAR. Perform the following command:
   
   ```sql
   SQL> SHOW PARAMETER nls_length_semantics
   ```

   **Note:** For pluggable database ensure to set nls_length_semantics=CHAR for both container and pluggable database.

**Upgrade and Migration from BYTE Based Storage to CHARACTER Based Storage**

1. Create a database using DBACA.

2. Execute following statement to set nls_length_semantics=CHAR.
   
   ```sql
   SQL> ALTER SYSTEM SET nls_length_semantics=CHAR SCOPE=BOTH;
   ```

3. Restart the database.

4. Ensure nls_length_semantics is CHAR using the following command:
   
   ```sql
   SQL> SHOW PARAMETER nls_length_semantics
   ```

   **Note:** For pluggable database ensure to set nls_length_semantics=CHAR for container and pluggable database both.

5. Export schema from the database that has nls_length_semantics=BYTE.
   
   ```bash
   expdp userid=system/<code>@<SID> directory=<DIR_NAME> schemas=<schema_name> dumpfile=<schema_name>.dmp logfile=<schema_name>.log
   ```

6. Generate DDL from dump file using Oracle impdp utility.
   
   ```bash
   impdp userid=system/<code>@<SID> directory=<DIR_NAME> DUMPFILE=<schema_name>.dmp SCHEMAS=<schema_name> SQLFILE=<schema_name>_DDL.sql
   ```

7. Replace “Byte” with “Char” in <schema_name>_DDL.sql.
   
   For vi editor (in Linux), use the following command to replace Byte to Char.
   
   ```bash
   :%s/BYTE/CHAR/g
   ```

8. Replace the schema name also if it is required for environment.

9. Execute <schema_name>_DDL.sql (generated in step 6) that creates objects in the schema.

   Execute the following command to ensure the number of objects at source and target are equal.
10. If an object is missing for any reason, create it by fixing DDL manually (DDL for each object is available in the file which was created in step 6).

Execute DDL for the objects that are not created.

11. Generate DDL to disable triggers using following command:

   `SQL> SELECT 'ALTER TABLE' || ' ' || TABLE_NAME || ' ' || 'DISABLE ALL TRIGGERS;' FROM USER_TABLES;

12. Execute the script generated from step 11 to disable all triggers.

13. Import the data only.

   Use the following command to import data only into the schema created to support CHAR based database storage.

   `impdp userid=system/@@@@ SID dumpfile=<schema_name>.dmp CONTENT=DATA_ONLY SCHEMAS=<schema_name> LOGFILE=<schema_name>_import.log`

14. Enable the triggers.

   Use the following command to generate DDL for triggers.

   `SQL>SELECT 'ALTER TABLE' || ' ' || TABLE_NAME || ' ' || 'ENABLE ALL TRIGGERS;' FROM USER_TABLES;

15. Execute the script generated from step No.14 to enable all triggers.

**Importing the Demo Dump 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:

   **NOTE:** Ensure the `.\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform/CCB/Demo/exp_demo.dmp.gz` file is extracted and available in data_pump_dir's location before running the below import command.

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

**Configuring Security**

The configuration utility and scripts are located in the `.\CCB-V2.6.0.1.0-Oracle-Database-Multiplatform\CCB\Security` folder. You can run this utility from a Linux or a Windows machine.

To configure security, for all objects from a Linux Standalone machine, you can either set the parameters as described in Linux Option 1: Using Variables or using absolute value as described in Linux Option 2: Using Absolute Value.
Demo Install

Linux Option 1: Using Variables
To configure security using parameters:
1. Set the following parameters:
•

JAVA_HOME - location of JDK 1.8
export JAVA_HOME=/scratch/software/jdk1.8.0_102

•

PATH - location of JDK bin
export PATH=$JAVA_HOME/bin:$PATH

•

CLASS_PATH - location of jarfiles
This can be found in ..\..\CCB-V2.6.0.1.0-Oracle-DatabaseMultiplatForm\CCB\Security\lib
export CLASS_PATH=..\..\CCB-V2.6.0.1.0-Oracle-DatabaseMultiplatForm\CCB\Security\lib\*

•

DB_SERVER - database server
export DB_SERVER=<database server>

•

PORT - database port number
export PORT=<port number>

•

SID - database name
export SID=<database name>

•

DBUSER - database username (such as CISADM)
export DBUSER=<CISADM>

•

DBPASS - database password for username
export DBPASS=<password>

•

RW_USER - database username with read-write privileges (such as
CISUSER)
export RW_USER=<CISUSER>

•

R_USER - database username with read privileges (such as CISREAD)
export R_USER=<CISREAD>

•

RW_USER_ROLE - database role with read-write privileges (such as
CIS_USER)
export RW_USER_ROLE =<CIS_USER>

•

R_USER_ROLE - database role with read privileges (such as CIS_READ)
export R_USER_ROLE =<CIS_READ>

2. Execute the OraGenSec utility using below command:
$JAVA_HOME/bin/java $CLASS_PATH
com.oracle.ouaf.oem.install.OraGenSec -d
$DBUSER,$DBPASS,jdbc:oracle:thin:@$DB_SERVER:$PORT/$SID -a A
-r $RW_USER_ROLE,$R_USER_ROLE -u $RWUSER,$RUSER

Installing the Database 2 - 63
Oracle Utilities Customer Care and Billing Database Administrator’s Guide


**Linux Option 2: Using Absolute Value**

To configure security using absolute values:

1. Set the CLASSPATH parameter.
   
   ```
   export CLASSPATH = ../../../CCB-V2.6.0.1.0-Oracle-Database-MultiplatForm/CCB/Security/lib
   ```

2. Execute OraGenSec utility using below command just replace with the actual values.
   
   ```
   /scratch/software/jdk1.8.0_102/bin/java
   com.oracle.ouaf.oem.install.OraGenSec -d
   <DBUSER>,<DBPASS>,jdbc:oracle:thin:@<DB_SERVER>:<PORT>/<SID> -a
   A -r <RW_USER>,<R_USER> -u <RW_USER_ROLE>,<R_USER ROLE>
   ```

To configure security, for all objects from a Windows machine, you can either set the parameters as described in **Windows Option 1: Using Variables** or using absolute value as describe in **Windows Option 2: Using Absolute Value**.

**Windows Option 1: Using Variables**

To configure the security using parameters:

1. Set the following parameters:
   
   - **JAVA_HOME** - location of JDK 1.8
     
     ```
     set JAVA_HOME= C:\Software\Java\jre1.8.0_91
     ```
   
   - **PATH** - location of JDK bin
     
     ```
     set PATH=%JAVA_HOME%/bin:%PATH
     ```
   
   - **CLASS_PATH** - location of jarfiles.
     
     ```
     This can be found in ..\..\CCB-V2.6.0.1.0-Oracle-Database-MultiplatForm\CCB\Security\lib
     set CLASS_PATH= ..\..\CCB-V2.6.0.1.0-Oracle-Database-MultiplatForm\CCB\Security\lib\*
     ```
   
   - **DB_SERVER** - database server
     
     ```
     set DB_SERVER=<database server>
     ```
   
   - **PORT** - database port number
     
     ```
     set PORT=<port number>
     ```
   
   - **SID** - database name
     
     ```
     set SID=<database name>
     ```
   
   - **DBUSER** - database username (such as CISADM)
     
     ```
     set DBUSER=<CISADM>
     ```
   
   - **DBPASS** - database password for username
     
     ```
     set DBPASS=<password>
     ```
   
   - **RW_USER** - database username with read-write privileges (such as CISUSER)
     
     ```
     set RW_USER=<CISUSER>
     ```
• **R_USER** - database username with read privileges (such as CISREAD)
  
  set R_USER=<CISREAD>

• **RW_USER_ROLE** - database role with read-write privileges (such as CIS_USER)
  
  set RW_USER_ROLE =<CIS_USER>

• **R_USER_ROLE** - database role with read privileges (such as CIS_READ)
  
  set R_USER_ROLE =<CIS_READ>

2. Execute the OraGenSec utility using below command.

```
"%JAVA_HOME%"\bin\java -Xmx1500M -cp %CLASS_PATH% com.oracle.ouaf.oem.install.OraGenSec -d %DBUSER%,%DBPASS%,jdbc:oracle:thin:@%DB_SERVER%:%PORT%/%SID% -a A -r %RW_USER_ROLE%,%R_USER_ROLE% -u %RWUSER%,%RUSER%
```

**Windows Option 2: Using Absolute Value**

To configure security using absolute value, execute OraGenSec utility using below command just replace with the actual values.

```
<JAVA_HOME>\bin\java -Xmx1500M -cp <CLASS_PATH>\* com.oracle.ouaf.oem.install.OraGenSec -d <DBUSER>,<DBPASS>,jdbc:oracle:thin:@<DB_SERVER>:<PORT>/<SID> -a A -r <RW_USER>,<R_USER> -u <RW_USER_ROLE>,<R_USER_ROLE>
```

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

The utility configures security for the application owner schema objects.

OraGenSec by default grant permissions to CIS_USER and CIS_READ Role. If you prefer to use site-specific roles then execute Oragensec after providing command line options and specifying the specific roles.

**OraGenSec Java Usage**

```
```

**OraGenSec Help**

- `-a <arg>` generate security for All objects in the database
- `-d <arg>` db connection as: db_host:db_port/db_service
- `-f <arg>` generate security for specific objects from an input File
- `-h` help
- `-l <arg>` log file
- `-o <arg>` generate security for comma separated list of objects
- `-q` silent mode
- `-r <arg>` roles as: CIS_READ,CIS_USER
- `-u <arg>` comma-separated list of users to create synonyms for
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 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. For customer modification, CM must prefix the column name. The following conventions apply when you define special types of columns in the database.

- Use the suffix FLG to define a lookup table field. Flag columns must be CHAR(4). Choose lookup field names carefully as these column names are defined in the lookup table (CI_LOOKUP_FLD) and must be prefixed by the product owner flag value.
- Use the suffix CD to define user-defined codes. User-defined codes are primarily found as the key column of the admin tables.
- Use the suffix ID to define system assigned key columns.
- Use the suffix SW to define Boolean columns. The valid values of the switches are 'Y' or 'N'. The switch columns must be CHAR(1)
- Use the suffix DT to define Date columns.
- Use the suffix DTTM to define Date Time columns.
- Use the suffix TM to define Time columns.

Some examples are:
- ADJ_STATUS_FLG
- CAN_RSN_CD

Indexes
Index names are composed of the following parts:

\[[OF][application specific prefix][C/M/T]NNN[P/S]n\]

- **OF** - Owner Flag. The standard is to use the two characters of the product's owner flag. Note that there may be some older indexes that use only the first character of the owner flag. For client specific implementation of index, use CM for Owner Flag. If implementation creates a CM Index on table-columns for which the base product already provides an index, then the CM Index will be overridden by the based index.
- 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
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.

We recommend creating CLOBs stored as SECUREFILE with Medium compression and Cache enabled. Please note that by default, medium compression is turned-off and must only be enabled if you have the Advanced compression license.

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 oradbi 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. For customer modification CM must prefix the sequence name. The sequence numbers should be named as below:

1. If the Sequence is used for a specific table, then use the following sequence name:
   
   
   \[ \text{OF} \] \[ \text{C/M/T} \] \text{NNN}_\text{SEQ} 
   
   • OF stands for Owner Flag. For example, for Framework its F1 and for CCB it is C1.
   
   • 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 e.g: F1T220_SEQ

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

   \[ \text{OF} \] \[ \text{C/M/T} \] \text{NNN}_\text{Column Name}_\text{SEQ} 

   • 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.

   \[ \text{OF} \] \text{Column Name}_\text{SEQ} 

   For Example: F1FKVALID_SEQ

   • For a customer modification, CM must prefix the sequence name.

**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

The product 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 fixes the metadata to make sure that the existing tables will not be affected.
This new feature only supports tables maintained by Java but NOT a Java program converted from COBOL. 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 Java converted COBOL programs.

**XML Type Support**

The product supports XML Type. XML Type provides the following advantages:

1. The ability to use XQuery for querying nodes in the XML document stored within a column defined as XMLType.

2. The option to use the XML engine, which is built into the Oracle Database, to create indexes using nodes within the XML document stored in the XMLType column.

**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.

**Table Classification and Table Volume Flags**

There are multiple types of tables in the application, namely Admin system tables, Admin non-system tables, master tables and transaction tables. The Table Classification flag (TBL_CLASSIFICATION_FLG) sets the appropriate value for this lookup field to give a better view of the table classification.

Table Volume flag (TBL_VOLUME_FLG) is a customer modifiable field which is initially populated by product, but can be overridden by implementation. The field gives an idea of the relative data volume (categorized as highVolume, lowVolume and mediumVolume) of the table to make informed decisions.

**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 for optimistic concurrency control in the application code. Add the Version column to all tables that are maintained by a Row Maintenance program.
The following section outlines the general implementation guidelines for the database components, including:

- Configuration Guidelines
- Oracle Database Implementation Guidelines

### 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. This section includes:

- Index
- Table Partitioning Recommendations
- Transparent Data Encryption Recommendations
- Data Compression Recommendations
- Database Vault Recommendations
- Oracle Fuzzy Search Support
- Information Lifecycle Management (ILM) and Data Archiving Support
- Storage Recommendations
- Database Configuration Recommendations
- Database Syntax
- Database Initialization Parameters

### 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.
Note: If the implementation creates a CM index on table-columns where the product already provides an index, then the CM index will be overridden by the base index.

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 <tablespacename>;
  ```
- AES128 is the default encryption algorithm.
- Tablespace level encryption is also supported using the following command:
  ```
  Create tablespace <tablespacename> 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.

Exadata Hardware
For Exadata hardware the compression recommendations are:

- For high volume tables, keep the current table partition uncompressed. All of the older partitions will be compressed based on QUERY HIGH compression.
- For high volume tables with CLOBs, always keep the CLOBs in securefiles with MEDIUM compression. 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.

Non-Exadata Hardware
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.

CLOB Fields
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.

Compression Guidelines

- Admin and Metadata tables and their indexes will NOT be compressed.
- All Transactional Tables will be compressed. This includes ILM enabled MOs where applicable.
- Compression will be done at the tablespace level.
  - Different MOs will have different tablespaces.
  - Partitioned MOs will have one tablespace per partition.
- Child tables will use reference partitioning with parent + children sharing the same tablespace. (parent and child will always be managed/archived together).

- All multicolumn indexes on transactional/ILM tables will be compressed.
- Use ‘compress advanced low’.
- Local partitioned indexes will reside in the same tablespace as the table.
- Each MO will have an index tablespace. All MO (Parent-Child Table) indexes will share this tablespace.
- Do NOT specify standard index compression.
- Securefile medium compression in row for LOBs and CLOBs.

Examples:
Create a Tablespace with Advanced Rowstore Compress

```sql
CREATE BIGFILE TABLESPACE CM_XT012_P2017JANDATAFILE '+DATA' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
```

Create Table with Subpartitions using Compressed Tablespaces & Securefiles Compression

```sql
CREATE TABLE CI_ADJ (  
  ADJ_ID CHAR(12) NOT NULL ENABLE,  
  SA_ID CHAR(10) DEFAULT ' ' NOT NULL ENABLE,  
  ADJ_TYPE_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,  
  ADJ_STATUS_FLG CHAR(2) DEFAULT ' ' NOT NULL ENABLE,  
  CRE_DT DATE,  
  CAN_RSN_CD CHAR(4) DEFAULT ' ' NOT NULL ENABLE,  
  ADJ_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,  
  XFER_ADJ_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,  
  ADJ_STATUS_FLG CHAR(2) DEFAULT ' ' NOT NULL ENABLE,  
  CURRENCY_CD CHAR(3) DEFAULT ' ' NOT NULL ENABLE,  
  COMMENTS VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,  
  VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,  
  BEHALF_SA_ID CHAR(10) DEFAULT ' ' NOT NULL ENABLE,  
  BASE_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,  
  GEN_REF_DT DATE,  
  APPR_REQ_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,  
  ADJ_DATA_AREA CLOB,  
  ILM_DT DATE,  
  ILM_ARCH_SW CHAR(1),)  
ENABLE ROW MOVEMENT  
PARTITION BY RANGE (ILM_DT)  
SUBPARTITION BY RANGE (ADJ_ID) SUBPARTITION TEMPLATE (  
  SUBPARTITION 01 VALUES LESS THAN ( '124999999999' ),  
  SUBPARTITION 02 VALUES LESS THAN ( '249999999999' ),  
  SUBPARTITION 03 VALUES LESS THAN ( '374999999999' ),  
  SUBPARTITION 04 VALUES LESS THAN ( '499999999999' ),  
  SUBPARTITION 05 VALUES LESS THAN ( '624999999999' ),  
  SUBPARTITION 06 VALUES LESS THAN ( '749999999999' ),  
  SUBPARTITION 07 VALUES LESS THAN ( '874999999999' ),  
  SUBPARTITION 08 VALUES LESS THAN ( MAXVALUE )  
)  
)
```
PARTITION "P2017JAN" VALUES LESS THAN (TO_DATE('2017-02-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017JAN,

PARTITION "P2017FEB" VALUES LESS THAN (TO_DATE('2017-03-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017FEB,

PARTITION "P2017MAR" VALUES LESS THAN (TO_DATE('2017-04-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017MAR,

PARTITION "P2017APR" VALUES LESS THAN (TO_DATE('2017-05-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017APR,

PARTITION "P2017MAY" VALUES LESS THAN (TO_DATE('2017-06-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017MAY,

PARTITION "P2017JUN" VALUES LESS THAN (TO_DATE('2017-07-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017JUN,

PARTITION "P2017JUL" VALUES LESS THAN (TO_DATE('2017-08-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017JUL,

PARTITION "P2017AUG" VALUES LESS THAN (TO_DATE('2017-09-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017AUG,

PARTITION "P2017SEP" VALUES LESS THAN (TO_DATE('2017-10-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017SEP,

PARTITION "P2017OCT" VALUES LESS THAN (TO_DATE('2017-11-01
00:00:01', 'SYYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017OCT,
Database Vault Recommendations

The product supports Database Vault. 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.

```sql
PARTITION "P2017NOV" VALUES LESS THAN (TO_DATE('2017-12-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017NOV,
PARTITION "P2017DEC" VALUES LESS THAN (TO_DATE('2017-01-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017DEC,
PARTITION "PMAX" VALUES LESS THAN (MAXVALUE)
tablespace CM_XT012_PMAX
);

Create a Compressed Local Index

CREATE UNIQUE INDEX XT012S3 ON CI_ADJ ( ILM_DT, ILM_ARCH_SW, ADJ_ID )
	TABLESPACE CM_XT012_IND COMPRESS ADVANCED LOW;

Create a Compressed Global Partitioned Index

CREATE UNIQUE INDEX XT012S2 ON CI_ADJ ( XFER_ADJ_ID, ADJ_ID )
	TABLESPACE CM_XT012_IND
GLOBAL PARTITION BY HASH (XFER_ADJ_ID, ADJ_ID )
	PARTITION PART1 TABLESPACE CM_XT012_IND,
	PARTITION PART2 TABLESPACE CM_XT012_IND,
	PARTITION PART3 TABLESPACE CM_XT012_IND,
	PARTITION PART4 TABLESPACE CM_XT012_IND,
	PARTITION PART5 TABLESPACE CM_XT012_IND,
	PARTITION PART6 TABLESPACE CM_XT012_IND,
	PARTITION PART7 TABLESPACE CM_XT012_IND,
	PARTITION PART8 TABLESPACE CM_XT012_IND
)
	COMPRESS ADVANCED LOW;

Do NOT specify standard index compression.

CREATE INDEX XT012S1 ON CI_ADJ ( SA_ID, ADJ_TYPE_CD )
	TABLESPACE CM_XT012_IND LOCAL COMPRESS 1 COMPRESS ADVANCED LOW;
```
Oracle Fuzzy Search Support

The product supports Oracle Fuzzy searches. To use this feature, Oracle Text must be installed. After Oracle Text is installed, an index must be created on the table where the fuzzy search needs to be performed from the application. This is only an Oracle database option and is not supported by other databases. Additionally, not all languages are supported. Refer to the Oracle database documentation for more information about fuzzy searching.

A typical syntax for implementation of fuzzy searching is as below. For the most updated syntax, please refer to Oracle Fuzzy documentation.

GRANT CTXAPP TO <Application schema owner e.g CISADM>;
GRANT EXECUTE ON CTX_DDL TO <Application schema owner e.g CISADM>;
create index <Application schema owner e.g CISADM>.<Index_Name> on 
Application schema owner e.g CISADM>.<Table_Name> (<column_name>) 
indextype is ctxsys.context parameters ('sync (on commit)');
begn
ctx_ddl.sync_index('Application schema owner e.g 
CISADM>.<Index_Name>');</n
end /

Information Lifecycle Management (ILM) and Data Archiving Support

The product supports Data Archiving based on Information Lifecycle Management (ILM). If Information Lifecycle Management is part of your implementation, please refer to the chapter and Information Lifecycle Management and Data Archiving in CCB in this guide for instructions on partitioning objects when using ILM.

Storage Recommendations

This section specifies recommended options for storing the database objects.

SecureFile for Storing LOBs

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

• The storage options with SecureFiles for Heap Tables should be ENABLE STORAGE IN ROW, CACHE and COMPRESS.
• For the IOT Table the PCTTHRESHOLD 50 OVERFLOW clause should be specified and the storage options with SecureFiles should be ENABLE STORAGE IN ROW, CACHE and COMPRESS.
• The PCTTHRESHOLD should be specified as a percentage of the block size. This value defines the maximum size of the portion of the row that is stored in the Index block when an overflow segment is used.
• The CHUNK option for storage, which is the data size used when accessing or modifying LOB values, can be set to higher than one database block size if big LOBs are used in the IO Operation.
• For SecureFiles, make sure that the initialization parameter db_securefile is set to ALWAYS.

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

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

If you are using Oracle Database Enterprise Edition, please verify that the “COMPRESS” flag is turned on by setting it to “Y” in Storage.xml. Refer to the Database Syntax section 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=30000`
- `db_writer_processes=10`
- `db_files=1024`
- `dbwr_io_slaves=10  (Only if Asynchronous IO is not Supported)`
- `sessions=4500`
- `memory_target=0`
- `memory_max_target=0`
- `processes=3000`
- `dml_locks=48600`
- `_b_tree_bitmap_plans=FALSE`

Oracle Database Implementation Guidelines

This section provides specific guidelines for implementing the Oracle database.

Oracle Partitioning

If you use a base index for the partitioning key, rename the index to CM**.

If you use the primary key index of the table as the partitioning key:

- Make the index non-unique.
- Primary constraints should still exist.

The upgrade on the partitioned table works best if the partitioning key is not unique. This allows the upgrade tool to drop the PK constraints if the primary key columns are modified and recreate the PK constraints without dropping the index.
Database Statistic

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. You should gather statistics periodically for objects where the statistics become stale over time because of changing data volumes or changes in column values. New statistics should be gathered after a schema object's data or structure are modified in ways that make the previous statistics inaccurate. For example, after loading a significant number of rows into a table, collect new statistics on the number of rows. After updating data in a table, you do not need to collect new statistics on the number of rows, but you might need new statistics on the average row length.

A sample syntax that can be used is as following:

```sql
BEGIN
SYS.DBMS_STATS.GATHER_SCHEMA_STATS ( 
  OwnName => 'CISADM',
  Degree => 16,
  Cascade => TRUE,
  Method_opt => 'FOR ALL COLUMNS SIZE AUTO',
  Granularity => 'ALL');
END;
```

Materialized View


Prerequisites

Please make sure the following:

1. Set parameter QUERY_REWRITE_ENABLED=TRUE at database level.

   Use the following SQL:

   ```sql
   ALTER SYSTEM SET QUERY_REWRITE_ENABLED=TRUE; OR
   ALTER SYSTEM SET QUERY_REWRITE_ENABLED=TRUE SCOPE=BOTH;
   ```

2. To create a materialized view in another user's schema you must have the CREATE ANY MATERIALIZED VIEW system privilege. The owner of the materialized view must have the CREATE TABLE system privilege. The owner must also have access to any master tables of the materialized view that the schema owner does not own (for example, if the master tables are on a remote database) and to any materialized view logs defined on those master tables, either through a SELECT object privilege on each of the tables or through the SELECT ANY TABLE system privilege.

3. To create a refresh-on-commit materialized view (ON COMMIT REFRESH clause), in addition to the preceding privileges, you must have the ON COMMIT REFRESH object privilege on any master tables that you do not own or you must have the ON COMMIT REFRESH system privilege.

To create the materialized view with query rewrite enabled, in addition to the preceding privileges: If the schema owner does not own the master tables, then the
schema owner must have the **GLOBAL QUERY REWRITE** privilege or the **QUERY REWRITE** object privilege on each table outside the schema.

```sql
CREATE MATERIALIZED VIEW F1_BO_LIFECYCLE_STATUS_MVW (
    BUS_OBJ_CD,
    LIFE_CYCLE_BO_CD,
    BO_STATUS_CD,
    BATCH_CD
) 
BUILD IMMEDIATE REFRESH ON COMMIT ENABLE QUERY REWRITE AS
SELECT
    BO2.BUS_OBJ_CD, BO.LIFE_CYCLE_BO_CD, BOSA.BO_STATUS_CD, LCBOS.BATCH_CD as LC_BATCH_CD
FROM
    F1_BUS_OBJ BO2,
    F1_BUS_OBJ BO,
    F1_BUS_OBJ_STATUS LCBOS,
    F1_BUS_OBJ_STATUS_ALG BOSA
WHERE
    BO2.LIFE_CYCLE_BO_CD = BO.LIFE_CYCLE_BO_CD AND
    BO.BUS_OBJ_CD = BOSA.BUS_OBJ_CD AND
    BOSA.BO_STATUS_SEVT_FLG = 'F1AT' AND
    LCBOS.BUS_OBJ_CD = BO.LIFE_CYCLE_BO_CD AND
    LCBOS.BO_STATUS_CD = BOSA.BO_STATUS_CD
/
create synonym SPLUSR.F1_BO_LIFECYCLE_STATUS_MVW for SPLADM.F1_BO_LIFECYCLE_STATUS_MVW;
grant select on F1_BO_LIFECYCLE_STATUS_MVW to FW_DEV;
grant select on F1_BO_LIFECYCLE_STATUS_MVW to SPL_USER;
grant select on F1_BO_LIFECYCLE_STATUS_MVW to SPL_READ;
```

For more information, refer to the following documents:

- Basic Query Rewrite (Oracle 11g) - [https://docs.oracle.com/cd/B28359_01/server.111/b28313/qrbasic.htm](https://docs.oracle.com/cd/B28359_01/server.111/b28313/qrbasic.htm)
- Basic Query Rewrite for Materialized Views (Oracle 12c) - [https://docs.oracle.com/database/121/DWHSG/qrbasic.htm#DWHSG01813](https://docs.oracle.com/database/121/DWHSG/qrbasic.htm#DWHSG01813)
- Troubleshooting Materialized Views - [http://docs.oracle.com/database/121/ARPLS/d_mview.htm#ARPLS67193](http://docs.oracle.com/database/121/ARPLS/d_mview.htm#ARPLS67193)
- Debugging materialized Views - [http://docs.oracle.com/cd/B28359_01/server.111/b28313/qradv.htm](http://docs.oracle.com/cd/B28359_01/server.111/b28313/qradv.htm)

**Known Issues**

The following are some of the known issues at the time of release. For more information, refer to these articles on My Oracle Support:

- Query Did Not Rewrite For A User Other Than The Owner Of the Materialized View (Doc ID 1594725.1) - A patch is available for bug report 14772096 for some platforms.
- Query rewrite not working as expected with SELECT DISTINCT (Doc ID 766113.8) for Oracle version – 11.2.0.1 and 11.1.0.7 Fixed in version - 12.1.0.1 (Base Release), 11.2.0.2 (Server Patch Set)
This section describes the following database conversion tools:

- Database Configuration
- Script Installation
- Preparing the Production Database
- Preparing the Staging Database

**Note:** All database related single fixes and service packs need to be applied against the production schema. Staging schema should not be updated with database single fixes or service packs. Staging schema need to be rebuilt for any fixes that contain DDL to create new database objects in production schema.

**Database Configuration**

The Conversion Tool Kit requires at least two sets of schema. One is to hold the staging data that the conversion tool gets the data from and performs validations. We call this schema the staging database. The target schema, which is referred to as the production database, is where the conversion tool inserts the validated data. Both the production database and the staging databases can reside in a single Oracle database or in different databases that are connected via a database link. Only the single database configuration is supported.
The following schematic diagram shows a sample configuration of both the production and staging environments in which the Conversion Tool Kit operates. The production and staging databases must be the same release level.

All the tables and views for the application are defined in the production database. The staging database has the same set of tables and views as the production database, except the tables that are grouped as part of the business configuration (control tables). Details on the differences of the tables of the two databases and of the conversion tool functionality are found in the Conversion Tool document.

**Script Installation**

The Conversion Setup Utility, ConvSetup.exe, is provided in this release of Oracle Utilities Customer Care and Billing to set up conversion schemas.

Install the Oracle Client 12.1.0.2(+) on Windows desktop and configure SQLNet to connect to the target database.

The Conversion folder contains the conversion setup utility: ConvSetup.exe and Conversion.bat.

This section of the document describes how to create the databases for the conversion tool kit.
Preparing the Production Database

If the production database does not exist create the database under the production schema owner (CISADM).

If the production database is upgraded from the previous version of the application make sure all public synonyms that are created on the application tables are deleted. Instead, each application user should have private synonyms created on the application tables in order for the conversion tool configuration to work.

Preparing the Staging Database

Once you have created a staging owner (STGADM), application user (STGUSER) and read access user (STGREAD), install the initial database option in the staging schema. The rest of the steps are listed below.

