Oracle Utilities Customer Care and Billing

Database Administrator's Guide

Release 2.4.0 Service Pack 3

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Oracle Utilities Customer Care and Billing Database Administrator's Guide

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Contents

Contents

Appendix F

Appendix G

Appendix H

Appendix I

Appendix J

Appendix K

Appendix L

Preface

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

Audience

Oracle Utilities Customer Care and Billing 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 V2.4.0.3 Release Notes*
- *Oracle Utilities Customer Care and Billing V2.4.0.3 Quick Install Guide*
- *Oracle Utilities Customer Care and Billing V2.4.0.3 Installation Guide*
- *Oracle Utilities Customer Care and Billing V2.4.0.3 Database Administrator's Guide*
- *Oracle Utilities Customer Care and Billing V2.4.0.3 Optional Product Installation Guide*
- *Oracle Utilities Customer Care and Billing V2.4.0.3 License Information User Guide*

Administration and Business Process Guides

- *Oracle Utilities Customer Care and Billing V2.4.0.3 Administration Guide*
- *Oracle Utilities Customer Care and Billing V2.4.0.3 Business Process Guide*
- *Oracle Utilities Application Framework V4.2.0.3 Administration Guide*
- *Oracle Utilities Application Framework V4.2.0.3 Business Process Guide*

Supplemental Documents

- *Oracle Utilities Customer Care and Billing V2.4.0.3 Batch Server Administration Guide*
- *Oracle Utilities Customer Care and Billing V2.4.0.3 Server Administration Guide*
- *Oracle Utilities Customer Care and Billing V2.4.0.3 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:

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

Chapter 1

Database Overview

This section provides an overview of the Oracle Utilities 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:

Platform	Database Versions
AIX 7.1 TL1 (POWER 64-bit)	Oracle Database Server 11.2.0.1+ (64-bit) Oracle Database Server 12.1.0.1+ (64-bit)
Oracle Linux 5.x, 6.x, or 7.x (64-bit) x86_64 (64-bit)	Oracle Database Server 11.2.0.1+ (64-bit) Oracle Database Server 12.1.0.1+ (64-bit)
Red Hat Enterprise Linux* 5.x, 6.x, or 7.x (64-bit) x86_64 (64-bit)	Oracle Database Server 11.2.0.1+ (64-bit) Oracle Database Server 12.1.0.1+ (64-bit)
Oracle Solaris 10 or 11 (SPARC 64-bit)	Oracle Database Server 11.2.0.1+ (64-bit) Oracle Database Server 12.1.0.1+ (64-bit)
Windows Server 2008 SP2 (x86_64 64-bit) Windows Server 2012 (x86_64 64-bit) Windows Server 2008 (32-bit)	Oracle Database Server 11.2.0.1+ (64-bit) Oracle Database Server 12.1.0.1+ (64-bit)
HP-UX 11.31 (64-bit)	Oracle Database Server 11.2.0.1+ (64-bit) Oracle Database Server 12.1.0.1+ (64-bit)

* Oracle Utilities Customer Care and Billing is tested and supported on the versions of Oracle Linux specified. Because Oracle Linux is 100% userspace-compatible with Red Hat Enterprise Linux, Oracle Utilities Customer Care and Billing also is supported on Red Hat Enterprise Linux for this release.

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 environments where scalability, performance, and database size-on-disk are not important considerations. Oracle Database Enterprise Edition, including the Advanced Compression and Partitioning options, is strongly recommended in all other situations.

Refer to My Oracle Support for additional details.

Support for Software Patches and Upgrades

Due to the ongoing nature of software improvement, vendors will issue patches and service packs for the operating systems, application servers and database servers on top of specific versions that Oracle Utilities 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 software version 4.1 GA. This version 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 Version 2.4.0 Service Pack 3 Database

This section provides the steps required to install or upgrade the Oracle Utilities Customer Care and Billing database, including:

Installation Overview

> **Note:** Refer to the *Oracle Utilities Customer Care and Billing Installation Guide* for the hardware and software versions required for the installation on Unix or Windows. This section contains steps for installation of Oracle Utilities Customer Care and Billing V2.4.0 Service Pack 3.

The following type of installation is available for Oracle Utilities Customer Care and Billing:

- **Initial Install —** a database with no demo data.
- **Upgrade Install —** a database upgrade to version 2.4.0.3 from versions 1.5.10, 1.5.15, 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 or 2.4.0.2.
- **Demo Install —** a database populated with demo data.

The database installation requires a supported version of the Java Development Kit Version 6.0 Update 20 or later and Oracle 11.2.0.1 32-bit client installed on the Windows 64-bit or 32-bit desktop where the install package is staged and run from.

For an Initial 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. For a database Upgrade Install you will upgrade your current Oracle Utilities Customer Care and Billing database.

For a Demo Install you will create an empty database on a UNIX or Windows database server using the CDXDBA Script.

The Oracle Utilities Customer Care and Billing installation package contains a script, **CDXDBA** that creates an empty database with a default tablespace (CISTS_01) and the required users and roles. After creating the database, install the product specific database objects/data from the desktop mentioned above.

Review the Storage.xml file under the FW42030\Install-Upgrade folder and the CCB\Upgrade\Oracle\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.

> **Note:** The utility CDXDBA is provided to create the demo database and import the demo data into the database. CDXDBA should be used for demo database only and not for creating an Initial Install database or a production database. See Demo Install for more information about installing the demo database. Customers should use the Database Configuration Assistant (DBCA) to create an Initial Install or production database and configure the instance parameters according to the environment needs.