Run ConvSetup.exe from under the Conversion folder. The script prompts you for the following values:

- Database Platform: Oracle (O)
- Database connection information
- Database Name
- System Password
- Production Schema Name
- Staging Schema Name
- Read-Write user for Staging Schema.

ConvSetup.exe performs following tasks:

- Creates cx* views on the master/transaction tables in the production database.
- Grants the privileges on the master/transaction tables in the production database to the staging owner.
- Drops control tables and creates views on production control tables in the staging database.
- Grants privileges on the control tables to the staging owner.
- Grants privileges on the cx* views to the staging application user.
- Creates generated key tables.
- Creates generated table primary key and secondary indexes.

In addition to above tasks ConvSetup.exe also generates the following SQL scripts:

- create_cxviews.sql
- create_ctlviews.sql
- createck_tbls.sql
- create_grants.sql
- createck_pkix.sql
• createck_secix.sql

By default the conversion.bat updates all changes to the staging schema. If you want to generate only the above sql scripts and not apply changes to staging schema then update conversion.bat by removing “-u”. The sql scripts can be applied to the staging schema later. The sql scripts need to be executed in the same order as described above using SQL*PLUS.

Once the staging schema has been set up, generate the security for the staging user using:

oragensec.exe -d stgadm,schemapassword,database_name -r
              stg_read,stg_user -u stguser
Oracle Utilities Customer Care and Billing provides support for Information Lifecycle Management (ILM) and Data Archiving.

ILM is a process to address data management issues, with a combination of processes, policies, software and hardware so that the appropriate technology can be used for each phase of the lifecycle of the data. The lifecycle of data typically refers to the fact that the most recent data is active in the system and as time passes the data is accessed less frequently or not at all. The costs of storing data that are accessed infrequently can be reduced by moving the data to lower cost mass storage media. Typically this involves a trade-off between cost and increased access times. Based on business needs, data may eventually be archived and purged from the database and kept offline ready to be restored if required.

This chapter includes:

- ILM Implementation Overview
- ILM Implementation Components
- ILM Database Administrator’s Tasks
ILM Implementation Overview

The implementation of ILM for products based on Oracle Utilities Application Framework includes a combination of application and database configuration and requires Oracle Partitioning.

An underlying design principle of the Oracle Utilities Application Framework ILM implementation is the concept that the age of the data may not the only criterion used to determine when a record is able to be archived. There may be business rules that dictate that some records are still current and must not be archived yet.

ILM enabled objects have a combination of an ILM date and an ILM Archive Switch. The ILM date is used in conjunction with partitioning to group data by age. The ILM Archive Switch is set by a background process when the record meets the business rules specific to that Maintenance Object if the record is eligible to be archived. The ILM Archive Switch gives Database Administrators an easy method to check when all records in a partition meet the business criteria that make the partition eligible to be archived. If the ILM Archive Switch is set for all records, then the DBA can take the steps required to archive the partition.

Moving data between storage tiers takes advantage of the partitioning by ILM Date but does not require that the ILM Archive Switch is set. Oracle recommends using the Oracle Database ILM Assistant to assist with this process.

ILM Implementation Components

The ILM based solution contains a number of components.

- **ILM Specific Table Columns** - For any Maintenance Object (MO) that has been configured to support ILM, the primary table of the MO includes two columns: ILM Date and ILM Archive Switch.
  - **ILM_DT** - This date column is defaulted to an appropriate date (typically the system date) when a new record is inserted, the MO is partitioned on the ILM_DT, so it should only be updated in exceptional circumstances as this would cause the record to be deleted from its current partition and inserted into a different partition, which is a relatively expensive operation.
  - **ILM_ARCHIVE_SW** - This field is set to N (Not yet eligible for archiving) when a new record is inserted. Subsequent reviews of "old" records may assess the data and change the value to "Y" based on business rules indicating that the record is eligible to be archived.
- **Database Referential Integrity Constraints** - These are required for reference partitioning of Child tables of ILM enabled MOs
- **Partitioning** - Partitioning is mandatory for ILM implementation. It is used to separate the data by ILM date so that data of a similar age is kept together.
- **One Tablespace per Partition** - The ILM implementation requires that each MO partition resides in a dedicated tablespace so that they can be easily managed.
- **Naming Convention** - This section covers the recommended naming convention to be used for partitions/subpartitions and tablespaces.
ILM Database Administrator’s Tasks

For a database administrator, there are two key phases involved with managing your data using ILM.

- **Preparation Phase** - This phase covers the database level configuration that needs to be done before the ILM solution runs in a production environment.
- **Business FlagOn-going Maintenance Phase** - This phase covers the ongoing maintenance tasks such as add partition, archive and restore partitions.

**Preparation Phase**

**Note:** In order to successfully implement ILM as described here, the following DB Version and Patch are pre-requisites: version 12.1.0.2.0 and Patch 15996848.

The steps needed to enable ILM functionality differ depending on whether ILM is enabled as part of the initial implementation of the product or enabled ILM on an existing implementation where data already exists in the respective tables.

- **Initial Install** – For an initial installation, the section Module Specific ILM Implementation Details outlines the additional steps to be performed on base delivered ILM Enabled Tables to conform to ILM requirements. In addition, Appendix A: Sample SQL for Enabling ILM in CCB (Initial Install) provides sample reference DDLs using two maintenance objects as examples.

- **Transform NON-ILM implementation to ILM Enabled Implementation:**
  
  The following steps provide a high level overview of steps that must be performed to implement ILM on enabled MOs for an existing implementation. Please refer to Appendix B: Sample SQL For Enabling ILM in CCB (Existing Installation) for detailed information using To Do Entry as an example.

  1. Rename the existing tables (Parent table followed by child table(s)), and primary key index associated with ILM enabled MOs by renaming the tables.
  2. Save the DDLs for the secondary indexes as you will need to recreate them later.
  3. Drop secondary indexes on the renamed tables.
  4. Create Partitioned table with no secondary indexes for ILM enabled MOs using a CTAS operation (Create Table as Select), which will also load the data into the partitioned table structure.

  **Functional Note:** ILM enabled MOs should have the ILM date (ILM_DT) populated when data is moved into the new partitioned table. Please refer to the Module Specific ILM Implementation Details section below for initial load details on which date column to use as the basis for populating the ILM date. Often it is based on Create Date (CRE_DTTM). ILM_ARCH_SW should initially be set to ‘N’.

  5. Enable logging option.
  6. Create Primary Key index.
  7. Create Primary Key Constraint of parent table.
  8. Create secondary indexes for the newly-created partitioned tables. This includes creating an index used specifically to benefit the ILM Crawler batch. The recommendation for this index name is to prefix it with "ILM".
On-going Maintenance Phase

The following steps provide a high level overview of what needs to be done for on-going maintenance for ILM on enabled MOs.

Please refer to the Appendix C: Sample SQL for Periodic Maintenance for detailed information using two maintenance objects as examples.

1. Add the partition:
   a. Create Tablespace to be used for the new parent table partition.
   b. Since, we define MAXVALUE Partition; new partition can only be created using “SPLIT” operation. Identify and use next HIGH_VALUE Partition for the split operation.
   c. All the child table(s) partition(s)\LOB(s) must be altered to use the same tablespace as that of the parent table’s partition.
   d. Enable advanced compression on all child table(s).
   e. Copy partition level statistics from the previous partition

2. Archive the partition:
   a. Make the tablespace that will be archived READ ONLY.
   b. Check that no records have ILM_ARCH_SW = ‘N’.
      - If record count is zero, proceed with further steps.
      - If record count is not zero, then change the tablespace back to READ WRITE MODE as Archive is not Feasible at the time.
   c. Create an archive tablespace for the partition that needs to be archived.
   d. Create staging tables using the new archive tablespace. Load data for all child tables first.
   e. Create staging table using the new archive tablespace and load data for the parent table.
   f. Export tablespace using TRANSPORT_TABLESPACES method.
      Make Sure Tablespace datafile required for further import is preserved.
   g. Drop the partition, partition the tablespace and archive the tablespace (as it is already exported).
3. Restore the partition:
   a. Create a new tablespace to restore the partition.
   b. Add partition using split operation on next greater high value partition.
   
      If the table contains LOBS, there will be an additional statement in split partition DDL indicating tablespace where the LOBs will be stored.
   
      c. Enable advanced compression on all child table(s).
   d. Import Tablespace using TRANSFORM_TABLESPACES method.
   e. Load data into the parent table first from the staging table
   f. Load data into the child table from the staging table
   g. Drop the archive tablespace after import and data loading is successful.

4. Move Data between different storage tiers:

   The ILM facilities can be used within the database to implement storage savings, as follows:
   
   • Use ILM Assistant to define the data groups to be used for the individual objects. Assign those data groups to partitions and storage devices to implement the storage savings.
   • Use ILM assistant to generate the necessary commands to implement the data changes manually or use Automatic Storage Management (ASM) to automate the data storage policies.
   • Optionally, use Automatic Data Optimization to provide further optimizations.

   For more information about ILM Assistant and ILM refer to the following:
   
   • ILM Assistant Users Guide available at:
   http://download.oracle.com/otn/other/ilm/ilma-users-guide.html
   • Oracle Database VLDB and Partitioning Guide (11.2) available at:
   http://docs.oracle.com/cd/E11882_01/server.112/e25523/part_lifecycle.htm#CACECAFB
   • Oracle Database VLDB and Partitioning Guide (12.1) available at:
   https://docs.oracle.com/database/121/VLDBG/title.htm

**ILM Assistant**

The ILM Assistant in the current 11g database implementation can provide the following

• Setup ILM Lifecycle definition - Here you can define different lifecycle definitions for different MOs and say that after what period of time the data is ready to be moved to a slower disk.

• Setup ILM Lifecycle tables - Here you define the tables you want to manage and assign it to a Lifecycle definition defined above. You can setup policies for when data is moved it can be automatically compressed to desired degree.

• Lifecycle Management - There is a tab called Lifecycle Management where the system admin will be alerted for when the partitions are eligible for archiving.
ILM Assistant can then be used with the ILM to make sure the records that have ILM_ARCH_SW = 'Y' can be moved to slower and slower disks and possibly get purged.

**Note:** For further guidelines on ILM Assistant refer to Implementing Information Lifecycle Management Using the ILM Assistant available at: [http://www.oracle.com/webfolder/technetwork/tutorials/obe/db/11g/r2/prod/storage/ilm/ilm.htm?cid=4196&ssid=115606280996764](http://www.oracle.com/webfolder/technetwork/tutorials/obe/db/11g/r2/prod/storage/ilm/ilm.htm?cid=4196&ssid=115606280996764)

**Naming Convention**

The naming convention for tablespace, partitions & subpartition is standardized as follows:

- Each name consists of some or all of the following parts
- The parts of the name are organized hierarchically
- Each part of the Name is separated with an underscore.
- The maximum name length must not exceed 30 Characters.
- For an MO, the parent table and child table share the same tablespace for the corresponding partition (or sub partition as appropriate).
- Square brackets [ ] indicate that this part of the name should be omitted if not required.

OWNERFLAG_TABLEIDENTIFIER_PARTITIONNAME[_SUBPARTITIONNAME][_ARCHIVEFLAG][_COMPRESSFLAG]

For details on the convention, please refer to the table below:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWNERFLAG</td>
<td>Owner flag for the relevant application for example “C1” for CCB</td>
</tr>
<tr>
<td>Convention</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TABLE IDENTIFIER</td>
<td>The Index Name of the Primary Key index without the “P0” suffix. For example, if the PK index name is XT039P0, the table identifier would be “XT039”.</td>
</tr>
<tr>
<td>PARTITION NAME</td>
<td>The Partition name should be prefixed with a P followed by a name which conforms to one of the following standards:</td>
</tr>
<tr>
<td></td>
<td>• 4 digit year and 3 letter month abbreviation PYYYYMON corresponding to the ILM date e.g. P2017JAN</td>
</tr>
<tr>
<td></td>
<td>• PMAX if it is the Max Value partition</td>
</tr>
<tr>
<td>SUBPARTITION NAME</td>
<td>If subpartitions are used, name should be prefixed with S followed by a name of not more than 5 characters which conforms to the following requirements:</td>
</tr>
<tr>
<td></td>
<td>• SMAX if this is the Max Value sub partition</td>
</tr>
<tr>
<td></td>
<td>• If the sub partition holds data for a sub retention period use a number equal to that period e.g S91 if the sub retention period &lt; 91 days.</td>
</tr>
<tr>
<td></td>
<td>• For a range based SubPartition on Primary Key, use an integral number increasing by +1. For example, if there are 8 sub partitions use S01 through S08</td>
</tr>
<tr>
<td>ARCHIVEFLAG</td>
<td>This flag is used as a suffix to the table and tablespace name for the staging tables created for the archiving operation.</td>
</tr>
<tr>
<td></td>
<td>• ARC</td>
</tr>
<tr>
<td>Convention</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>COMPRESS FLAG</td>
<td>This flag is used as a suffix to the tablespace name for the staging tables created when compressing a partition.</td>
</tr>
<tr>
<td></td>
<td>• <strong>C</strong></td>
</tr>
<tr>
<td></td>
<td>For compression related tasks, this is used as suffix to the tablespace name.</td>
</tr>
<tr>
<td></td>
<td>• Partition Tablespace Name: It is formed by OWNERFLAG_TABLEIDENTIFIER_PARTITIONNAME.</td>
</tr>
<tr>
<td></td>
<td>For example:</td>
</tr>
<tr>
<td></td>
<td>CM_D1T304_PMAX</td>
</tr>
<tr>
<td></td>
<td>CM_D1T304_P2017JAN</td>
</tr>
<tr>
<td></td>
<td>• SubPartition Tablespace Name: It is formed by OWNERFLAG_TABLEIDENTIFIER_PARTITIONNAME_SUBPARTITIONNAME.</td>
</tr>
<tr>
<td></td>
<td>For example:</td>
</tr>
<tr>
<td></td>
<td>CM_D1T304_PMAX_SMAX</td>
</tr>
<tr>
<td></td>
<td>CM_D1T304_P2017JAN_SMAX</td>
</tr>
<tr>
<td></td>
<td>CM_D1T304_PMAX_S001</td>
</tr>
<tr>
<td></td>
<td>CM_D1T304_P2017JAN_S181</td>
</tr>
<tr>
<td></td>
<td>• Archive Staging Table And Its Tablespace Name (When archiving partition): It is formed by OWNERFLAG_TABLEIDENTIFIER_PARTITIONNAME_ARCHIVEFLAG.</td>
</tr>
<tr>
<td></td>
<td>For example:</td>
</tr>
<tr>
<td></td>
<td>CM_D1T304_P2017JAN_ARC</td>
</tr>
<tr>
<td></td>
<td>• Archive Staging Table And Its Tablespace Name (When archiving subpartition): It is formed by OWNERFLAG_TABLEIDENTIFIER_PARTITIONNAME_SUBPARTITIONNAME_ARCHIVEFLAG.</td>
</tr>
<tr>
<td></td>
<td>For example:</td>
</tr>
<tr>
<td></td>
<td>CM_D1T304_P2017JAN_S181_ARC</td>
</tr>
<tr>
<td></td>
<td>• Compressed Tablespace name (When compressing partition):</td>
</tr>
<tr>
<td></td>
<td>For example:</td>
</tr>
<tr>
<td></td>
<td>CM_D1T304_P2017JAN_C</td>
</tr>
</tbody>
</table>
**Module Specific ILM Implementation Details**

This section outlines each maintenance object that has been configured to support ILM. The parent table is noted. Other tables are child tables of the parent unless otherwise noted. In each case, the partitioning strategy is indicated.

All indexes are listed with a recommendation whether the index should be global or local and whether the index should be partitioned. In addition to the base delivered indexes, each parent table includes a recommended ILM specific local index to build with the ILM_DT, ILM_ARCH_SW and the primary key of the table. The recommended column that should be used to populate the ILM_DT is also shown. Please refer to Appendix B: Sample SQL For Enabling ILM in CCB (Existing Installation) for sample DDL(s).

**To Do Entry**

This table describes the To Do Entry maintenance object.

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Table Partitioning Type (Partitioning, Sub-Partitioning Key)</th>
<th>Index Name</th>
<th>Index Columns</th>
<th>Index Type Global or Local</th>
<th>Index Partitioning Sub-Partitioning Key</th>
<th>ILM_DT Initial Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI_TD_ENTRY (Parent)</td>
<td>RANGE (ILM_DT, TD_ENTRY_ID)</td>
<td>XT039P0</td>
<td>TD_ENTRY_ID</td>
<td>Global</td>
<td>Partitioned</td>
<td>RANGE (TD_ENTRY_ID)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>XT039S2</td>
<td>ASSIGNED_TO, TD_ENTRY_ID</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XT039S3</td>
<td>ENTRY_STATUS_FLG, ASSIGNED_TO</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XT039S4</td>
<td>ROLE_ID, TD_TYPE_CD, ENTRY_STATUS_FLG, TD_PRIORITY_FLG</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XT039S5</td>
<td>BATCH_CD, BATCH_NBR, ENTRY_STATUS_FLG</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XT039S6</td>
<td>TD_ENTRY_ID, ASSIGNED_TO, ENTRY_STATUS_FLG</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XT039S7</td>
<td>COMPLETE_USER_ID, COMPLETE_DTTM, TD_ENTRY_ID</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CM_ILM_</td>
<td>ILM_DT, ILM_ARCH_SW, TD_ENTRY_ID</td>
<td>XT039S8</td>
<td>Reference</td>
<td>Local</td>
<td>Partitioned</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XT701P0</td>
<td>TD_ENTRY_ID, CHAR_TYPE_CD, SEQ_NUM</td>
<td>Global</td>
<td>Partitioned</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XT701S1</td>
<td>SRCH_CHAR_VAL, CHAR_TYPE_CD, TD_ENTRY_ID</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XT701S2</td>
<td>CHAR_VAL_FK1</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This table describes the Sync Request (Outbound) maintenance object.

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Table Partitioning Type (Partitioning, Sub-Partitioning Key)</th>
<th>Index Name</th>
<th>Index Columns</th>
<th>Index Type Global or Local</th>
<th>Index Partitioning Sub-Partitioning Key</th>
<th>ILM_DT Initial Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1_SYNC_REQ</td>
<td>RANGE (ILM_DT, F1_SYNC_REQ_ID)</td>
<td>FIT014P0</td>
<td>F1_SYNC_REQ_ID</td>
<td>Global</td>
<td>RANGE (F1_SYNC_REQ_ID)</td>
<td>F1_SYNC_REQ.CRE_DTTM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FIT014S1</td>
<td>BO_STATUS_CD, BUS_OBJ_CD, F1_SYNC_REQ_ID</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>FIT014S2</td>
<td>BO_STATUS_REASON_CD</td>
<td>Global</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table Name</td>
<td>Table Partitioning Type (Partitioning, Sub-Partitioning Key)</td>
<td>Index Name</td>
<td>Index Columns</td>
<td>Index Type Global or Local</td>
<td>Index Partitioning Sub-Partitioning Key</td>
<td>ILM_DT Initial Load</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------------------------</td>
<td>----------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>FIT014S3</td>
<td></td>
<td>MAINT_OBJ_CD, PK_VALUE1, PK_VALUE2, F1_SYNC_REQ_ID</td>
<td></td>
<td></td>
<td></td>
<td>Global</td>
</tr>
<tr>
<td>CM_ILM_FIT014S4</td>
<td></td>
<td>ILM_DT, ILM_ARC_SW, F1_SYNC_REQ_ID</td>
<td></td>
<td></td>
<td></td>
<td>Local Partitioned</td>
</tr>
<tr>
<td>F1_SYNC_REQ_CHAR</td>
<td>Reference Partitioning</td>
<td>FIT017P0</td>
<td>F1_SYNC_REQ_ID, CHAR_TYPE_CD, SEQ_NUM</td>
<td>Global</td>
<td>Partitioned</td>
<td></td>
</tr>
<tr>
<td>FIT017S1</td>
<td></td>
<td>SRCH_CHAR_VAL</td>
<td></td>
<td></td>
<td></td>
<td>Global</td>
</tr>
<tr>
<td>F1_SYNC_REQ_EXTRACT</td>
<td>Reference Partitioning</td>
<td>FIT019P0</td>
<td>F1_SYNC_REQ_ID, SEQ_NUM</td>
<td>Global</td>
<td>Partitioned</td>
<td></td>
</tr>
<tr>
<td>F1_SYNC_REQ_LOG</td>
<td>Reference Partitioning</td>
<td>FIT015P0</td>
<td>F1_SYNC_REQ_ID, SEQNO</td>
<td>Global</td>
<td>Partitioned</td>
<td></td>
</tr>
<tr>
<td>FIT015S1</td>
<td></td>
<td>CHAR_TYPE_CD, CHAR_VAL_FK1</td>
<td></td>
<td></td>
<td></td>
<td>Global</td>
</tr>
<tr>
<td>FIT015S2</td>
<td></td>
<td>CHAR_TYPE_CD, CHAR_VAL</td>
<td></td>
<td></td>
<td></td>
<td>Global</td>
</tr>
<tr>
<td>FIT015S3</td>
<td></td>
<td>BO_STATUS_REASON_CD</td>
<td></td>
<td></td>
<td></td>
<td>Global</td>
</tr>
<tr>
<td>F1_SYNC_REQ_LOG_PARM</td>
<td>Reference Partitioning</td>
<td>FIT016P0</td>
<td>F1_SYNC_REQ_ID, SEQNO, PARM_SEQ</td>
<td>Global</td>
<td>Partitioned</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** It is recommended that data retention policies and rules for this object match the policies and rules implemented for the Inbound Sync Request on the target system to avoid data inconsistencies when auditing.
# Inbound Sync Request

This table describes the Inbound Sync Request maintenance object.

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Table Partitioning Type (Partitioning, Sub-Partitioning Key)</th>
<th>Index Name</th>
<th>Index Columns</th>
<th>Index Type Global or Local</th>
<th>Index Partitioning Sub-Partitioning Key</th>
<th>ILM_DT Initial Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1_SYNC_REQ_IN (Parent)</td>
<td>RANGE/ILM_DT, F1_SYNC_REQ_IN_ID</td>
<td>FIT191P0</td>
<td>F1_SYNC_REQ_IN_ID</td>
<td>Global</td>
<td>Partitioned</td>
<td>F1_SYNC_REQ_IN.CRE_DTTM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FIT191S1</td>
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### Outbound Message

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<td>F1_OUTMSG_ERRPARAM</td>
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## Service Task

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Note: This maintenance object is enabled for ILM, however it is not used in a production environment. It is typically used in a development or configuration environment. Your implementation should review its use of this functionality and consider whether or not it is a candidate for ILM and in which region.

### Adjustment

This table describes the Adjustment maintenance object.

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### Naming Convention

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**Bill**

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### Bill Segment

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Information Lifecycle Management and Data Archiving in CCB 6 - 35
Oracle Utilities Customer Care and Billing Database Administrator's Guide
## Customer Relationship Request

This table describes the Customer Relationship Request maintenance object.

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<th>Index Type Global or Local</th>
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<td>XT062S1</td>
<td>SA_ID, WO_SA_STATUS_FLG</td>
<td>Global</td>
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### General Audit

This table describes the General Audit maintenance object.

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Table Partitioning Type (Partitioning, Sub-Partitioning Key)</th>
<th>Index Name</th>
<th>Index Columns</th>
<th>Index Type</th>
<th>Local or Global</th>
<th>ILM_DT Initial Load</th>
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<tr>
<td>F1_GNRL_GNRL_AUDIT</td>
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<td>AUDIT_ID</td>
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<td>F1T901S1</td>
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<td>Global</td>
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<tr>
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<td></td>
<td>F1T901S1</td>
<td>AUDIT_ID, USER_ID, CRE_DTTM</td>
<td>Global</td>
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<tr>
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<td>RANGE(ILM_DT, ILM_ARCH_SW, AUDIT_ID)</td>
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<td>AUDIT_ID, FLD_NAME</td>
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<td>Partitioned</td>
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<td>F1T902S1</td>
<td>FLD_ID, FLD_VAL</td>
<td>Global</td>
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</tbody>
</table>
This section provides more detail about steps needed to fully support ILM on tables for maintenance objects that support the functionality. Two maintenance objects are shown:

- **To Do Entry**, which does not include a LOB field.
- **Sync Request**, which does include a LOB field.

Other maintenance object's implementations can follow the appropriate pattern based on whether there is a LOB field or not.

The following DDL(s):

- Follow Naming convention recommendations for partitions\subpartitions\tablespaces.
- Ensure all the ILM Storage requirements are incorporated, failing which, ILM functionality will not be achieved.
  - Partitions are defined with respective Tablespace.
  - Child Tables are referenced partitioned.
- Ensure all compression recommendations are incorporated.

### Maintenance Object: TO DO ENTRY

**Parent Table: CI_TD_ENTRY**

```sql
CREATE BIGFILE TABLESPACE CM_XT039_P2017JAN DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017FEB DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017MAR DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017APR DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
```
CREATE BIGFILE TABLESPACE CM_XT039_P2017MAY DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017JUN DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017JUL DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017AUG DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017SEP DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017OCT DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017NOV DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_P2017DEC DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_XT039_PMAX DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;

CREATE TABLE CI_TD_ENTRY (
    TD_ENTRY_ID CHAR(14) NOT NULL ENABLE,
    BATCH_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
    BATCH_NBR NUMBER(10,0) DEFAULT 0 NOT NULL ENABLE,
    MESSAGE_CAT_NBR NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
    MESSAGE_NBR NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
    ASSIGNED_TO CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
    TD_TYPE_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
    ROLE_ID CHAR(10) DEFAULT ' ' NOT NULL ENABLE,
    ENTRY_STATUS_FLG CHAR(2) DEFAULT ' ' NOT NULL ENABLE,
    VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
    CRE_DTTM DATE,
    ASSIGNED_DTTM DATE,
    COMPLETE_DTTM DATE,
    COMPLETE_USER_ID CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
    COMMENTS VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
    ASSIGNED_USER_ID CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
    TD_PRIORITY_FLG CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
    ILM_DT DATE,
    ILM_ARCH_SW CHAR(1)
) WITH Organizer (CRE_DTTM,ASSIGNED_DTTM,COMPLETE_DTTM,COMPLETE_USER_ID,ASSIGNED_USER_ID,TD_PRIORITY_FLG)
ENABLE ROW MOVEMENT
PARTITION BY RANGE (ILM_DT)
SUBPARTITION BY RANGE (TD_ENTRY_ID) SUBPARTITION TEMPLATE
{
    SUBPARTITION S01 VALUES LESS THAN ( '124999999999' ),
    SUBPARTITION S02 VALUES LESS THAN ( '249999999999' ),
    SUBPARTITION S03 VALUES LESS THAN ( '374999999999' ),
    SUBPARTITION S04 VALUES LESS THAN ( '499999999999' ),
    SUBPARTITION S05 VALUES LESS THAN ( '624999999999' ),
    SUBPARTITION S06 VALUES LESS THAN ( '749999999999' ),
    SUBPARTITION S07 VALUES LESS THAN ( '874999999999' ),
    SUBPARTITION SMAX VALUES LESS THAN ( MAXVALUE )
}
;
Sample SQL for Enabling ILM in CCB (Initial Install)

```sql
PARTITION "P2017JAN" VALUES LESS THAN (TO_DATE('2017-02-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017JAN,
PARTITION "P2017FEB" VALUES LESS THAN (TO_DATE('2017-03-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017FEB,
PARTITION "P2017MAR" VALUES LESS THAN (TO_DATE('2017-04-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017MAR,
PARTITION "P2017APR" VALUES LESS THAN (TO_DATE('2017-05-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017APR,
PARTITION "P2017MAY" VALUES LESS THAN (TO_DATE('2017-06-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017MAY,
PARTITION "P2017JUN" VALUES LESS THAN (TO_DATE('2017-07-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017JUN,
PARTITION "P2017JUL" VALUES LESS THAN (TO_DATE('2017-08-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017JUL,
PARTITION "P2017AUG" VALUES LESS THAN (TO_DATE('2017-09-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017AUG,
PARTITION "P2017SEP" VALUES LESS THAN (TO_DATE('2017-10-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017SEP,
PARTITION "P2017OCT" VALUES LESS THAN (TO_DATE('2017-11-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017OCT,
PARTITION "P2017NOV" VALUES LESS THAN (TO_DATE('2017-12-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017NOV,
PARTITION "P2017DEC" VALUES LESS THAN (TO_DATE('2018-01-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017DEC,
PARTITION "PMAX" VALUES LESS THAN (MAXVALUE)
tablespace CM_XT039_PMAX
);

INDEX
CREATE BIGFILE TABLESPACE CM_XT039_IND DATAFILE '+DATADG' SIZE 50M
AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;

CREATE UNIQUE INDEX XT039P0 ON CI_TD_ENTRY (TD_ENTRY_ID) TABLESPACE CM_XT039_IND
GLOBAL PARTITION BY RANGE (TD_ENTRY_ID)
{
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
};

ALTER TABLE CI_TD_ENTRY ADD CONSTRAINT XT039P0 PRIMARY
KEY(TD_ENTRY_ID) USING INDEX;
```
CREATE UNIQUE INDEX XT039S2 ON CI_TD_ENTRY (ASSIGNED_TO, TD_ENTRY_ID) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE INDEX XT039S3 ON CI_TD_ENTRY (ENTRY_STATUS_FLG, ASSIGNED_TO) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE INDEX XT039S4 ON CI_TD_ENTRY (ROLE_ID, TD_TYPE_CD, ENTRY_STATUS_FLG, CM_PRIORITY_FLG) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE INDEX XT039S5 ON CI_TD_ENTRY (BATCH_CD, BATCH_NBR, ENTRY_STATUS_FLG) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE UNIQUE INDEX XT039S6 ON CI_TD_ENTRY (TD_ENTRY_ID, ASSIGNED_TO, ENTRY_STATUS_FLG) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE UNIQUE INDEX XT039S7 ON CI_TD_ENTRY (COMPLETE_USER_ID, COMPLETE_DTTM, TD_ENTRY_ID) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE UNIQUE INDEX ILM_XT039S8 ON CI_TD_ENTRY (ILM_DT, ILM_ARCH_SW, TD_ENTRY_ID) LOCAL COMPRESS ADVANCED LOW;

CREATE UNIQUE INDEX XT039S2 ON CI_TD_ENTRY (ASSIGNED_TO, TD_ENTRY_ID) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE INDEX XT039S3 ON CI_TD_ENTRY (ENTRY_STATUS_FLG, ASSIGNED_TO) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE INDEX XT039S4 ON CI_TD_ENTRY (ROLE_ID, TD_TYPE_CD, ENTRY_STATUS_FLG, CM_PRIORITY_FLG) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE INDEX XT039S5 ON CI_TD_ENTRY (BATCH_CD, BATCH_NBR, ENTRY_STATUS_FLG) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE UNIQUE INDEX XT039S6 ON CI_TD_ENTRY (TD_ENTRY_ID, ASSIGNED_TO, ENTRY_STATUS_FLG) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE UNIQUE INDEX XT039S7 ON CI_TD_ENTRY (COMPLETE_USER_ID, COMPLETE_DTTM, TD_ENTRY_ID) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE UNIQUE INDEX ILM_XT039S8 ON CI_TD_ENTRY (ILM_DT, ILM_ARCH_SW, TD_ENTRY_ID) LOCAL COMPRESS ADVANCED LOW;

Child Table: CI_TD_DRLKEY

CREATE TABLE CI_TD_DRLKEY
(
TD_ENTRY_ID CHAR(14) NOT NULL ENABLE,
SEQ_NUM NUMBER(3,0) NOT NULL ENABLE,
KEY_VALUE VARCHAR2(50) DEFAULT '' NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CONSTRAINT CI_TD_DRLKEY_FK FOREIGN KEY(TD_ENTRY_ID) REFERENCES CI_TD_ENTRY ON DELETE CASCADE
) PARTITION BY REFERENCE (CI_TD_DRLKEY_FK)
ENABLE ROW MOVEMENT;

INDEX

CREATE UNIQUE INDEX XT037P0 ON CI_TD_DRLKEY (TD_ENTRY_ID, SEQ_NUM) TABLESPACE CM_XT039_IND
GLOBAL PARTITION BY RANGE (TD_ENTRY_ID)
(
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
) COMPRESS ADVANCED LOW;

ALTER TABLE CI_TD_DRLKEY ADD CONSTRAINT XT037P0 PRIMARY KEY(TD_ENTRY_ID, SEQ_NUM) USING INDEX;
CREATE INDEX XT037S1 ON CI_TD_DRLKEY ( KEY_VALUE, TD_ENTRY_ID )
TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE TABLE CI_TD_ENTRY_CHA
(
  TD_ENTRY_ID   CHAR(14) NOT NULL ENABLE,
  CHAR_TYPE_CD   CHAR(8) NOT NULL ENABLE,
  SEQ_NUM       NUMBER(3,0) DEFAULT 0 NOT NULL ENABLE,
  CHAR_VAL       CHAR(16) DEFAULT ' ' NOT NULL ENABLE,
  VERSION        NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
  ADHOC_CHAR_VAL VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK1   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK2   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK3   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK4   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK5   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  SRCH_CHAR_VAL  VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  CONSTRAINT CI_TD_ENTRY_CHA_FK FOREIGN KEY(TD_ENTRY_ID) REFERENCES
    CI_TD_ENTRY ON DELETE CASCADE
)
PARTITION BY REFERENCE (CI_TD_ENTRY_CHA_FK)
ENABLE ROW MOVEMENT;

INDEX
CREATE UNIQUE INDEX XT701P0 ON CI_TD_ENTRY_CHA ( TD_ENTRY_ID,
  CHAR_TYPE_CD, SEQ_NUM ) TABLESPACE CM_XT039_IND
GLOBAL PARTITION BY RANGE (TD_ENTRY_ID)
( PARTITION P1 VALUES LESS THAN ( '124999999999' ),
  PARTITION P2 VALUES LESS THAN ( '249999999999' ),
  PARTITION P3 VALUES LESS THAN ( '374999999999' ),
  PARTITION P4 VALUES LESS THAN ( '499999999999' ),
  PARTITION P5 VALUES LESS THAN ( '624999999999' ),
  PARTITION P6 VALUES LESS THAN ( '749999999999' ),
  PARTITION P7 VALUES LESS THAN ( '874999999999' ),
  PARTITION P8 VALUES LESS THAN ( MAXVALUE )
) COMPRESS ADVANCED LOW;

ALTER TABLE CI_TD_ENTRY_CHA ADD CONSTRAINT XT701P0 PRIMARY
KEY(TD_ENTRY_ID, CHAR_TYPE_CD, SEQ_NUM) USING INDEX;

CREATE INDEX XT701S1 ON CI_TD_ENTRY_CHA ( SRCH_CHAR_VAL, CHAR_TYPE_CD,
  TD_ENTRY_ID ) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

CREATE TABLE CI_TD_LOG
(
  TD_ENTRY_ID CHAR(14) NOT NULL ENABLE,
  SEQ_NUM    NUMBER(3,0) NOT NULL ENABLE,
  LOG_DTTM DATE NOT NULL ENABLE,
  LOG_TYPE_FLG CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
ALTER TABLE CI_TD_LOG ADD CONSTRAINT XT721P0 PRIMARY KEY(TD_ENTRY_ID, SEQ_NUM) USING INDEX;

CREATE INDEX XT721S1 ON CI_TD_LOG (LOG_DTTM, USER_ID, LOG_TYPE_FLG, TD_ENTRY_ID) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

Child Table: CI_TD_MSG_PARM

CREATE TABLE CI_TD_MSG_PARM

INDEX

CREATE UNIQUE INDEX XT040P0 ON CI_TD_MSG_PARM (TD_ENTRY_ID, SEQ_NUM) TABLESPACE CM_XT039_IND
GLOBAL PARTITION BY RANGE (TD_ENTRY_ID)

( PARTITION P1 VALUES LESS THAN ( '124999999999' ),
  PARTITION P2 VALUES LESS THAN ( '249999999999' ),
  PARTITION P3 VALUES LESS THAN ( '374999999999' ),
  PARTITION P4 VALUES LESS THAN ( '499999999999' ),
  PARTITION P5 VALUES LESS THAN ( '624999999999' ),
  PARTITION P6 VALUES LESS THAN ( '749999999999' ),
  PARTITION P7 VALUES LESS THAN ( '874999999999' ),
  PARTITION P8 VALUES LESS THAN ( MAXVALUE )
) COMPRESS ADVANCED LOW;

ALTER TABLE CI_TD_MSG_PARM ADD CONSTRAINT XT040P0 PRIMARY KEY(TD_ENTRY_ID, SEQ_NUM) USING INDEX;

CREATE INDEX XT040S1 ON CI_TD_MSG_PARM (LOG_DTTM, USER_ID, LOG_TYPE_FLG, TD_ENTRY_ID) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
)
COMpress ADVANCED LOW;

ALTER TABLE CI_TD_MSG_PARM ADD CONSTRAINT XT040P0 PRIMARY KEY(TD_ENTRY_ID, SEQ_NUM) USING INDEX;

Child Table: CI_TD_SRTKEY

CREATE TABLE CI_TD_SRTKEY
(
TD_ENTRY_ID CHAR(14) NOT NULL ENABLE,
SEQ_NUM NUMBER(3,0) NOT NULL ENABLE,
KEY_VALUE VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CONSTRAINT CI_TD_SRTKEY_FK FOREIGN KEY(TD_ENTRY_ID) REFERENCES CI_TD_ENTRY ON DELETE CASCADE
)
PARTITION BY REFERENCE (CI_TD_SRTKEY_FK)
ENABLE ROW MOVEMENT;

INDEX
CREATE UNIQUE INDEX XT041P0 ON CI_TD_SRTKEY ( TD_ENTRY_ID, SEQ_NUM )
TABLESPACE CM_XT039_IND
GLOBAL PARTITION BY RANGE (TD_ENTRY_ID)
(
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
)
COMpress ADVANCED LOW;

ALTER TABLE CI_TD_SRTKEY ADD CONSTRAINT XT041P0 PRIMARY KEY(TD_ENTRY_ID, SEQ_NUM) USING INDEX;

CREATE INDEX XT041S1 ON CI_TD_SRTKEY ( KEY_VALUE, TD_ENTRY_ID )
TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW;

Maintenance Object: F1-SYNCREQIN

Parent Table: F1_SYNC_REQ_IN

CREATE BIGFILE TABLESPACE CM_F1T191_P2017JAN DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017FEB DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017MAR DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017APR DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017MAY DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017JUN DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017JUL DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017AUG DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017SEP DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017OCT DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017NOV DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_P2017DEC DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;
CREATE BIGFILE TABLESPACE CM_F1T191_PMAX DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;

CREATE TABLE F1_SYNC_REQ_IN
(
    F1_SYNC_REQ_IN_ID CHAR(14) NOT NULL ENABLE,
    BUS_OBJ_CD CHAR(30) DEFAULT ' ' NOT NULL ENABLE,
    CRE_DTTM DATE NOT NULL ENABLE,
    BO_STATUS_CD CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
    STATUS_UPD_DTTM DATE,
    MAINT_OBJ_CD CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
    NT_XID_CD CHAR(30) DEFAULT ' ' NOT NULL ENABLE,
    EXT_PK_VALUE1 VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
    EXT_PK_VALUE2 VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
    EXT_PK_VALUE3 VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
    EXT_PK_VALUE4 VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
    EXT_PK_VALUE5 VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
    PK_VALUE1 VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
    BO_DATA_AREA CLOB,
    PRE_TRN_INIT_BO_DATA_AREA CLOB,
    PRE_TRN_FIN_BO_DATA_AREA CLOB,
    POST_TRN_BO_DATA_AREA CLOB,
    VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
    EXT_REFERENCE_ID CHAR(36) DEFAULT ' ' NOT NULL ENABLE,
    F1_INITIAL_LOAD_SYNC_FLG CHAR(14) DEFAULT ' ' NOT NULL ENABLE,
    F1_COMPOSITE_SYNC_FLG CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
    ILM_DT DATE,
    ILM_ARCH_SW CHAR(1)
)
ENABLE ROW MOVEMENT
LOB (BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE)
LOB (PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE)
LOB (PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE)
LOB (POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE)
PARTITION BY RANGE(ILM_DT)
SUBPARTITION BY RANGE(F1_SYNC_REQ_IN_ID)
SUBPARTITION TEMPLATE
{
  SUBPARTITION S01 VALUES LESS THAN ('124999999999'),
  SUBPARTITION S02 VALUES LESS THAN ('249999999999'),
  SUBPARTITION S03 VALUES LESS THAN ('374999999999'),
  SUBPARTITION S04 VALUES LESS THAN ('499999999999'),
  SUBPARTITION S05 VALUES LESS THAN ('624999999999'),
  SUBPARTITION S06 VALUES LESS THAN ('749999999999'),
  SUBPARTITION S07 VALUES LESS THAN ('874999999999'),
  SUBPARTITION SMAX VALUES LESS THAN (MAXVALUE)
}

PARTITION "P2017JAN" VALUES LESS THAN (TO_DATE('2017-02-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017JAN)
LOB(PRE_TRN_INIT_ BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017JAN)
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017JAN)
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE)
tablespace CM_F1T191_P2017JAN,

PARTITION "P2017FEB" VALUES LESS THAN (TO_DATE('2017-03-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017FEB)
LOB(PRE_TRN_INIT_ BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017FEB)
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017FEB)
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE)
tablespace CM_F1T191_P2017FEB,

PARTITION "P2017MAR" VALUES LESS THAN (TO_DATE('2017-04-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017MAR)
LOB(PRE_TRN_INIT_ BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017MAR)
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017MAR)
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE)
tablespace CM_F1T191_P2017MAR,
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017APR )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017APR )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE
tablespace CM_F1T191_P2017APR ,
PARTITION "P2017MAY" VALUES LESS THAN (TO_DATE('2017-06-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017MAY )
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017MAY )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017MAY )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE
tablespace CM_F1T191_P2017MAY ,
PARTITION "P2017JUN" VALUES LESS THAN (TO_DATE('2017-07-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017JUN )
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017JUN )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017JUN )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE
tablespace CM_F1T191_P2017JUN ,
PARTITION "P2017JUL" VALUES LESS THAN (TO_DATE('2017-08-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017JUL )
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017JUL )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017JUL )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE
tablespace CM_F1T191_P2017JUL ,
PARTITION "P2017AUG" VALUES LESS THAN (TO_DATE('2017-09-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017AUG )
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017AUG )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017AUG )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE
tablespace CM_F1T191_P2017AUG ,
PARTITION "P2017SEP" VALUES LESS THAN (TO_DATE('2017-10-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017SEP )
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017SEP )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017SEP )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017OCT )
tablespace CM_F1T191_P2017OCT,
PARTITION "P2017OCT" VALUES LESS THAN (TO_DATE('2017-11-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017OCT )
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017OCT )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017OCT )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017OCT )
tablespace CM_F1T191_P2017OCT,
PARTITION "P2017NOV" VALUES LESS THAN (TO_DATE('2017-12-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017NOV )
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017NOV )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017NOV )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017NOV )
tablespace CM_F1T191_P2017NOV,
PARTITION "P2017DEC" VALUES LESS THAN (TO_DATE('2018-01-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017DEC )
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017DEC )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017DEC )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_P2017DEC )
tablespace CM_F1T191_P2017DEC,
PARTITION "PMAX" VALUES LESS THAN (MAXVALUE)
LOB(BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_PMAX )
LOB(PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_PMAX )
LOB(PRE_TRN_FIN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_PMAX )
LOB(POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE tablespace CM_F1T191_PMAX )
tablespace CM_F1T191_PMAX )
tablespace CM_F1T191_PMAX )

INDEX
CREATE BIGFILE TABLESPACE CM_F1T191_IND DATAFILE '+DATADG' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;

CREATE UNIQUE INDEX F1T191P0 ON F1_SYNC_REQ_IN(F1_SYNC_REQ_IN_ID) TABLESPACE CM_F1T191_IND
GLOBAL PARTITION BY RANGE (F1_SYNC_REQ_IN_ID)
{
PARTITION P1 VALUES LESS THAN ( '12499999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
Child Table: F1_SYNC_REQ_IN_CHAR

CREATE TABLE F1_SYNC_REQ_IN_CHAR
(
    F1_SYNC_REQ_IN_ID CHAR(14) NOT NULL ENABLE,
    CHAR_TYPE_CD      CHAR(8) NOT NULL ENABLE,
    SEQ_NUM           NUMBER(3,0) NOT NULL ENABLE,
    CHAR_VAL          CHAR(16) DEFAULT ' ' NOT NULL ENABLE,
    ADHOC_CHAR_VAL    VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK1      VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK2      VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK3      VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK4      VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK5      VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    SRCH_CHAR_VAL     VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    VERSION           NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
    CONSTRAINT F1_SYNC_REQ_IN_CHAR_FK FOREIGN KEY(F1_SYNC_REQ_IN_ID)
    REFERENCES F1_SYNC_REQ_IN ON DELETE CASCADE
)
PARTITION BY REFERENCE (F1_SYNC_REQ_IN_CHAR_FK)
ENABLE ROW MOVEMENT;

INDEX

CREATE UNIQUE INDEX F1T193P0 ON F1_SYNC_REQ_IN_CHAR(F1_SYNC_REQ_IN_ID, CHAR_TYPE_CD, SEQ_NUM) TABLESPACE CM_F1T191_IND
GLOBAL PARTITION BY RANGE (F1_SYNC_REQ_IN_ID)
(
    PARTITION P1 VALUES LESS THAN ( '124999999999' ),
    PARTITION P2 VALUES LESS THAN ( '249999999999' ),
    PARTITION P3 VALUES LESS THAN ( '374999999999' ),
    PARTITION P4 VALUES LESS THAN ( '499999999999' ),
    PARTITION P5 VALUES LESS THAN ( '624999999999' ),
    PARTITION P6 VALUES LESS THAN ( '749999999999' ),
    PARTITION P7 VALUES LESS THAN ( '874999999999' ),
    PARTITION P8 VALUES LESS THAN ( MAXVALUE )
)

PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
);
COMPRESS ADVANCED LOW;

ALTER TABLE F1_SYNC_REQ_IN_CHAR ADD CONSTRAINT F1T193P0 PRIMARY KEY (F1_SYNC_REQ_IN_ID, CHAR_TYPE_CD, SEQ_NUM) USING INDEX;

CREATE INDEX F1T193S1 ON F1_SYNC_REQ_IN_CHAR(SRCH_CHAR_VAL) TABLESPACE CM_F1T191_IND;

Child Table: F1_SYNC_REQ_IN_EXCP

CREATE TABLE F1_SYNC_REQ_IN_EXCP
{

    F1_SYNC_REQ_IN_ID CHAR(14) NOT NULL ENABLE,
    SEQNO NUMBER(5,0) NOT NULL ENABLE,
    MESSAGE_CAT_NBR NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
    MESSAGE_NBR NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
    VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
    CONSTRAINT F1_SYNC_REQ_IN_EXCP_FK FOREIGN KEY(F1_SYNC_REQ_IN_ID)
    REFERENCES F1_SYNC_REQ_IN ON DELETE CASCADE
}
PARTITION BY REFERENCE (F1_SYNC_REQ_IN_EXCP_FK)
ENABLE ROW MOVEMENT;

INDEX

CREATE INDEX F1T197P0 ON F1_SYNC_REQ_IN_EXCP (F1_SYNC_REQ_IN_ID,SEQNO) TABLESPACE CM_F1T191_IND
GLOBAL PARTITION BY RANGE (F1_SYNC_REQ_IN_ID)
{
    PARTITION P1 VALUES LESS THAN ( '124999999999' ),
    PARTITION P2 VALUES LESS THAN ( '249999999999' ),
    PARTITION P3 VALUES LESS THAN ( '374999999999' ),
    PARTITION P4 VALUES LESS THAN ( '499999999999' ),
    PARTITION P5 VALUES LESS THAN ( '624999999999' ),
    PARTITION P6 VALUES LESS THAN ( '749999999999' ),
    PARTITION P7 VALUES LESS THAN ( '874999999999' ),
    PARTITION P8 VALUES LESS THAN ( MAXVALUE )
}
COMPRESS ADVANCED LOW;

ALTER TABLE F1_SYNC_REQ_IN_EXCP ADD CONSTRAINT F1T197P0 PRIMARY KEY (F1_SYNC_REQ_IN_ID,SEQNO) USING INDEX;

Child Table: F1_SYNC_REQ_IN_EXCP_PARM

CREATE TABLE F1_SYNC_REQ_IN_EXCP_PARM
{

    F1_SYNC_REQ_IN_ID CHAR(14) NOT NULL ENABLE,
    SEQNO NUMBER(5,0) NOT NULL ENABLE,
    PARM_SEQ NUMBER(3,0) NOT NULL ENABLE,
    MSG_PARM_VAL VARCHAR2(30) DEFAULT ' ' NOT NULL ENABLE,
    MSG_PARM_TYP_FLG CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
    VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
    CONSTRAINT F1_SYNC_REQ_IN_EXCP_PARM_FK FOREIGN KEY(F1_SYNC_REQ_IN_ID)
    REFERENCES F1_SYNC_REQ_IN ON DELETE CASCADE
}
PARTITION BY REFERENCE (F1_SYNC_REQ_IN_EXCP_PARM_FK)
ENABLE ROW MOVEMENT;
INDEX
CREATE UNIQUE INDEX F1T198P0 ON
F1_SYNC_REQ_IN_EXCP_PARM(F1_SYNC_REQ_IN_ID,SEQNO,PARM_SEQ) TABLESPACE CM_F1T191_IND
GLOBAL PARTITION BY RANGE (F1_SYNC_REQ_IN_ID)
{
    PARTITION P1 VALUES LESS THAN ( '124999999999' ),
    PARTITION P2 VALUES LESS THAN ( '249999999999' ),
    PARTITION P3 VALUES LESS THAN ( '374999999999' ),
    PARTITION P4 VALUES LESS THAN ( '499999999999' ),
    PARTITION P5 VALUES LESS THAN ( '624999999999' ),
    PARTITION P6 VALUES LESS THAN ( '749999999999' ),
    PARTITION P7 VALUES LESS THAN ( '874999999999' ),
    PARTITION P8 VALUES LESS THAN ( MAXVALUE )
}
COMPRESS ADVANCED LOW;

ALTER TABLE F1_SYNC_REQ_IN_EXCP_PARM ADD CONSTRAINT F1T198P0 PRIMARY KEY (F1_SYNC_REQ_IN_ID,SEQNO,PARM_SEQ) USING INDEX;

Child Table: F1_SYNC_REQ_IN_LOG
CREATE TABLE F1_SYNC_REQ_IN_LOG
(
    F1_SYNC_REQ_IN_ID  CHAR(14) NOT NULL ENABLE,
    SEQNO              NUMBER(5,0) NOT NULL ENABLE,
    LOG_ENTRY_TYPE_FLG CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
    LOG_DTTM DATE NOT NULL ENABLE,
    BO_STATUS_CD    CHAR(12) 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,
    CHAR_TYPE_CD    CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL        CHAR(16) DEFAULT ' ' NOT NULL ENABLE,
    ADHOC_CHAR_VAL  VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK1    VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK2    VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK3    VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK4    VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    CHAR_VAL_FK5    VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
    DESCRLONG       VARCHAR2(4000) DEFAULT ' ' NOT NULL ENABLE,
    USER_ID         CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
    VERSION         NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
)
REFERENCES F1_SYNC_REQ_IN LOG_FK FOREIGN KEY(F1_SYNC_REQ_IN_ID)
PARTITION BY REFERENCE (F1_SYNC_REQ_IN_LOG_FK)
ENABLE ROW MOVEMENT;

INDEX
CREATE UNIQUE INDEX F1T194P0 ON
F1_SYNC_REQ_IN_LOG(F1_SYNC_REQ_IN_ID,SEQNO) TABLESPACE CM_F1T191_IND
GLOBAL PARTITION BY RANGE (F1_SYNC_REQ_IN_ID)
{
    PARTITION P1 VALUES LESS THAN ( '124999999999' ),
    PARTITION P2 VALUES LESS THAN ( '249999999999' ),
    PARTITION P3 VALUES LESS THAN ( '374999999999' ),
    PARTITION P4 VALUES LESS THAN ( '499999999999' ),
    PARTITION P5 VALUES LESS THAN ( '624999999999' ),
    PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
)
COMPRESS ADVANCED LOW;

ALTER TABLE F1_SYNC_REQ_IN_LOG ADD CONSTRAINT F1T194P0 PRIMARY KEY
(F1_SYNC_REQ_IN_ID,SEQNO) USING INDEX;

CREATE INDEX F1T194S1 ON F1_SYNC_REQ_IN_LOG(CHAR_TYPE_CD,CHAR_VAL_FK1)
TABLESPACE CM_F1T191_IND COMPRESS ADVANCED LOW;

CREATE INDEX F1T194S2 ON F1_SYNC_REQ_IN_LOG(CHAR_TYPE_CD,CHAR_VAL)
TABLESPACE CM_F1T191_IND COMPRESS ADVANCED LOW;

---

CREATE TABLE F1_SYNC_REQ_IN_LOG_PARM
(
  F1_SYNC_REQ_IN_ID CHAR(14) NOT NULL ENABLE,
  SEQNO             NUMBER(5,0) NOT NULL ENABLE,
  PARM_SEQ          NUMBER(3,0) NOT NULL ENABLE,
  MSG_PARM_VAL      VARCHAR2(30) DEFAULT ' ' NOT NULL ENABLE,
  MSG_PARM_TYP_FLG  CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
  VERSION           NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
  CONSTRAINT F1_SYNC_REQ_IN_LOG_PARM_FK FOREIGN
  KEY(F1_SYNC_REQ_IN_ID) REFERENCES F1_SYNC_REQ_IN ON DELETE CASCADE
)
PARTITION BY REFERENCE (F1_SYNC_REQ_IN_ID)
ENABLE ROW MOVEMENT;

INDEX
CREATE UNIQUE INDEX F1T195P0 ON
F1_SYNC_REQ_IN_LOG_PARM(F1_SYNC_REQ_IN_ID,SEQNO,PARM_SEQ) TABLESPACE
CM_F1T191_IND
GLOBAL PARTITION BY RANGE (F1_SYNC_REQ_IN_ID)
{
  PARTITION P1 VALUES LESS THAN ( '124999999999' ),
  PARTITION P2 VALUES LESS THAN ( '249999999999' ),
  PARTITION P3 VALUES LESS THAN ( '374999999999' ),
  PARTITION P4 VALUES LESS THAN ( '499999999999' ),
  PARTITION P5 VALUES LESS THAN ( '624999999999' ),
  PARTITION P6 VALUES LESS THAN ( '749999999999' ),
  PARTITION P7 VALUES LESS THAN ( '874999999999' ),
  PARTITION P8 VALUES LESS THAN ( MAXVALUE )
)
COMPRESS ADVANCED LOW;

ALTER TABLE F1_SYNC_REQ_IN_LOG_PARM ADD CONSTRAINT F1T195P0 PRIMARY
KEY (F1_SYNC_REQ_IN_ID,SEQNO,PARM_SEQ) USING INDEX;

---

CREATE TABLE F1_SYNC_REQ_IN_REL_OBJ
(
  F1_SYNC_REQ_IN_ID CHAR(14) NOT NULL ENABLE,
  MAINT_OBJ_CD      CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
  REL_OBJ_TYPE_FLG  CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
  PK_VALUE1         VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
PK_VALUE2 VARCHAR2(254) DEFAULT '' NOT NULL ENABLE,
PK_VALUE3 VARCHAR2(254) DEFAULT '' NOT NULL ENABLE,
PK_VALUE4 VARCHAR2(254) DEFAULT '' NOT NULL ENABLE,
PK_VALUE5 VARCHAR2(254) DEFAULT '' NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CONSTRAINT F1_SYNC_REQ_IN_REL_OBJ_FK FOREIGN KEY(F1_SYNC_REQ_IN_ID)
REFERENCES F1_SYNC_REQ_IN ON DELETE CASCADE
)
PARTITION BY REFERENCE (F1_SYNC_REQ_IN_REL_OBJ_FK)
ENABLE ROW MOVEMENT;

INDEX
CREATE UNIQUE INDEX F1T192P0 ON
F1_SYNC_REQ_IN_REL_OBJ(F1_SYNC_REQ_IN_ID, MAINT_OBJ_CD,
REL_OBJ_TYPE_FLG) TABLESPACE CM_F1T191_IND
GLOBAL PARTITION BY RANGE (F1_SYNC_REQ_IN_ID)
(
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
)
COMPRESS ADVANCED LOW;

ALTER TABLE F1_SYNC_REQ_IN_REL_OBJ ADD CONSTRAINT F1T192P0 PRIMARY KEY
(F1_SYNC_REQ_IN_ID, MAINT_OBJ_CD, REL_OBJ_TYPE_FLG) USING INDEX;

CREATE INDEX F1T192S1 ON F1_SYNC_REQ_IN_REL_OBJ(PK_VALUE1) TABLESPACE
CM_F1T191_IND;
This section provides additional details related to supporting ILM in an existing installation. It includes the sample syntax for each step using the To Do Entry maintenance object as an example. Other maintenance object's implementations can follow a similar pattern.

1. Rename existing table CI_TD_ENTRY and primary key index as a backup. It is suggested to use an ILM_prefix. The following are sample statements:

   ```sql
   ALTER TABLE CI_TD_ENTRY RENAME TO ILM_TD_ENTRY;
   ALTER INDEX XT039P0 RENAME TO ILM_XT039P0;
   ```

2. Generate DDL for the secondary index.

   ```sql
   set heading off;
   set echo off;
   set long 90000;
   spool ddl_list.sql
   select dbms_metadata.get_ddl('INDEX','XT039S2','CISADM') from dual;
   select dbms_metadata.get_ddl('INDEX','XT039S3','CISADM') from dual;
   select dbms_metadata.get_ddl('INDEX','XT039S4','CISADM') from dual;
   select dbms_metadata.get_ddl('INDEX','XT039S5','CISADM') from dual;
   select dbms_metadata.get_ddl('INDEX','XT039S6','CISADM') from dual;
   select dbms_metadata.get_ddl('INDEX','XT039S7','CISADM') from dual;
   select dbms_metadata.get_ddl('INDEX','XT039S8','CISADM') from dual;
   spool off;
   ```

3. Drop secondary indexes.

   ```sql
   DROP INDEX CISADM.XT039S2;
   DROP INDEX CISADM.XT039S3;
   DROP INDEX CISADM.XT039S4;
   DROP INDEX CISADM.XT039S5;
   DROP INDEX CISADM.XT039S6;
   DROP INDEX CISADM.XT039S7;
   DROP INDEX CISADM.XT039S8;
   ```

4. Create Partitioned Table.

   In the following example ILM_DT value is inserted from column CRE_DTTM. The degree setting of 'parallel' in the DDL can be adjusted according to the table's data, its means and its size.