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:

```
<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 2.4.0 Service Pack 3. It contains the following topics:

- Database Scripts and Utilities
- Initial Install, or Installing Version 2.4.0.3 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. Unzip the CCB-V2.4.0.3.0-Oracle-Database-MultiplatForm.zip file to your local machine. The database folder contains several files that will be referred to in the installation process.
2. Set up a Microsoft Windows desktop with the Oracle Client installed.

Initial Install, or Installing Version 2.4.0.3 for the First Time

This section describes an initial installation of the version 4.2.0.3 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.

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

- Copying and Decompressing Install Media
- Creating the Database
- Installing the CISADM Schema
- Postinstallation Tasks

Copying and Decompressing Install Media

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

1. Download the Oracle Utilities Customer Care and Billing v2.4.0.3.0 Oracle database from the Oracle Software Delivery Cloud.
2. Unzip the CCB-V2.4.0.3.0-Oracle-Database-MultiPlatform.zip file to a temporary folder. This file contains all the database components required to install the Oracle Utilities Customer Care and Billing database.

Creating the Database

Note: You must have Oracle Database Server 11.2.0.1+ or 12.1.0.1+ 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 a Production Database

It is recommended that you use the Database Configuration Assistant (DBCA) for creating a production database. Once the database is created the instance configuration can be done according to the environment needs and based on your production recommendations.

After creating the database, follow these steps to create specific product users (for example, CISADM).

1. Create a tablespace CISTS_01.
2. Log into the database as sys user and execute \CCB\DatabaseCreation\UNIX\11g\users.sql

   Note: You can also edit the script to rename the users, or default tablespace as per your production recommendations. Before proceeding, review the section regarding the Storage.XML file in Installation Overview.

Creating a Non-Production Database

The CDXDBA utility provided in the CCB\DatabaseCreation folder may be used to automate the database creation process for non-production databases.

CDXDBA creates an empty database with AL32UTF8 character set and at least one tablespace for storing the DB objects before running the installation. The default name of the tablespace is CISTS_01. It also creates product specific users as well.

This section includes:

- Creating the Database on Unix Using CDXDBA
- Creating the Database on Windows Using CDXDBA

Creating the Database on Unix Using CDXDBA

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

Note: For Oracle 12c (12.1.0.1+), use files under /CCB/DatabaseCreation/Unix_12c

Follow these steps to create a database:

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

   ```
   perl cdxdba.plx
   ```

4. Provide the following parameter values when prompted:
   - Instance name (DEMO):
   - ORACLE_BASE: the directory where the setup files for the database will be created (/orasw/app/oracle):
   - ORACLE_HOME: the folder where the current version of Oracle software is installed (/orasw/app/oracle/product/):
   - ORACLE_DATA: the directory where the data files for the database will be created (/db05/oradata):

- Character set for the database (AL32UTF8):

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

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

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

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

Select N to exit the database utility.

Creating the Database on Windows Using CDXDBA

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

You should be logged in as a user who is a member of the local ORA_DBA group on that server. The ORA_DBA group should have "administrator" privileges assigned to it.

Follow these steps to create the database:

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

   The utility displays the following options:

   ```
   E - Export schema from the database
   R - Refresh schema with a database dump
   C - Create/Recreate a local database
   H - See help for the command line options
   Q - Quit
   ```

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

   Provide the following values:

   - Provide the instance name (DEMO): <DB Name> (for example, CCB_DB)
   - Enter the character set of the database (AL32UTF8): AL32UTF8
   - Enter ORACLE_BASE: the directory where the setup files for the database will be created (c:\oracle): <Oracle_Base> (for example, c:\app\oracle)
   - Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (c:\oracle\product\11.1.0.6\Db_1):< Oracle_Home> (for example, c:\app\oracle\db_home)
   - Enter ORACLE_DATA: the directory where the data files for the database will be created (c:\app\oracle\oradata): <Directory where data files will be created>

3. Select option Q to exit the utility after the database is created.

Installing the CISADM Schema

You will install the Oracle Utilities Application Framework V4.2.0.3 prior to Oracle Utilities Customer Care and Billing 2.4.0.3. The files for Oracle Utilities Application Framework installation are located in the FW\FW42030 folder. The installation process will prompt 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 (for example, CISADM).
- A database user that has read-write (select/update/insert/delete) privileges to the objects in the application schema. (for 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. (for example, CISREAD).
- A database role that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CIS_USER).
- A database role with read-only privileges to the objects in the application schema. (for example, CIS_READ).
- Location for jar files. (The Jar files are bundled with the database package.)
- Java Home (For example, C:\Java\jdk1.6.0_20)

Installing the Oracle Utilities Application Framework Database Component

To install the schema for Oracle Utilities Application Framework 4.2.0.3, follow these steps:

1. Run OraDBI.exe from the ..\FW\FW42030\Install-Upgrade directory.
   Please run the utility from the command prompt.

   Note: Be sure to run ORADBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle Database 11g Release 2 Client (11.2.0.1), 32-bit, and Java Development Kit Version 6.0 Update 20 or later installed. The database should already be listed in the local file tnsnames.ora

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

   - Name of the target database: <DB NAME>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Location of Java Home: <..\jdk1.6.0_20>
   - Location of UGBU Jar files: <..\CCB\jarfiles>
   - Oracle user with read-write privileges to the Database Schema: <CISUSER>
   - Oracle user with read-only privileges to the Database Schema: <CISREAD>
   - Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
   - Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Password for the user (in silent mode)

Installing Prerequisite Database Single Fixes

Before installing Oracle Utilities Customer Care and Billing, you must install Oracle Utilities Framework Prerequisite DB Single Fixes as described below.

1. Apply prerequisite Framework DB single fixes by running the CDXPatch.exe utility from the ..\FW\FW42030\FW42030-HFix directory. The utility will prompt you for the value of the following parameters:
   - The target database type (O/M/D) [O]:
   - The name of the user that owns the database objects

- The password for the user (in silent mode)
- The name of the Oracle database

CDXPatch.exe can be executed by selecting it from Windows explorer, or by using a command line from a DOS window. Use the option "-h" to see the help.

After the patches are processed, the utility may prompt you to create security for new objects.

When prompted as shown below, press Enter without any input, because security for new objects is generated in subsequent steps during installation of Oracle Utilities Customer Care and Billing.

- Enter a comma-separated list of Oracle users in which synonyms need to be created (e.g. CISUSER,CISREAD):
- Enter a database role which has a read-write privilege (e.g. CIS_USER):
- Enter a database role which has a read only privilege (e.g. CIS_READ):

Installing the Oracle Utilities Customer Care and Billing Database Component

To install the database component of Oracle Utilities Customer Care and Billing, follow these steps.

1. Run ORADBI.exe from the ..\CCB\Upgrade\Oracle\Install-Upgrade directory. The utility prompts you to enter values for the following parameters:
   - Name of the target database: <DB NAME>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Location of Java Home: <..\jdk1.6.0_20>
   - Location of UGBU Jar files: <..\CCB\jarfiles>
   - Oracle user with read-write privileges to the Database Schema: <CISUSER>
   - Oracle user with read-only privileges to the Database Schema: <CISREAD>
   - Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
   - Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Password for the user (in silent mode)

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

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.

Postinstallation Tasks

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.

Environment Registration

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

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

Upgrade Install

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

- Copying and Decompressing Install Media
- Upgrading the CISADM Schema

Copying and Decompressing Install Media

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

1. Download the Oracle Utilities Customer Care and Billing v2.4.0.3.0 Oracle database from the Oracle Software Delivery Cloud.
2. Unzip the CCB-V2.4.0.3.0-Oracle-Database-MultiPlatform.zip file to a temporary folder.This file contains all the database components required to install the Oracle Utilities Customer Care and Billing database.

Upgrading the CISADM Schema

The following upgrade paths are supported:

- Upgrading from Version 2.4.0.2 to 2.4.0.3
- Upgrading from Version 2.4.0.1 to 2.4.0.3
- Upgrading from Version 2.4.0.0 to 2.4.0.3
- Upgrading from Version 2.3.1.10 to 2.4.0.3
- Upgrading from Version 2.2.0.10 to 2.4.0.3
- Upgrading from Version 2.2.0 to 2.4.0.3
- Upgrading from Version 2.1.0 to 2.4.0.3
- Upgrading from Version 2.0.5 to 2.4.0.3
- Upgrading from Version 1.5.20 to 2.4.0.3
- Upgrading from Version 1.5.10 or 1.5.15 to 2.4.0.3

Upgrading from Version 2.4.0.2 to 2.4.0.3

You must install the Oracle Utilities Application Framework version 4.2.0.3 prior to Oracle Utilities Customer Care and Billing 2.4.0.3. The files for Oracle Utilities Application Framework installation are located in the FW/FW42030 folder.

Installing the Oracle Utilities Application Framework Database Component

To install the schema for Oracle Utilities Application Framework 4.2.0.3 follow these steps:

1. Run ORADBI.exe from the ..\FW\FW42030\Install-Upgrade directory. Please run the utility from the command prompt.

   Note: Be sure to run ORADBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle Database 11g Release 2 Client (11.2.0.1), 32-bit, and Java Development Kit Version 6.0 Update 20 or later installed. The database should already be listed in the local file tnsnames.ora

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

   - Name of the target database: <DB NAME>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Location of Java Home: <..\jdk1.6.0_20>

- Location of UGBU Jar files: <..\CCB\jarfiles>
- Oracle user with read-write privileges to the Database Schema: <CISUSER>
- Oracle user with read-only privileges to the Database Schema: <CISREAD>
- Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
- Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
- Name of the owner of the Database Schema: <CISADM>
- Password for the user (in silent mode)
- Password for the user (in silent mode)

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

Installing Prerequisite Database Single Fixes

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

1. Apply prerequisite Framework DB single fixes by running the CDXPatch.exe utility from the ..\FW\FW42030\FW42030-HFix directory. The utility will prompt you for the value of the following parameters:

   The utility prompts you for the value of the following parameters:

   - The target database type (O/M/D) [O]: O
   - The name of the user that owns the database objects: <CISADM>
   - The password for the user (in silent mode): <Password for CISADM user>
   - The name of the Oracle database: <DB Name>

CDXPatch.exe can be executed by selecting it from Windows explorer, or by using a command line from a DOS window. Use the option "-h" to see the help.

After the patches are processed, the utility may prompt you to create security for new objects.

When prompted as shown below, press Enter without any input, because security for new objects is generated in subsequent steps during installation of Oracle Utilities Customer Care and Billing.

- Enter a comma-separated list of Oracle users in which synonyms need to be created (e.g. CISUSER,CISREAD):
- Enter a database role which has a read-write privilege (e.g. CIS_USER):
- Enter a database role which has a read only privilege (e.g. CIS_READ):

Installing the Oracle Utilities Customer Care and Billing Database Component

To install the database component of Oracle Utilities Customer Care and Billing, follow these steps.

1. Run ORADBI.exe from the ..\CCB\Upgrade\Oracle\Install-Upgrade directory. The utility prompts you to enter values for the following parameters:
   - Name of the target database: <DB NAME>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Location of Java Home: <..\jdk1.6.0_20>
   - Location of UGBU Jar files: <..\CCB\jarfiles>

- Oracle user with read-write privileges to the Database Schema: <CISUSER>
- Oracle user with read-only privileges to the Database Schema: <CISREAD>
- Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
- Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
- Name of the owner of the Database Schema: <CISADM>
- Password for the user (in silent mode)
- Password for the user (in silent mode)

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

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.

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 2.4.0.1 to 2.4.0.3

You must install the Oracle Utilities Application Framework version 4.2.0.3 prior to Oracle Utilities Customer Care and Billing 2.4.0.3. The files for Oracle Utilities Application Framework installation are located in the FW/FW42030 folder.

Installing the Oracle Utilities Application Framework Database Component

To install the schema for Oracle Utilities Application Framework 4.2.0.3 follow these steps:

1. Run ORADBI.exe from the ..\FW\FW42030\Install-Upgrade directory. Please run the utility from the command prompt.

   Note: Be sure to run ORADBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle Database 11g Release 2 Client (11.2.0.1), 32-bit, and Java

Development Kit Version 6.0 Update 20 or later installed. The database should already be listed in the local file tnsnames.ora

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

- Name of the target database: <DB NAME>
- Name of the owner of the Database Schema: <CISADM>
- Password for the user (in silent mode)
- Location of Java Home: <..\jdk1.6.0_20>
- Location of UGBU Jar files: <..\CCB\jarfiles>
- Oracle user with read-write privileges to the Database Schema: <CISUSER>
- Oracle user with read-only privileges to the Database Schema: <CISREAD>
- Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
- Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
- Name of the owner of the Database Schema: <CISADM>
- Password for the user (in silent mode)
- Password for the user (in silent mode)

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

Installing Prerequisite Database Single Fixes

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

1. Apply prerequisite Framework DB single fixes by running the CDXPatch.exe utility from the ..\FW\FW42030\FW42030-HFix directory. The utility will prompt you for the value of the following parameters:

   The utility prompts you for the value of the following parameters:

   - The target database type (O/M/D) [O]: O
   - The name of the user that owns the database objects: <CISADM>
   - The password for the user (in silent mode): <Password for CISADM user>
   - The name of the Oracle database: <DB Name>

CDXPatch.exe can be executed by selecting it from Windows explorer, or by using a command line from a DOS window. Use the option "-h" to see the help.

After the patches are processed, the utility may prompt you to create security for new objects.

When prompted as shown below, press Enter without any input, because security for new objects is generated in subsequent steps during installation of Oracle Utilities Customer Care and Billing.

- Enter a comma-separated list of Oracle users in which synonyms need to be created (e.g. CISUSER,CISREAD):
- Enter a database role which has a read-write privilege (e.g. CIS_USER):
- Enter a database role which has a read only privilege (e.g. CIS_READ):

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 CCB2402_Trim_SRCH_CHAR_VAL.sql from the ..\CCB\Upgrade\Oracle\Install-Upgrade directory

   ```
   @CCB2402_Trim_SRCH_CHAR_VAL.sql
   ```
   This will generate a file called CCB_TRIM_SRCH_CHAR_VAL.sql

3. Run the generated CCB_TRIM_SRCH_CHAR_VAL.sql script

   ```
   @CCB_TRIM_SRCH_CHAR_VAL.sql
   ```

Installing the Oracle Utilities Customer Care and Billing Database Component

To install the database component of Oracle Utilities Customer Care and Billing, follow these steps.

1. Run ORADBI.exe from the ..\CCB\Upgrade\Oracle\Install-Upgrade directory. The utility prompts you to enter values for the following parameters:
   - Name of the target database: <DB NAME>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Location of Java Home: <..\jdk1.6.0_20>
   - Location of UGBU Jar files: <..\CCB\jarfiles>
   - Oracle user with read-write privileges to the Database Schema: <CISUSER>
   - Oracle user with read-only privileges to the Database Schema: <CISREAD>
   - Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
   - Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Password for the user (in silent mode)

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

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.

Consideration for Upgrade from Framework Versions Prior to Version 4.2.0 Service Pack 2

Customers upgrading from Framework versions prior to 4.2.0.2 need to run an upgrade script to trim the SRCH_CHAR_VAL column on the char tables. The search char value column is so far being populated with trailing spaces for Java-based objects for char types which are pre-defined values as well as foreign key values with user defined keys. This will result in empty results during "exact string" searches on SRCH_CHAR_VAL column. As a part of patch 16745968, this is fixed in the application but the existing data needs to be cleaned up.

The upgrade script "FW4202_Trim_SRCH_CHAR_VAL.sql" that is available in FW420 SP2 database blueprint upgrade folder can be used to perform this cleanup. This SQL should be executed by a schema owner and it will create a SQL file named "TRIM_SRCH_CHAR_VAL.sql". This SQL file ("TRIM_SRCH_CHAR_VAL.sql") is going to trim SRCH_CHAR_VAL columns of all the characteristics tables and will do this update operation in multiple chunks of key ranges. Only char types with pre-defined values as well as foreign key values with user defined keys will be updated in those char tables. Once sql- "FW4202_Trim_SRCH_CHAR_VAL.sql" is executed it cannot be re-executed.

> **Note:** This is only needed during upgrades from FW versions below 420 SP2. It should NOT be run in an initial install environment.

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 ..\FW42030\Install-Upgrade directory

   ```
   @FW4202_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 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 2.4.0.0 to 2.4.0.3

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 2.4.0.0 to version 2.4.0.3. The files for this upgrade are located in the following directory ..\CCB\Upgrade\Oracle\Upgrade-From-v2400\

1. Apply Framework version 4.2.0 Service Pack 2 and Customer Care and Billing 2.4.0 Service Pack 2 from Step_1_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. Execute the CCB2402_Trim_SRCH_CHAR_VAL.sql script from \03_CCB_TRIM_SRCH_VAL folder.

   - Login as CISADM user in SQL prompt & run CCB2402_Trim_SRCH_CHAR_VAL.sql

     @CCB2402_Trim_SRCH_CHAR_VAL.sql

     This will generate a file called CCB_TRIM_SRCH_CHAR_VAL.sql

   - Run the generated CCB_TRIM_SRCH_CHAR_VAL.sql script

     @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.

   - Login as CISADM user in SQL prompt & run FW4202_Trim_SRCH_CHAR_VAL.sql

     @FW4202_Trim_SRCH_CHAR_VAL.sql

     This will generate a file called TRIM_SRCH_CHAR_VAL.sql

   - Run the generated TRIM_SRCH_CHAR_VAL.sql script

     @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.

   - Login as SYS user. On SQL prompt run:

     @?/rdbms/admin/userlock.sql

   - 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.

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

Upgrading from Version 2.3.1.10 to 2.4.0.3

To upgrade Oracle Utilities Customer Care and Billing version 2.3.1.10 to version 2.4.0.3, you must install the Oracle Utilities Application Framework version 4.2.0.3 prior to Oracle Utilities Customer Care and Billing 2.4.0.3. The files for the Oracle Utilities Application Framework 4.2.0.3 installation are located in the FW42030 folder.

Installing the Oracle Utilities Application Framework 4.2.0.3 Database Component

To install the schema for Oracle Utilities Application Framework 4.2.0.3, follow these steps:

1. Run ORADBI.exe from the ..\FW\FW42030\Install-Upgrade directory. Please run the utility from the command prompt.

   Note: Be sure to run ORADBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle Database 11g Release 2 Client (11.2.0.1), 32-bit, and Java Development Kit Version 6.0 Update 20 or later installed. The database should already be listed in the local file tnsnames.ora

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

   - Name of the target database: <DB NAME>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Location of Java Home: <..\jdk1.6.0_20>
   - Location of UGBU Jar files: <..\CCB\jarfiles>
   - Oracle user with read-write privileges to the Database Schema: <CISUSER>
   - Oracle user with read-only privileges to the Database Schema: <CISREAD>
   - Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
   - Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Password for the user (in silent mode)

Installing Prerequisite Database Single Fixes

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

1. Apply prerequisite Framework DB single fixes by running the CDXPatch.exe utility from the ..\FW\FW42030\FW42030-HFix directory. The utility will prompt you for the value of the following parameters:

   The utility prompts you for the value of the following parameters:

   - The target database type (O/M/D) [O]: O
   - The name of the user that owns the database objects: <CISADM>
   - The password for the user (in silent mode): <Password for CISADM user>
   - The name of the Oracle database: <DB Name>

CDXPatch.exe can be executed by selecting it from Windows explorer, or by using a command line from a DOS window. Use the option "-h" to see the help.

After the patches are processed, the utility may prompt you to create security for new objects.

When prompted as shown below, press Enter without any input, because security for new objects is generated in subsequent steps during installation of Oracle Utilities Customer Care and Billing.