   ```sql
   CREATE TABLE CI_TD_ENTRY (  
   TD_ENTRY_ID CHAR(14) NOT NULL ENABLE,  
   BATCH_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,  
   BATCH_NBR NUMBER(10,0) DEFAULT 0 NOT NULL ENABLE,  
   MESSAGE_CAT_NBR NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,  
   MESSAGE_NBR NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
   ```
<table>
<thead>
<tr>
<th>Column</th>
<th>Data Type</th>
<th>Default Value</th>
<th>Nullability</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSIGNED_TO</td>
<td>CHAR(8)</td>
<td>DEFAULT ' '</td>
<td>NOT NULL</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TD_TYPE_CD</td>
<td>CHAR(8)</td>
<td>DEFAULT ' '</td>
<td>NOT NULL</td>
<td>ENABLE</td>
</tr>
<tr>
<td>ROLE_ID</td>
<td>CHAR(10)</td>
<td>DEFAULT ' '</td>
<td>NOT NULL</td>
<td>ENABLE</td>
</tr>
<tr>
<td>ENTRY_STATUS_FLG</td>
<td>CHAR(2)</td>
<td>DEFAULT ' '</td>
<td>NOT NULL</td>
<td>ENABLE</td>
</tr>
<tr>
<td>VERSION</td>
<td>NUMBER(5,0)</td>
<td>DEFAULT 1</td>
<td>NOT NULL</td>
<td>ENABLE</td>
</tr>
<tr>
<td>CRE_DTTM</td>
<td>DATE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASSIGNED_DTTM</td>
<td>DATE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPLETE_DTTM</td>
<td>DATE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPLETE_USER_ID</td>
<td>CHAR(8)</td>
<td>DEFAULT ' '</td>
<td>NOT NULL</td>
<td>ENABLE</td>
</tr>
<tr>
<td>TD_PRIORITY_FLG</td>
<td>CHAR(4)</td>
<td>DEFAULT ' '</td>
<td>NOT NULL</td>
<td>ENABLE</td>
</tr>
<tr>
<td>ILM_DT</td>
<td>DATE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ILM_ARCH_SW</td>
<td>CHAR(1)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sample SQL For Enabling ILM in CCB (Existing Installation)**

```sql
ASSIGNED_TO     CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
TD_TYPE_CD      CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
ROLE_ID         CHAR(10) DEFAULT ' ' NOT NULL ENABLE,
ENTRY_STATUS_FLG CHAR(2) DEFAULT ' ' NOT NULL ENABLE,
VERSION         NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CRE_DTTM DATE,
ASSIGNED_DTTM DATE,
COMPLETE_DTTM DATE,
COMPLETE_USER_ID CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
COMMENTS        VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
ASSIGNED_USER_ID CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
TD_PRIORITY_FLG CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
ILM_DT DATE,
ILM_ARCH_SW CHAR(1) ) NOLOGGING PARALLEL
ENABLE ROW MOVEMENT
PARTITION BY RANGE (ILM_DT) SUBPARTITION BY RANGE (TD_ENTRY_ID) SUBPARTITION TEMPLATE |
| SUBPARTITION S01 VALUES LESS THAN ( '124999999999999999' ),
SUBPARTITION S02 VALUES LESS THAN ( '249999999999999999' ),
SUBPARTITION S03 VALUES LESS THAN ( '374999999999999999' ),
SUBPARTITION S04 VALUES LESS THAN ( '499999999999999999' ),
SUBPARTITION S05 VALUES LESS THAN ( '624999999999999999' ),
SUBPARTITION S06 VALUES LESS THAN ( '749999999999999999' ),
SUBPARTITION S07 VALUES LESS THAN ( '874999999999999999' ),
SUBPARTITION SMAX VALUES LESS THAN ( MAXVALUE )
|
| PARTITION "P2017JAN" VALUES LESS THAN (TO_DATE('2017-02-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017JAN,
PARTITION "P2017FEB" VALUES LESS THAN (TO_DATE('2017-03-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017FEB,
PARTITION "P2017MAR" VALUES LESS THAN (TO_DATE('2017-04-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017MAR,
PARTITION "P2017APR" VALUES LESS THAN (TO_DATE('2017-05-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017APR,
PARTITION "P2017MAY" VALUES LESS THAN (TO_DATE('2017-06-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017MAY,
PARTITION "P2017JUN" VALUES LESS THAN (TO_DATE('2017-07-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017JUN,
PARTITION "P2017JUL" VALUES LESS THAN (TO_DATE('2017-08-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017JUL,
PARTITION "P2017AUG" VALUES LESS THAN (TO_DATE('2017-09-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017AUG,
PARTITION "P2017SEP" VALUES LESS THAN (TO_DATE('2017-10-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017SEP,
PARTITION "P2017OCT" VALUES LESS THAN (TO_DATE('2017-11-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017OCT,
PARTITION "P2017NOV" VALUES LESS THAN (TO_DATE('2017-12-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017NOV,
PARTITION "P2017DEC" VALUES LESS THAN (TO_DATE('2018-01-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT039_P2017DEC,
PARTITION "PMAX" VALUES LESS THAN (MAXVALUE)
tablespace CM_XT039_PMAX ) as select /* PARALLEL */
as select /* PARALLEL */
TD_ENTRY_ID,
BATCH_CD,
BATCH_NBR,
MESSAGE_CAT_NBR,
MESSAGE_NBR,
ASSIGNED_TO,
TD_TYPE_CD,
ROLE_ID,
ENTRY_STATUS_FLG,
VERSION,
CRE_DTTM,
ASSIGNED_DTTM,
COMPLETE_DTTM,
COMPLETE_USER_ID,
COMMENTS,
ASSIGNED_USER_ID,
5. Enable logging option for table CI_TD_ENTRY.

ALTER TABLE CI_TD_ENTRY NOPARALLEL LOGGING;

6. Create Primary Index for Parent table CI_TD_ENTRY.

CREATE UNIQUE INDEX XT039P0 ON CI_TD_ENTRY NOLOGGING PARALLEL(
    TD_ENTRY_ID
) PARTITION P1 VALUES LESS THAN ('12499999999999'),
PARTITION P2 VALUES LESS THAN ('24999999999999'),
PARTITION P3 VALUES LESS THAN ('37499999999999'),
PARTITION P4 VALUES LESS THAN ('49999999999999'),
PARTITION P5 VALUES LESS THAN ('62499999999999'),
PARTITION P6 VALUES LESS THAN ('74999999999999'),
PARTITION P7 VALUES LESS THAN ('87499999999999'),
PARTITION P8 VALUES LESS THAN (MAXVALUE)
) TABLESPACE CM_XT039_IND

ALTER INDEX XT039P0 LOGGING NOPARALLEL;

7. Add Primary Key for Parent table CI_TD_ENTRY

ALTER TABLE CI_TD_ENTRY ADD CONSTRAINT XT039P0 PRIMARY KEY(TD_ENTRY_ID) USING INDEX

8. Create Secondary Indexes for Parent table CI_TD_ENTRY

CREATE UNIQUE INDEX CM_ILM_XT039S8 ON CI_TD_ENTRY (ILM_DT, ILM_ARCH_SW, TD_ENTRY_ID)
LOCAL COMPRESS ADVANCED LOW

CREATE UNIQUE INDEX XT039S2 ON CI_TD_ENTRY (ASSIGNED_TO, TD_ENTRY_ID) TABLESPACE
CM_XT039_IND COMPRESS ADVANCED LOW

CREATE INDEX XT039S3 ON CI_TD_ENTRY (ENTRY_STATUS_FLG, ASSIGNED_TO) TABLESPACE
CM_XT039_IND COMPRESS ADVANCED LOW

CREATE UNIQUE INDEX XT039S4 ON CI_TD_ENTRY (ROLE_ID, TD_TYPE_CD, ENTRY_STATUS_FLG,
TD_PRIORITY_FLG) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW

CREATE INDEX XT039S5 ON CI_TD_ENTRY (BATCH_CD, BATCH_NBR, ENTRY_STATUS_FLG)
TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW

CREATE UNIQUE INDEX XT039S6 ON CI_TD_ENTRY (TD_ENTRY_ID, ASSIGNED_TO,
ENTRY_STATUS_FLG) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW

CREATE UNIQUE INDEX XT039S7 ON CI_TD_ENTRY (COMPLETE_USER_ID, COMPLETE_DTTM,
TD_ENTRY_ID) TABLESPACE CM_XT039_IND COMPRESS ADVANCED LOW

9. After verification of the ILM based tables, user can drop the backup tables “ILM” renamed table.

10. Create all child Tables, Primary Key, Primary Indexes and Secondary Indexes as shown below.

Repeat the following steps for all child tables.

**Create Child Table CI_TD_DRLKEY**

CREATE TABLE CI_TD_DRLKEY
(
    TD_ENTRY_ID NOT NULL ENABLE,
    SEQ_NUM NOT NULL ENABLE,
KEY_VALUE DEFAULT '' NOT NULL ENABLE,
VERSION DEFAULT 1 NOT NULL ENABLE,
CONSTRAINT CI_TD_DRLKEY_FK FOREIGN KEY(TD_ENTRY_ID) REFERENCES CI_TD_ENTRY ON DELETE
CASCADE
) PARTITION BY REFERENCE (CI_TD_DRLKEY_FK)
ENABLE ROW MOVEMENT
AS SELECT /*+ PARALLEL */ * FROM ILM_CI_TD_DRLKEY;

Create Index

CREATE UNIQUE INDEX XT037P0 ON CI_TD_DRLKEY ( TD_ENTRY_ID, SEQ_NUM ) TABLESPACE
CM_XT039_IND NOLOGGING PARALLEL GLOBAL PARTITION BY RANGE (TD_ENTRY_ID)
{
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
} COMPRESS ADVANCED LOW;
ALTER INDEX XT037P0 LOGGING NOPARALLEL;
ALTER TABLE CI_TD_DRLKEY ADD CONSTRAINT XT037P0 PRIMARY KEY(TD_ENTRY_ID, SEQ_NUM) USING
INDEX;
CREATE INDEX XT037S1 ON CI_TD_DRLKEY ( KEY_VALUE, TD_ENTRY_ID ) TABLESPACE CM_XT039_IND
COMPRESS ADVANCED LOW;
Appendix C
Sample SQL for Periodic Maintenance

This appendix provides additional details related to creating new partitions over time as well as archiving and restoring partitions. The To Do Entry and Inbound Sync Request maintenance objects are used as examples. This section contains the following steps:

- Add Partition
- Archive Partition
- Restore Partition
Add Partition

1. Create separate tablespace for new partition

   CREATE BIGFILE TABLESPACE CM_XT039_P2016JAN DATAFILE '+DATA' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;

2. Add partition using split operation on MAXVALUE Partition

   ALTER TABLE CISADM.CI_TD_ENTRY SPLIT PARTITION PMAX AT (TO_DATE('2016-02-01 00:00:01','SYYYY-MM-DD HH24:MI:SS')) INTO
   (PARTITION P2016JAN TABLESPACE CM_XT039_P2016JAN, PARTITION PMAX
   )
   UPDATE INDEXES;

   In case table contains LOBS like F1_SYNC_REQ_IN, there will be additional statement in split partition DDL indicating tablespace on which LOB should go.

   ALTER TABLE CISADM.F1_SYNC_REQ_IN SPLIT PARTITION PMAX AT (TO_DATE('2016-02-01 00:00:01','SYYYY-MM-DD HH24:MI:SS')) INTO
   (PARTITION P2016JAN TABLESPACE CM_F1T191_P2016JAN
   LOB(BO_DATA_AREA, POST_TRN_BO_DATA_AREA, PRE_TRN_FIN_BO_DATA_AREA, PRE_TRN_INIT_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE IN ROW COMPRESS MEDIUM CACHE TABLESPACE CM_F1T191_P2016JAN ),
   PARTITION PMAX
   )
   UPDATE INDEXES;

3. Enable advanced compression after SPLIT partition as it will disable the compression.

   ALTER TABLE CISADM.CI_TD_SRTKEY ROW STORE COMPRESS ADVANCED;
   ALTER TABLE CISADM.CI_TD_MSG_PARM ROW STORE COMPRESS ADVANCED;
   ALTER TABLE CISADM.CI_TD_DRLKEY ROW STORE COMPRESS ADVANCED;
   ALTER TABLE CISADM.CI_TD_ENTRY_CHA ROW STORE COMPRESS ADVANCED;
   ALTER TABLE CISADM.CI_TD_LOG ROW STORE COMPRESS ADVANCED;

Archive Partition

1. Make the tablespace to be archived READ ONLY.

   ALTER TABLESPACE CM_XT039_P2017JAN READ ONLY;

2. Check the feasibility of archive using ILM_ARCH_SW = ‘N’.

   Select count(1) from CISADM.CI_TD_ENTRY PARTITION P2017JAN where ILM_ARCH_SW = ‘N’;

   • If Yes (count of records of above query is ZERO), then proceed for further steps.
   • If No (count of records of above query is Non ZERO), then make the tablespace back to READ WRITE MODE as Archive is not Feasible at the time.
ALTER TABLESPACE CM_XT039_P2017JAN READ WRITE;

3. Create separate archive tablespace for partition need to be archived.
   CREATE BIGFILE TABLESPACE CM_XT039_P2017JAN_ARC DATAFILE '+DATA' SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMpress ADVANCED;

4. Create staging tables and load data for all child tables for the MO first.
   a. CI_TD_ENTRY_CHA
      CREATE TABLE CM_XT701_P2017JAN_ARC PARALLEL NOLOGGING TABLESPACE CM_XT039_P2017JAN_ARC AS
         (SELECT /*+ PARALLEL */ * FROM CISADM.CI_TD_ENTRY_CHA PARTITION (P2017JAN_S01)
           UNION ALL
           SELECT /*+ PARALLEL */ * FROM CI_TD_ENTRY_CHA PARTITION (P2017JAN_S02)
           UNION ALL
           .
           .
           UNION ALL
           SELECT /*+ PARALLEL */ * FROM CI_TD_ENTRY_CHA PARTITION (P2017JAN_S08)
         )
      ALTER TABLE CM_XT701_P2017JAN_ARC NOPARALLEL LOGGING;
   b. CI_TD_MSG_PARM
      CREATE TABLE CM_XT04_P2017JAN_ARC PARALLEL NOLOGGING TABLESPACE CM_XT039_P2017JAN_ARC AS
         (SELECT /*+ PARALLEL */ * FROM CISADM.CI_TD_MSG_PARM PARTITION (P2017JAN_S01)
           UNION ALL
           SELECT /*+ PARALLEL */ * FROM CI_TD_MSG_PARM PARTITION (P2017JAN_S02)
           UNION ALL
           .
           .
           UNION ALL
           SELECT /*+ PARALLEL */ * FROM CI_TD_MSG_PARM PARTITION (P2017JAN_S08)
         )
      ALTER TABLE CM_XT04_P2017JAN_ARC NOPARALLEL LOGGING;
   c. CI_TD_LOG
      CREATE TABLE CM_XT721_P2017JAN_ARC PARALLEL NOLOGGING TABLESPACE CM_XT039_P2017JAN_ARC AS
         (SELECT /*+ PARALLEL */ * FROM CISADM.CI_TD_LOG PARTITION (P2017JAN_S01)
           UNION ALL
SELECT /*+ PARALLEL */ * FROM CI_TD_LOG PARTITION (P2017JAN_S02) UNION ALL
.
.
.
UNION ALL
SELECT /*+ PARALLEL */ * FROM CI_TD_LOG PARTITION (P2017JAN_S08);
ALTER TABLE CM_XT721_P2017JAN_ARC NOPARALLEL LOGGING;

d. CI_TD_SRTKEY

CREATE TABLE CM_XT041_P2017JAN_ARC PARALLEL NOLOGGING TABLESPACE CM_XT039_P2017JAN_ARC AS
( SELECT /*+ PARALLEL */ * FROM CISADM.CI_TD_SRTKEY PARTITION (P2017JAN_S01) UNION ALL
SELECT /*+ PARALLEL */ * FROM CI_TD_SRTKEY PARTITION (P2017JAN_S02)
.
.
.
UNION ALL
SELECT /*+ PARALLEL */ * FROM CI_TD_SRTKEY PARTITION (P2017JAN_S08) );
ALTER TABLE CM_XT041_P2017JAN_ARC NOPARALLEL LOGGING;

e. CI_TD_DRLKEY

CREATE TABLE CM_XT037_P2017JAN_ARC PARALLEL NOLOGGING TABLESPACE CM_XT039_P2017JAN_ARC AS
( SELECT /*+ PARALLEL */ * FROM CISADM.CI_TD_DRLKEY PARTITION (P2017JAN_S01) UNION ALL
SELECT /*+ PARALLEL */ * FROM CISADM.CI_TD_DRLKEY PARTITION (P2017JAN_S02)
.
.
.
.
UNION ALL
SELECT /*+ PARALLEL */ * FROM CISADM.CI_TD_DRLKEY PARTITION (P2017JAN_S08) );
ALTER TABLE CM_XT037_P2017JAN_ARC NOPARALLEL LOGGING;

5. Create staging table and load data for parent table.

CREATE TABLE CM_XT039_P2017JAN_ARC NOLOGGING PARALLEL TABLESPACE CM_XT039_P2017JAN_ARC AS
SELECT /*+ PARALLEL */ * FROM CISADM.CI_TD_ENTRY PARTITION (P2017JAN);
ALTER TABLE CM_XT039_P2017JAN_ARC NOPARALLEL LOGGING;

   ```sql
   ALTER TABLESPACE CM_XT039_P2017JAN_ARC READ ONLY;
   expdp system/manager DIRECTORY=DUMP_DIR DUMPFILE=
   CM_XT039_P2017JAN_ARC.DMP TRANSPORT_TABLESPACES =
   CM_XT039_P2017JAN_ARC LOGFILE=EXP_CM_XT039_P2017JAN_ARC.LOG
   TRANSPORT_FULL_CHECK=Y
   ```

Ensure tablespace datafile required for further import should be preserved.

<<Transport THE FILE to LOCAL DB DIRECTORY DUMP_DIR like
connected to asmcmd and copied the file from cp
   cm_xt039_p201701_tbs_ar.553.913864937 /tugbu_perf_02/BACKUPS/
test_verification/ >>

7. Drop the partition, partition tablespace and archive tablespace (as it is already
exported).

   ```sql
   ALTER TABLE CISADM.CI_TD_ENTRY DROP PARTITION P2017JAN UPDATE
   INDEXES;
   DROP TABLESPACE CM_XT039_P2017JAN INCLUDING CONTENTS AND
   DATAFILES;
   DROP TABLESPACE CM_XT039_P2017JAN_ARC INCLUDING CONTENTS AND
   DATAFILES;
   ```

---

**Restore Partition**

1. Create separate tablespace to restore the partition.

   ```sql
   CREATE BIGFILE TABLESPACE CM_XT039_P2017JAN DATAFILE '+DATA'
   SIZE 50M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE
   COMPRESS ADVANCED;
   ```

2. Add partition using split operation on next greater value partition

   ```sql
   ALTER TABLE CISADM.CI_TD_ENTRY SPLIT PARTITION P2017FEB AT
   (TO_DATE('2017-02-01 00:00:01','SYYYY-MM-DD HH24:MI:SS'))
   INTO
   ( PARTITION P2017JAN TABLESPACE CM_XT039_P2017JAN , PARTITION
   P2017FEB
   )
   UPDATE INDEXES;
   ```

In case table contains LOBs like `F1_SYNC_REQ_IN`, there will be additional statement in
split partition DDL indicating tablespace on which LOB should go.

   ```sql
   ALTER TABLE CISADM.F1_SYNC_REQ_IN SPLIT PARTITION P2017FEB AT
   (TO_DATE('2017-02-01 00:00:01','SYYYY-MM-DD HH24:MI:SS'))
   INTO
   ( PARTITION P2017JAN TABLESPACE CM_F1T191_P2017JAN
   LOB(BO_DATA_AREA,PRE_TRN_INIT_BO_DATA_AREA,PRE_TRN_FIN_BO_DATA_ 
   AREA,POST_TRN_BO_DATA_AREA) STORE AS SECUREFILE (ENABLE STORAGE 
   IN ROW COMPRESS MEDIUM CACHE TABLESPACE
   CM_F1T191_P2017JAN )
   , PARTITION P2017FEB
   ```
3. Enable advanced compression after SPLIT partition as it will disable the compression.

```
ALTER TABLE CISADM.CI_TD_SRTKEY ROW STORE COMPRESS ADVANCED;
ALTER TABLE CISADM.CI_TD_MSG_PARM ROW STORE COMPRESS ADVANCED;
ALTER TABLE CISADM.CI_TD_DRLKEY ROW STORE COMPRESS ADVANCED;
ALTER TABLE CISADM.CI_TD_ENTRY_CHA ROW STORE COMPRESS ADVANCED;
ALTER TABLE CISADM.CI_TD_LOG ROW STORE COMPRESS ADVANCED;
```

4. Import tablespace using TRANSPORT_TABLESPACES method.

```
imdp system/manager DIRECTORY=DUMP_DIR DUMPFILE=CM_XT039_P2017JAN_ARC.DMP PARTITION_OPTIONS=DEPARTITION LOGFILE=IMP_CM_XT039_P2017JAN_ARC.LOG TRANSPORT_DATAFILES=/tugbu_perf_02/BACKUPS/test_verification/cm_xt039_p201701jan_ar.553.913864937
```

5. Load data into parent table first from the staging table

```
ALTER SESSION ENABLE PARALLEL DML;

INSERT /*+ APPEND PARALLEL */ INTO CISADM.CI_TD_ENTRY SELECT /*+ PARALLEL */ * FROM CM_XT039_P2017JAN_ARC;
COMMIT;
```

6. Load data into child table from the staging table

For each Child IN LIST OF CHILD TABLES, perform the following:

```
INSERT /*+ APPEND PARALLEL */ INTO CISADM.CI_TD_ENTRY_CHA SELECT /*+ PARALLEL */ * FROM CM_XT701_P2017JAN_ARC;
COMMIT;
```

```
INSERT /*+ APPEND PARALLEL */ INTO CISADM.CI_TD_MSG_PARM SELECT /*+ PARALLEL */ * FROM CM_XT04_P2017JAN_ARC;
COMMIT;
```

```
INSERT /*+ APPEND PARALLEL */ INTO CISADM.CI_TD_LOG SELECT /*+ PARALLEL */ * FROM CM_XT721_P2017JAN_ARC;
COMMIT;
```

```
INSERT /*+ APPEND PARALLEL */ INTO CISADM.CI_TD_SRTKEY SELECT /*+ PARALLEL */ * FROM CM_XT041_P2017JAN_ARC;
COMMIT;
```

```
INSERT /*+ APPEND PARALLEL */ INTO CISADM.CI_TD_DRLKEY SELECT /*+ PARALLEL */ * FROM CM_XT037_P2017JAN_ARC;
COMMIT;
```

7. Drop the archive tablespace after import is import and data loading is successful.

```
DROP TABLESPACE CM_XT039_P2017JAN_ARC INCLUDING CONTENTS AND DATAFILES;
```
These are the sample SQL scripts which has the recommended way to partition the Bill Segment and Adjustment tables and Indexes. Implementations can further customize these scripts and update the partition names, tablespace names and date ranges to make sure they are suited to the implementation.

This appendix consists:

- Maintenance Object: Adjustment
- Maintenance Object: Bill Segment
Sample SQL for ILM in CCB D - 2

Oracle Utilities Customer Care and Billing Database Administrator’s Guide

Maintenance Object: Adjustment

This section contains the sample SQL for the following tables:

- Parent Table: CI_ADJ
  - Child Table: CI_ADJ_APREQ
  - Child Table: CI_ADJ_CALC_LN
    - Child Table: CI_ADJ_CL_CHAR
  - Child Table: CI_ADJ_CHAR

Parent Table: CI_ADJ

```sql
CREATE BIGFILE TABLESPACE CM_XT012_P2017JAN DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017FEB DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017MAR DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017APR DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017MAY DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017JUN DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017JUL DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017AUG DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017SEP DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017OCT DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017NOV DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_P2017DEC DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 
CREATE BIGFILE TABLESPACE CM_XT012_PMAX DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED / 

CREATE TABLE CI_ADJ
  (  CHAR(12) NOT NULL ENABLE,
    ADJ_ID
    SA_IDCHAR(10) DEFAULT ' ' NOT NULL ENABLE,
    ADJ_TYPE_CDCHAR(8) DEFAULT' ' NOT NULL ENABLE,
    ADJ_STATUS_FLG CHAR(2) DEFAULT' ' NOT NULL ENABLE,
```
Parent Table: CI_ADJ

```sql
CRE_DT DATE, CHAR(4) DEFAULT '' NOT NULL ENABLE,
CAN_RSN_CD
ADJ_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
XFER_ADJ_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
CURRENCY_CD CHAR(3) DEFAULT '' NOT NULL ENABLE,
COMMENTS VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
BEHALF_SA_ID CHAR(10) DEFAULT ' ' NOT NULL ENABLE,
BASE_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
GEN_REF_DT DATE,
APPR_REQ_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
ADJ_DATA_AREA CLOB,
ILM_DT DATE,
ILM_ARCH_SW CHAR(1),
)
ENABLE ROW MOVEMENT
PARTITION BY RANGE (ILM_DT)
SUBPARTITION BY RANGE (ADJ_ID) SUBPARTITION TEMPLATE ( 
SUBPARTITION S01 VALUES LESS THAN ( '124999999999' ),
SUBPARTITION S02 VALUES LESS THAN ( '249999999999' ),
SUBPARTITION S03 VALUES LESS THAN ( '374999999999' ),
SUBPARTITION S04 VALUES LESS THAN ( '499999999999' ),
SUBPARTITION S05 VALUES LESS THAN ( '624999999999' ),
SUBPARTITION S06 VALUES LESS THAN ( '749999999999' ),
SUBPARTITION S07 VALUES LESS THAN ( '874999999999' ),
SUBPARTITION S08 VALUES LESS THAN ( MAXVALUE )
)
{
PARTITION "P2017JAN" VALUES LESS THAN (TO_DATE('2017-02-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017JAN,
PARTITION "P2017FEB" VALUES LESS THAN (TO_DATE('2017-03-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017FEB,
PARTITION "P2017MAR" VALUES LESS THAN (TO_DATE('2017-04-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017MAR,
PARTITION "P2017APR" VALUES LESS THAN (TO_DATE('2017-05-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017APR,
PARTITION "P2017MAY" VALUES LESS THAN (TO_DATE('2017-06-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017MAY,
PARTITION "P2017JUN" VALUES LESS THAN (TO_DATE('2017-07-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017JUN,
PARTITION "P2017JUL" VALUES LESS THAN (TO_DATE('2017-08-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017JUL,
PARTITION "P2017AUG" VALUES LESS THAN (TO_DATE('2017-09-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017AUG,
PARTITION "P2017SEP" VALUES LESS THAN (TO_DATE('2017-10-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017SEP,
PARTITION "P2017OCT" VALUES LESS THAN (TO_DATE('2017-11-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017OCT,
```
PARTITION "P2017NOV" VALUES LESS THAN (TO_DATE('2017-12-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017NOV,
PARTITION "P2017DEC" VALUES LESS THAN (TO_DATE('2018-01-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT012_P2017DEC,
PARTITION "PMAX" VALUES LESS THAN (MAXVALUE)
tablespace CM_XT012_PMAX
)
/

INDEX

CREATE BIGFILE TABLESPACE CM_XT012_IND DATAFILE '+DATA' SIZE 50M
AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED
/

CREATE UNIQUE INDEX XT012P0 ON CI_ADJ ( ADJ_ID ) TABLESPACE
CM_XT012_IND
GLOBAL PARTITION BY RANGE (ADJ_ID)
{
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
}
/

ALTER TABLE CI_ADJ ADD CONSTRAINT XT012P0 PRIMARY KEY(ADJ_ID) USING
INDEX
/

CREATE INDEX XT012S1 ON CI_ADJ ( SA_ID, ADJ_TYPE_CD ) TABLESPACE
CM_XT012_IND
COMpress ADVANCED LOW
/

CREATE UNIQUE INDEX XT012S2 ON CI_ADJ ( XFER_ADJ_ID, ADJ_ID )
TABLESPACE CM_XT012_IND
COMpress ADVANCED LOW
/

CREATE UNIQUE INDEX XT012S3 ON CI_ADJ ( ILM_DT, ILM_ARCH_SW, ADJ_ID )
TABLESPACE CM_XT012_IND
COMpress ADVANCED LOW
/

Child Table: CI_ADJ_APREQ

CREATE TABLE CI_ADJ_APREQ
(
AP_REQ_ID      CHAR(12) NOT NULL ENABLE,
COUNTRY        CHAR(3) DEFAULT '' NOT NULL ENABLE,
ADDRESS1       VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
ADJ_ID         CHAR(12) DEFAULT '' NOT NULL ENABLE,
ADDRESS2       VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
ADDRESS3       VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
ADDRESS4       VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
CITY           VARCHAR2(90) DEFAULT ' ' NOT NULL ENABLE,
NUM1           CHAR(6) DEFAULT '' NOT NULL ENABLE,
### Parent Table: CI_ADJ

```sql
NUM2 CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
COUNTY VARCHAR2(90) DEFAULT ' ' NOT NULL ENABLE,
HOUSE_TYPE CHAR(2) DEFAULT ' ' NOT NULL ENABLE,
STATE CHAR(6) DEFAULT ' ' NOT NULL ENABLE,
POSTAL CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
CURRENCY_PYMNT CHAR(3) DEFAULT ' ' NOT NULL ENABLE,
GEO_CODE CHAR(11) DEFAULT ' ' NOT NULL ENABLE,
IN_CITY_LIMIT CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
PAID_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
SCHEDULED_PAY_DT DATE,
PYMNT_DT DATE,
ENTITY_NAME VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
PAY_DOC_ID VARCHAR2(20) DEFAULT ' ' NOT NULL ENABLE,
PAY_DOC_DT DATE,
PYMNT_ID CHAR(36) DEFAULT ' ' NOT NULL ENABLE,
PYMNT_METHOD_FLG CHAR(3) DEFAULT ' ' NOT NULL ENABLE,
PYMNT_SEL_STAT_FLG CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
BATCH_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
BATCH_NBR NUMBER(10,0) DEFAULT 0 NOT NULL ENABLE,
CONSTRAINT CI_ADJ_APREQ_FK FOREIGN KEY(ADJ_ID) REFERENCES CI_ADJ ON DELETE CASCADE
) PARTITION BY REFERENCE (CI_ADJ_APREQ_FK) ENABLE ROW MOVEMENT
/

INDEX
CREATE UNIQUE INDEX XT160P0 ON CI_ADJ_APREQ ( AP_REQ_ID ) TABLESPACE CM_XT012_IND
GLOBAL PARTITION BY RANGE (AP_REQ_ID)
{
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
} COMPRESS ADVANCED LOW /

ALTER TABLE CI_ADJ_APREQ ADD CONSTRAINT XT160P0 PRIMARY KEY(AP_REQ_ID) USING INDEX /
CREATE INDEX XT160S1 ON CI_ADJ_APREQ ( ADJ_ID ) TABLESPACE CM_XT012_IND /
CREATE INDEX XT160S2 ON CI_ADJ_APREQ ( BATCH_CD, BATCH_NBR ) TABLESPACE CM_XT012_IND COMPRESS ADVANCED LOW /

### Child Table: CI_ADJ_CALC_LN

```sql
CREATE TABLE CI_ADJ_CALC_LN
(
  ADJ_ID CHAR(12) NOT NULL ENABLE,
  SEQNO NUMBER(5,0) NOT NULL ENABLE,
```
TOU_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
UOM_CD CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
SQI_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
RS_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
EFFDT DATE,
RC_SEQ NUMBER(4,0) DEFAULT 0 NOT NULL ENABLE,
DST_ID CHAR(10) DEFAULT ' ' NOT NULL ENABLE,
CURRENCY_CD CHAR(3) DEFAULT ' ' NOT NULL ENABLE,
CHAR_TYPE_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
CHAR_VAL CHAR(16) DEFAULT ' ' NOT NULL ENABLE,
PRT_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
APP_IN_SUMM_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
CALC_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
EXEMPT_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
BASE_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
MSR_PEAK_QTY_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
DESCR_ON_BILL VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
BILL_SQ NUMBER(18,6) DEFAULT 0 NOT NULL ENABLE,
AUDIT_CALC_AMT NUMBER(18,5) DEFAULT 0 NOT NULL ENABLE,
CALC_GRP_CD VARCHAR2(30) DEFAULT ' ' NOT NULL ENABLE,
CALC_RULE_CD VARCHAR2(30) DEFAULT ' ' NOT NULL ENABLE,
CONSTRAINT CI_ADJ_CALC_LN_FK FOREIGN KEY(ADJ_ID) REFERENCES CI_ADJ ON DELETE CASCADE
) PARTITION BY REFERENCE (CI_ADJ_CALC_LN_FK)
ENABLE ROW MOVEMENT
/

INDEX
CREATE UNIQUE INDEX XT310P0 ON CI_ADJ_CALC_LN (ADJ_ID, SEQNO)
TABLESPACE CM_XT012_IND
GLOBAL PARTITION BY RANGE (ADJ_ID)
{
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
}
COMPRESS ADVANCED LOW
/
ALTER TABLE CI_ADJ_CALC_LN ADD CONSTRAINT XT310P0 PRIMARY KEY(ADJ_ID, SEQNO) USING INDEX
/

Child Table: CI_ADJ_CL_CHAR
CREATE TABLE CI_ADJ_CL_CHAR
{
ADJ_ID CHAR(12) NOT NULL ENABLE,
SEQNO NUMBER(5,0) NOT NULL ENABLE,
CHAR_TYPE_CD CHAR(8) NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CHAR_VAL CHAR(16) DEFAULT ' ' NOT NULL ENABLE,
ADHOC_CHAR_VAL VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
CREATE TABLE CI_ADJ_CHAR
(
  ADJ_ID         CHAR(12) NOT NULL ENABLE,
  CHAR_TYPE_CD   CHAR(8) NOT NULL ENABLE,
  SEQ_NUM        NUMBER(3,0) NOT NULL ENABLE,
  VERSION        NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
  CHAR_VAL       CHAR(16) DEFAULT ' ' NOT NULL ENABLE,
  ADHOC_CHAR_VAL VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK1   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK2   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK3   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK4   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  CHAR_VAL_FK5   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
  SRCH_CHAR_VAL  VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
CONSTRAINT CI_ADJ_CHAR_FK FOREIGN KEY(ADJ_ID) REFERENCES CI_ADJ ON DELETE CASCADE
)
PARTITION BY REFERENCE (CI_ADJ_CHAR_FK)
ENABLE ROW MOVEMENT
/

INDEX

CREATE TABLE CI_ADJ_CHAR
/

INDEX

CREATE UNIQUE INDEX XT309P0 ON CI_ADJ_CL_CHAR ( ADJ_ID, SEQNO,
CHAR_TYPE_CD ) TABLESPACE CM_XT012_IND
GLOBAL PARTITION BY RANGE (ADJ_ID)

PARTITION BY REFERENCE (CI_ADJ_CL_CHAR_FK)
ENABLE ROW MOVEMENT
/

INDEX

CREATE UNIQUE INDEX XT309P0 ON CI_ADJ_CL_CHAR ( ADJ_ID, SEQNO,
CHAR_TYPE_CD ) TABLESPACE CM_XT012_IND
GLOBAL PARTITION BY RANGE (ADJ_ID)

PARTITION BY REFERENCE (CI_ADJ_CL_CHAR_FK)
ENABLE ROW MOVEMENT
/

INDEX

CREATE TABLE CI_ADJ_CHAR
/

INDEX

CREATE TABLE CI_ADJ_CHAR
/

INDEX
CREATE UNIQUE INDEX XC781P0 ON CI_ADJ_CHAR (ADJ_ID, CHAR_TYPE_CD, SEQ_NUM) TABLESPACE CM_XT012_IND
GLOBAL PARTITION BY RANGE(ADJ_ID)

  PARTITION PART1 VALUES LESS THAN ('124999999999'),
  PARTITION PART2 VALUES LESS THAN ('249999999999'),
  PARTITION PART3 VALUES LESS THAN ('374999999999'),
  PARTITION PART4 VALUES LESS THAN ('499999999999'),
  PARTITION PART5 VALUES LESS THAN ('624999999999'),
  PARTITION PART6 VALUES LESS THAN ('749999999999'),
  PARTITION PART7 VALUES LESS THAN ('874999999999'),
  PARTITION PART8 VALUES LESS THAN (MAXVALUE)
)
COMPRESS ADVANCED LOW
/

ALTER TABLE CI_ADJ_CHAR ADD CONSTRAINT XC781P0 PRIMARY KEY (ADJ_ID, CHAR_TYPE_CD, SEQ_NUM) USING INDEX;

CREATE INDEX XC781S1 ON CI_ADJ_CHAR(SRCH_CHAR_VAL) GLOBAL PARTITION BY HASH(SRCH_CHAR_VAL)

  PARTITION PART1 TABLESPACE CM_XT012_IND,
  PARTITION PART2 TABLESPACE CM_XT012_IND,
  PARTITION PART3 TABLESPACE CM_XT012_IND,
  PARTITION PART4 TABLESPACE CM_XT012_IND,
  PARTITION PART5 TABLESPACE CM_XT012_IND,
  PARTITION PART6 TABLESPACE CM_XT012_IND,
  PARTITION PART7 TABLESPACE CM_XT012_IND,
  PARTITION PART8 TABLESPACE CM_XT012_IND
)
/

Sample SQL for ILM in CCB D - 8
Oracle Utilities Customer Care and Billing Database Administrator’s Guide
Maintenance Object: Bill Segment

This section contains the sample SQL for the following tables:

- **Parent Table: CI_BSEG**
  - Child Table: CI_BSEG_CALC
  - Child Table: CI_BSEG_CALC_LN
    - Child Table: CI_BSEG_CL_CHAR
  - Child Table: CI_BSEG_EXCP
  - Child Table: CI_BSEG_MSG
  - Child Table: CI_BSEG_READ
  - Child Table: CI_BSEG_SQ
  - Child Table: CI_BSEG_ITEM

**Parent Table: CI_BSEG**

CREATE BIGFILE TABLESPACE CM_XT048_P2017JAN DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017FEB DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017MAR DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017APR DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017MAY DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017JUN DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017JUL DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017AUG DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017SEP DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017OCT DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017NOV DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_P2017DEC DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE BIGFILE TABLESPACE CM_XT048_PMAX DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED /
CREATE TABLE CI_BSEG
(
  CHAR(12) NOTNULL ENABLE,
  BSEG_ID
BSEG_ID
BILL_CYC_CD CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
WIN_START_DT DATE,
CAN_RSN_CD CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
CAN_BSEG_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
SA_ID CHAR(10) DEFAULT ' ' NOT NULL ENABLE,
BILL_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
START_DT DATE,
END_DT DATE, CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
EST_SW
CLOSING_BSEG_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
SQ_OVERRIDE_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
ITEM_OVERRIDE_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
PREM_ID CHAR(10) DEFAULT ' ' NOT NULL ENABLE,
BSEG_STAT_FLG CHAR(2) DEFAULT ' ' NOT NULL ENABLE,
CRE_DTTM DATE,
STAT_CHG_DTTM DATE,
REBILL_SEG_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
VERSIONNUMBER (5,0) DEFAULT 1 NOT NULL ENABLE,
MASTER_BSEG_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
QUOTE_DTL_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
BSEG_DATA_AREA CLOB,
ILM_DT DATE,
ILM_ARCH_SW CHAR(1)
) ENABLE ROW MOVEMENT
PARTITION BY RANGE (ILM_DT)
SUBPARTITION BY RANGE (BSEG_ID) SUBPARTITION TEMPLATE
(
  SUBPARTITION S01 VALUES LESS THAN ( '124999999999' ),
  SUBPARTITION S02 VALUES LESS THAN ( '249999999999' ),
  SUBPARTITION S03 VALUES LESS THAN ( '374999999999' ),
  SUBPARTITION S04 VALUES LESS THAN ( '499999999999' ),
  SUBPARTITION S05 VALUES LESS THAN ( '624999999999' ),
  SUBPARTITION S06 VALUES LESS THAN ( '749999999999' ),
  SUBPARTITION S07 VALUES LESS THAN ( '874999999999' ),
  SUBPARTITION S08 VALUES LESS THAN ( MAXVALUE )
)

(
  PARTITION "P2017JAN" VALUES LESS THAN (TO_DATE('2017-02-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT048_P2017JAN,
PARTITION "P2017FEB" VALUES LESS THAN (TO_DATE('2017-03-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT048_P2017FEB,
PARTITION "P2017MAR" VALUES LESS THAN (TO_DATE('2017-04-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT048_P2017MAR,
PARTITION "P2017APR" VALUES LESS THAN (TO_DATE('2017-05-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT048_P2017APR,
PARTITION "P2017MAY" VALUES LESS THAN (TO_DATE('2017-06-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT048_P2017MAY,
PARTITION "P2017JUN" VALUES LESS THAN (TO_DATE('2017-07-01 00:00:01', 'SYYYY-MM-DD HH24:MI:SS', 'NLS_CALENDAR=GREGORIAN'))
tablespace CM_XT048_P2017JUN)
CREATE BIGFILE TABLESPACE CM_XT048_IND DATAFILE '+DATA' SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED DEFAULT ROW STORE COMPRESS ADVANCED;

INDEX
CREATE UNIQUE INDEX XT048P0 ON CI_BSEG ( BSEG_ID ) TABLESPACE CM_XT048_IND
GLOBAL PARTITION BY RANGE (BSEG_ID)
{
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
}

ALTER TABLE CI_BSEG ADD CONSTRAINT XT048P0 PRIMARY KEY(BSEG_ID) USING INDEX

CREATE INDEX XT048S1 ON CI_BSEG ( BILL_ID ) TABLESPACE CM_XT048_IND
/
CREATE INDEX XT048S2 ON CI_BSEG ( SA_ID ) TABLESPACE CM_XT048_IND
/
CREATE UNIQUE INDEX XT048S3 ON CI_BSEG ( QUOTE_DTL_ID, BSEG_ID ) TABLESPACE CM_XT048_IND COMPRESS ADVANCED LOW
/
CREATE UNIQUE INDEX XT048S4 ON CI_BSEG ( ILM_DT, ILM_ARCH_SW, BSEG_ID ) TABLESPACE CM_XT048_IND COMPRESS ADVANCED LOW
/

Child Table: CI_BSEG_CALC
CREATE TABLE CI_BSEG_CALC
{
BSEG_ID CHAR(12) NOT NULL ENABLE,
HEADER_SEQ NUMBER(3,0) NOT NULL ENABLE,
START_DT DATE NOT NULL ENABLE,
CURRENCY_CD CHAR(3) DEFAULT ' ' NOT NULL ENABLE,
END_DT DATE NOT NULL ENABLE,
RS_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
EFFDT DATE,
BILLABLE_CHG_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
CALC_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
DESCR_ON_BILL VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CONSTRAINT CI_BSEG_CALC_FK FOREIGN KEY(BSEG_ID) REFERENCES CI_BSEG ON DELETE CASCADE
)
PARTITION BY REFERENCE (CI_BSEG_CALC_FK)
ENABLE ROW MOVEMENT
/

INDEX
CREATE UNIQUE INDEX XT072P0 ON CI_BSEG_CALC ( BSEG_ID, HEADER_SEQ )
TABLESPACE CM_XT048_IND
GLOBAL PARTITION BY RANGE (BSEG_ID)
(
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
)
COMPRESS ADVANCED LOW
/

ALTER TABLE CI_BSEG_CALC ADD CONSTRAINT XT072P0 PRIMARY KEY(BSEG_ID,
HEADER_SEQ) USING INDEX
/
CREATE INDEX XT072S1 ON CI_BSEG_CALC ( BILLABLE_CHG_ID,  BSEG_ID )
TABLESPACE CM_XT048_IND COMPRESS ADVANCED LOW
/

Child Table: CI_BSEG_CALC_LN
CREATE TABLE CI_BSEG_CALC_LN
(
BSEG_ID CHAR(12) NOT NULL ENABLE,
HEADER_SEQ NUMBER(3,0) NOT NULL ENABLE,
SEQNO NUMBER(5,0) NOT NULL ENABLE,
CHAR_TYPE_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
CURRENCY_CD CHAR(3) DEFAULT ' ' NOT NULL ENABLE,
CHAR_VAL CHAR(16) DEFAULT ' ' NOT NULL ENABLE,
DST_ID CHAR(10) DEFAULT ' ' NOT NULL ENABLE,
UOM_CD CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
TOU_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
RC_SEQ NUMBER(4,0) DEFAULT 0 NOT NULL ENABLE,
PRT_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
APP_IN_SUMM_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
CALC_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
EXEMPT_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
BASE_AMT NUMBER(15,2) DEFAULT 0 NOT NULL ENABLE,
SQI_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
### Parent Table: CI_BSEG

```
BILL_SQ         NUMBER(18,6) DEFAULT 0 NOT NULL ENABLE,
MSR_PEAK_QTY_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
DESCR_ON_BILL   VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
VERSION         NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
AUDIT_CALC_AMT  NUMBER(18,5) DEFAULT 0 NOT NULL ENABLE,
CALC_GRP_CD     VARCHAR2(30) DEFAULT ' ' NOT NULL ENABLE,
CALC_RULE_CD    VARCHAR2(30) DEFAULT ' ' NOT NULL ENABLE,
CONSTRAINT CI_BSEG_CALC_LN_FK FOREIGN KEY(BSEG_ID) REFERENCES CI_BSEG
ON DELETE CASCADE
)
PARTITION BY REFERENCE (CI_BSEG_CALC_LN_FK)
ENABLE ROW MOVEMENT
/

INDEX
CREATE UNIQUE INDEX XT050P0 ON CM_BSEG_CALC_LN (BSEG_ID,
HEADER_SEQ,SEQNO) TABLESPACE CM_XT048_IND
GLOBAL PARTITION BY RANGE (BSEG_ID)
{
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
}
COMPRESS ADVANCED LOW
/

ALTER TABLE CI_BSEG_CALC_LN ADD CONSTRAINT XT050P0 PRIMARY
KEY(BSEG_ID, HEADER_SEQ,SEQNO) USING INDEX
/
```

### Child Table: CI_BSEG_CL_CHAR

```
CREATE TABLE CI_BSEG_CL_CHAR
(
BSEG_ID        CHAR(12) NOT NULL ENABLE,
HEADER_SEQ     NUMBER(3,0) NOT NULL ENABLE,
SEQNO          NUMBER(5,0) NOT NULL ENABLE,
CHAR_TYPE_CD   CHAR(8) NOT NULL ENABLE,
CHAR_VAL       CHAR(16) DEFAULT ' ' NOT NULL ENABLE,
ADHOC_CHAR_VAL VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
CHAR_VAL_FK1   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
CHAR_VAL_FK2   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
CHAR_VAL_FK3   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
CHAR_VAL_FK4   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
CHAR_VAL_FK5   VARCHAR2(50) DEFAULT ' ' NOT NULL ENABLE,
VERSION        NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CONSTRAINT CI_BSEG_CL_CHAR_FK FOREIGN KEY(BSEG_ID) REFERENCES CI_BSEG
ON DELETE CASCADE
)
PARTITION BY REFERENCE (CI_BSEG_CL_CHAR_FK)
ENABLE ROW MOVEMENT
/
```
INDEX
CREATE UNIQUE INDEX XT056P0 ON CI_BSEG_CL_CHAR ( BSEG_ID, HEADER_SEQ, SEQNO, CHAR_TYPE_CD ) TABLESPACE CM_XT048_IND
GLOBAL PARTITION BY RANGE (BSEG_ID)
{
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
} COMpress ADVANCED LOW
/

ALTER TABLE CI_BSEG_CL_CHAR ADD CONSTRAINT XT056P0 PRIMARY KEY (BSEG_ID, HEADER_SEQ, SEQNO, CHAR_TYPE_CD) USING INDEX
/

Child Table: CI_BSEG_EXCP
CREATE TABLE CI_BSEG_EXCP
{
BSEG_ID         CHAR(12) NOT NULL ENABLE,
MESSAGE_CAT_NBR NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
MESSAGE_NBR     NUMBER(5,0) DEFAULT 0 NOT NULL ENABLE,
BSEG_EXCP_FLG   CHAR(2) DEFAULT ' ' NOT NULL ENABLE,
EXP_MSG         VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
MESSAGE_PARM1   VARCHAR2(2000) DEFAULT ' ' NOT NULL ENABLE,
MESSAGE_PARM2   VARCHAR2(2000) DEFAULT ' ' NOT NULL ENABLE,
MESSAGE_PARM3   VARCHAR2(2000) DEFAULT ' ' NOT NULL ENABLE,
MESSAGE_PARM4   VARCHAR2(2000) DEFAULT ' ' NOT NULL ENABLE,
MESSAGE_PARM5   VARCHAR2(2000) DEFAULT ' ' NOT NULL ENABLE,
MESSAGE_PARM6   VARCHAR2(2000) DEFAULT ' ' NOT NULL ENABLE,
MESSAGE_PARM7   VARCHAR2(2000) DEFAULT ' ' NOT NULL ENABLE,
MESSAGE_PARM8   VARCHAR2(2000) DEFAULT ' ' NOT NULL ENABLE,
MESSAGE_PARM9   VARCHAR2(2000) DEFAULT ' ' NOT NULL ENABLE,
CALL_SEQ        VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
USER_ID         CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
CRE_DTTM DATE,
REVIEW_COMP    CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
REVIEW_USER_ID CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
REVIEW_DT DATE,
COMMENTS VARCHAR2(254) DEFAULT ' ' NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CONSTRAINT CI_BSEG_EXCP_FK FOREIGN KEY (BSEG_ID) REFERENCES CI_BSEG
ON DELETE CASCADE
}
PARTITION BY REFERENCE (CI_BSEG_EXCP_FK)
ENABLE ROW MOVEMENT
/

INDEX
CREATE UNIQUE INDEX XT051P0 ON CI_BSEG_EXCP ( BSEG_ID ) TABLESPACE CM_XT048_IND
GLOBAL PARTITION BY RANGE (BSEG_ID)
Parent Table: CI_BSEG

Sample SQL for ILM in CCB D - 15

Oracle Utilities Customer Care and Billing Database Administrator's Guide

Parent Table: CI_BSEG

{  
  PARTITION P1 VALUES LESS THAN ( '124999999999' ),  
  PARTITION P2 VALUES LESS THAN ( '249999999999' ),  
  PARTITION P3 VALUES LESS THAN ( '374999999999' ),  
  PARTITION P4 VALUES LESS THAN ( '499999999999' ),  
  PARTITION P5 VALUES LESS THAN ( '624999999999' ),  
  PARTITION P6 VALUES LESS THAN ( '749999999999' ),  
  PARTITION P7 VALUES LESS THAN ( '874999999999' ),  
  PARTITION P8 VALUES LESS THAN ( MAXVALUE )  
}  
COMPRESS ADVANCED LOW  
/  
ALTER TABLE CI_BSEG_EXCP ADD CONSTRAINT XT051P0 PRIMARY KEY(BSEG_ID) USING INDEX  
/  

Child Table: CI_BSEG_MSG

CREATE TABLE CI_BSEG_MSG  
(  
  BSEG_ID CHAR(12) NOT NULL ENABLE,  
  BILL_MSG_CD CHAR(4) NOT NULL ENABLE,  
  VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,  
  CONSTRAINT CI_BSEG_MSG_FK FOREIGN KEY(BSEG_ID) REFERENCES CI_BSEG ON DELETE CASCADE  
)  
PARTITION BY REFERENCE (CI_BSEG_MSG_FK)  
ENABLE ROW MOVEMENT  
/  
INDEX  
CREATE UNIQUE INDEX XT080P0 ON CI_BSEG_MSG ( BSEG_ID, BILL_MSG_CD )  
TABLESPACE CM_XT048_IND  
GLOBAL PARTITION BY RANGE (BSEG_ID)  
(  
  PARTITION P1 VALUES LESS THAN ( '124999999999' ),  
  PARTITION P2 VALUES LESS THAN ( '249999999999' ),  
  PARTITION P3 VALUES LESS THAN ( '374999999999' ),  
  PARTITION P4 VALUES LESS THAN ( '499999999999' ),  
  PARTITION P5 VALUES LESS THAN ( '624999999999' ),  
  PARTITION P6 VALUES LESS THAN ( '749999999999' ),  
  PARTITION P7 VALUES LESS THAN ( '874999999999' ),  
  PARTITION P8 VALUES LESS THAN ( MAXVALUE )  
)  
COMPRESS ADVANCED LOW  
/  
ALTER TABLE CI_BSEG_MSG ADD CONSTRAINT XT080P0 PRIMARY KEY(BSEG_ID, BILL_MSG_CD) USING INDEX  
/  

Child Table: CI_BSEG_READ

CREATE TABLE CI_BSEG_READ  
(  
  BSEG_ID CHAR(12) NOT NULL ENABLE,  
  SP_ID CHAR(10) NOT NULL ENABLE,  
  REG_CONST NUMBER(12,6) DEFAULT 0 NOT NULL ENABLE,  
  CONSTRAINT CI_BSEG_READ_FK FOREIGN KEY(BSEG_ID, SP_ID) REFERENCES CI_BSEG_MSG ON DELETE CASCADE  
)  
PARTITION BY REFERENCE (CI_BSEG_MSG_FK)  
ENABLE ROW MOVEMENT  
/
Parent Table: CI_BSEG

```
SEQNO         NUMBER(5,0) NOT NULL ENABLE,
USAGE_FLG     CHAR(2) DEFAULT ' ' NOT NULL ENABLE,
USE_PCT       NUMBER(3,0) DEFAULT 0 NOT NULL ENABLE,
HOW_TO_USE_FLG CHAR(2) DEFAULT ' ' NOT NULL ENABLE,
MSR_PEAK_QTY_SW CHAR(1) DEFAULT ' ' NOT NULL ENABLE,
UOM_CD        CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
TOU_CD        CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
START_REG_READ_ID CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
START_READ_DTTM DATE NOT NULL ENABLE,
START_REG_READING NUMBER(15,6) DEFAULT 0 NOT NULL ENABLE,
END_REG_READ_ID   CHAR(12) DEFAULT ' ' NOT NULL ENABLE,
END_READ_DTTM DATE NOT NULL ENABLE,
END_REG_READING NUMBER(15,6) DEFAULT 0 NOT NULL ENABLE,
MSR_QTY       NUMBER(18,6) DEFAULT 0 NOT NULL ENABLE,
FINAL_UOM_CD  CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
FINAL_TOU_CD  CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
FINAL_REG_QTY NUMBER(18,6) DEFAULT 0 NOT NULL ENABLE,
VERSION       NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
SQI_CD        CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
FINAL_SQI_CD  CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
CONSTRAINT CI_BSEG_READ_FK FOREIGN KEY(BSEG_ID) REFERENCES CI_BSEG ON DELETE CASCADE )
PARTITION BY REFERENCE (CI_BSEG_READ_FK)
ENABLE ROW MOVEMENT /

INDEX
CREATE UNIQUE INDEX XT054P0 ON CI_BSEG_READ ( BSEG_ID, SP_ID, SEQNO ) TABLESPACE CM_XT048_IND
GLOBAL PARTITION BY RANGE (BSEG_ID)
{ PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
}
COMpress ADVANCED LOW /

ALTER TABLE CI_BSEG_READ ADD CONSTRAINT XT054P0 PRIMARY KEY(BSEG_ID, SP_ID, SEQNO) USING INDEX /
CREATE INDEX XT054S1 ON CI_BSEG_READ ( SP_ID ) TABLESPACE CM_XT048_IND /
CREATE INDEX XT054S2 ON CI_BSEG_READ ( START_REG_READ_ID ) TABLESPACE CM_XT048_IND /
CREATE INDEX XT054S3 ON CI_BSEG_READ ( END_REG_READ_ID ) TABLESPACE CM_XT048_IND /

Child Table: CI_BSEG_SQ

CREATE TABLE CI_BSEG_SQ
( ...

Sample SQL for ILM in CCB D - 16
Oracle Utilities Customer Care and Billing Database Administrator's Guide
BSEG_ID CHAR(12) NOT NULL ENABLE,
UOM_CD  CHAR(4) NOT NULL ENABLE,
TOU_CD  CHAR(8) NOT NULL ENABLE,
SQI_CD  CHAR(8) NOT NULL ENABLE,
INIT_SQ NUMBER(18,6) DEFAULT 0 NOT NULL ENABLE,
BILL_SQ NUMBER(18,6) DEFAULT 0 NOT NULL ENABLE,
VERSION NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CONSTRAINT CI_BSEG_SQ_FK FOREIGN KEY(BSEG_ID) REFERENCES CI_BSEG ON DELETE CASCADE
) PARTITION BY REFERENCE (CI_BSEG_SQ_FK)
ENABLE ROW MOVEMENT
/

INDEX
CREATE UNIQUE INDEX XT055P0 ON CI_BSEG_SQ ( BSEG_ID, UOM_CD, TOU_CD,
SQI_CD ) TABLESPACE CM_XT048_IND
GLOBAL PARTITION BY RANGE (BSEG_ID)
{
PARTITION P1 VALUES LESS THAN ( '124999999999' ),
PARTITION P2 VALUES LESS THAN ( '249999999999' ),
PARTITION P3 VALUES LESS THAN ( '374999999999' ),
PARTITION P4 VALUES LESS THAN ( '499999999999' ),
PARTITION P5 VALUES LESS THAN ( '624999999999' ),
PARTITION P6 VALUES LESS THAN ( '749999999999' ),
PARTITION P7 VALUES LESS THAN ( '874999999999' ),
PARTITION P8 VALUES LESS THAN ( MAXVALUE )
}
COMPRESS ADVANCED LOW
/
ALTER TABLE CI_BSEG_SQ ADD CONSTRAINT XT055P0 PRIMARY KEY(BSEG_ID,
UOM_CD, TOU_CD, SQI_CD) USING INDEX
/

Child Table: CI_BSEG_ITEM
CREATE TABLE CI_BSEG_ITEM
(
   BSEG_ID      CHAR(12) NOT NULL ENABLE,
   SEQNO        NUMBER(5,0) NOT NULL ENABLE,
   ITEM_TYPE_CD CHAR(8) DEFAULT ' ' NOT NULL ENABLE,
   ITEM_ID      CHAR(10) DEFAULT ' ' NOT NULL ENABLE,
   START_DT DATE NOT NULL ENABLE,
   END_DT DATE NOT NULL ENABLE,
   ITEM_CNT NUMBER(11,2) DEFAULT 0 NOT NULL ENABLE,
   UOM_CD   CHAR(4) DEFAULT ' ' NOT NULL ENABLE,
   SVC_QTY  NUMBER(18,6) DEFAULT 0 NOT NULL ENABLE,
   VERSION  NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
CONSTRAINT CI_BSEG_ITEM_FK FOREIGN KEY(BSEG_ID) REFERENCES CI_BSEG ON DELETE CASCADE
) PARTITION BY REFERENCE (CI_BSEG_ITEM_FK)
ENABLE ROW MOVEMENT
/

INDEX
CREATE UNIQUE INDEX XT053P0 ON CI_BSEG_ITEM ( BSEG_ID, SEQNO )
TABLESPACE CM_XT048_IND
GLOBAL PARTITION BY RANGE (BSEG_ID)
PARTITION P1 VALUES LESS THAN ('124999999999'),
PARTITION P2 VALUES LESS THAN ('249999999999'),
PARTITION P3 VALUES LESS THAN ('374999999999'),
PARTITION P4 VALUES LESS THAN ('499999999999'),
PARTITION P5 VALUES LESS THAN ('624999999999'),
PARTITION P6 VALUES LESS THAN ('749999999999'),
PARTITION P7 VALUES LESS THAN ('874999999999'),
PARTITION P8 VALUES LESS THAN (MAXVALUE)
)
COMPRESS ADVANCED LOW
/
ALTER TABLE CI_BSEG_ITEM ADD CONSTRAINT XT053P0 PRIMARY KEY(BSEG_ID,
SEQNO) USING INDEX
/

In this release of Oracle Utilities Customer Care and Billing, there are enhancements that change the behavior of some objects. Upgrading customers may wish to update existing data to align with how newly created data will behave.

The following sample scripts are provided to help upgrading clients. Customers are advised to review, edit, and test these sample scripts to ensure they meet business and data requirements.

All scripts are delivered with logic to run in threads. In the format that the script is delivered, these scripts will not process any records. The scripts must be edited to set specific key ranges so that they can be run in parallel or process all records.

This appendix consists of the following:

• Updating Customer Contact Account and Premise
• Updating Preferred Contact Method on Legacy Values

Updating Customer Contact Account and Premise

In this release of Oracle Utilities Customer Care and Billing, the customer contact capability has been enhanced so that customer contacts can be linked to a person, account and/or premise. This section contains sample SQL that upgrading implementations can use to update the account ID and premise ID fields on existing customer contacts.

All Oracle Utilities Customer Care and Billing system processes that create customer contacts have been enhanced to populate account and/or premise. Not all of these areas retain a link to the customer contact created and the SQL provided is just a sample.

These scripts update Customer Contact Account and Premise from the following sources:

• Customer Contact Characteristics
• Collection Events
• Severance Events
• Write off Events
The other Oracle Utilities Customer Care and Billing process enhanced are algorithm types delivered for the below plug-in spots. Examine your organization's customer contacts to determine if you should update customer contacts created from the following:

- FA Remark Algorithm
- Meter read Remark Algorithm
- Case Type Enter Status Algorithm
- Customer Class Order Completion
- SA Type SA Stop
- SA Type - SA Activation
- Service Credit Membership Type - Membership Activation
- Service Credit Membership Type - Membership Creation
- Campaign - Order Completion
- Lead Event Type (BO) - Lead Event Completion
- Notification Type (BO) - Create Notification

Since existing customer contact records are all person-based, all account updates should occur before premise updates to ensure the premise is associated with the account.

These are intended to be run in the following order:

1. Update Account ID from characteristic.

Note the following about this SQL:

- This cannot handle two characteristic types that are both linked to Acct FK Ref with different char values. If this exists such as FROM_ACCT and TO_ACCT with different values, this will not update.
- Limited to accounts linked to CC person to not violate new CC validations.
- Change FK Ref if your implementation has introduced new FK Ref values for ACCT.