- Enter a comma-separated list of Oracle users in which synonyms need to be created (e.g. CISUSER,CISREAD):
- Enter a database role which has a read-write privilege (e.g. CIS_USER):
- Enter a database role which has a read only privilege (e.g. CIS_READ):

Optional: Execute CCB2401_BpSchema2.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. Also, note that CCB2401_BpSchema2.SQL can be executed well in advance of the upgrade to CCB 2.4.0.3 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\Upgrade\Oracle\Install-Upgrade.
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\Upgrade\Oracle\Install-Upgrade.
3. Connect to SQLPLUS.
4. Execute the file as follows:

   ```
   @CCB2401_BpSchema3.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 CCB2402_Trim_SRCH_CHAR_VAL.sql from the .. \CCB\Upgrade\Oracle\Install-Upgrade directory.

   ```
   @CCB2402_Trim_SRCH_CHAR_VAL.sql
   ```

   This will generate a file called CCB_TRIM_SRCH_CHAR_VAL.sql
3. Run the generated CCB_TRIM_SRCH_CHAR_VAL.sql script

   ```
   @CCB_TRIM_SRCH_CHAR_VAL.sql
   ```

Installing the Oracle Utilities Customer Care and Billing Database Component

To install the database component of Oracle Utilities Customer Care and Billing, follow these steps.

1. Run ORADBI.exe from the ..\CCB\Upgrade\Oracle\Install-Upgrade directory. The utility prompts you to enter values for the following parameters:
   - Name of the target database: <DB NAME>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Location of Java Home: <..\jdk1.6.0_20>
   - Location of UGBU Jar files: <..\CCB\jarfiles>
   - Oracle user with read-write privileges to the Database Schema: <CISUSER>

- Oracle user with read-only privileges to the Database Schema: <CISREAD>
- Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
- Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
- Name of the owner of the Database Schema: <CISADM>
- Password for the user (in silent mode)
- Password for the user (in silent mode)

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

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.

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\Upgrade\Oracle\Install-Upgrade
3. Connect to SQLPLUS.
4. Execute the file as follows:

```
@CCB2401_APDATA1.sql
```

Consideration for Upgrade from Framework Versions Prior to Version 4.2.0 Service Pack 2

Customers upgrading from Framework versions prior to 4.2.0.2 need to run an upgrade script to trim the SRCH_CHAR_VAL column on the char tables. The search char value column is so far being populated with trailing spaces for Java-based objects for char types which are pre-defined values as well as foreign key values with user defined keys. This will result in empty results during

"exact string" searches on SRCH_CHAR_VAL column. As a part of patch 16745968, this is fixed in the application but the existing data needs to be cleaned up.

The upgrade script "FW4202_Trim_SRCH_CHAR_VAL.sql" that is available in FW420 SP2 database blueprint upgrade folder can be used to perform this cleanup. This SQL should be executed by a schema owner and it will create a SQL file named "TRIM_SRCH_CHAR_VAL.sql". This SQL file ("TRIM_SRCH_CHAR_VAL.sql") is going to trim SRCH_CHAR_VAL columns of all the characteristics tables and will do this update operation in multiple chunks of key ranges. Only char types with pre-defined values as well as foreign key values with user defined keys will be updated in those char tables. Once sql- "FW4202_Trim_SRCH_CHAR_VAL.sql" is executed it cannot be re-executed.

> **Note:** This is only needed during upgrades from FW versions below 420 SP2. It should NOT be run in an initial install environment.

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 ..\FW42030\Install-Upgrade directory

   ```
   @FW4202_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 2.4.0.3

To upgrade Oracle Utilities Customer Care and Billing version 2.2.0.10 to version 2.4.0.3, you must install the Oracle Utilities Application Framework version 4.2.0.3 prior to Oracle Utilities Customer Care and Billing 2.4.0.3. The files for the Oracle Utilities Application Framework 4.2.0.3 installation are located in the FW42030 folder.

Optional: Execute CCB2401_BpSchema2.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. Also, note that CCB2401_BpSchema2.SQL can be executed well in

advance of the upgrade to CCB 2.4.0.3 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\Upgrade\Oracle\Install-Upgrade.
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\Upgrade\Oracle\Install-Upgrade.
3. Connect to SQLPLUS.
4. Execute the file as follows:

   ```
   @CCB2401_BpSchema3.SQL
   ```

Installing the Oracle Utilities Application Framework 4.2.0.3 Database Component

To install the schema for Oracle Utilities Application Framework 4.2.0.3, follow these steps:

1. Run ORADBI.exe from the ..\FW\FW42030\Install-Upgrade directory. Please run the utility from the command prompt.

   Note: Be sure to run ORADBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle Database 11g Release 2 Client (11.2.0.1), 32-bit, and Java Development Kit Version 6.0 Update 20 or later installed. The database should already be listed in the local file tnsnames.ora

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

   - Name of the target database: <DB NAME>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Location of Java Home: <..\jdk1.6.0_20>
   - Location of UGBU Jar files: <..\CCB\jarfiles>
   - Oracle user with read-write privileges to the Database Schema: <CISUSER>
   - Oracle user with read-only privileges to the Database Schema: <CISREAD>
   - Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
   - Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Password for the user (in silent mode)

Installing Prerequisite Database Single Fixes

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

1. Apply prerequisite Framework DB single fixes by running the CDXPatch.exe utility from the ..\FW\FW42030\FW42030-HFix directory. The utility will prompt you for the value of the following parameters:

   The utility prompts you for the value of the following parameters:

   - The target database type (O/M/D) [O]: O
   - The name of the user that owns the database objects: <CISADM>
   - The password for the user (in silent mode): <Password for CISADM user>
   - The name of the Oracle database: <DB Name>

CDXPatch.exe can be executed by selecting it from Windows explorer, or by using a command line from a DOS window. Use the option "-h" to see the help.

After the patches are processed, the utility may prompt you to create security for new objects.

When prompted as shown below, press Enter without any input, because security for new objects is generated in subsequent steps during installation of Oracle Utilities Customer Care and Billing.

- Enter a comma-separated list of Oracle users in which synonyms need to be created (e.g. CISUSER,CISREAD):
- Enter a database role which has a read-write privilege (e.g. CIS_USER):
- Enter a database role which has a read only privilege (e.g. CIS_READ):

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 CCB2402_Trim_SRCH_CHAR_VAL.sql from the .. \CCB\Upgrade\Oracle\Install-Upgrade directory.

   ```
   @CCB2402_Trim_SRCH_CHAR_VAL.sql
   ```

   This will generate a file called CCB_TRIM_SRCH_CHAR_VAL.sql
3. Run the generated CCB_TRIM_SRCH_CHAR_VAL.sql script

   ```
   @CCB_TRIM_SRCH_CHAR_VAL.sql
   ```

Installing the Oracle Utilities Customer Care and Billing Database Component

To install the database component of Oracle Utilities Customer Care and Billing, follow these steps.

1. Run ORADBI.exe from the ..\CCB\Upgrade\Oracle\Install-Upgrade directory. The utility prompts you to enter values for the following parameters:
   - Name of the target database: <DB NAME>
   - Name of the owner of the Database Schema: <CISADM>
   - Password for the user (in silent mode)
   - Location of Java Home: <..\jdk1.6.0_20>
   - Location of UGBU Jar files: <..\CCB\jarfiles>
   - Oracle user with read-write privileges to the Database Schema: <CISUSER>
   - Oracle user with read-only privileges to the Database Schema: <CISREAD>
   - Oracle database role with read-write privileges to the Database Schema: <CIS_USER>

- Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
- Name of the owner of the Database Schema: <CISADM>
- Password for the user (in silent mode)
- Password for the user (in silent mode)

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

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.

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\Upgrade\Oracle\Install-Upgrade
3. Connect to SQLPLUS.
4. Execute the file as follows:

```
@CCB2401_APDATA1.sql
```

Consideration for Upgrade from Framework Versions Prior to Version 4.2.0 Service Pack 2

Customers upgrading from Framework versions prior to 4.2.0.2 need to run an upgrade script to trim the SRCH_CHAR_VAL column on the char tables. The search char value column is so far being populated with trailing spaces for Java-based objects for char types which are pre-defined values as well as foreign key values with user defined keys. This will result in empty results during "exact string" searches on SRCH_CHAR_VAL column. As a part of patch 16745968, this is fixed in the application but the existing data needs to be cleaned up.

The upgrade script "FW4202_Trim_SRCH_CHAR_VAL.sql" that is available in FW420 SP2 database blueprint upgrade folder can be used to perform this cleanup. This SQL should be executed by a schema owner and it will create a SQL file named "TRIM_SRCH_CHAR_VAL.sql". This SQL file ("TRIM_SRCH_CHAR_VAL.sql") is going to trim SRCH_CHAR_VAL columns of all the characteristics tables and will do this update operation in multiple chunks of key ranges. Only char types with pre-defined values as well as foreign key values with user defined keys will be updated in those char tables. Once sql- "FW4202_Trim_SRCH_CHAR_VAL.sql" is executed it cannot be re-executed.

> **Note:** This is only needed during upgrades from FW versions below 420 SP2. It should NOT be run in an initial install environment.

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 ..\FW42030\Install-Upgrade directory

   ```
   @FW4202_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 to 2.4.0.3

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 2.2.0 to version 2.4.0.3. The files for this upgrade are located in the following directory: ..\CCB\Upgrade\Oracle\ Upgrade-From-v210-v220\ From-v220-Upgrade-to-v2403.

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.

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

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. Upgrade to Customer Care and Billing 2.4.0.3.0 by following the steps in the Section Upgrading from Version 2.2.0.10 to 2.4.0.3.

Upgrading from Version 2.1.0 to 2.4.0.3

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 2.1.0 to version 2.4.0.3. The files for this upgrade are located in the following directory: ..\CCB\Upgrade\Oracle\ Upgrade-From-v210-v220\ From-v210-Upgrade-to-v2403.

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.

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

   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. Upgrade to Customer Care and Billing 2.4.0.3.0 by following the steps in the Section Upgrading from Version 2.2.0.10 to 2.4.0.3.

Upgrading from Version 2.0.5 to 2.4.0.3

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 2.0.5 to version 2.4.0.3. The files for this upgrade are located in the following directory: ..\CCB\Upgrade\Oracle\ Upgrade-From-v205\

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_FW_220_SP18 folder.

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

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

5. Upgrade to Customer Care and Billing 2.4.0.3.0 by following the steps in the Section Upgrading from Version 2.2.0.10 to 2.4.0.3.

Upgrading from Version 1.5.20 to 2.4.0.3

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 1.5.20 to version 2.4.0.3. The files for this upgrade are located in the following directory:

..\CCB\Upgrade\Oracle\Upgrade-From-v1.5.10-v1.5.15\

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 CC&B 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 CDXPATCH.exe from the \02_FW_220_SP18 folder.

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

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

7. Upgrade to Customer Care and Billing 2.4.0.3.0 by following the steps in the Section Upgrading from Version 2.2.0.10 to 2.4.0.3.

Upgrading from Version 1.5.10 or 1.5.15 to 2.4.0.3

This section describes the steps for upgrading Oracle Utilities Customer Care and Billing version 1.5.10 or 1.5.15 to version 2.4.0.3. The files for this upgrade are located in the following directory:

..\CCB\Upgrade\Oracle\Upgrade-From-v1.5.10-v1.5.15\

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_mdfl.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.

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

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. Upgrade to Customer Care and Billing 2.4.0.3.0 by following the steps in the Section Upgrading from Version 2.2.0.10 to 2.4.0.3.

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 and Importing Dump File
- Configuring Security

Copying and Decompressing Install Media

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

1. Download the Oracle Utilities Customer Care and Billing v2.4.0.3.0 Oracle database from the Oracle Software Delivery Cloud.
2. Unzip the CCB-V2.4.0.3.0-Oracle-Database-MultiplatForm.zip file to your local machine. The database folder contains several files that will be referred to in the installation process.

Creating the Database and Importing Dump File

Note: You must have Oracle Database Server 11.2.0.1+ or 12.1.0.1+ installed on your machine in order to create the database.

You can use the database creation tool (cdxdba.plx for UNIX or CDXDBA.exe for Windows) to create the demo database with AL32UTF8 character set and to import the demo environment. The UNIX and Windows database creation utilities create an empty database with AL32UTF8 character set and at least one tablespace for storing the application objects before running the installation. The default name of the application tablespace is CISTS_01.

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

Creating the Demo Database on Unix

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

Note: For Oracle 12c (12.1.0.1+), use the files under CCB/DatabaseCreation/Unix_12c

Follow these steps to create a database:

1. FTP the contents of the Database Creation folder to a temporary directory on the UNIX server.
2. Set the ORACLE_HOME and ORACLE_BASE variables.
3. Run the utility cdxdba.plx by executing the following command:

   ```
   perl cdxdba.plx
   ```

4. When prompted, provide the following parameter values:
   - Instance name (DEMO):
   - ORACLE_BASE: the directory where the setup files for the database will be created (/orasw/app/oracle):
   - ORACLE_HOME: the folder where the current version of Oracle software is installed (/orasw/app/oracle/product/):
   - ORACLE_DATA: the directory where the data files for the database will be created (/db05/oradata):
   - Character set for the database (AL32UTF8):

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

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

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

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

   Select Y to import the Demo Install data.

   Note: The data_pump_dir directory object must exist in the database created above before continuing with the import. You should also copy the exp_demo.dmp file to the data_pump_dir. Decompress the exp_demo.dmp.gz

file first to extract the exp_demo.dmp file. This file is in ..\CCB\Demo directory.

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

Enter the name of the dump file (exp_demo.dmp):
Enter the name of the dump file directory (data_pump_dir):
Enter the name of the log file (exp_demo.log):
```

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

Note: If your database has been created without using the CDXDBA script, then you can also import demo data by following the steps below:

1. Create a tablespace named CISTS_01.
2. Log in to the database as sys user and execute the CCB\DatabaseCreation\UNIX\11g\users.sql to create the product users.
3. Create a database directory data_pump_dir and copy the dump file to this location.
4. Set the correct ORACLE_SID and ORACLE_HOME.
5. Run the following command to import demo dump:

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

Creating the Demo Database on Windows

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

You should be logged in as a user who is a member of the local ORA_DBA group on that server. The ORA_DBA group should have "administrator" privileges assigned to it.