```sql
UPDATE CI_CC X
SET X.ACCT_ID =
(SELECT DISTINCT(a.CHAR_VAL_FK1)
FROM CI_CC_CHAR A,
CI_CHAR_TYPE B,
CI_CC C
WHERE a.CHAR_TYPE_CD = B.CHAR_TYPE_CD
AND A.CC_ID = C.CC_ID
AND B.FK_REF_CD <> ' '
AND b.fk_ref_cd = 'ACCT'
AND a.CC_ID = X.CC_ID
AND EXISTS
(SELECT 'x'
FROM CI_ACCT.PER D
WHERE D.PER_ID = C.PER_ID
AND D.ACCT_ID = a.CHAR_VAL_FK1)
)
WHERE CC_ID =
(SELECT A.CC_ID
```
FROM CI_CC_CHAR A,
    CI_CHAR_TYPE B,
    CI_CC C
WHERE a.CHAR_TYPE_CD = B.CHAR_TYPE_CD
AND A.CC_ID          = C.CC_ID
AND B.FK_REF_CD     <> ' ' 
AND b.fk_ref_cd      = 'ACCT'
AND a.CC_ID          = X.CC_ID
AND EXISTS
    (SELECT 'x'
        FROM CI_ACCT_PER D
        WHERE D.PER_ID = C.PER_ID
        AND D.ACCT_ID  = a.CHAR_VAL_FK1
    )
}
)
AND 1 =
    (SELECT COUNT (DISTINCT a.CHAR_VAL_FK1)
        FROM CI_CC_CHAR A,
            CI_CHAR_TYPE B,
            CI_CC C
WHERE a.CHAR_TYPE_CD = B.CHAR_TYPE_CD
AND A.CC_ID          = C.CC_ID
AND B.FK_REF_CD     <> ' ' 
AND b.fk_ref_cd      = 'ACCT'
AND a.CC_ID          = X.CC_ID
    )
AND X.ACCT_ID IS NULL
    --AND X.CC_ID BETWEEN '0000000000' AND '9999999999';
    AND X.CC_ID BETWEEN '0000000000' AND '0000000000';

2. Update Account ID from Coll event.

UPDATE CI_CC X
SET X.ACCT_ID =
    (SELECT a.acct_id
        FROM CI_COLL_PROC A,
            CI_COLL_EVT_CC C
        WHERE a.coll_proc_id = c.coll_proc_ID
        AND c.cc_id          = x.cc_id
    )
WHERE X.CC_ID IN
    (SELECT CC_ID FROM CI_COLL_EVT_CC
    )
    --AND X.CC_ID BETWEEN '0000000000' AND '9999999999';
    AND X.CC_ID BETWEEN '0000000000' AND '0000000000';

3. Update Account ID from Sev event.

UPDATE CI_CC X
SET X.ACCT_ID =
    (SELECT a.acct_id
        FROM CI_SA A,
            CI_SEV_PROC B,
            CI_SEV_EVT_CC C
        WHERE a.SA_ID     = B.SA_ID
        AND B.sev_proc_id = c.sev_proc_id
        AND c.cc_id       = x.cc_id
    )
WHERE X.CC_ID IN
    (SELECT CC_ID FROM CI_SEV_EVT_CC
    )
    --AND X.CC_ID BETWEEN '0000000000' AND '9999999999';
    AND X.CC_ID BETWEEN '0000000000' AND '0000000000';
4. Update Premise ID from Sev event.

Using premise linked to SP linked to FA linked to same Sev Proc First.

```
UPDATE CI_CC X
SET X.PREM_ID =
(SELECT DISTINCT h.prem_id
FROM CI_SEV_EVT_CC D,
    CI_SEV_EVT_FA E,
    CI_FA G,
    CI_SP H
WHERE D.SEVER_PROC_ID = E.SEVER_PROC_ID
    AND e.fa_id = g.fa_id
    AND g.sp_id = h.sp_id
    AND d.cc_id = x.cc_id)
WHERE X.CC_ID IN
(SELECT CC_ID
FROM CI_SEV_EVT_CC D,
    CI_SEV_EVT_FA E
WHERE D.SEVER_PROC_ID = E.SEVER_PROC_ID
)
AND X.PREM_ID IS NULL
--AND X.CC_ID BETWEEN '0000000000' AND '9999999999';
AND X.CC_ID BETWEEN '0000000000' AND '0000000000';
```

5. Update Premise ID from Sev event.

Using premise linked to SA via Char Premise second.

**Note:** There is no SQL that will try to find a premise via SASP. The likelihood of more than one premise is too high.

```
UPDATE CI_CC X
SET X.PREM_ID =
(SELECT NVL(a.char_prem_id,NULL)
FROM CI_SA A,
    CI_SEV_PROC B,
    CI_SEV_EVT_CC C
WHERE a.SA_ID = B.SA_ID
    AND B.SEVER_PROC_ID = c.SEVER_PROC_ID
    AND A.CHAR_PREM_ID <> ' ',
    AND c.cc_id = x.cc_id)
WHERE X.CC_ID IN
(SELECT CC_ID FROM CI_SEV_EVT_CC
)
AND X.PREM_ID IS NULL
--AND X.CC_ID BETWEEN '0000000000' AND '9999999999';
AND X.CC_ID BETWEEN '0000000000' AND '0000000000';
```

6. Update Account ID from WO event.

```
UPDATE CI_CC X
SET X.ACCT_ID =
(SELECT a.acct_id
FROM CI_WO_PROC A,
    CI_WO_EVT_CC C
WHERE a.WO_PROC_ID = c.WO_PROC_ID
    AND c.cc_id = x.cc_id
```

**NOTE:** You must hardcode the Char Type Code your implementation has introduced.

```sql
UPDATE CI_CC X
SET X.ACCT_ID =
(SELECT b.acct_id
FROM CI_OD_PROC_LOG A,
    CI_OD_PROC B
WHERE a.char_type_cd = 'CCID'
AND a.OD_PROC_ID = B.OD_PROC_ID
AND trim(a.char_val_fk1) = x.cc_id)
WHERE X.CC_ID IN
    (SELECT a.char_val_fk1
     FROM CI_OD_PROC_LOG A,
         CI_OD_PROC B
     WHERE a.char_type_cd = 'CCID'
     AND a.OD_PROC_ID = B.OD_PROC_ID
     )
AND X.ACCT_ID IS NULL
--AND X.CC_ID BETWEEN '0000000000' AND '9999999999';
AND X.CC_ID BETWEEN '0000000000' AND '0000000000';
```

8. Update Premise ID from CC Char.

Some notes about this SQL:

- This cannot handle two characteristic types that are both linked to Prem FK Ref with different char values. If this exists such as OLD_PREM and NEW_PREM with different values, this will not update.
- Limited to premise associated with account if acct is populated on the CC to not violate new CC validations.
- Change FK Ref if your implementation has introduced new FK Ref values for PREM.

```sql
UPDATE CI_CC X
SET X.PREM_ID =
(SELECT DISTINCT(a.CHAR_VAL_FK1)
FROM CI_CC_CHAR A,
    CI_CHAR_TYPE B,
    CI_CC C
WHERE a.CHAR_TYPE_CD = B.CHAR_TYPE_CD
AND A.CC_ID = C.CC_ID
AND B.FK_REF_CD <> ' ' 
AND b.fk_ref_cd = 'PREM'
AND a.CC_ID = X.CC_ID
AND (C.ACCT_ID IS NULL
OR C.ACCT_ID IS NOT NULL
OR C.ACCT_ID IS NULL
OR C.ACCT_ID IS NOT NULL
AND a.CHAR_VAL_FK1 IN
    (SELECT E.char_prem_id FROM CI_SA E WHERE E.ACCT_ID = C.ACCT_ID
     UNION
```
Updating Preferred Contact Method on Legacy Values

In this release of Oracle Utilities Customer Care and Billing, a feature is introduced that some system processes use to determine if person phone and email or person contacts is being used.

If moving to using person contacts, some contact method values on case and customer contact are suppressed and existing records show as <invalid value>.

These scripts update the preferred contact method on cases and customer contacts from legacy values to person contact.
1. Update Case Preferred Contact Method from Email to Primary Email Person Contact:

```
UPDATE CI_CASE X
SET X.CONTACT_METH_FLG = 'C1PC',
    X.C1_CONTACT_ID =
        (SELECT B.C1_CONTACT_ID
         FROM CI_CASE A,
           CISADM.C1_PER_CONTDET B,
           CISADM.C1_COMM_RTE_TYPE C
         WHERE CONTACT_METH_FLG = 'EM'
           AND A.CONTACT_PER_ID = B.PER_ID
           AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
           AND B.CND_PRIMARY_FLG = 'C1YS'
           AND C.COMM_RTE_METH_FLG = 'EMAIL'
           AND X.CASE_ID = A.CASE_ID)
WHERE X.CASE_ID IN
    (SELECT A.CASE_ID
     FROM CI_CASE A,
      CISADM.C1_PER_CONTDET B,
      CISADM.C1_COMM_RTE_TYPE C
     WHERE CONTACT_METH_FLG = 'EM'
       AND A.CONTACT_PER_ID = B.PER_ID
       AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
       AND B.CND_PRIMARY_FLG = 'C1YS'
       AND C.COMM_RTE_METH_FLG = 'EMAIL')
--AND X.CASE_ID BETWEEN '0000000000' AND '9999999999';
AND X.CASE_ID BETWEEN '0000000000' AND '0000000000';
```

2. Update Case Preferred Contact Method from Fax to Primary Fax Person Contact:

```
UPDATE CI_CASE X
SET X.CONTACT_METH_FLG = 'C1PC',
    X.C1_CONTACT_ID =
        (SELECT B.C1_CONTACT_ID
         FROM CI_CASE A,
           CISADM.C1_PER_CONTDET B,
           CISADM.C1_COMM_RTE_TYPE C
         WHERE CONTACT_METH_FLG = 'FAX'
           AND A.CONTACT_PER_ID = B.PER_ID
           AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
           AND B.CND_PRIMARY_FLG = 'C1YS'
           AND C.COMM_RTE_METH_FLG = 'FAX'
           AND X.CASE_ID = A.CASE_ID)
WHERE X.CASE_ID IN
    (SELECT A.CASE_ID
     FROM CI_CASE A,
      CISADM.C1_PER_CONTDET B,
      CISADM.C1_COMM_RTE_TYPE C
     WHERE CONTACT_METH_FLG = 'FAX'
       AND A.CONTACT_PER_ID = B.PER_ID
       AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
       AND B.CND_PRIMARY_FLG = 'C1YS'
       AND C.COMM_RTE_METH_FLG = 'FAX')
--AND X.CASE_ID BETWEEN '0000000000' AND '9999999999';
AND X.CASE_ID BETWEEN '0000000000' AND '0000000000';
```
3. Update Case Preferred Contact Method from Phone to Primary Phone Person Contact:

```sql
UPDATE CI_CASE X
SET X.CONTACT_METH_FLG = 'C1PC',
    X.C1_CONTACT_ID =
(SELECT B.C1_CONTACT_ID
FROM CI_CASE A,
    CISADM.C1_PER_CONTDET B,
    CISADM.C1_COMM_RTE_TYPE C
WHERE CONTACT_METH_FLG = 'PH'
AND A.CONTACT_PER_ID = B.PER_ID
AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
AND B.CND_PRIMARY_FLG = 'C1YS'
AND C.COMM_RTE_METH_FLG = 'PHONE'
AND X.CASE_ID = A.CASE_ID )
WHERE X.CASE_ID IN
(SELECT A.CASE_ID
FROM CI_CASE A,
    CISADM.C1_PER_CONTDET B,
    CISADM.C1_COMM_RTE_TYPE C
WHERE CONTACT_METH_FLG = 'PH'
AND A.CONTACT_PER_ID = B.PER_ID
AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
AND B.CND_PRIMARY_FLG = 'C1YS'
AND C.COMM_RTE_METH_FLG = 'PHONE'
)
--AND X.CASE_ID BETWEEN '0000000000' AND '9999999999';
AND X.CASE_ID BETWEEN '0000000000' AND '0000000000';
```

4. Update Customer Contact Preferred Contact Method from Email to Primary Email Person Contact:

```sql
UPDATE CI_CC X
SET X.CONTACT_METH_FLG = 'C1PC',
    X.C1_CONTACT_ID =
(SELECT B.C1_CONTACT_ID
FROM CI_CC A,
    CISADM.C1_PER_CONTDET B,
    CISADM.C1_COMM_RTE_TYPE C
WHERE CONTACT_METH_FLG = 'EM'
AND A.PER_ID = B.PER_ID
AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
AND B.CND_PRIMARY_FLG = 'C1YS'
AND C.COMM_RTE_METH_FLG = 'EMAIL'
AND X.CC_ID = A.CC_ID )
WHERE X.CC_ID IN
(SELECT A.CC_ID
FROM CI_CC A,
    CISADM.C1_PER_CONTDET B,
    CISADM.C1_COMM_RTE_TYPE C
WHERE CONTACT_METH_FLG = 'EM'
AND A.PER_ID = B.PER_ID
AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
AND B.CND_PRIMARY_FLG = 'C1YS'
AND C.COMM_RTE_METH_FLG = 'EMAIL'
)
--AND X.CC_ID BETWEEN '0000000000' AND '9999999999';
AND X.CC_ID BETWEEN '0000000000' AND '0000000000';
```
5. Update Customer Contact Preferred Contact Method from Fax to Primary Fax
Person Contact:

```sql
UPDATE CI_CC X
SET X.CONTACT_METH_FLG = 'C1PC',
    X.C1_CONTACT_ID =
    (SELECT B.C1_CONTACT_ID
     FROM CI_CC A,
     CISADM.C1_PER_CONTDET B,
     CISADM.C1_COMM_RTE_TYPE C
     WHERE CONTACT_METH_FLG = 'FAX'
     AND A.PER_ID = B.PER_ID
     AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
     AND B.CND_PRIMARY_FLG = 'C1YS'
     AND C.COMM_RTE_METH_FLG = 'FAX'
     AND X.CC_ID = A.CC_ID)
WHERE X.CC_ID IN
    (SELECT A.CC_ID
     FROM CI_CC A,
     CISADM.C1_PER_CONTDET B,
     CISADM.C1_COMM_RTE_TYPE C
     WHERE CONTACT_METH_FLG = 'FAX'
     AND A.PER_ID = B.PER_ID
     AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
     AND B.CND_PRIMARY_FLG = 'C1YS'
     AND C.COMM_RTE_METH_FLG = 'FAX'
     )
   --AND X.CC_ID BETWEEN '0000000000' AND '9999999999';
   AND X.CC_ID BETWEEN '0000000000' AND '0000000000';
```

6. Update Customer Contact Preferred Contact Method from Phone to Primary Phone
Person Contact:

```sql
UPDATE CI_CC X
SET X.CONTACT_METH_FLG = 'C1PC',
    X.C1_CONTACT_ID =
    (SELECT B.C1_CONTACT_ID
     FROM CI_CC A,
     CISADM.C1_PER_CONTDET B,
     CISADM.C1_COMM_RTE_TYPE C
     WHERE CONTACT_METH_FLG = 'PH'
     AND A.PER_ID = B.PER_ID
     AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
     AND B.CND_PRIMARY_FLG = 'C1YS'
     AND C.COMM_RTE_METH_FLG = 'PHONE'
     AND X.CC_ID = A.CC_ID)
WHERE X.CC_ID IN
    (SELECT A.CC_ID
     FROM CI_CC A,
     CISADM.C1_PER_CONTDET B,
     CISADM.C1_COMM_RTE_TYPE C
     WHERE CONTACT_METH_FLG = 'PH'
     AND A.PER_ID = B.PER_ID
     AND B.COMM_RTE_TYPE_CD = C.COMM_RTE_TYPE_CD
     AND B.CND_PRIMARY_FLG = 'C1YS'
     AND C.COMM_RTE_METH_FLG = 'PHONE'
     )
   --AND X.CC_ID BETWEEN '0000000000' AND '9999999999';
   AND X.CC_ID BETWEEN '0000000000' AND '0000000000';
```
7. The following shows remaining cases that need to be investigated manually:
    SELECT *
    FROM CI_CASE
    WHERE CONTACT_METH_FLG <> ' ' 
    AND CONTACT_METH_FLG NOT IN ('N/A','POST','C1PC');

8. The following shows remaining Customer Contacts that need to be investigated manually:
    SELECT *
    FROM CI_CC
    WHERE CONTACT_METH_FLG <> ' ' 
    AND CONTACT_METH_FLG NOT IN ('N/A','POST','C1PC');
Appendix F

Upgrades to the Oracle Utilities Customer Care and Billing 2.6.0.1.0 Database

This document describes the database upgrade process for the Oracle Utilities Customer Care and Billing V2.6.0.1.0. 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 V2.6.0.1.0 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 of the document. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V2.6.0.1.0 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 V2.6.0.1.0 User Guides. In the last section of this document you will find a list of the new tables that are added in V2.6.0.1.0.

This section includes:
- Schema Changes
- New System Data

Schema Changes

Column Format Changes

The following columns are modified in this Oracle Utilities Customer Care and Billing release.

<table>
<thead>
<tr>
<th>Table_Name</th>
<th>Column_Name</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL_BF_VAL</td>
<td>VAL</td>
<td>NUMBER (18,7)</td>
<td>NUMBER (19,8)</td>
</tr>
<tr>
<td>CL_CVAL_TMPL</td>
<td>VAL</td>
<td>NUMBER (18,7)</td>
<td>NUMBER (19,8)</td>
</tr>
<tr>
<td>CL_CVAL_TOU_TMP</td>
<td>VAL</td>
<td>NUMBER (18,7)</td>
<td>NUMBER (19,8)</td>
</tr>
<tr>
<td>CL_RC</td>
<td>VAL</td>
<td>NUMBER (18,7)</td>
<td>NUMBER (19,8)</td>
</tr>
</tbody>
</table>
New System Data

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

New Tables

There are no new tables are added to Oracle Utilities Customer Care and Billing in this release.

New Columns

The following columns are added to Oracle Utilities Customer Care and Billing in this release.

<table>
<thead>
<tr>
<th>Table_Name</th>
<th>Column_Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI_CC_TYPE</td>
<td>CC_PER_FLG</td>
<td>CHAR(4)</td>
</tr>
<tr>
<td>CI_CC_TYPE</td>
<td>CC_ACCT_FLG</td>
<td>CHAR(4)</td>
</tr>
<tr>
<td>CI_CC_TYPE</td>
<td>CC_PREM_FLG</td>
<td>CHAR(4)</td>
</tr>
<tr>
<td>CI_CC_TYPE</td>
<td>ENTITY_REL_FLG</td>
<td>CHAR(4)</td>
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New Indexes

The following indexes are added in this release of Oracle Utilities Customer Care and Billing.

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<th>Column_Name</th>
</tr>
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<td>C1_NTF_PREF</td>
<td>C1T002S3</td>
<td>C1_CONTACT_ID</td>
</tr>
<tr>
<td>C1_NTF_PREF</td>
<td>C1T002S4</td>
<td>F1_SVC_TASK_ID</td>
</tr>
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</table>

New Functions

There are no new functions added to Oracle Utilities Customer Care and Billing in this release.
## New Batch Control Application Services

The following batch controls use the designated application services:

<table>
<thead>
<tr>
<th>Batch Control</th>
<th>Description</th>
<th>New Application Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTVTAPY</td>
<td>Activate auto-pay</td>
<td>C1-APAY</td>
</tr>
<tr>
<td>ADM</td>
<td>Account debt monitor</td>
<td>ADM</td>
</tr>
<tr>
<td>ADM2</td>
<td>Account debt monitor, minimum days review</td>
<td>ADM2</td>
</tr>
<tr>
<td>ANLYZSAR</td>
<td>Analyze SA relationship</td>
<td>ANLYZSAR</td>
</tr>
<tr>
<td>APAYACH</td>
<td>Auto pay extract - ACH</td>
<td>C1-APAY</td>
</tr>
<tr>
<td>APAYCRET</td>
<td>Create autopay on extract date</td>
<td>C1-APAY</td>
</tr>
<tr>
<td>APAYDSFR</td>
<td>Distribute and freeze autopay</td>
<td>C1-APAY</td>
</tr>
<tr>
<td>APDL</td>
<td>Accounts payable download</td>
<td>APDL</td>
</tr>
<tr>
<td>ASSGNSBN</td>
<td>Assign sequential bill numbers</td>
<td>ASSGNSBN</td>
</tr>
<tr>
<td>BALAPY</td>
<td>Create autopay tender controls</td>
<td>BALAPY</td>
</tr>
<tr>
<td>BCASSIGN</td>
<td>Assign balance control id to FTs</td>
<td>C1-BCG</td>
</tr>
<tr>
<td>BCGNEW</td>
<td>Create new balance control group</td>
<td>C1-BCG</td>
</tr>
<tr>
<td>BCGSNAP</td>
<td>Create/validate balance control snapshot</td>
<td>C1-BCG</td>
</tr>
<tr>
<td>BCU1</td>
<td>Billable Charge Upload 1 - Validate Staging</td>
<td>C1-BCU</td>
</tr>
<tr>
<td>BCU2</td>
<td>Billable Charge Upload 2 - Populate</td>
<td>C1-BCU</td>
</tr>
<tr>
<td>BILLING</td>
<td>Create bills using bill cycle</td>
<td>BILLING</td>
</tr>
<tr>
<td>BUDMON</td>
<td>Monitor budgets</td>
<td>BUDMON</td>
</tr>
<tr>
<td>BUDTRUP</td>
<td>True up budgets</td>
<td>BUDTRUP</td>
</tr>
<tr>
<td>C1-ACAMT</td>
<td>Update Bill Segment Audit Calc Amount</td>
<td>C1-ACAMT</td>
</tr>
<tr>
<td>C1-ACTRQ</td>
<td>Activity Request Monitor (Deferred)</td>
<td>C1-ACTRQ</td>
</tr>
<tr>
<td>C1-ADAMT</td>
<td>Update Adjustment Audit Calc Amount</td>
<td>C1-ADAMT</td>
</tr>
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<td>C1-ADMOV</td>
<td>Overdue Monitor</td>
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<td>C1-ADUP1</td>
<td>Adjustment Upload Preprocessor</td>
<td>C1-ADUP</td>
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<tr>
<td>C1-ADUP2</td>
<td>Adjustment Upload</td>
<td>C1-ADUP</td>
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<tr>
<td>C1-ADURS</td>
<td>Resolve Suspense Adjustments</td>
<td>C1-ADURS</td>
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<td>C1-APACH</td>
<td>Auto pay extract - ACH (with offset days parameter)</td>
<td>C1-APAY</td>
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<td>Approval Request Monitor</td>
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<td>Activity Request Monitor</td>
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<td>Batch Control</td>
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<td>Freeze and Complete Pending Bills</td>
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<td>Billing Data Initial Load for DataConnect</td>
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<td>Bill Review Validation</td>
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<td>Review Bills for Settlement of Held GL Amounts</td>
<td>C1-BLRVVW</td>
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<td>Assign Bill Document Numbers</td>
<td>C1-DOCNBR</td>
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<td>Billing Data Extract for DataConnect</td>
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<td>Create Person Contact from Person Phone/Email</td>
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<td>Issuing Center Monitor</td>
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<td>Lead Event Periodic Monitor Process</td>
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<td>Advanced Analysis System Lead - Retry</td>
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<td>Off Cycle Bill Generator Monitor</td>
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<td>Overdue and Cut Event Manager</td>
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<td>Payment Template Monitor</td>
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<td>Payment Event Upload Stage 1</td>
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<td>Balance Tender Controls</td>
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<td>C1-PNBAS</td>
<td>Assign Payment Event Document Numbers</td>
<td>C1-DOCNBR</td>
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<td>Prepay Biller Task - Error</td>
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<td>Rebate Claim Monitor</td>
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<td>Conservation Program Rebate Definition Monitor</td>
<td>C1-CONSRVMON</td>
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<td>SA-Based Initial Load for DataConnect</td>
<td>C1-DATACON</td>
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<td>SAFT-PT Audit Extract Concatenator</td>
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<td>SP-Based Initial Load for DataConnect</td>
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<td>SP-Based Extract for DataConnect</td>
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<td>Service Route Download Staging</td>
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<td>C1-SYNIL</td>
<td>Generic Sync Request Initial Load</td>
<td>C1-SYNIL</td>
</tr>
<tr>
<td>C1-TCRNB</td>
<td>Transition OCBG for Replacement Read Process</td>
<td>C1-TCRNB</td>
</tr>
<tr>
<td>Batch Control</td>
<td>Description</td>
<td>New Application Service</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>C1-TDCOE</td>
<td>Create To Do Entry for Contract Option Event Exception</td>
<td>C1-TDCOE</td>
</tr>
<tr>
<td>C1-TDIDS</td>
<td>Create To Do Entry for Interval Data Set Exception</td>
<td>C1-TDIDS</td>
</tr>
<tr>
<td>C1-TDRDS</td>
<td>Create To Do Entry for Interval Register Data Set Exception</td>
<td>C1-TDRDS</td>
</tr>
<tr>
<td>C1-TDTDS</td>
<td>Create To Do Entry for TOU Data Set Exception</td>
<td>C1-TDTDS</td>
</tr>
<tr>
<td>C1-TOUTR</td>
<td>TOU Map Data Generation Monitor</td>
<td>C1-TOUTR</td>
</tr>
<tr>
<td>C1-UPDBF</td>
<td>Update Calc Rules Mapping</td>
<td>C1-UPDBF</td>
</tr>
<tr>
<td>C1-UPDNT</td>
<td>Update Notification Tasks</td>
<td>C1-UPDNT</td>
</tr>
<tr>
<td>C1-UPDPT</td>
<td>Update Payment Tender Alternate Currency</td>
<td>C1-UPDPT</td>
</tr>
<tr>
<td>C1-USGDF</td>
<td>Usage Scheduled Monitor Process (Deferred)</td>
<td>C1-USAGE</td>
</tr>
<tr>
<td>C1-USGTR</td>
<td>Usage Periodic Monitor Process</td>
<td>C1-USAGE</td>
</tr>
<tr>
<td>C1-WAMAS</td>
<td>Extract asset data for work and asset management</td>
<td>C1-WAMEXTRACT</td>
</tr>
<tr>
<td>C1-WAMEX</td>
<td>Extract customer data for work and asset management</td>
<td>C1-WAMEXTRACT</td>
</tr>
<tr>
<td>C1-WFSUB</td>
<td>Workflow event trigger - Batch scheduler</td>
<td>C1-WORKFLOW</td>
</tr>
<tr>
<td>CAREPROG</td>
<td>Create customer contact for expiring SA char</td>
<td>CAREPROG</td>
</tr>
<tr>
<td>CASETRAN</td>
<td>Case Status Automatic Transition Process</td>
<td>C1-CASETRAN</td>
</tr>
<tr>
<td>CET</td>
<td>Collection event trigger</td>
<td>CET</td>
</tr>
<tr>
<td>CLOSEQTE</td>
<td>Close expired quotes</td>
<td>CLOSEQTE</td>
</tr>
<tr>
<td>CPCRALOC</td>
<td>Capital credit allocation</td>
<td>C1-CAPCRE</td>
</tr>
<tr>
<td>CPCRRRETR</td>
<td>Capital credit retirement</td>
<td>C1-CAPCRE</td>
</tr>
<tr>
<td>CPM</td>
<td>Collection process monitor</td>
<td>CPM</td>
</tr>
<tr>
<td>DEPINTRF</td>
<td>Deposit interest refund</td>
<td>C1-DEPOSIT</td>
</tr>
<tr>
<td>DEPRFND</td>
<td>Deposit refund</td>
<td>C1-DEPOSIT</td>
</tr>
<tr>
<td>DEPRRVW</td>
<td>Deposit review</td>
<td>C1-DEPOSIT</td>
</tr>
<tr>
<td>DSGPFODL</td>
<td>Dispatch Group Field Order Print</td>
<td>C1-FODWNLD</td>
</tr>
<tr>
<td>DWLDBILC</td>
<td>Download billable charge</td>
<td>DWLDBILC</td>
</tr>
<tr>
<td>DWLDCOLL</td>
<td>Download collection agency ref</td>
<td>DWLDCOLL</td>
</tr>
<tr>
<td>DWLDCONS</td>
<td>Download consumption</td>
<td>DWLDCONS</td>
</tr>
<tr>
<td>Batch Control</td>
<td>Description</td>
<td>New Application Service</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>F1-ENCRS</td>
<td>Encrypt Legacy Schema Field Data</td>
<td>C1-ENCR</td>
</tr>
<tr>
<td>F1-ENCRT</td>
<td>Encrypt Legacy Table Field Data</td>
<td>C1-ENCR</td>
</tr>
<tr>
<td>FACOMPL</td>
<td>Field activity completion</td>
<td>C1-FAUPLD</td>
</tr>
<tr>
<td>FACT</td>
<td>Field activity remark activation</td>
<td>C1-FAUPLD</td>
</tr>
<tr>
<td>FANRMRCO</td>
<td>Complete FA using a recent MR</td>
<td>FANRMRCO</td>
</tr>
<tr>
<td>FAXROUT</td>
<td>Fax Routing</td>
<td>FAXROUT</td>
</tr>
<tr>
<td>FDS</td>
<td>Field order download staging</td>
<td>C1-FODWNLD</td>
</tr>
<tr>
<td>FOD</td>
<td>Automatic dispatch of FA's</td>
<td>C1-FODWNLD</td>
</tr>
<tr>
<td>FODL</td>
<td>Field order download extract</td>
<td>C1-FODWNLD</td>
</tr>
<tr>
<td>GLASSIGN</td>
<td>Populates GL_ACCT on CI_FT_GL</td>
<td>C1-GL</td>
</tr>
<tr>
<td>GLDL</td>
<td>GL download extract</td>
<td>C1-GL</td>
</tr>
<tr>
<td>GLS</td>
<td>Create GL download staging</td>
<td>C1-GL</td>
</tr>
<tr>
<td>IB-SPDB</td>
<td>Interval data set derivation</td>
<td>C1-INTERVAL</td>
</tr>
<tr>
<td>IB-STDB</td>
<td>SA specific TOU data creation</td>
<td>C1-INTERVAL</td>
</tr>
<tr>
<td>IPDSDVB</td>
<td>Interval prof data validation</td>
<td>C1-INTERVAL</td>
</tr>
<tr>
<td>IPDSIDB</td>
<td>Determine profile for datasets</td>
<td>C1-INTERVAL</td>
</tr>
<tr>
<td>IREGDVB</td>
<td>Interval reg. data validation</td>
<td>C1-INTERVAL</td>
</tr>
<tr>
<td>IREGIDB</td>
<td>Determine register for datasets</td>
<td>C1-INTERVAL</td>
</tr>
<tr>
<td>LATEPYMT</td>
<td>Create late payment charges</td>
<td>LATEPYMT</td>
</tr>
<tr>
<td>LTRPRT</td>
<td>Letter Extract</td>
<td>LTRPRT</td>
</tr>
<tr>
<td>MASSCNCL</td>
<td>Mass bill cancellation</td>
<td>MASSCNCL</td>
</tr>
<tr>
<td>MASSROBL</td>
<td>Mass re-open of bills</td>
<td>MASSROBL</td>
</tr>
<tr>
<td>MDL</td>
<td>Meter read download extract</td>
<td>MDL</td>
</tr>
<tr>
<td>MDS</td>
<td>Create MR download staging</td>
<td>C1-MRDWNLD</td>
</tr>
<tr>
<td>MRRA</td>
<td>Execute MR remark algorithms</td>
<td>MRRA</td>
</tr>
<tr>
<td>MSR</td>
<td>Create MR schedule routes</td>
<td>C1-MRDWNLD</td>
</tr>
<tr>
<td>MUP1</td>
<td>Meter Read upload 1 - populate meter config</td>
<td>C1-MRUPLD</td>
</tr>
<tr>
<td>MUP2</td>
<td>Meter Read upload 2 - populate meter read</td>
<td>C1-MRUPLD</td>
</tr>
<tr>
<td>NBBAPAY</td>
<td>Create autopay for NBB's</td>
<td>C1-NBB</td>
</tr>
<tr>
<td>NBBPS</td>
<td>Process NBB scheduled payments</td>
<td>C1-NBB</td>
</tr>
<tr>
<td>NDSXTR</td>
<td>Notif download staging extract</td>
<td>NDSXTR</td>
</tr>
<tr>
<td>PAYSPR</td>
<td>Pay service provider</td>
<td>PAYSPR</td>
</tr>
<tr>
<td>Batch Control</td>
<td>Description</td>
<td>New Application Service</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>POSTROUT</td>
<td>Postal bill routing</td>
<td>C1-BILLPRINT</td>
</tr>
<tr>
<td>PPAPAY</td>
<td>Generate autopay for pay plans</td>
<td>C1-PAYPLAN</td>
</tr>
<tr>
<td>PPM</td>
<td>Pay plan monitor</td>
<td>C1-PAYPLAN</td>
</tr>
<tr>
<td>PSASPM</td>
<td>Pending SA/SP monitor</td>
<td>PSASPM</td>
</tr>
<tr>
<td>PUPL</td>
<td>Payment upload</td>
<td>C1-PUPL</td>
</tr>
<tr>
<td>PY-RPE</td>
<td>Resolve payments in error</td>
<td>PY-RPE</td>
</tr>
<tr>
<td>QUOTROUT</td>
<td>Quote routing</td>
<td>QUOTROUT</td>
</tr>
<tr>
<td>REACH</td>
<td>YTD charitable contributions</td>
<td>REACH</td>
</tr>
<tr>
<td>REDSAAMT</td>
<td>Update old FT's as redundant</td>
<td>REDSAAMT</td>
</tr>
<tr>
<td>REGCNST</td>
<td>Register constant validation</td>
<td>REGCNST</td>
</tr>
<tr>
<td>RTTYPOST</td>
<td>Postal bill routing using bill print software</td>
<td>C1-BILLPRINT</td>
</tr>
<tr>
<td>SAACT</td>
<td>Activate pending start/stop SA</td>
<td>SAACT</td>
</tr>
<tr>
<td>SAEXPIRE</td>
<td>Stop expired SAs</td>
<td>SAEXPIRE</td>
</tr>
<tr>
<td>SARENEW</td>
<td>Renew Service Agreement</td>
<td>SARENEW</td>
</tr>
<tr>
<td>SASP</td>
<td>Find read for SA/SP</td>
<td>SASP</td>
</tr>
<tr>
<td>SEC</td>
<td>Severance event completion</td>
<td>C1-SEVEVT</td>
</tr>
<tr>
<td>SED</td>
<td>Severance event set dependency date</td>
<td>C1-SEVEVT</td>
</tr>
<tr>
<td>SET</td>
<td>Severance event trigger</td>
<td>C1-SEVEVT</td>
</tr>
<tr>
<td>STMDWLD</td>
<td>Download statements</td>
<td>STMDWLD</td>
</tr>
<tr>
<td>STMPRD</td>
<td>Create statements</td>
<td>STMPRD</td>
</tr>
<tr>
<td>TD-BCUPL</td>
<td>To Do for Billable Charge in Error</td>
<td>C1-BILLERR</td>
</tr>
<tr>
<td>TD-BIERR</td>
<td>To Do for Bills in Error</td>
<td>C1-BILLERR</td>
</tr>
<tr>
<td>TD-BSERR</td>
<td>To Do for Bill Segment in Error</td>
<td>C1-BILLERR</td>
</tr>
<tr>
<td>TD-BTERR</td>
<td>To Do for Batch Errors</td>
<td>TD-BTERR</td>
</tr>
<tr>
<td>TD-CCCB</td>
<td>To Do for Customer Contact</td>
<td>TD-CCCB</td>
</tr>
<tr>
<td>TD-CEVT</td>
<td>To Do for C&amp;C Events</td>
<td>TD-CEVT</td>
</tr>
<tr>
<td>TD-DTCS1</td>
<td>Create To Do for Deposit/Tender Upload Error</td>
<td>TD-DTCS1</td>
</tr>
<tr>
<td>TD-DTCS2</td>
<td>Complete To Do for Deposit/Tender Upload Error</td>
<td>TD-DTCS2</td>
</tr>
<tr>
<td>TD-DTCST</td>
<td>To Do for Deposit/Tender Upload Error</td>
<td>TD-DTCST</td>
</tr>
<tr>
<td>TD-ECBK</td>
<td>To Do for Callback Orders</td>
<td>TD-ECBK</td>
</tr>
<tr>
<td>TD-EPND</td>
<td>To Do for Pending Orders</td>
<td>TD-EPND</td>
</tr>
<tr>
<td>Batch Control</td>
<td>Description</td>
<td>New Application Service</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>TD-FACT</td>
<td>To Do for Field Activity Remark Exception</td>
<td>TD-FACT</td>
</tr>
<tr>
<td>TD-FAUPL</td>
<td>To Do for Field Activity Upload in Error</td>
<td>TD-FAUPL</td>
</tr>
<tr>
<td>TD-HILO</td>
<td>To Do for Meter Read High/Low Errors</td>
<td>TD-HILO</td>
</tr>
<tr>
<td>TD-MODTL</td>
<td>To Do for Open-Dispute Match Event</td>
<td>TD-MODTL</td>
</tr>
<tr>
<td>TD-MONTL</td>
<td>To Do for Open/non-Dispute Match Event</td>
<td>TD-MONTL</td>
</tr>
<tr>
<td>TD-MRRER</td>
<td>To Do for Meter Read Remarks in Error</td>
<td>TD-MRRER</td>
</tr>
<tr>
<td>TD-MRUPL</td>
<td>To Do for Meter Read Upload in Error</td>
<td>TD-MRUPL</td>
</tr>
<tr>
<td>TD-NCDEX</td>
<td>To Do for Non Cash Deposit</td>
<td>TD-NCDEX</td>
</tr>
<tr>
<td>TD-NOBC</td>
<td>To Do for Account without a Bill Cycle</td>
<td>TD-NOBC</td>
</tr>
<tr>
<td>TD-NOMR</td>
<td>To Do for SP without Meter Read Cycle</td>
<td>TD-NOMR</td>
</tr>
<tr>
<td>TD-NTDWN</td>
<td>To Do for NT Download in Error</td>
<td>TD-NTDWN</td>
</tr>
<tr>
<td>TD-NTUPL</td>
<td>To Do for Notification Upload in Error</td>
<td>TD-NTUPL</td>
</tr>
<tr>
<td>TD-PYERR</td>
<td>To Do for Payments in Error/Unfrozen</td>
<td>TD-PYERR</td>
</tr>
<tr>
<td>TD-PYUPL</td>
<td>To Do for Payment Staging Error</td>
<td>TD-PYUPL</td>
</tr>
<tr>
<td>TD-SEVT</td>
<td>To Do for Severance Events</td>
<td>TD-SEVT</td>
</tr>
<tr>
<td>TD-SPRO</td>
<td>To Do for Severance Processes</td>
<td>TD-SPRO</td>
</tr>
<tr>
<td>TD-SSFTL</td>
<td>To Do for Old Pending Start/ Stops</td>
<td>TD-SSFTL</td>
</tr>
<tr>
<td>TD-UNBAL</td>
<td>To Do for Unbalanced Pay Event</td>
<td>TD-UNBAL</td>
</tr>
<tr>
<td>TD-WEXTL</td>
<td>To Do for Workflow Events in Error</td>
<td>TD-WEXTL</td>
</tr>
<tr>
<td>TD-WOEVT</td>
<td>To Do for Write-Off Events</td>
<td>TD-WOEVT</td>
</tr>
<tr>
<td>TD-XAIDN</td>
<td>To Do for XAI Download Staging in error</td>
<td>TD-XAIDN</td>
</tr>
<tr>
<td>TD-XAIUP</td>
<td>To Do for XAI Upload Staging in error</td>
<td>TD-XAIUP</td>
</tr>
<tr>
<td>TREND</td>
<td>Trend update</td>
<td>TREND</td>
</tr>
<tr>
<td>UARENEW</td>
<td>Umbrella Agreement Renewal</td>
<td>UARENEW</td>
</tr>
<tr>
<td>UPDERR</td>
<td>Update Batch Run/Thread Status</td>
<td>UPDERR</td>
</tr>
<tr>
<td>WAITCOM</td>
<td>Completes a WF Event in Waiting state</td>
<td>C1-WORKFLOW</td>
</tr>
<tr>
<td>WAITFA</td>
<td>Wait for field actv completion</td>
<td>C1-WORKFLOW</td>
</tr>
<tr>
<td>WAITMAN</td>
<td>Workflow timeout manual wait</td>
<td>C1-WORKFLOW</td>
</tr>
<tr>
<td>WAITNT</td>
<td>Wait for notification response</td>
<td>C1-WORKFLOW</td>
</tr>
<tr>
<td>WET</td>
<td>Write off event trigger</td>
<td>WET</td>
</tr>
<tr>
<td>WFET</td>
<td>Workflow event trigger</td>
<td>C1-WORKFLOW</td>
</tr>
<tr>
<td>WFPRINIT</td>
<td>Workflow process initiation</td>
<td>C1-WORKFLOW</td>
</tr>
</tbody>
</table>
## Conversion Batch Control Application Services

The following batch controls use the C1-CONVERSION application service:

<table>
<thead>
<tr>
<th>Batch Control</th>
<th>Description</th>
<th>New Application Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPM</td>
<td>Write off monitor process</td>
<td>WPM</td>
</tr>
<tr>
<td>WX-NOTIF</td>
<td>Self-Service Notification Monitor</td>
<td>WX-NOTIF</td>
</tr>
</tbody>
</table>

### CIPVAAPI
- Insert CI_ACCT_APAY

### CIPVAAPK
- Generate CI_ACCT_APAY keys

### CIPVAAPV
- Foreign Key validation for CI_ACCT_APAY

### CIPVACCI
- Insert CI_ACCT

### CIPVACCK
- Generate CI_ACCT keys

### CIPVACHI
- Insert CI_ACCT_CHAR

### CIPVACHV
- Foreign Key validation for CI_ACCT_CHAR

### CIPVACPI
- Insert CI_ACCT_PER

### CIPVACPV
- Foreign Key validation for CI_ACCT_PER

### CIPVADCI
- Insert CI_ADJ_CHAR

### CIPVADCV
- Foreign Key validation for CI_ADJ_CHAR

### CIPVADJI
- Insert CI_ADJ

### CIPVADJK
- Generate CI_ADJ keys

### CIPVADJV
- Foreign Key validation for CI_ADJ

### CIPVAPAI
- Insert CI_PRM_ALT_ADDR

### CIPVAPAK
- Generate CI_PRM_ALT_ADDR keys

### CIPVAPAV
- Foreign Key validation for CI_PRM_ALT_ADDR

### CIPVAPRI
- Insert CI_ADJ_APREQ

### CIPVAPRK
- Generate CI_ADJ_APREQ keys

### CIPVAPRV
- Foreign Key validation for CI_ADJ_APREQ

### CIPVARHI
- Insert CI_COLL_AGY_HIS

### CIPVARCHV
- Foreign Key validation for CI_COLL_AGY_HIS

### CIPVARSI
- Insert CI_ADM_RVW_SCH

### CIPVARSV
- Foreign Key validation for CI_ADM_RVW_SCH

### CIPVBCCI
- Insert CI_BSEG_CL_CHAR
<table>
<thead>
<tr>
<th>Batch Control</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIPVBCCV</td>
<td>Foreign Key validation for CI_BSEG_CI_CHAR</td>
</tr>
<tr>
<td>CIPVBCGI</td>
<td>Insert CI_BILL_CHG</td>
</tr>
<tr>
<td>CIPVBCK</td>
<td>Generate CI_BILL_CHG keys</td>
</tr>
<tr>
<td>CIPVBGV</td>
<td>Foreign Key validation for CI_BILL_CHG</td>
</tr>
<tr>
<td>CIPVBCHI</td>
<td>Insert CI_BILL_CHAR</td>
</tr>
<tr>
<td>CIPVBCHV</td>
<td>Foreign Key validation for CI_BILL_CHAR</td>
</tr>
<tr>
<td>CIPVBLI</td>
<td>Insert CI_B_CHG_LINE</td>
</tr>
<tr>
<td>CIPVBLV</td>
<td>Foreign Key validation for CI_B_CHG_LINE</td>
</tr>
<tr>
<td>CIPVBFLI</td>
<td>Insert CI_BF_VAL</td>
</tr>
<tr>
<td>CIPVBFLV</td>
<td>Foreign Key validation for CI_BF_VAL</td>
</tr>
<tr>
<td>CIPVBK</td>
<td>Generate CI_BILL keys</td>
</tr>
<tr>
<td>CIPVBLLI</td>
<td>Insert CI_BILL</td>
</tr>
<tr>
<td>CIPVBLLV</td>
<td>Foreign Key validation for CI_BILL</td>
</tr>
<tr>
<td>CIPVBLMI</td>
<td>Insert CI_BILL_MSGS</td>
</tr>
<tr>
<td>CIPVBLMV</td>
<td>Foreign Key validation for CI_BILL_MSGS</td>
</tr>
<tr>
<td>CIPVBLLRI</td>
<td>Insert CI_BILL_ROUTING</td>
</tr>
<tr>
<td>CIPVBLLRV</td>
<td>Foreign Key validation for CI_BILL_ROUTING</td>
</tr>
<tr>
<td>CIPVBRLV</td>
<td>Insert CI_BILL_RVW_SCH</td>
</tr>
<tr>
<td>CIPVBRLVV</td>
<td>Foreign Key validation for CI_BILL_RVW_SCH</td>
</tr>
<tr>
<td>CIPVBSAI</td>
<td>Insert CI_BILL_SA</td>
</tr>
<tr>
<td>CIPVBSAV</td>
<td>Foreign Key validation for CI_BILL_SA</td>
</tr>
<tr>
<td>CIPVBSCI</td>
<td>Insert CI_BSEG_CALC</td>
</tr>
<tr>
<td>CIPVBSCV</td>
<td>Foreign Key validation for CI_BSEG_CALC</td>
</tr>
<tr>
<td>CIPVBGK</td>
<td>Generate CI_BSEG keys</td>
</tr>
<tr>
<td>CIPVBGII</td>
<td>Insert CI_BSEG_ITEM</td>
</tr>
<tr>
<td>CIPVBGIV</td>
<td>Foreign Key validation for CI_BSEG_ITEM</td>
</tr>
<tr>
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### Conversion Batch Control Application Services

**Upgrades to the Oracle Utilities Customer Care and Billing 2.6.0.1.0 Database**

**Batch Control** | **Description**
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`CIPVPGOV` | Foreign Key validation for `CI_PREM_GEO`
`CIPVPIDI` | Insert `CI_PER_ID`
`CIPVPIDV` | Foreign Key validation for `CI_PER_ID`
`CIPVPNMI` | Insert `CI_PER_NAME`
`CIPVPNMV` | Foreign Key validation for `CI_PER_NAME`
`CIPVPPEI` | Insert `CI_PER_PER`
`CIPVPPEV` | Foreign Key validation for `CI_PER_PER`
`CIPVPHI` | Insert `CI_PER_PHONE`
`CIPVPPHV` | Foreign Key validation for `CI_PER_PHONE`
`CIPVPRCI` | Insert `CI_PER_CHAR`
`CIPVPRCV` | Foreign Key validation for `CI_PER_CHAR`
`CIPVPREDI` | Insert `CI_REG_DATA`
`CIPVREDI` | Insert `CI_REG_DATA`
`CIPVREFV` | Foreign Key validation for `CI_REG_DATA`
`CIPVREGI` | Insert `CI_REG`
`CIPVREGK` | Generate `CI_REG` keys
`CIPVREGV` | Foreign Key validation for `CI_REG`
`CIPVRGCI` | Insert `CI_REG_CHAR`
`CIPVRGCV` | Foreign Key validation for `CI_REG_CHAR`
`CIPVRGRI` | Insert `CI_REG_READ`
`CIPVRGRK` | Generate `CI_REG_READ` keys
`CIPVRRDK` | Generate `CI_REG_READ` keys
`CIPVSACI` | Insert `CI_SA_CHAR`
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</tr>
<tr>
<td>CIPVSM1</td>
<td>Insert CI_SP_MTR_EVT</td>
</tr>
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<td>CIPVSM2</td>
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</tr>
<tr>
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<td>Insert CI_SA_MSG</td>
</tr>
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</tr>
<tr>
<td>CIPVSMHI</td>
<td>Insert CI_SP_MTR_HIST</td>
</tr>
<tr>
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<td>Generate CI_SP_MTR_HIST keys</td>
</tr>
<tr>
<td>CIPVSMHV</td>
<td>Foreign Key validation for CI_SP_MTR_HIST</td>
</tr>
<tr>
<td>CIPVSM1I</td>
<td>Insert CI_MULTI_ITEM</td>
</tr>
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<td>CIPVSM1V</td>
<td>Foreign Key validation for CI_MULTI_ITEM</td>
</tr>
<tr>
<td>CIPVSPCI</td>
<td>Insert CI_SP_CHAR</td>
</tr>
<tr>
<td>CIPVSPCV</td>
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</tr>
<tr>
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<td>Insert CI_SP_GEO</td>
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<tr>
<td>CIPVSPGV</td>
<td>Foreign Key validation for CI_SP_GEO</td>
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<td>Insert CI_SP_MULTI_ITEM</td>
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</tr>
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<td>Insert CI_SP_OP_AREA</td>
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<td>Generate CI_SP keys</td>
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<tr>
<td>CIPVSSFV</td>
<td>Foreign Key validation for CI_SA_SP_FA</td>
</tr>
<tr>
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<td>Generate CI_SA_SP keys</td>
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<tr>
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<td>Insert CI_SA_TOU_MAP</td>
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<td>Foreign Key validation for CI_SA_TOU_MAP</td>
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<td>Insert CI_SA</td>
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<td>Generate CI_SA keys</td>
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<td>Insert CI_TOU_CONT_VAL</td>
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<td>Generate CI_TOU_MAP keys</td>
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<td>Description</td>
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<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>CIPVTMLV</td>
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</tr>
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<td>Insert CI_TREND</td>
</tr>
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</tr>
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</tr>
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<td>CIPVWEVV</td>
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</tr>
<tr>
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<td>Insert CI_WO_EVT_CC</td>
</tr>
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<tr>
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</tr>
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<td>CIPVWOSI</td>
<td>Insert CI_WO_PROC_SA</td>
</tr>
<tr>
<td>CIPVWOSV</td>
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</tr>
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</tr>
<tr>
<td>CIPVWOVV</td>
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</tr>
<tr>
<td>CIPVWPCI</td>
<td>Insert CI_WF_PROC_CTXT</td>
</tr>
<tr>
<td>CIPVWPCV</td>
<td>Foreign Key validation for CI_WF_PROC_CTXT</td>
</tr>
<tr>
<td>CIPVWPRI</td>
<td>Insert CI_WF_PROC</td>
</tr>
<tr>
<td>CIPVWPRK</td>
<td>Generate CI_WF_PROC keys</td>
</tr>
<tr>
<td>CIPVWPRV</td>
<td>Foreign Key validation for CI_WF_PROC</td>
</tr>
<tr>
<td>CNV-BCG</td>
<td>Conversion-clear balance control ID</td>
</tr>
<tr>
<td>CNV-ADM</td>
<td>Conversion-create ADM triggers</td>
</tr>
<tr>
<td>CNV-BAL</td>
<td>Conversion-tidy balances</td>
</tr>
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</table>
## Validation Batch Control Application Services

The following batch controls use the C1-VALIDATE application service:

<table>
<thead>
<tr>
<th>Batch Control</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAL-ACCT</td>
<td>Validate account</td>
</tr>
<tr>
<td>VAL-BCHG</td>
<td>Validate billable charge</td>
</tr>
<tr>
<td>VAL-CEVT</td>
<td>Validate contract option event</td>
</tr>
<tr>
<td>VAL-CFG</td>
<td>Validate meter configuration</td>
</tr>
<tr>
<td>VAL-COLL</td>
<td>Validate collection process</td>
</tr>
<tr>
<td>VAL-COP</td>
<td>Validate contract option</td>
</tr>
<tr>
<td>VAL-DCL</td>
<td>Validate declaration</td>
</tr>
<tr>
<td>VAL-DTST</td>
<td>Validate device test</td>
</tr>
<tr>
<td>VAL-FA</td>
<td>Validate field activity</td>
</tr>
<tr>
<td>VAL-FO</td>
<td>Validate field order</td>
</tr>
<tr>
<td>VAL-IDS</td>
<td>Validate interval data set</td>
</tr>
<tr>
<td>VAL-INPF</td>
<td>Validate interval profile</td>
</tr>
<tr>
<td>VAL-IRDS</td>
<td>Validate interval register data set</td>
</tr>
<tr>
<td>VAL-ITEM</td>
<td>Validate items</td>
</tr>
<tr>
<td>VAL-IVS</td>
<td>Validate interval value set</td>
</tr>
<tr>
<td>VAL-LL</td>
<td>Validate landlord</td>
</tr>
<tr>
<td>VAL-MTR</td>
<td>Validate meter</td>
</tr>
<tr>
<td>VAL-PER</td>
<td>Validate person</td>
</tr>
<tr>
<td>VAL-PREM</td>
<td>Validate premise</td>
</tr>
<tr>
<td>VAL-SA</td>
<td>Validate service agreement</td>
</tr>
<tr>
<td>VAL-SARL</td>
<td>Validate SA relationships</td>
</tr>
<tr>
<td>VAL-SCM</td>
<td>Validate service credit member</td>
</tr>
<tr>
<td>VAL-SEVP</td>
<td>Validate severance process</td>
</tr>
<tr>
<td>VAL-SP</td>
<td>Validate service point</td>
</tr>
<tr>
<td>VAL-TDS</td>
<td>Validate TOU data set</td>
</tr>
<tr>
<td>VAL-TMAP</td>
<td>Validate TOU map</td>
</tr>
<tr>
<td>VAL-WFP</td>
<td>Validate workflow process</td>
</tr>
<tr>
<td>VAL-WOP</td>
<td>Validate write off process</td>
</tr>
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</table>
# Purge Batch Control Application Services

The following batch controls use the C1-PURGE application service:

<table>
<thead>
<tr>
<th>Batch Control</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>BCUP-PRG</td>
<td>Purge billable charge upload</td>
</tr>
<tr>
<td>FAUP-PRG</td>
<td>Purge completed FA upload</td>
</tr>
<tr>
<td>MRUP-PRG</td>
<td>Purge completed MR upload</td>
</tr>
<tr>
<td>PYUP-PRG</td>
<td>Purge completed payment upload</td>
</tr>
<tr>
<td>C1-PRGST</td>