Follow these steps to create the database:

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

   The utility displays the following options:

   ```
   E - Export a schema from the database
   R - Refresh a schema with a database dump
   C - Create/Recreate a local database
   H - See help for the command line options
   Q - Quit
   ```

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

   Provide the following values:

   - Provide the instance name (DEMO): <DB Name> For example, CCB_DB
   - Enter the character set of the database (AL32UTF8): AL32UTF8
   - Enter ORACLE_BASE: the directory where the setup files for the database will be created (c:\oracle): <Oracle_Base> For example, c:\app\oracle
   - Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (c:\oracle\product\11.1.0.6\Db_1):< Oracle_Home> For example, c:\app\oracle\db_home
   - Enter ORACLE_DATA: the directory where the data files for the database will be created (c:\app\oracle\oradata): <Directory where data files will be created>

3. Once the database has been created, select the R - Refresh a schema option with a database dump file to load the Demo Install data.

    - Select an option: R
    - Enter the instance name (DEMO): <DB name>
    - Is it a LOCAL database (exists on the same machine) (Y/N): <Please provide Y or N>
    - Enter the name of the Oracle account that owns that application schema (cisadm): CISADM
    - Enter password for CISADM (cisadm): CISADM
    - Enter the character set of the database (AL32UTF8): AL32UTF8
    - Enter the name of data pump directory (DATA_PUMP_DIR): DATA_PUMP_DIR
    - Enter the name of the dump file (exp_demo.dmp):exp_demo.dmp
    - Enter the name of the log file (imp_demo.log):exp_demo.log

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

> **Note:** The data_pump_dir directory object must exist in the database created above before continuing with the import. You should also copy the exp_demo.dmp file to the data_pump_dir. Decompress the exp_demo.dmp.gz file first to extract the exp_demo.dmp file. This file is in the ..\CCB\Demo directory.

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

> **Note:** If your database has been created without using the CDXDBA script, then you can also import demo data by following the steps below:

1. Create a tablespace named CISTS_01.
2. Log in to the database as sys user and execute the CCB\DatabaseCreation\Windows\11g\users.sql to create the product users.
3. Create a database directory data_pump_dir and copy the dump file to this location.
4. Set the correct ORACLE_SID and ORACLE_HOME.
5. Run the following command to import demo dump:

```
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\Security folder. To configure security, follow these steps:

1. Execute the OraGenSec.exe utility.

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

    The script will prompt you for parameter values:

    - Enter the application read-only user or Schema Owner in the database (e.g CISADM or CISREAD): CISADM
    - Enter the password for the user: CISADM
    - Enter the name of the Oracle Database: database name

- Enter a comma-separated list of Oracle users in which synonyms need to be created (e.g. cisuser,cisread): cisuser,cisread
- Select the following options: A
  - (A/a): Generate security for All objects in the Database (e.g. A or a for all objects)
  - (O/o): Generate security for specific Objects inputted in this terminal (e.g. CI_ACCT,CI_ACCT_K)
- Generate security for specific objects generated from an input File (e.g. Security_Objects.txt)

The utility configures security for the application owner schema objects.

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

For example:

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

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

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

Categories of Data

A table can belong to one of the three categories:

- Control (admin)
- Master
- Transaction

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

Example of tables in each category:

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

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

Naming Standards

The following naming standards must be applied to database objects.

Table

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

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

Some examples are:

- CI_ADJ_TYPE
- CI_ADJ_TYPE_L

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

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

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

Columns

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

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

Some examples are:

- ADJ_STATUS_FLG
- CAN_RSN_CD

Indexes

Index names are composed of the following parts:

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

- **OF**- Owner Flag. Prior to Version 4.1.0 of the framework the leading character of the base Owner Flag was used. From 4.1.0 on the first two characters of product's owner flag value should be used. For client specific implementation of index, use CM for Owner Flag.
- Application specific prefix could be C, F, T or another letter.
- **C/M/T** - The second character can be either C or M or T. C is used for control tables (Admin tables). M is for the master tables. T is reserved for the transaction tables.
- **NNN** - A three-digit number that uniquely identifies the table on which the index is defined.
- **P/S** - P indicates that this index is the primary key index. S is used for indexes other than primary keys.
- **n** is the index number, unique across all indexes on a given table (0 for primary and 1, 2, etc., for the secondary indexes).

Some examples are:

- F1C066P0
- F1C066S1
- XT206C2
- CMT206S2

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

Updating Storage.xml

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

Format:

```
<Table_Name>
  <TABLESPACE>CISTS_01</TABLESPACE>
  <PARALLEL>1</PARALLEL>
- <LOB>
- <Column Name>
  <TABLESPACE>CISTS_01</TABLESPACE>
  <SECUREFILE>Y</SECUREFILE>
  <CHUNK>8192</CHUNK>
  <CACHE>N</CACHE>
  <LOGGING>Y</LOGGING>
  <INROW>Y</INROW>
  <COMPRESS>N</COMPRESS>
  </Column Name>
  </LOB>
  </Table_Name>
```

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

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

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

The 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:

   [OF][C/M/T]NNN_SEQ

   - OF stands for Owner Flag. For example, Framework its F1. Other examples are M1,C1,D1,D2, etc.
   - C/M/T stands for Control (Admin)/Master/Transaction Tables.
   - NNN is a three digit unique Identifier for a Table on which the Sequence is defined.

   For Example: F1T220_SEQ

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

   [OF][C/M/T]NNN_Column_Name_SEQ

- OF stands for Owner Flag. For example, the framework is F1. Other examples are M1,C1,D1,D2 etc.
- C/M/T stands for Control (Admin)/Master/Transaction tables.
- NNN is a three digit unique identifier for a table on which the sequence is defined.

For Example: F1T220_BO_STATUS_CD_SEQ and F1T220_BUS_OBJ_CD_SEQ

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

   [OF]Column_Name_SEQ

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

   For Example: F1FKVALID_SEQ

   - 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

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

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

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

XML Type Support

Oracle Utilities Application Framework v4.2.0.0 onwards supports XML Type. XML Type provides 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 to for optimistic concurrency control in the application code. Add the Version column to all tables that are maintained by a Row Maintenance program irrespective of the language used (COBOL or JAVA).

Chapter 4

Database Implementation Guidelines

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

- Configuration Guidelines

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

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

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

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

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

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

Note: If the implementation creates a CM index on table-columns for which 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 <tablespace_name>;
```

- AES128 is the default encryption algorithm.
- Tablespace level encryption is also supported using the following command:

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

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

Data Compression Recommendations

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

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 ensure to always keep CLOBs in securefile and medium compressed. Also keep the current table partition uncompressed. All of the older partitions will be compressed based on QUERY HIGH compression.
- Load data into the uncompressed table partitions using a conventional load and then, once data is loaded using a CTAS operation, load into a temporary heap table. Then truncate the original partition. Alter the original partition into HCC compressed and then partition exchange this with the temporary heap table.
- All multi column Indexes (primary as well as secondary) will be compressed using the default compression. HCC or OLTP compression is not applicable on the top of compressed Indexes.

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.

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.

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)');
begin
ctx_ddl.sync_index('Application schema owner e.g
CISADM>.<Index_Name>');
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 Information Lifecycle Management and Data Archiving 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 ensure that the "COMPRESS" flag is turned on by setting it to "Y" in Storage.xml.

See "Database Syntax" on page 5 for more information on SecureFiles.

Database Configuration Recommendations

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

Large Redo Log File Sizes

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

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

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

Database Syntax

SecureFile

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

CREATE TABLE <Table_Name>
     ( COLUMN1 ….,
       COLUMN2 (CLOB)
       CONTRAINT <> PRIMARY KEY(…)
     )
ORGANIZATION INDEX PCTTHRESHOLD 50 OVERFLOW
```

```
LOB(COLUMN2) STORE AS SECUREFILE (ENABLE STORAGE IN ROW CHUNK CACHE
COMPRESS);
```

Database Initialization Parameters

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

db_block_size=8192

log_checkpoint_interval=0

db_file_multiblock_read_count=8

transactions=3000

open_cursors=30000

db_writer_processes=10

optimizer_index_cost_adj=1

optimizer_index_caching=100

db_files=1024

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

sessions=4500

memory_target=0

memory_max_target=0

processes=3000

dml_locks=48600

_b_tree_bitmap_plans=FALSE

Chapter 5

Conversion Tools

This section describes the following database conversion tools:

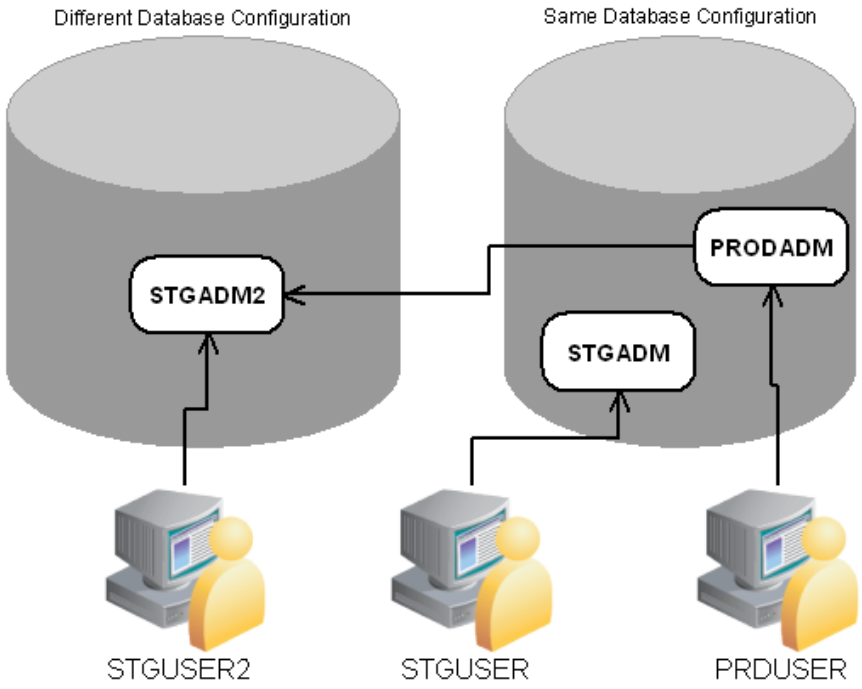
- Database Configuration
- Script Installation
- Preparing the Production Database
- Preparing the Staging Database

> **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.

1. Install the Oracle client V11g or later 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 this 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 sqls 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 -d stgadm,schemapassword,database_name -r
 stg_read,stg_user -u stguser
```

Appendix A

Information Lifecycle Management and Data Archiving

Oracle Utilities Customer Care and Billing provides support for Data Archiving based on Information Lifecycle Management (ILM).

ILM is methodology designed 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 goes the same data becomes older and older. Older data starts becoming an overhead to the overall application not only in terms of storage but also in terms of performance. This older data can be compressed using advanced compression techniques like Advanced Compression and Hybrid columnar compression, and can be put into slower and cheaper storage media and can be possibly removed from the system to make an overall savings in terms of cost and performance.

This chapter includes:

ILM Implementation Overview

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

The approach followed for most maintenance objects that support ILM is the concept that the age of the data is not the only criterion used to determine the lifecycle of a record. There may be business rules that dictate that some "old" records are still valid and should not be archived yet.

The Oracle Utilities Application Framework includes the combination of an ILM date and an archive switch to indicate if the record can be archived or not. The switch is set using processes that periodically review "old" data and call an algorithm to assess whether or not the record can be archived.

Database Administrators can then review older partitions and review the number of records that have the archive switch set to Y. If this is set on all records, the DBA is safe to take desired steps for that partition. If there are some records that are still not eligible to be archived, the DBA may choose to move those records to a different partition to free up the partition for desired steps.

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 field is the date used for ILM. It is defaulted to an appropriate date (typically the system date) when a new record is inserted. This column should be rarely updated. This will make sure that during the online/batch processing there is no extra overhead of moving these records from one partition to another. In circumstances where the record is not eligible for archiving, an algorithm (or a DBA) can update the ILM Date to the current system date (or another appropriate "newer" date) to remove it from a partition that is ready to be archived.
    - 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.
- Referential Integrity Contraints- To use ILM within the database, database level foreign key constraints must be added to child tables of ILM enabled MOs
- Partitioning - Partitioning is mandatory for ILM implementation. This provides segregation of data into multiple table partitions which provides better management of the data over its lifecycle.

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.
- On-going Maintenance Phase - This phase covers the ongoing maintenance tasks.

Preparation Phase

The following steps should be performed to prepare ILM enabled MOs. This will involve backing up the existing tables, creating new table structures incorporating referential integrity and partitioning, and loading the existing data into the new structures.

1. Rename existing tables and prime key indexes for tables associated with ILM enabled MOs. Prefix these tables with "ILM_" For example, to rename table: ALTER TABLE CI_TD_ENTRY RENAME TO ILM_TD_ENTRY, to rename prime key index: ALTER INDEX XT039P0 RENAME TO ILM_XT039P0
2. Please refer to the Module Specific ILM Implementation Details section below for tables associated with ILM enabled MOs.
3. Save the DDLs for the secondary indexes as you will need to recreate them later. Drop secondary indexes on the renamed tables.
4. Add Partitioned table structures with no secondary indexes for ILM enabled MOs. An example for To Do Entry MO is provide in **Appendix B: Sample DDL for ILM Enabled Maintenance Object**. Note that DDL specifies prime keys are implemented as Global Partitioned Indexes and that Foreign Key constraints from Child Tables to Parent Tables are specified.
5. Move the records from original (renamed) tables to the new partitioned tables.

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'.

Technical Note: Techniques involving direct path insert, parallelism, SQL*Loader may be necessary to load the data.

6. Create secondary indexes for the newly created partitioned tables as Global Indexes.

   Note: This can be created specifying parallel index create; remember to turn off parallelism after the index is created.

Module Specific ILM Implementation Details

This section outlines each maintenance object that has been configured to support ILM. In each case, the partitioning strategy is indicated only if it differs from the general recommendation described above. In each case, the recommendation of the initial load of the ILM_DT for existing records is noted.

To Do Entry

Primary Table Name: CI_TD_ENTRY

Child Table Names:

- CI_TD_DRLKEY
- CI_TD_ENTRY_CHA
- CI_TD_LOG
  - CI_TD_MSG_PARM
- CI_TD_SRTKEY

Initial Load of ILM_DT: Set to the Creation Date (CRE_DTTM) from CI_TD_ENTRY.

Sync Request (Outbound)

Primary Table Name: F1_SYNC_REQ

Child Table Names:

- F1_SYNC_REQ_CHAR
- F1_SYNC_REQ_EXTRACT
- F1_SYNC_REQ_LOG
  - F1_SYNC_REQ_LOG_PARM

Initial Load of ILM_DT: Set to the Creation Date (CRE_DTTM) from F1_SYNC_REQ.

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.

Sync Request (Inbound)

Primary Table Name: F1_SYNC_REQ_IN

Child Table Names:

- F1_SYNC_REQ_IN_CHAR
- F1_SYNC_REQ_IN_EXCP
  - F1_SYNC_REQ_IN_EXCP_PARM

- F1_SYNC_REQ_IN_LOG
    - F1_SYNC_REQ_IN_LOG_PARM
- F1_SYNC_REQ_IN_REL_OBJ

Initial Load of ILM_DT: Set to the Creation Date (CRE_DTTM) from F1_SYNC_REQ_IN.

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

Outbound Message

Primary Table Name: F1_OUTMSG

Child Table Name:

- F1_OUTMSG_ERRPARM

Initial Load of ILM_DT: Set to the Creation Date (CRE_DTTM) from F1_OUTMSG.

Service Task

Primary Table Name: F1_SVC_TASK

Child Table Name:

- F1_SVC_TASK_CHAR
- F1_SVC_TASK_LOG
    - F1_SVC_TASK_LOG_PARM
- F1_SVC_TASK_REL_OBJ

Initial Load of ILM_DT: Set to the Creation Date (CRE_DTTM) from F1_SVC_TASK.

Object Revision

Primary Table Name: F1_OBJ_REV

Child Table Name:

- F1_OBJ_REV_CHAR
- F1_OBJ_REV_LOG
    - F1_OBJ_REV_LOG_PARM

Initial Load of ILM_DT: Set to the Status Update Date (STATUS_UPD_DTTM) from F1_OBJ_REV

> **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

Primary Table Name: CI_ADJ

Child Table Names:

- CI_ADJ_APREQ
- CI_ADJ_CALC_LN
    - CI_ADJ_CL_CHAR
- CI_ADJ_CHAR

Initial Load of ILM_DT: Set to the Creation Date (CRE_DT) on CI_ADJ table.

Approval Request

Primary Table Name: CI_APPR_REQ

Child Table Names:

- CI_APPR_REQ_CHAR
- CI_APPR_REQ_LOG
    - CI_APPR_REQ_LOG_PARM

Initial Load of ILM_DT: Set to the minimum Log Date/Time (LOG_DTTM) on CI_APPR_REQ_LOG table for a given APPR_REQ_ID.

Bill

Primary Table Name: CI_BILL

Child Table Names:

- CI_BILL_CHAR
- CI_BILL_EXCP
- CI_BILL_MSGS
    - CI_BILL_MSG_PRM
- CI_BILL_SA
- CI_BILL_ROUTING

Initial Load of ILM_DT: Set to the Creation Date/Time (CRE_DTTM) on CI_BILL table.

Bill Segment

Primary Table Name: CI_BSEG

Child Table Names:

- CI_BSEG_CALC
    - CI_BSEG_CALC_LN
        - CI_BSEG_CL_CHAR
- CI_BSEG_EXCP
- CI_BSEG_MSG
- CI_BSEG_READ
- CI_BSEG_SQ
- CI_BSEG_ITEM

Initial Load of ILM_DT: Set to the Creation Date/Time (CRE_DTTM) on CI_BSEG table.

Statement

Primary Table Name: CI_STM

Child Table Names:

- CI_STM_DTL

Initial Load of ILM_DT: Set to the Statement Date (STM_DT) on CI_STM table.

Off Cycle Bill Generator

Primary Table Name: C1_OFFCYC_BGEN

Child Table Names:

- C1_OFFCYC_BGEN_ADJ

- C1_OFFCYC_BGEN_BCHG
- C1_OFFCYC_BGEN_CHAR
- C1_OFFCYC_BGEN_LOG
    - C1_OFFCYC_BGEN_LOG_PARM
- C1_OFFCYC_BGEN_SA

Initial Load of ILM_DT: Set to the Status Update Date/Time (STATUS_UPD_DTTM) on C1_OFFCYC_BGEN table.

Billable Charge

Primary Table Name: CI_BILL_CHG

Child Table Names:

- CI_BCHG_READ
- CI_BCHG_SQ
- CI_B_CHG_LINE
    - CI_B_LN_CHAR

Initial Load of ILM_DT: Set to the Start Date (START_DT) on CI_BILL_CHG table.

Case

Primary Table Name: CI_CASE

Child Table Names:

- CI_CASE_CHAR
- CI_CASE_LOG
    - CI_CASE_LOG_PARM

Initial Load of ILM_DT: Set to the minimum Log Date/Time (LOG_DTTM) on CI_CASE_LOG table for a given CASE_ID.

Field Activity

Primary Table Name: CI_FA

Child Table Names:

- CI_FA_CHAR
- CI_FA_LOG
- CI_FA_REM
    - CI_FA_REM_EXC
        - CI_FA_REM_EXP
- CI_FA_STEP

Initial Load of ILM_DT: Set to the Creation Date/Time (CRE_DTTM) on CI_FA table for a given FA_ID.

Meter Read

Primary Table Name: CI_MR

Child Table Names:

- CI_MR_CHAR
- CI_MR_REM

        - CI_MR_REM_EXCP
    - CI_REG_READ

Initial Load of ILM_DT: Set to the Read Date/Time (READ_DTTM) on CI_MR table for a given MR_ID.

Enrollment (Order)

Primary Table Name: CI_ENRL

Child Table Names:

- CI_ENRL_ADDR
- CI_ENRL_FLD
- CI_ENRL_LOG
- CI_ENRL_PER_ID
- CI_ENRL_PER_NM
- CI_ENRL_PER_PHN

Initial Load of ILM_DT: Set to the Start Date (START_DT) on CI_ENRL table for a given ENRL_ID.

Payment Event

Primary Table Name: CI_PAY_EVENT

Child Table Names:

- CI_PAY_EVT_CHAR
- CI_PAY_EVT_EXCP
- CI_PAY_TNDR
    - CI_APAY_CLR_STG
    - CI_PAY_TNDR_CHAR
- CI_PEVT_DST_DTL

Initial Load of ILM_DT: Set to the Payment Date (PAY_DT) on CI_PAY_EVENT table.

Payment

Primary Table Name: CI_PAY

Child Table Names:

- CI_PAY_CHAR
- CI_PAY_EXCP
- CI_PAY_SEG

Initial Load of ILM_DT: Set to the Payment Date (PAY_DT) on CI_PAY_EVENT table.

Match Event

Primary Table Name: CI_MATCH_EVT

Child Table Names: N/A

Initial Load of ILM_DT: Set to the Creation Date (CREATE_DT) on CI_MATCH_EVT table.

Usage Request

Primary Table Name: C1_USAGE

Child Table Names:

- C1_USAGE_CHAR
- C1_USAGE_LOG
    - C1_USAGE_LOG_PARM

Initial Set Load of ILM_DT: Set to the Creation Date/Time (CRE_DTTM) on C1_USAGE table.

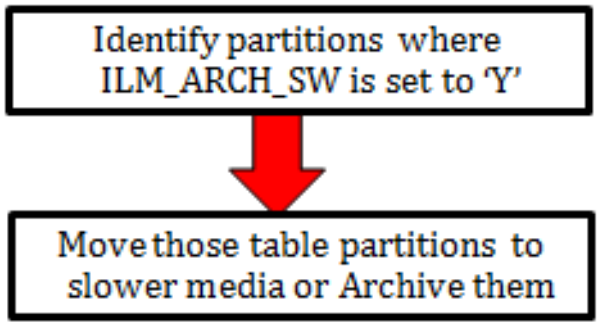
On-going Maintenance Phase

As mentioned in the overview, for each maintenance object that supports ILM, there are batch processes that periodically review "old" records and mark the ILM Archive switch to "Y".

Once the ILM fields are populated with their relevant values, the ILM facilities are then used within the database to implement storage savings, as per the following:

- 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. Remember to assign transportable tablespaces for the archive/dormant data stage to allow for safe removal of the data.
- 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.

The following figure illustrates the steps necessary for this phase:



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 that when data is moved from one partition to another it should be automatically compressed.
- 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