<td>Purge Completed Service Tasks</td>
</tr>
<tr>
<td>TD-PURGE</td>
<td>Purge Completed ToDo Entries</td>
</tr>
<tr>
<td>XMLUP-PR</td>
<td>Purge completed XAI upload staging records</td>
</tr>
<tr>
<td>C1-PRGSY</td>
<td>Purge Sync Requests</td>
</tr>
<tr>
<td>BCUP-PRG</td>
<td>Purge billable charge upload</td>
</tr>
</tbody>
</table>

# ILM Batch Control Application Services

The following batch controls use the C1-ILM application service:

<table>
<thead>
<tr>
<th>Batch Control</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1-ADCRL</td>
<td>ILM Crawler - Adjustment</td>
</tr>
<tr>
<td>C1-BLCRL</td>
<td>ILM Crawler - Bill</td>
</tr>
<tr>
<td>C1-BSCRL</td>
<td>ILM Crawler - Bill Segment</td>
</tr>
<tr>
<td>C1-BCCRL</td>
<td>ILM Crawler - Billable Charge</td>
</tr>
<tr>
<td>C1-CACRL</td>
<td>ILM Crawler - Case</td>
</tr>
<tr>
<td>C1-CRCRL</td>
<td>ILM Crawler - Customer Relationship Request</td>
</tr>
<tr>
<td>C1-FACRL</td>
<td>ILM Crawler - Field Activity</td>
</tr>
<tr>
<td>C1-MECRL</td>
<td>ILM Crawler - Match Event</td>
</tr>
<tr>
<td>C1-MRCRL</td>
<td>ILM Crawler - Meter Read</td>
</tr>
<tr>
<td>C1-ORCRL</td>
<td>ILM Crawler - Order</td>
</tr>
<tr>
<td>C1-PECRL</td>
<td>ILM Crawler - Payment Event</td>
</tr>
<tr>
<td>C1-URCRL</td>
<td>ILM Crawler - Usage Request</td>
</tr>
</tbody>
</table>
Appendix G

Upgrades to the Oracle Utilities Application Framework Database

This section describes the database upgrade process for the Oracle Utilities Application Framework database since the last release. 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 Oracle Utilities Application Framework application, and to preserve the business logic implemented in the previous version of the application. The changes that do not require data upgrade are not described in this document. The tasks that need to be performed after running the upgrade scripts are included.

**Note**: Upgrade scripts do not automatically enable the newly added functionality by default. Please refer to the release notes for more information.

The section provides information on upgrading the Oracle Utilities Application Framework Database including:

- Upgrading from Oracle Utilities Application Framework v4.3.0.1.0 to v4.3.0.2.0
- Upgrading from Oracle Utilities Application Framework v4.3.0.2.0 to v4.3.0.3.0
- Upgrading from Oracle Utilities Application Framework v4.3.0.3.0 to v4.3.0.4.0
- Upgrading from Oracle Utilities Application Framework v4.3.0.4.0 to v4.3.0.5.0

### Upgrading from Oracle Utilities Application Framework v4.3.0.1.0 to v4.3.0.2.0

#### New Tables

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<td>F1_BUS_FLG</td>
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<td>Business Flag Characteristic</td>
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<td>F1_BUS_FLG_K</td>
<td>Business Flag Key Table</td>
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### New Views
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### Dropped Tables
None

### Unsupported Tables
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### Added Columns

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<td>F1_EXTSYS_OUTMSG_PROF</td>
<td>JSON_CONVRSN_METH_FLG</td>
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<tr>
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<th>Column</th>
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<tr>
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<td>FLD_USAGE_FLG</td>
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Upgrading from Oracle Utilities Application Framework v4.3.0.2.0 to v4.3.0.3.0

Unsupported Table Columns
None

Column Format Change
None

Upgrading from Oracle Utilities Application Framework v4.3.0.2.0 to v4.3.0.3.0

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<td>Statistics Control Log Parameter</td>
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<td>Statistics Snapshot Related Object</td>
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<td>Web Service Catalog</td>
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New Views
## Upgrading from Oracle Utilities Application Framework v4.3.0.3.0 to v4.3.0.4.0

### None

### Dropped Tables
None

### Unsupported Tables
None

### Added Columns

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<td>F1_EXTSYS_OUTMSG_PROF</td>
<td>WSDL_FILE_NAME</td>
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</table>

### Dropped Columns
None

### Unsupported Table Columns
None

### Column Format Change
None

### Primary Key Change
None

### Upgrading from Oracle Utilities Application Framework v4.3.0.3.0 to v4.3.0.4.0

### New Tables

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<th>Type of Table</th>
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<tr>
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<td>Migration request Grouping</td>
</tr>
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### New Views
None

### Dropped Tables
None

### Unsupported Tables
None
### Added Columns

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<th>Table</th>
<th>Column</th>
<th>Required</th>
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</thead>
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<tr>
<td>F1_MIGR_REQ</td>
<td>MIGR_REQ_CLASS_FLG</td>
<td>Y</td>
</tr>
<tr>
<td>F1_MIGR_REQ_INSTR_ENTTTY</td>
<td>COMMENT_LONG</td>
<td>N</td>
</tr>
<tr>
<td>F1_MIGR_REQ_INSTR_ENTTTY</td>
<td>EXT_REFERENCE_ID</td>
<td>N</td>
</tr>
</tbody>
</table>

### Dropped Columns

<table>
<thead>
<tr>
<th>Table</th>
<th>Column</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI_XAI_RCVR_CTX</td>
<td>CTXT_VAL</td>
</tr>
</tbody>
</table>

### Unsupported Table Columns

None

### Column Format Change

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Column Name</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1_EXT_LOOKUP_VAL_CHAR</td>
<td>F1_EXT_LOOKUP_VALUE</td>
<td>VARCHAR2 (30)</td>
<td>VARCHAR2 (254)</td>
</tr>
</tbody>
</table>

### Primary Key Change

<table>
<thead>
<tr>
<th>Table</th>
<th>Primary Key Columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI_XAI_RCVR_CTX</td>
<td>XAI_RCVR_ID, SEQNO</td>
</tr>
<tr>
<td>CI_XA_SNDR_CTX</td>
<td>XAI_SENDER_ID, SEQNO</td>
</tr>
</tbody>
</table>
### New Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Type of Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1_DEPLOYMENT</td>
<td>Deployment</td>
<td>Transaction</td>
</tr>
<tr>
<td>F1_DEPLOYMENT_ITEM</td>
<td>Deployment Item</td>
<td>Transaction</td>
</tr>
<tr>
<td>F1_DEPLOYMENT_ITEM_METADATA</td>
<td>Deployment Item Meta Data</td>
<td>Transaction</td>
</tr>
<tr>
<td>F1_DEPLOYMENT_PART</td>
<td>Deployment Part</td>
<td>Master</td>
</tr>
<tr>
<td>F1_DEPLOYMENT_PART_L</td>
<td>Deployment Part Language</td>
<td>Master</td>
</tr>
<tr>
<td>F1_DEPLOYMENT_TYPE</td>
<td>Deployment Type</td>
<td>Master</td>
</tr>
<tr>
<td>F1_DEPLOYMENT_TYPE_L</td>
<td>Deployment Type Language</td>
<td>Master</td>
</tr>
<tr>
<td>F1_DEPTYP_DEPPART</td>
<td>Deployment Type / Deployment Part</td>
<td>Transaction</td>
</tr>
<tr>
<td>F1_DEPTYP_MDT_TYPE</td>
<td>Deployment Type / MDT Type</td>
<td>Transaction</td>
</tr>
<tr>
<td>F1_DEPTYP_MSG_CAT</td>
<td>Deployment Type Message Category</td>
<td>Transaction</td>
</tr>
<tr>
<td>F1_DEPTYP_USR_GRP</td>
<td>Deployment Type User Group</td>
<td>Transaction</td>
</tr>
<tr>
<td>F1_MDT</td>
<td>Mobile Data Terminal</td>
<td>Transaction</td>
</tr>
<tr>
<td>F1_MDT_CHAR</td>
<td>Mobile Data Terminal</td>
<td>Transaction</td>
</tr>
<tr>
<td>F1_MDT_TYPE</td>
<td>Mobile Data Terminal Type</td>
<td>Master</td>
</tr>
<tr>
<td>F1_MDT_TYPE_CHAR</td>
<td>Mobile Data Terminal</td>
<td>Master</td>
</tr>
<tr>
<td>F1_MDT_TYPE_L</td>
<td>Mobile Data Terminal</td>
<td>Master</td>
</tr>
<tr>
<td>F1_MOB_COMP_CHAR</td>
<td>Mobile Component Characteristics</td>
<td>Admin - System</td>
</tr>
<tr>
<td>F1_MOB_COMP_CNT</td>
<td>Mobile Component Content</td>
<td>Admin - System</td>
</tr>
<tr>
<td>F1_MOBILE_COMPONENT</td>
<td>Mobile Component</td>
<td>Admin - System</td>
</tr>
<tr>
<td>F1_MOBILE_COMPONENT_L</td>
<td>Mobile Component Language</td>
<td>Admin - System</td>
</tr>
</tbody>
</table>
Upgrading from Oracle Utilities Application Framework v4.3.0.3.0 to v4.3.0.4.0

Upgrades to the Oracle Utilities Application Framework Database

Oracle Utilities Customer Care and Billing Database Administrator's Guide

Note that in addition, the following table was added to 4.3.0.4.0 via a hot fix, but was not included in 4.3.0.5.0 until after the final build and is therefore added as a hot fix. Clients upgrading to 4.3.0.5.0 may see that the table is dropped via the blueprint and then reinstated after applying the bug fixes.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Type of Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1_MIGR_OBJ_SQL_PK</td>
<td>Migration Object SQL Primary Key</td>
<td>Transaction</td>
</tr>
</tbody>
</table>

**New Views**

None

**Dropped Tables**

Table

- F1_IWS_ANN_CHAR
- F1_IWS_ANN_TYPE_CHAR

**Unsupported Tables**

None

**Added Columns**

<table>
<thead>
<tr>
<th>Table</th>
<th>Column</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI_MD_SVC</td>
<td>APP_SVC_ID</td>
<td>N</td>
</tr>
<tr>
<td>F1_OUTMSG</td>
<td>BO_XML_DATA_AREA</td>
<td>N</td>
</tr>
<tr>
<td>F1_OUTMSG_TYPE</td>
<td>OUTMSG_PRIOR_FLG</td>
<td>Y</td>
</tr>
<tr>
<td>F1_OUTMSG_TYPE</td>
<td>OWNER_FLG</td>
<td>N</td>
</tr>
<tr>
<td>F1_OUTMSG_TYPE</td>
<td>TYPE_BUS_OBJ_CD</td>
<td>N</td>
</tr>
</tbody>
</table>
Dropped Columns
None

Unsupported Table Columns
None

Column Format Change
None

Primary Key Change
None

Index Changes
Index S1C675S1 for table F1_EXT_LOOKUP_VAL_CHAR has been renamed to F1C675S1.

<table>
<thead>
<tr>
<th>Table</th>
<th>Column</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1_OUTMSG_TYPE_L</td>
<td>OWNER_FLG</td>
<td>N</td>
</tr>
</tbody>
</table>
Appendix H

Oracle Application Framework
System Table Guide

This section lists the system tables owned by the Oracle Utilities Application Framework V4.3.0.5.0 and explains the data standards of the system tables. The data standards are required for the installation of Oracle Utilities Application Framework, development within the Oracle Utilities Application Framework, and the configuration and customization of Oracle Utilities products. Adhering to the data standards is a prerequisite for seamless upgrade to future releases.

This section includes:

- About the Application Framework System Tables
- System Table Standards
- Guidelines for System Table Updates
- System Table List
About the Application Framework System Tables

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

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

System Table Standards

System table standards must be observed for the following reasons:

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

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

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>SC_ACCESS_CNTL, SC_USER, SC_USR_GRP_PROF, SC_USR_GRP_USR, SC_USER_GROUP, SC_USER_GROUP_L</td>
</tr>
<tr>
<td>Initial Data</td>
<td>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.</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_CURRENCY_CD, CI_CURRENCY_CD_L</td>
</tr>
<tr>
<td>Initial Data</td>
<td>United States Dollar (USD)</td>
</tr>
</tbody>
</table>

Display Profile

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

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_DISP_PROF, CI_DISP_PROF_L</td>
</tr>
</tbody>
</table>
## 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.

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_INSTALLATION, CI_INSTALL_ALG, CI_INSTALL_MSG, CI_INSTALL_MSG_L, CI_INSTALL_PROD</td>
</tr>
<tr>
<td>Initial Data</td>
<td>Option 11111</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_LANGUAGE</td>
</tr>
<tr>
<td>Initial Data</td>
<td>English (ENG)</td>
</tr>
</tbody>
</table>
**Time Zone**
The installation options require a valid time zone. A value for UTC (Coordinated Universal Time) is provided. Implementations should define the appropriate time zone and update the installation option value accordingly.

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_TIME_ZONE, CI_TIME_ZONE_L</td>
</tr>
<tr>
<td>Initial Data</td>
<td>UTC</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_ROLE(L), CI_TD_VAL_ROLE</td>
</tr>
<tr>
<td>Initial Data</td>
<td>F1_DFLT</td>
</tr>
</tbody>
</table>

**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.

Note that the system supports a system upgrade rule called 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, CI_PORTAL_OPT, 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_L.
### Algorithm Type

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_ALG_TYPE, CI_ALG_TYPE_L, CI_ALG_TYPE_PRM,</td>
</tr>
<tr>
<td></td>
<td>CI_ALG_TYPE_PRM_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Algorithm Type (ALG_TYPE_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### Algorithm

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_ALG, CI_ALG_L, CI_ALG_PARM, CI_ALG_VER</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Algorithm (ALG_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### Application Security

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>SC_APP_SERVICE, SC_APP_SERVICE_L, CI_APP_SVC_ACC</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Application Service ID (APP_SVC_ID)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### Batch Control

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_BATCH_CTRL, CI_BATCH_CTRL_L, CI_BATCH_CTRL_P, CI_BATCH_CTRL_P_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Batch Process (BATCH_CD), Program Name (PROGRAM_NAME)</td>
</tr>
</tbody>
</table>
### Business Object

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

### Business Service

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_BUS_SVC, F1_BUS_SVC_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Business Service (BUS_SVC_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>Application Service (APP_SVC_ID)</td>
</tr>
</tbody>
</table>
### Characteristics

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_CHAR_TYPE, CI_CHAR_TYPE_L, CI_CHAR_ENTITY, CI_CHAR_VAL, CI_CHAR_VAL_L.</td>
</tr>
</tbody>
</table>
| Standard Data Fields | Characteristic Type (CHAR_TYPE_CD)  
| | Characteristic Value (CHAR_VAL) on CI_CHAR_VAL  
| | If the characteristic type is customizable, Customer Modification can insert new characteristic values. CM must prefix when implementers introduce a new characteristic value. |
| Customer Modification | Adhoc Characteristic Value Validation Rule (ADHOC_VAL_ALG_CD), Allow Search by Characteristic Value (SEARCH_FLG) |

### Configuration Migration Assistant

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_MIGR_PLAN, F1_MIGR_PLAN_L, F1_MIGR_PLAN_INSTR, F1_MIGR_PLAN_INSTR_L, F1_MIGR_PLAN_INSTR_ALG, F1_MIGR_REQ, F1_MIGR_REQ_L, F1_MIGR_REQ_INSTR, F1_MIGR_REQ_INSTR_L, F1_MIGR_REQ_INSTR_ENTITY, F1_MIGR_REQ_INCL_REQ</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Migration Plan Code (MIGR_PLAN_CD), Migration Request Code (MIGR_REQ_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### Data Area

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_DATA_AREA, F1_DATA_AREA_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Data Area Code (DATA_AREA_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### Deployment Part

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_DEPLOYMENT_PART, F1_DEPLOYMENT_PART_L, F1_DEPLOYMENT_ITEM</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Deployment ID (F1_DEPLOYMENT_ID)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>
### Display Icon

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_DISP_ICON, CI_DISP_ICON_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Display Icon Code (DISP_ICON_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### Extendable Lookup

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_EXT_LOOKUP_VAL, F1_EXT_LOOKUP_VAL_L, F1_EXT_LOOKUP_VAL_CHAR</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Business Object (BUS_OBJ_CD), Extendable Lookup Value (F1_EXT_LOOKUP_VALUE)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>Business Object Data Area (BO_DATA_AREA) Override Description (DESCR_OVRD) on Extendable Lookup Field Value Language Table (F1_EXT_LOOKUP_VAL_L)</td>
</tr>
</tbody>
</table>

**Note:** When the product releases base owned records in Extendable Lookup, if there are additional elements the business object will map the element to the BO_DATA_AREA if the value is allowed to be modified by an implementation.

### Foreign Key Reference

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_FK_REF, CI_FK_REF_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>FK reference code (FK_REF_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>Info Program Name (INFO_PRG), Zone (ZONE_CD)</td>
</tr>
</tbody>
</table>

### Inbound Web Service

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_IWS_SVC_L, F1_IWS_SVC, F1_IWS_SVC_OPER_L, F1_IWS_SVC_OPER, F1_IWS_ANL_L, F1_IWS_ANL, F1_IWS_ANL_TYPE_L, F1_IWS_ANL_TYPE, F1_IWS_ANL_TYPE_PARM, F1_IWS_ANL_TYPE_PARM_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Webservice Name (IN_SVC_NAME), Annotation (ANN_CD), Annotation Type (ANN_TYPE_CD)</td>
</tr>
</tbody>
</table>
### Legacy Object

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Modification</td>
<td>Debug (DEBUG_SW), Active (ACTIVE_SW), Trace (TRACE_SW), Request XSL (REQUEST_XSL), Response XSL (RESPONSE_XSL)</td>
</tr>
</tbody>
</table>

### Lookup

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Data Fields</td>
<td>Legacy Object ID (LGUCY_OBJ_ID)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Data Fields</td>
<td>Field Name (FIELD_NAME)</td>
</tr>
<tr>
<td></td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td>Field Value (FIELD_VALUE)</td>
</tr>
<tr>
<td></td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td>• Product development may add lookup values to a Oracle Utilities Application Framework owned lookup field’s value. When extended new value is added, the Owner Flag is used to prefix the value.</td>
</tr>
<tr>
<td></td>
<td>For example: When the Oracle Utilities Customer Care and Billing product adds a new value to the algorithm entity flag (ALG_ENTITTY_FLG), it is prefixed with C1.</td>
</tr>
<tr>
<td></td>
<td>Override Description (DESCR_OVRD) on Lookup Field Value Language Table (CI_LOOKUP_VAL_L)</td>
</tr>
</tbody>
</table>

| Customer Modification       | Override Description (DESCR_OVRD) on Lookup Field Value Language Table (CI_LOOKUP_VAL_L) |
### Map

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_MAP, F1_MAP_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>UI Map (MAP_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### Managed Content

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_MANAG_CONTENT, F1_MANAGCONTENT_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Managed Content (MANAGCONTENT_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### Messages

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_MSGCATEGORY, CI_MSGCATEGORY_L, CI_MSG, CI_MSGL</td>
</tr>
</tbody>
</table>
### Standard Data Fields

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
</table>
| Message Category (MESSAGE_CAT_NBR) | • Messages are grouped in categories and each category has message numbers between 1 and 99999. A range of message categories is assigned to a product. An implementation may only use categories assigned for customization use.  
• Implementer Message Categories are 80000 and 90000  
• Reserved for Tests - 99999 |
| Message Number (MESSAGE_NBR) for message categories | • Message numbers below 1000 are reserved for common messages. Implementers must not use message numbers below 1000.  
| Message Number (MESSAGE_NBR) for Java message categories | • Subsystem Standard Messages - 00001 thru 02000  
• Reserved - 02001 thru 09999  
• Published Messages - 10001 thru 11000  
• Package Messages - 10001 thru 90000  
• Reserved - 90001 thru 99999  
• Each package is allocated 100 message numbers, each starting from 101.  
• Published Messages are messages that are special-interest messages that implementations need to know about and are therefore published in the user docs. Examples of these include messages that are highly likely to be changed for an implementation, or messages that are embedded into other texts/messages and therefore the message number is never shown  
• Reserved message number ranges are for future use and therefore must not be used by all products. |

### Customer Modification

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Override Description (DESCRLONG_OVRD), Message Text Override (MESSAGE_TEXT_OVRD)</td>
<td></td>
</tr>
</tbody>
</table>
Meta Data - Table and Field

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_MD_TBL, CI_MD_TBL_FLD, CI_MD_TBL_L, CI_MD_TBL_FLD_L, CI_MD_TBL_L, F1_DB_OBJECTS_REPO</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Table Name (TBL_NAME)</td>
</tr>
<tr>
<td></td>
<td>• Table names must match with the physical table name or view name in the database.</td>
</tr>
<tr>
<td></td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td>• 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)</td>
</tr>
</tbody>
</table>

Customer Modification          | AuditSwitches(AUDIT_INSERT_SW, AUDIT_UPDATE_SW, AUDIT_DELETE_SW), Override label (OVRD_LABEL) on MD Table Field Table (CI_MD_TBL_FLD). Audit Program Name (AUDIT_PGM_NAME), Audit Table Name (AUDIT_TBL_NAME), Audit Program Type (AUDIT_PGM_TYPE_FLG), Key Validation (KEY_VALIDATION_FLG) and Caching strategy (CACHE_FLG) on MD Table (CI_MD_TBL), Override Label (OVRD_LABEL) and Customer Specific Description (DESCRLONG_OVRD) on Field Table. |

Meta Data - Constraints

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_MD_CONST, CI_MD_CONST_FLD</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Constraint Id (CONST_ID)</td>
</tr>
<tr>
<td></td>
<td>• Index Name for Primary Constraints</td>
</tr>
<tr>
<td></td>
<td>• &lt;Index Name&gt;Rnn for Foreign Key Constraints</td>
</tr>
<tr>
<td></td>
<td>Where</td>
</tr>
<tr>
<td></td>
<td>• nn: integer, 01 through 99</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>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</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Menu Name (MENU_NAME), Menu Item Id (MENU_ITEM_ID), Menu Line Id (MENU_LINE_ID)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>Override Label (OVRD_LABEL) on Menu Line Language Table (CI_MD_MENU_LINE_L)</td>
</tr>
</tbody>
</table>

**Meta Data - Program, Location and Services**

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_MD_PRG_COM, CI_MD_PRG_LOC, CI_MD_SVC, CI_MD_SVC_L, CI_MD_SVC_PRG, 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</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Program Component Id (PROG_COM_ID), Location Id (LOC_ID), Program Component Name (PROG_COM_NAME), Service Name (SVC_NAME), Navigation Key (NAVIGATION_KEY)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>User Exit Program Name (USER_EXIT_PGM_NAME) on Program Components Table (CI_MD_PRG_COM),</td>
</tr>
</tbody>
</table>

**Meta Data - Maintenance Object**

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_MD_MO, CI_MD_MO_L, CI_MD_MO_TBL, CI_MD_MO_OPT, CI_MD_MO_ALG</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Maintenance Object (MAINT_OBJ_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

**Meta Data - Work Tables**

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_MD_WRK_TBL, CI_MD_WRK_TBL_L, CI_MD_WRK_TBLFLD, CI_MD_MO_WRK</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Work Table Name (WRK_TBL_NAME)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>
## Meta Data - Search Object

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_MD_SO, CI_MD_SO_L, CI_MD_SO_RSFLD, CI_MD_SO_RSFLDAT, CI_MD_SOCG,</td>
</tr>
<tr>
<td></td>
<td>CI_MD_SOCG_FLD, CI_MD_SOCG_FLDAT, CI_MD_SOCG_L, CI_MD_SOCG_SORT</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Search Object (SO_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

## Mobile Component

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_MOBILE_COMPONENT, F1_MOBILE_COMPONENT_L, F1_MOB_COMP_CNT,</td>
</tr>
<tr>
<td></td>
<td>F1_MOBILE_COMP_CHAR</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Mobile Component Code (F1_MOB_COMP_TYPE_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>Expiration Days (F1_EXPIRATION_TIME_DUR)</td>
</tr>
</tbody>
</table>

## Navigation Option

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_NAV_OPT, CI_NAV_OPT_L, CI_NAV_OPT_CTXT, CI_NAV_OPT_USG, CI_MD_NAV</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Navigation Option Code (NAV_OPT_CD), Navigation Key (NAVIGATION_KEY)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

## Outbound Message Type

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_OUTMSG_TYPE, F1_OUTMSG_TYPE_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Outbound Message Type Code (OUTMSG_TYPE_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>Priority (OUTMSG_PRIOR_FLG)</td>
</tr>
</tbody>
</table>
### Portal and Zone

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

### Sequence

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_SEQ</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Sequence Name (SEQ_NAME)</td>
</tr>
</tbody>
</table>
| Customer Modification | Sequence Number (SEQ_NBR)  
  This field is updated by the application process and must be set to 1 initially.                                                                  |

### Schema

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_SCHEMA</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Schema Name (SCHEMA_NAME)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>
### Script

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_SCR, CI_SCR_I, CI_SCR_CRT, CI_SCR_CRT_GRP, CI_SCR_CRT_GRP_L, CI_SCR_DA, CI_SCR_FLD_MAP, CI_SCR_PRMPT, CI_SCR_PRMPT_L, CI_SCR_STEP, CI_SCR_STEP_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Script (SCR_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### To Do Type

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_TD_TYPE, CI_TD_TYPE_I, CI_TD_SRTKEY_TYP, CI_TD_DRLKEY_TYP, CI_TD_SRTKEY_TYP_L</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>To Do Type Code (TD_TYPE_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>Creation Batch Code (CRE_BATCH_CD), Route Batch Code (RTE_BATCH_CD), Priority Flag (TD_PRIORITY_FLG) on To Do Type Table (CI_TD_TYPE)</td>
</tr>
</tbody>
</table>

### Web Service Category

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>F1_WEB_CAT, F1_WEB_CAT_I, F1_WEB_CAT_INCL_SVC</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Web Service Category code (WEB_SVC_CAT_CD)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>None</td>
</tr>
</tbody>
</table>

### XAI Configuration

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_XAI_ADAPTER, CI_XAI_ADAPTER_I, CI_XAI_CLASS, CI_XAI_CLASS_I, CI_XAI_ENV_HNDL, CI_XAI_ENV_HNDL_I, CI_XAI_FORMAT, CI_XAI_FORMAT_I, CI_XAI_RCVR, CI_XAI_RCVR_I, CI_XAI_RCVR_CTX, CI_XAI_RCVR_RSP, CI_XAI_RCVR_RGRP, CI_XAI_SENDER, CI_XAI_SENDER_CTX, CI_XAI_SENDER_ID, CI_XAI_SENDER_CTX, CI_XAI_OPTION</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>Adapter Id (XAI_ADAPTER_ID), Class Id (XAI_CLASS_ID), Envelope Handler Id (XAI_ENV_HNDL_ID), XAI Format Id (XAI_FORMAT_ID), Receiver Id (XAI_RCVR_ID), Sender Id (XAI_SENDER_ID)</td>
</tr>
</tbody>
</table>
### Customer Modification Option Value (OPTION_VALUE) on Message Option Table (CI_XAI_OPTION)

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Modification</td>
<td>Option Value (OPTION_VALUE) on Message Option Table (CI_XAI_OPTION)</td>
</tr>
</tbody>
</table>

### XAI Services

<table>
<thead>
<tr>
<th>Properties</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>CI_XAI_IN_SVC, CI_XAI_IN_SVC_L, CI_XAI_SVC_PARM</td>
</tr>
<tr>
<td>Standard Data Fields</td>
<td>XAI Inbound Service Id (XAI_IN_SVC_ID), XAI Inbound Service Name (XAI_IN_SVC_NAME)</td>
</tr>
<tr>
<td>Customer Modification</td>
<td>XAI Version (XAI_VERSION_ID), Trace (TRACE_SW), Debug (DEBUG_SW), Request XSL (INPUT_XSL), Response XSL (RESPONSE_XSL), Record XSL (RECORD_XSL) and Post Error (POST_ERROR_SW) on XAI Inbound Service Table (CI_XAI_IN_SVC)</td>
</tr>
</tbody>
</table>
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. The product does not support customer specific data in these tables.

*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>
<thead>
<tr>
<th>Table Name</th>
<th>Upgrade Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI_ALG</td>
<td>MG</td>
<td>Algorithm</td>
</tr>
<tr>
<td>CI_ALG_L</td>
<td>MG</td>
<td>Algorithm Language</td>
</tr>
<tr>
<td>CI_ALG_PARM</td>
<td>MG</td>
<td>Algorithm Parameters</td>
</tr>
<tr>
<td>CI_ALG_TYPE</td>
<td>MG</td>
<td>Algorithm Type</td>
</tr>
<tr>
<td>CI_ALG_TYPE_L</td>
<td>MG</td>
<td>Algorithm Type Language</td>
</tr>
<tr>
<td>CI_ALG_TYPE_PRM</td>
<td>MG</td>
<td>Algorithm Type Parameter</td>
</tr>
<tr>
<td>CI_ALG_TYPE_PRM_L</td>
<td>MG</td>
<td>Algorithm Type Parameter Language</td>
</tr>
<tr>
<td>CI_ALG_VER</td>
<td>MG</td>
<td>Algorithm Version</td>
</tr>
<tr>
<td>CI_APP_SVC_ACC</td>
<td>MG</td>
<td>Application Service Access Mode</td>
</tr>
<tr>
<td>CI_BATCH_CTRL</td>
<td>MG</td>
<td>Batch Control</td>
</tr>
<tr>
<td>CI_BATCH_CTRL_ALG</td>
<td>MG</td>
<td>Batch Control Algorithm</td>
</tr>
<tr>
<td>CI_BATCH_CTRL_L</td>
<td>MG</td>
<td>Batch Control Language</td>
</tr>
<tr>
<td>CI_BATCH_CTRL_P</td>
<td>MG</td>
<td>Batch Control Parameters</td>
</tr>
<tr>
<td>CI_BATCH_CTRL_P_L</td>
<td>MG</td>
<td>Batch Control Parameters Language</td>
</tr>
<tr>
<td>CI_CHAR_ENTITY</td>
<td>MG</td>
<td>Characteristic Type Entity</td>
</tr>
<tr>
<td>CI_CHAR_TYPE</td>
<td>MG</td>
<td>Characteristic Type</td>
</tr>
<tr>
<td>CI_CHAR_TYPE_L</td>
<td>MG</td>
<td>Characteristic Type Language</td>
</tr>
<tr>
<td>CI_CHAR_VAL</td>
<td>MG</td>
<td>Characteristic Type Value</td>
</tr>
<tr>
<td>CI_CHAR_VAL_L</td>
<td>MG</td>
<td>Characteristic Type Value Language</td>
</tr>
<tr>
<td>Table Name</td>
<td>Upgrade Action</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>CI_DISP_ICON</td>
<td>MG</td>
<td>Display Icon</td>
</tr>
<tr>
<td>CI_DISP_ICON_L</td>
<td>MG</td>
<td>Display Icon Language</td>
</tr>
<tr>
<td>CI_FK_REF</td>
<td>MG</td>
<td>Foreign Key Reference</td>
</tr>
<tr>
<td>CI_FK_REF_L</td>
<td>MG</td>
<td>Foreign Key Reference Language</td>
</tr>
<tr>
<td>CI_LANGUAGE</td>
<td>MG</td>
<td>Language Code</td>
</tr>
<tr>
<td>CI_LOOKUP_FIELD</td>
<td>MG</td>
<td>Lookup Field</td>
</tr>
<tr>
<td>CI_LOOKUP_VAL</td>
<td>MG</td>
<td>Lookup Field Value</td>
</tr>
<tr>
<td>CI_LOOKUP_VAL_L</td>
<td>MG</td>
<td>Lookup Field Value Language</td>
</tr>
<tr>
<td>CI_MD_CONST</td>
<td>MG</td>
<td>Constraints</td>
</tr>
<tr>
<td>CI_MD_CONST_FLD</td>
<td>MG</td>
<td>Constraint Fields</td>
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<tr>
<td>CI_MD_FLD</td>
<td>MG</td>
<td>Field</td>
</tr>
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