Appendix B

Sample DDL for ILM Enabled Maintenance Object

This section denotes a sample script of a maintenance object. Other maintenance object's implementations can follow similar pattern.

```
CREATE TABLE CI_TD_ENTRY
  (
    TD_ENTRY_ID      CHAR(14 BYTE) NOT NULL ENABLE,
    BATCH_CD         CHAR(8 BYTE) 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 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    TD_TYPE_CD       CHAR(8 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    ROLE_ID          CHAR(10 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    ENTRY_STATUS_FLG CHAR(2 BYTE) 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 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    COMMENTS         VARCHAR2(254 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    ASSIGNED_USER_ID CHAR(8 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    TD_PRIORITY_FLG  CHAR(4 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    ILM_DT DATE DEFAULT SYSDATE,
    ILM_ARCH_SW  CHAR(1 BYTE) DEFAULT 'N' NOT NULL ENABLE
)PARTITION BY RANGE (ILM_DT)
SUBPARTITION BY RANGE (TD_ENTRY_ID)
SUBPARTITION TEMPLATE
  (
    SUBPARTITION SUB1 VALUES LESS THAN ( '124999999999' ),
    SUBPARTITION SUB2 VALUES LESS THAN ( '249999999999' ),
    SUBPARTITION SUB3 VALUES LESS THAN ( '374999999999' ),
    SUBPARTITION SUB4 VALUES LESS THAN ( '499999999999' ),
    SUBPARTITION SUB5 VALUES LESS THAN ( '624999999999' ),
    SUBPARTITION SUB6 VALUES LESS THAN ( '744999999999' ),
    SUBPARTITION SUB7 VALUES LESS THAN ( '874999999999' ),
    SUBPARTITION SUB8 VALUES LESS THAN ( MAXVALUE )
  )
(PARTITION P2 VALUES LESS THAN(TO_DATE('01/06/2002 00:00:01','DD/MM/YYYY
HH24:MI:SS')),
 PARTITION P3 VALUES LESS THAN(TO_DATE('01/06/2003 00:00:01','DD/MM/YYYY
HH24:MI:SS')),
 PARTITION P4 VALUES LESS THAN(TO_DATE('01/06/2010 00:00:01','DD/MM/YYYY
HH24:MI:SS')),
 PARTITION P5 VALUES LESS THAN(TO_DATE('01/06/2012 00:00:01','DD/MM/YYYY
HH24:MI:SS')),
 PARTITION P6 VALUES LESS THAN(TO_DATE('01/12/2012 00:00:01','DD/MM/YYYY
HH24:MI:SS')),
```

```
 PARTITION P7 VALUES LESS THAN(TO_DATE('01/06/2013 00:00:01','DD/MM/YYYY
HH24:MI:SS')),
 PARTITION P8 VALUES LESS THAN(TO_DATE('01/12/2013 00:00:01','DD/MM/YYYY
HH24:MI:SS')),
 PARTITION P9 VALUES LESS THAN(TO_DATE('01/06/2014 00:00:01','DD/MM/YYYY
HH24:MI:SS')),
 PARTITION P1 VALUES LESS THAN (MAXVALUE)
)
ENABLE ROW MOVEMENT
/

CREATE UNIQUE INDEX XT039P0 ON CI_TD_ENTRY
  (
    TD_ENTRY_ID
  )
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 ( '744999999999' ),
    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
  )
/

CREATE INDEX XT039S3 ON CI_TD_ENTRY
    (
      ENTRY_STATUS_FLG,
      ASSIGNED_TO
    )
/

CREATE INDEX XT039S4 ON CI_TD_ENTRY
   (
      ROLE_ID, TD_TYPE_CD, ENTRY_STATUS_FLG, TD_PRIORITY_FLG
    )
/

CREATE INDEX XT039S5 ON CI_TD_ENTRY
    (
      BATCH_CD,
      BATCH_NBR,
      ENTRY_STATUS_FLG
    )
/

CREATE UNIQUE INDEX XT039S6 ON CI_TD_ENTRY
    (
      TD_ENTRY_ID, ASSIGNED_TO, ENTRY_STATUS_FLG
    )
/
CREATE UNIQUE INDEX XT039S7 ON CI_TD_ENTRY
    (
      COMPLETE_USER_ID, COMPLETE_DTTM, TD_ENTRY_ID
    )
```

```
/

CREATE UNIQUE INDEX XT039S8 ON CI_TD_ENTRY
    (
      ILM_DT, ILM_ARCH_SW, TD_ENTRY_ID
    )
/

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

CREATE UNIQUE INDEX XT701P0 ON CI_TD_ENTRY_CHA
  (
    TD_ENTRY_ID, CHAR_TYPE_CD, SEQ_NUM
  )
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 ( '744999999999' ),
    PARTITION P7 VALUES LESS THAN ( '874999999999' ),
    PARTITION P8 VALUES LESS THAN ( MAXVALUE )
  )
/

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
    )
/

CREATE TABLE CI_TD_DRLKEY
  (
    TD_ENTRY_ID CHAR(14 BYTE) NOT NULL ENABLE,
    SEQ_NUM     NUMBER(3,0) NOT NULL ENABLE,
    KEY_VALUE   VARCHAR2(50 BYTE) 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)
    PARTITION BY REFERENCE (CI_TD_DRLKEY_FK)
  ENABLE ROW MOVEMENT
/
```

```
CREATE UNIQUE INDEX XT037P0 ON CI_TD_DRLKEY
  (
    TD_ENTRY_ID, SEQ_NUM
  )
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 ( '744999999999' ),
    PARTITION P7 VALUES LESS THAN ( '874999999999' ),
    PARTITION P8 VALUES LESS THAN ( MAXVALUE )
  )
/

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
    )
/

CREATE TABLE CI_TD_LOG
  (
    TD_ENTRY_ID CHAR(14 BYTE) NOT NULL ENABLE,
    SEQ_NUM     NUMBER(3,0) NOT NULL ENABLE,
    LOG_DTTM DATE NOT NULL ENABLE,
    LOG_TYPE_FLG CHAR(4 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    USER_ID      CHAR(8 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    ASSIGNED_TO  CHAR(8 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    VERSION      NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
    DESCRLONG    VARCHAR2(4000 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    CONSTRAINT CI_TD_LOG_FK FOREIGN KEY(TD_ENTRY_ID) REFERENCES CI_TD_ENTRY)
    PARTITION BY REFERENCE (CI_TD_LOG_FK)
  ENABLE ROW MOVEMENT
/

CREATE UNIQUE INDEX XT721P0 ON CI_TD_LOG
  (
    TD_ENTRY_ID, SEQ_NUM
  )
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 ( '744999999999' ),
    PARTITION P7 VALUES LESS THAN ( '874999999999' ),
    PARTITION P8 VALUES LESS THAN ( MAXVALUE )
  )
/

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
    )
/

CREATE TABLE CI_TD_MSG_PARM
  (
    TD_ENTRY_ID  CHAR(14 BYTE) NOT NULL ENABLE,
    SEQ_NUM      NUMBER(3,0) NOT NULL ENABLE,
    MSG_PARM_VAL VARCHAR2(30 BYTE) DEFAULT ' ' NOT NULL ENABLE,
    VERSION      NUMBER(5,0) DEFAULT 1 NOT NULL ENABLE,
    CONSTRAINT CI_TD_MSG_PARM_FK FOREIGN KEY(TD_ENTRY_ID) REFERENCES
CI_TD_ENTRY)
    PARTITION BY REFERENCE (CI_TD_MSG_PARM_FK)
  ENABLE ROW MOVEMENT
/

CREATE UNIQUE INDEX XT040P0 ON CI_TD_MSG_PARM
  (
    TD_ENTRY_ID, SEQ_NUM
  )
/

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

CREATE TABLE CI_TD_SRTKEY
  (
    TD_ENTRY_ID CHAR(14 BYTE) NOT NULL ENABLE,
    SEQ_NUM     NUMBER(3,0) NOT NULL ENABLE,
    KEY_VALUE   VARCHAR2(50 BYTE) 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)
    PARTITION BY REFERENCE (CI_TD_SRTKEY_FK)
  ENABLE ROW MOVEMENT
/


CREATE UNIQUE INDEX XT041P0 ON CI_TD_SRTKEY
  (
    TD_ENTRY_ID, SEQ_NUM
  )
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 ( '744999999999' ),
    PARTITION P7 VALUES LESS THAN ( '874999999999' ),
    PARTITION P8 VALUES LESS THAN ( MAXVALUE )
  )
/

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
    )
/
```

```
CREATE TABLE CI_TD_ENTRY_K
  (
    TD_ENTRY_ID CHAR(14 BYTE) NOT NULL ENABLE,
    ENV_ID      NUMBER(6,0) NOT NULL ENABLE,
    CONSTRAINT XT547P0 PRIMARY KEY (TD_ENTRY_ID, ENV_ID) ENABLE
  )
/
```

Appendix C

Upgrades to the Oracle Utilities Customer Care and Billing 2.4.0 Service Pack 3 Database

This section describes the changes made to the database for Oracle Utilities Customer Care and Billing 2.4.0 Service Pack 3.

This section includes:

Automatic Data Upgrade

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

Program Management Changes

When Eligibility Criteria (C1_INITV_CRITERIA_TYPE_FLG) on C1_INITIATIVE_CRITERIA has a value of 'C1EC' (eligibility criteria), Criteria Execution Point (ELIG_CRT_EXEC_FLG) will be populated with value 'C1LG' (Lead Generation)

Lead Event Table (C1_LEAD_EVT) , Primary Communication Channel (C1_PRIM_COM_CH_FLG) will be populated with default values:

- Bill Insert ('C1BI') when BO = 'C1-LeadEvtTypeCreBillInsAbtIni'
- Letter ('C1LT') when BO = 'C1-LeadEvtTypeCreCCAbtInitv'
- SMS ('C1SM') when BO = 'C1-LeadEvtTypeCreSMSAbtInitv'
- Email ('C1EM') when BO = 'C1-LeadEvtTypeCreEmailAbtInitv'
- Not Applicable ('C1NA') when BO = 'C1-LeadEvtTypeDiscardLead', 'C1-LeadEvtTypeUseCustomerPref', 'C1-LeadEvtTypeNotifyCSS'
- To Dos with To Type = 'TD-FAUPL' created with an empty 2nd drill key.

This script cleans up the data. CCB Bug 20775380.

New Tables

The following new tables are added to Oracle Utilities Customer Care and Billing V2.4.0.3:

Table Name	Description
C1_LETY_STEP_TYPE	Lead Event Type Step Type
C1_LETY_STEP_TYPE_L	Lead Event Type Step Type Language
C1_LEAD_EVT_STEP	Lead Event Step
C1_LEAD_EVT_STEP_K	Lead Event Step Key
C1_NTF_TYPE	Notification Type
C1_NTF_TYPE_L	Notification Type Language
C1_NTF_TYPE_COMM_RTE_TYPE	Notification Type Person Contact Type
C1_NTF_TYPE_ALG	Notification Type Algorithm
C1_NTF_TYPE_DVTYP	Notification Type Delivery Type
C1_NTF_TYPE_CHAR	Notification Type Characteristic
C1_COMM_RTE_TYPE	Person Contact Type
C1_COMM_RTE _TYPE_L	Person Contact Type Language
C1_COMM_RTE_TYPE_DVTYP	Person Contact Type Delivery Type
C1_COMM_RTE_TYPE_CHAR	Person Contact Type Characteristic
C1_NTF_PREF	Communication Preference
C1_NTF_PREF_ID	Communication Preference Identifier
C1_NTF_PREF_CHAR	Communication Preference Characteristic
C1_NTF_PREF_LOG	Communication Preference Log
C1_NTF_PREF _LOG_PARM	Communication Preference Log Parameters
C1_NTF_PREF_K	Communication Preference Key
C1_PER_CONTDET	Person Contact
C1_PER_CONT_DET_K	Person Contact Key

Added Columns

The following columns are added in Oracle Utilities Customer Care and Billing V2.4.0.3.

Table	Column	Required
C1_REPRESENTATIVE	PER_ID	N
C1_REPRESENTATIVE	NT_XID_CD	N
C1_INITIATIVE_CRITERIA	ELIG_CRT_EXEC_FLG	N
C1_LEAD	LEAD_RESPONSE_CH_FLG	N

Table	Column	Required
C1_LEAD	THRD_PTY_REP_CD	N
C1_LEAD_EVT	C1_PRIM_COM_CH_FLG	N
CI_ACCT_PER	ALW_PREF_FLG	Y

Column Format Change

The following columns are modified in Oracle Utilities Customer Care and Billing V2.4.0.3.

Table	Column	From	To
CI_ENRL	EMAILID	CHAR(70)	CHAR(254)
CI_BATCH_CTRL	EMAILID	CHAR(70)	CHAR(254
CI_BATCH_JOB	EMAILID	CHAR(70)	CHAR(254
CI_PER	EMAILID	CHAR(70)	CHAR(254
CI_QUOTE_RTG	EMAILID	CHAR(70)	CHAR(254
CI_SS_ADDR_OVRD	EMAILID	CHAR(70)	CHAR(254
SC_USER	EMAILID	CHAR(70)	CHAR(254
CI_SP_RTE	SVC_CYC_CD	CHAR(4)	CHAR(16)
CI_SP_RTE	SVC_RTE_CD	CHAR(8)	CHAR(16)
CI_SVC_RTE_STG_DWN	SVC_CYC_CD	CHAR(4)	CHAR(16)
CI_SVC_RTE_STG_DWN	SVC_RTE_CD	CHAR(8)	CHAR(16)

New Indexes

The following indexes are added in Oracle Utilities Customer Care and Billing V2.4.0.3

Table_name	Index_name	Column_Name
CI_BAL_CTL_GRP	XT064S1	BALANCING_STAT_FLG
CI_BAL_CTL_GRP	XT064S1	BAL_CTL_GRP_ID

Index Changes

The following indexes are modified in Oracle Utilities Customer Care and Billing V2.4.0.3.

Table_name	Index_name	Column_Name
C1_INITIATIVE	C1C335S3	BUS_OBJ_CD
C1_LEAD	C1T108S2	BUS_OBJ_CD
C1_LEAD	C1T108S2	BO_STATUS_CD
C1_LEAD	C1T108S2	C1_LEAD_ID

Table_name	Index_name	Column_Name
C1_LEAD_EVT	C1T113S3	BUS_OBJ_CD
C1_LEAD_EVT	C1T113S3	BO_STATUS_CD
C1_LEAD_EVT	C1T113S3	C1_LEAD_EVT_ID
CI_COLL_EVT	XT069S0	TRIGGER_BP_SW
CI_COLL_EVT	XT069S0	COLL_PROC_ID
CI_COLL_EVT	XT069S0	EVT_SEQ
CI_COLL_EVT	XT069S0	COLL_EVT_TYP_CD
CI_MD_MO_TBL	XC079S2	TBL_NAME
CI_MD_CONST_FLD	XC617S1	FLD_NAME
CI_BILL	XT033S7	ACCT_ID
CI_BILL	XT033S7	OFFCYC_BGEN_ID
CI_BILL	XT033S7	CRE_DTTM

Appendix D

Upgrades to the Oracle Utilities Customer Care and Billing 2.4.0 Service Pack 2 Database

This section describes the changes made to the database for Oracle Utilities Customer Care and Billing 2.4.0 Service Pack 2.

This section includes:

New Tables

The following new tables are added to Oracle Utilities Customer Care and Billing V2.4.0.2:

Table Name	Description
F1_GNRL_AUDIT_K	General Audit Key
F1_GNRL_AUDIT_CHAR	General Audit Characteristic
F1_GNRL_AUDIT_VAL	General Audit Value
F1_GNRL_AUDIT	General Audit
C1_PREM_ACTIVITY_GTT	Premise Activity Overview Temp Table

New ILM Columns

Information Lifecycle Management columns (ILM_DT and ILM_ARCH_SW) are added to the following tables in Oracle Utilities Customer Care and Billing V2.4.0.2:

Table	Description
CI_ADJ	Adjustment
CI_APPR_REQ	Approval Request
CI_PAY_EVENT	Payment Event
CI_PAY	Payment

Table	Description
CI_MATCH_EVT	Match Event
CI_MR	Meter Read
CI_BILL_CHG	Billable Charge
C1_USAGE	Usage
CI_BILL	Bill
CI_BSEG	Bill Segment
CI_STM	Statement
CI_FA	Field Activity
CI_ENRL	Order
CI_CASE	Case
C1_OFFCYC_BGEN	Off Cycle Bill Generator

Dropped Tables

None

New Indexes

The following indexes are added in Oracle Utilities Customer Care and Billing V2.4.0.2:

Index_name	Table_name	Column_Name
C1T001P0	C1_PREM_ACTIVITY_GTT	CRE_DTTM
C1T001P0	C1_PREM_ACTIVITY_GTT	SCHED_DTTM
C1T001P0	C1_PREM_ACTIVITY_GTT	SEQNO
F1T901P0	F1_GNRL_AUDIT	AUDIT_ID
F1T901S1	F1_GNRL_AUDIT	USER_ID
F1T901S2	F1_GNRL_AUDIT	AUDIT_ID
F1T901S2	F1_GNRL_AUDIT	CRE_DTTM
F1T901S2	F1_GNRL_AUDIT	USER_ID
F1T902P0	F1_GNRL_AUDIT_VAL	AUDIT_ID
F1T902P0	F1_GNRL_AUDIT_VAL	FLD_NAME
F1T902S1	F1_GNRL_AUDIT_VAL	AUDIT_ID
F1T902S1	F1_GNRL_AUDIT_VAL	FLD_NAME
F1T902S1	F1_GNRL_AUDIT_VAL	FLD_VAL
F1T903P0	F1_GNRL_AUDIT_K	AUDIT_ID

Index_name	Table_name	Column_Name
F1T903P0	F1_GNRL_AUDIT_K	ENV_ID

Appendix E

Upgrades to the Oracle Utilities Customer Care and Billing 2.4.0 Service Pack 1 Database

This section describes the changes made to the database for Oracle Utilities Customer Care and Billing 2.4.0 Service Pack 1.

This section includes:

New Tables

The following new tables are added to Oracle Utilities Customer Care and Billing V2.4.0.1:

Table	Description
C1_REPRESENTATIVE	Sales Representative
C1_REP_GRP_MEM	Sales Representative Group Membership
C1_REPRESENTATIVE_L	Sales Representative Language
C1_REPRESENTATIVE_CHAR	Sales Representative Characteristic
C1_INITIATIVE_REL_OBJ	Initiative Related Object
C1_INITIATIVE_CRITERIA	Initiative Criteria
C1_INITIATIVE_CRITERIA_L	Initiative Criteria Language
C1_INITIATIVE_CRITERIA_CHAR	Initiative Criteria Characteristic
C1_REPRESENTATIVE_LOG	Sales Representative Log
C1_REPRESENTATIVE_LOG_PARM	Sales Representative Log Message Parameter

Dropped Tables

The following tables were dropped in Oracle Utilities Customer Care and Billing V2.4.0.1:

Table	Description
C1_INITIATIVE_LEAD_CRIT	Initiative Lead Eligibility Criteria
C1_INITIATIVE_LEAD_CRIT_L	Initiative Lead Eligibility Criteria Characteristic
C1_INITIATIVE_LEAD_CRIT_CHAR	Initiative Lead Eligibility Criteria Language
C1_INITIATIVE_PRTC_CRIT	Initiative Participation Criteria
C1_INITIATIVE_PRTC_CRIT_L	Initiative Participation Criteria Language
C1_INITIATIVE_PRTC_CRIT_CHAR	Initiative Participation Criteria Characteristic

New Indexes

The following indexes are added in Oracle Utilities Customer Care and Billing V2.4.0.1:

Index	Table	Column
C1M252S1	CI_TNDR_CTL_ST	TND_CTL_STG_ST_FLG
C1M252S1	CI_TNDR_CTL_ST	TNDR_CTL_ID
CI_CXT169P0	CI_PAY_TNDR_ST_CHAR	SEQ_NUM
CI_CXT169P0	CI_PAY_TNDR_ST_CHAR	CHAR_TYPE_CD
CI_CXT169P0	CI_PAY_TNDR_ST_CHAR	PAY_CHAR_ENT_FLG
CI_CXT169P0	CI_PAY_TNDR_ST_CHAR	EXT_REFERENCE_ID
CI_CXT169P0	CI_PAY_TNDR_ST_CHAR	EXT_TRANSMIT_ID
CI_CXT169P0	CI_PAY_TNDR_ST_CHAR	EXT_SOURCE_ID
CI_CXT169P0	CI_PAY_TNDR_ST_CHAR	EXT_BATCH_ID
XC381S1	CI_SCR	SCR_TYPE_FLG
XC381S1	CI_SCR	APP_SVC_ID
XC381S1	CI_SCR	SCR_CD
XM244S1	CI_NB_SA	SA_ID
XM244S1	CI_NB_SA	CVRD_SA_ID
XT199S1	CI_ENRL_PER_ID	HASH_PER_ID_NBR
XT199S1	CI_ENRL_PER_ID	ENRL_ID
XT199S1	CI_ENRL_PER_ID	ID_TYPE_CD
XT313P0	CI_BILL_CHAR	SEQ_NUM
XT313P0	CI_BILL_CHAR	CHAR_TYPE_CD
XT313P0	CI_BILL_CHAR	BILL_ID

Index	Table	Column
XT313S1	CI_BILL_CHAR	SRCH_CHAR_VAL
XT368S4	C1_USAGE	SA_ID

Upgrading System Configuration

Update Calculation Rules Mapping

Run the upgrade batch process **Update Calc Rules Mapping** (C1-UPDBF) to set the correct value of Calc Rule elements by using the correct mapping. This process will trigger the Post-Processing Service Script on each of the Calculation Rule business objects that is responsible in populating the Bill Factor, Item Type, Calc Value Algorithm, and Step Value Algorithm elements. If the Calculation Rule is Service Quantity or Stepped SQ, it will issue an update using the Calculation Rule Cleanup - Override Proration business object to populate the Override Proration switch.

For additional information, see the detailed description for the Update Calc Rules Mapping batch process in the application.

Appendix F

Upgrades to the Oracle Utilities Customer Care and Billing 2.4.0 Database

This document describes the database upgrade process for the Oracle Utilities Customer Care and Billing V2.4.0. 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 V2.4.0 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 V2.4.0 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 V2.4.0 User Guides.

This section includes:

Schema Changes

New Tables

The following new tables are added to Oracle Utilities Customer Care and Billing V2.4.0.

Tables	Description
C1_CALC_GRP	Calculation Group
C1_CALC_GRP_CHAR	Calculation Group Characteristics
C1_CALC_GRP_L	Calculation Group Language
C1_CALC_RULE	Calculation Rule
C1_CALC_RULE_CHAR	Calculation Rule Characteristics
C1_CALC_RULE_CRT	Calc Rule Eligibility Criteria
C1_CALC_RULE_CRT_CHAR	Calc Rule Elig Criteria Characteristics
C1_CALC_RULE_CRT_L	Calc Rule Elig Criteria Language

Tables	Description
C1_CALC_RULE_L	Calculation Rule Language
C1_CALC_RULE_MBR_CAT	Calculation Rule Member Category
C1_CALC_RULE_TRGT_CAT	Calculation Rule Target Category
C1_CL_CAT_TYPE	Calc Line Category Type
C1_CL_CAT_TYPE_CHAR	Calc Line Category Type Characteristic
C1_CL_CAT_TYPE_L	Calc Line Category Type Language
C1_CL_CAT_VAL	Calc Line Category Value
C1_CL_CAT_VAL_L	Calc Line Category Value Language
C1_INITIATIVE	Initiative
C1_INITIATIVE_CHAR	Initiative Characteristic
C1_INITIATIVE_L	Initiative Language
C1_INITIATIVE_LEAD_CRIT	Initiative Lead Eligibility Criteria
C1_INITIATIVE_LEAD_CRIT_CHAR	Initiative Lead Eligibility Criteria Characteri
C1_INITIATIVE_LEAD_DEFN	Initiative Lead Definition
C1_INITIATIVE_LOG	Initiative Log
C1_INITIATIVE_LOG_PARM	Initiative Log Message Parameter
C1_INITIATIVE_PRTC_CRIT	Initiative Participation Criteria
C1_INITIATIVE_PRTC_CRIT_CHAR	Initiative Participation Criteria Characteristi
C1_INITIATIVE_PRTC_CRIT_L	Initiative Participation Criteria Language
C1_INTV_DATA_GTT	Interval Data Temporary Table
C1_LEAD	Lead
C1_LEAD_CHAR	Lead Characteristic
C1_LEAD_EVT	Lead Event
C1_LEAD_EVT_CHAR	Lead Event Characteristic
C1_LEAD_EVT_K	Lead Event Key
C1_LEAD_EVT_LOG	Lead Event Log
C1_LEAD_EVT_LOG_PARM	Lead Event Log Message Parameter
C1_LEAD_EVT_TYPE	Lead Event Type
C1_LEAD_EVT_TYPE_CHAR	Lead Event Type Characteristic
C1_LEAD_EVT_TYPE_L	Lead Event Type Language
C1_LEAD_K	Lead Key
C1_LEAD_LOG	Lead Log
C1_LEAD_LOG_PARM	Lead Log Message Parameter

Tables	Description
C1_LEAD_REL_OBJ	Lead Related Object
C1_RC_CALC_GTT	Rate Check - Calc Header Temp Table
C1_RC_CALC_LN_GTT	Rate Check - Calc Line Temp Table
C1_RC_CHAR_GTT	Rate Check - Characteristics Temp Table
C1_RC_READ_GTT	Rate Check - Reads Temp Table
C1_RC_SQ_GTT	Rate Check - Service Quantity Temp Table
C1_RC_TRACE_GTT	Rate Check - Trace Temp Table
C1_RS_POST_PROC	Rate Post-Processing
C1_RS_POST_PROC_L	Rate Post-Processing Language
C1_RS_PRE_PROC	Rate Pre-Processing
C1_RS_PRE_PROC_L	Rate Pre-Processing Language
C1_RS_RV2	Rate Version 2
C1_RS_RV2_L	Rate Version 2 Language
C1_TOU_MAP	TOU Map
C1_TOU_MAP_CHAR	TOU Map Characteristics
C1_TOU_MAP_DATA	TOU Map Data
C1_TOU_MAP_DATA_CHAR	TOU Map Data Characteristics
C1_TOU_MAP_K	TOU Map Key
C1_TOU_MAP_L	TOU Map Language
C1_TOU_MAP_LOG	TOU Map Log
C1_TOU_MAP_LOG_PARM	TOU Map Log Parameters
C1_TOU_MAP_TMPLT	TOU Map Template
C1_TOU_MAP_TMPLT_CHAR	TOU Map Template Characteristics
C1_TOU_MAP_TMPLT_L	TOU Map Template Language
C1_TOU_MAP_TYPE	TOU Map Type
C1_TOU_MAP_TYPE_CHAR	TOU Map Type Characteristics
C1_TOU_MAP_TYPE_L	TOU Map Type Language
C1_TOU_MAP_TYPE_TMPLT	TOU Map Type TOU Map Templates
CI_PAY_TNDR_ST_CHAR	Payment Tender Staging Characteristics

New Views

None

Dropped Tables

None

Unsupported Tables

None

Added Columns

The following Table Columns are added to Oracle Utilities Customer Care and Billing V2.4.0.

Table	Column	Required
CI_ACCT_APAY	ENCR_EXT_ACCT_ID	N
CI_ACCT_CHAR	SRCH_CHAR_VAL	N
CI_ADJ	ADJ_DATA_AREA	N
CI_ADJ_CALC_LN	CALC_GRP_CD	N
CI_ADJ_CALC_LN	CALC_RULE_CD	N
CI_APAY_CLR_STG	ENCR_EXT_ACCT_ID	N
CI_BILL	BILL_SIGN	N
CI_BPRT_GRP	DESCRLONG	N
CI_BSEG	BSEG_DATA_AREA	N
CI_BSEG_CALC_LN	CALC_GRP_CD	N
CI_BSEG_CALC_LN	CALC_RULE_CD	N
CI_CASE_STATUS_L	DESCRLONG	N
CI_CASE_TYPE_L	DESCRLONG	N
CI_CC	DESCRLONG	N
CI_CC_CHAR	SRCH_CHAR_VAL	N
CI_COLL_CL_CNTL_L	DESCRLONG	N
CI_COLL_EVT_TYP_L	DESCRLONG	N
CI_CUT_EVT_TYPE_L	DESCRLONG	N
CI_ENRL_PER_ID	ENCR_PER_ID_NBR	N
CI_ENRL_PER_ID	HASH_PER_ID_NBR	N
CI_FA	DESCRLONG	N
CI_FA_STAGE_UP	DESCRLONG	N
CI_FA_TYPE	BUS_OBJ_CD	N

Table	Column	Required
CI_FA_TYPE	EXT_SERV_REQ_FLG	N
CI_FO	DESCRLONG	N
CI_ITEM	DESCRLONG	Y
CI_ITEM_CHAR	SRCH_CHAR_VAL	N
CI_MATCH_EVT	DESCRLONG	N
CI_MTR	DESCRLONG	N
CI_MTR_CHAR	SRCH_CHAR_VAL	N
CI_OD_EVT_TYPE_L	DESCRLONG	N
CI_PAY_TNDR	ENCR_MICR_ID	N
CI_PAY_TNDR	HASH_MICR_ID	N
CI_PAY_TNDR_ST	ENCR_MICR_ID	N
CI_PAY_TNDR_ST	HASH_MICR_ID	N
CI_PER_CHAR	SRCH_CHAR_VAL	N
CI_PER_ID	ENCR_PER_ID_NBR	N
CI_PER_ID	HASH_PER_ID_NBR	N
CI_PEVT_DTL_ST	ENCR_EXT_ACCT_ID	N
CI_PEVT_DTL_ST	ENCR_MICR_ID	N
CI_PEVT_DTL_ST	HASH_MICR_ID	N
CI_PKG_CRT_GRP_L	DESCRLONG	N
CI_PKG_INSTR_L	DESCRLONG	Y
CI_PREM_CHAR	SRCH_CHAR_VAL	N
CI_RC_CRT_GRP_L	DESCRLONG	Y
CI_REG_RULE_L	DESCRLONG	Y
CI_RS	RS_VERSION_FLG	Y
CI_SA_TYPE	C1_PREPAID_METER_FLG	N
CI_SC_EVT	DESCRLONG	N
CI_SEV_EVT_TYPE_L	DESCRLONG	N
CI_SP	DESCRLONG	N
CI_SP_CHAR	SRCH_CHAR_VAL	N
CI_SP_TYPE	EXT_SERV_REQ_FLG	Y
CI_SQ_RULE_L	DESCRLONG	N

Dropped Columns

Table Name	Column Name
CI_FO	DESCR254
CI_FA	DESCR254
CI_CUT_EVT_TYPE_L	DESCR254
CI_ITEM	DESCR254
CI_CASE_TYPE_L	DESCR254
CI_COLL_CL_CNTL_L	DESCR254
CI_PKG_CRT_GRP_L	DESCR254
CI_COLL_EVT_TYP_L	DESCR254
CI_SP	DESCR254
CI_MATCH_EVT	DESCR254
CI_MTR	DESCR254
CI_PKG_INSTR_L	DESCR254
CI_REG_RULE_L	DESCR254
CI_FA_STAGE_UP	DESCR254
CI_RC_CRT_GRP_L	DESCR254
CI_CASE_STATUS_L	DESCR254
CI_SEV_EVT_TYPE_L	DESCR254
CI_BPRT_GRP	DESCR254
CI_BF	NO_PRO_REF_FLG
CI_OD_EVT_TYPE_L	DESCR254
CI_CC	DESCR254
CI_SQ_RULE_L	DESCR254
C0_INSTALLATION	ALLOW_CR_NOTE_SW
CI_SCR_FLD_MAP	SCR_STEP_ID

Unsupported Table Columns

None

Column Format Change

Table Name	Column Name	From	To
C1_ISS_CTR_DTL	EXT_REFERENCE_ID	CHAR:30	CHAR:36
C1_USAGE	EXT_REFERENCE_ID	CHAR:30	CHAR:36
CI_ACCT_PER	NBR_BILL_COPIES	NUMBER:22:1	NUMBER:22:2
CI_ADJ_APREQ	CITY	VARCHAR2:30	VARCHAR2:90
CI_ADJ_APREQ	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_ADJ_APREQ	PYMNT_ID	CHAR:10	CHAR:36
CI_BCHG_UP_XTYP_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_BILL_ROUTING	CITY	VARCHAR2:30	VARCHAR2:90
CI_BILL_ROUTING	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_BILL_ROUTING	NBR_BILL_COPIES	NUMBER:22:1	NUMBER:22:2
CI_ENRL_ADDR	CITY	VARCHAR2:30	VARCHAR2:90
CI_ENRL_ADDR	CITY_UPR	VARCHAR2:30	VARCHAR2:90
CI_ENRL_ADDR	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_FT_GL	STATISTIC_AMOUNT	NUMBER:22:15	NUMBER:22:19
CI_MR_CYC	MR_CYC_CD	CHAR:4	CHAR:16
CI_MR_CYC_L	MR_CYC_CD	CHAR:4	CHAR:16
CI_MR_RTE	MR_RTE_CD	CHAR:8	CHAR:16
CI_MR_RTEGEN_VW	MR_CYC_CD	CHAR:4	CHAR:16
CI_MR_RTEGEN_VW	MR_RTE_CD	CHAR:8	CHAR:16
CI_MR_RTE_CHAR	MR_CYC_CD	CHAR:4	CHAR:16
CI_MR_RTE_CHAR	MR_RTE_CD	CHAR:8	CHAR:16
CI_MR_RTE_L	MR_CYC_CD	CHAR:4	CHAR:16
CI_MR_RTE_L	MR_RTE_CD	CHAR:8	CHAR:16
CI_MR_SCHED	MR_CYC_CD	CHAR:4	CHAR:16
CI_MR_SCHED_RTE	MR_CYC_CD	CHAR:4	CHAR:16
CI_MR_SCHED_RTE	MR_RTE_CD	CHAR:8	CHAR:16
CI_MR_STAGE_DWN	MR_CYC_CD	CHAR:4	CHAR:16

Table Name	Column Name	From	To
CI_MR_STAGE_DWN	MR_RTE_CD	CHAR:8	CHAR:16
CI_MR_STGUP2_VW	MR_STAGE_UP_ID_CH	VARCHAR2:36	VARCHAR2:48
CI_MR_ST_EXC_VW	MR_STAGE_UP_ID_CH	VARCHAR2:36	VARCHAR2:48
CI_NT_DWN_PROF_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_NT_DWN_TYPE_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_NT_UP_XTYPE_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_NT_XID_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_PAY_ST	CUST_ID	CHAR:15	CHAR:36
CI_PAY_ST	EXT_REFERENCE_ID	CHAR:30	CHAR:36
CI_PAY_TNDR	CUST_ID	CHAR:15	CHAR:36
CI_PAY_TNDR	EXT_REFERENCE_ID	CHAR:30	CHAR:36
CI_PAY_TNDR_ST	CUST_ID	CHAR:15	CHAR:36
CI_PAY_TNDR_ST	EXT_REFERENCE_ID	CHAR:30	CHAR:36
CI_PER	CITY	VARCHAR2:30	VARCHAR2:90
CI_PER	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_PER_ADDR_OVRD	CITY	VARCHAR2:30	VARCHAR2:90
CI_PER_ADDR_OVRD	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_PER_ADDR_SEAS	CITY	VARCHAR2:30	VARCHAR2:90
CI_PER_ADDR_SEAS	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_PEVT_DTL_ST	CUST_ID	CHAR:15	CHAR:36
CI_PEVT_DTL_ST	EXT_REFERENCE_ID	CHAR:30	CHAR:36
CI_POST_DFLT	CITY	VARCHAR2:30	VARCHAR2:90
CI_POST_DFLT	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_PREM	CITY	VARCHAR2:30	VARCHAR2:90
CI_PREM	CITY_UPR	VARCHAR2:30	VARCHAR2:90
CI_PREM	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_PRM_ALT_ADDR	CITY	VARCHAR2:30	VARCHAR2:90

Table Name	Column Name	From	To
CI_PRM_ALT_ADDR	CITY_UPR	VARCHAR2:30	VARCHAR2:90
CI_PRM_ALT_ADDR	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_QUOTE_RTG	CITY	VARCHAR2:30	VARCHAR2:90
CI_QUOTE_RTG	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_ROOT_OBJ_PK	FIELD_VAL	VARCHAR2:50	VARCHAR2:254
CI_SA	OLD_ACCT_ID	VARCHAR2:15	VARCHAR2:36
CI_SA_REL	MR_CYC_CD	CHAR:4	CHAR:16
CI_SED_ACCT_HST_VW	ACTIVITY_ID2	VARCHAR2:30	VARCHAR2:40
CI_SE_ACCT_HST_VW	ACTIVITY_ID2	VARCHAR2:30	VARCHAR2:40
CI_SP	MR_CYC_CD	CHAR:4	CHAR:16
CI_SP	MR_RTE_CD	CHAR:8	CHAR:16
CI_SPR_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_SS_ADDR_OVRD	CITY	VARCHAR2:30	VARCHAR2:90
CI_SS_ADDR_OVRD	COUNTY	VARCHAR2:30	VARCHAR2:90
CI_STM_CNST	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_TNDR_ST_EXCP	EXT_REFERENCE_ID	CHAR:30	CHAR:36
CI_WF_EVT_TYPE_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_WO_RESP	DAYS_AFT_PROC_CRE	NUMBER:22:3	NUMBER:22:4

New System Data

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

Application Service

The following Application Services are new to V2.4.0.

Application Service	Description
C1-CALC-GRP	Calculation Group MO
C1-CALC-R-EL	Calc Rule Eligibility Criteria MO
C1-CALC-RULE	Calculation Rule MO
C1-CCPREMINFO	Retrieve Control Central Premise Info
C1-CL-CAT	Calc Line Category Type MO
C1-CUSTCONTCTASKBOAS	Customer Contact Task BO
C1-CUSTCONTCTYPBOAS	Customer Contact Task Type BO
C1-NEMTRUEUPMONBOAS	NEM True Up Task BO
C1-NEMTRUEUPTYPBOAS	NEM True Up Task Type BO
C1-NOTIFYAPPTASKBOAS	Notify Appointment Task BO
C1-NOTIFYAPPTYPBOAS	Notify Appointment Task Type BO
C1-NTFYMISAPPTSKBOAS	Notify Missed Appointment Task BO
C1-NTFYMISAPPTYPBOAS	Notify Missed Appointment Task Type BO
C1-PREPAYBILLTSKBOAS	Prepay Biller Task
C1-PREPAYBILLTTYBOAS	Prepay Biller Task Type
C1-RTENGINMSTCFGBOAS	Rate Engine Master Configuration
C1-SELFSRVCINTEGBOAS	Self-Service Integration
C1-SERVICEREQTSKBOAS	Service Request Task BO
C1-SERVICEREQTYPBOAS	Service Request Task Type BO
C1-SERVREQINTEGBOAS	Service Request Integration Master Configuration
C1-TOUMAP	TOU Map MO
C1-TOUMAPBOAS	TOU Map BO
C1-TOUMAPDAT	TOU Map Data MO
C1-TOUMAPTM	TOU Map Template MO
C1-TOUMAPTYP	TOU Map Type MO
C1ACCMGT	Account Management
C1CALCAT	Calculation Line Category Type
C1CALGRP	Calculation Group

Application Service	Description
C1CALGRQ	Calculation Group Query
C1CALRLE	Calculation Rule
C1CALRLQ	Calculation Rule Query
C1RSQRY	Rate Schedule Query
C1RSV2M	Rate Schedule
C1RTCHK	Rate Check
C1TMTYP	TOU Map Type
C1TOUMAP	TOU Map
C1TOUMPQ	TOU Map Query
C1TOUMPT	TOU Map Template
CICORRREADOCBGBOAS	MDM Corrected Read Notification BO
CILXCXSP	Create XDS Message

Access Mode Added to Application Service

The following Access Mode are new to V2.4.0:

Application Service	Description	Access Mode
C1-FACOMPLBOAS	User	Enable/Disable (ENBL)
C1-PRODOFFERSYNCBOAS	Product Offer Sync Request BO	Send Request (F1SR)
C1-PRODOFFERSYNCBOAS	Product Offer Sync Request BO	Pending (PE)
C1USGRM	Usage Portal	Change (C)
CILMMSUP	MR Upload Staging	Execute (F1EX)
CILQCASP	Case Management	Delete (D)

Batch Control

The following Batch Controls are new to V2.4.0.

Batch Control	Description
C1-NEMDF	NEM Scheduled Monitor Process (Deferred)
C1-PPBER	Prepay Biller Task - Error
C1-PPBTR	Prepay Biller Task
C1-TOUTR	TOU Map Data Generation Monitor

XAI Inbound Service

The following XAI Inbound Service is are new to V2.4.0.

XAI Inbound Service ID	Zone Type	Description
C126800279	WXServiceDetails	Retrieve Service Details
C137628894	WXProcessPayArrangementRequest	Process Payment Arrangement Request
C143716799	C1FACompletionServiceRequest	Service Request FA Completion
C157127114	C1-CustomerMaintenanceRequest	Customer Maintenance Request
C160549912	C1FACompletionFieldWork	FA Completion - Field Work (MWM via PIP)
C175706652	C1-ServiceRequestUpdateRequest	Process Service Request Update Request
C176872824	C1-ServiceRequestFinancialInfo	Service Request Financial Information
C179156189	WXPremiseSearch	Premise Search
C195599240	WXProcessStartStopRequest	Process Start Stop Request

Appendix G

Upgrades to the Oracle Utilities Application Framework 4.2.0.3 Database

This section describes the database upgrade process for the Oracle Utilities Application Framework database from V4.2.0.2 to V4.2.0 Service Pack 3 (v4.2.0.3). It highlights changes made to the administrative tables and how those changes should be applied to the data in order for your current database to work with the V4.2.0.3 application, and to preserve the business logic implemented in the previous version of the application. The changes that do not require data upgrade are not described in this document. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V4.2.0.3 is not the scope of this documentation. The upgrade scripts do not turn on the newly added functionality by default. For new functionality, refer the V4.2.0.3 User Guides.

This section includes:

Automatic Data Upgrade

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

Long Context Value on XAI Receiver

A new field Context Value Long (F1_CTXT_VAL_LONG) is added to XAI Receiver Table (CI_XAI_RCVR_CTX). This new field is a longer version of the existing field CTXT_VAL. CTXT_VAL which supported only 50 characters. To accommodate long encryption key generated by the Java key generator for keystore, the new column is added on the XAI Receiver Table to store the encrypted key. The existing column CTXT_VAL on this table would be unsupported. For this to be possible, as a part of upgrade script, all the current data in CTXT_VAL column would be updated into F1_CTXT_VAL_LONG column. The CTXT_VAL is deprecated and will be dropped in subsequent release.

Schema Change

New Tables

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

Tables	Description
F1_KEY_HASH	Keystore Signature
F1_REQ_CHAR	Request Characteristic

New Views

Views	Description
F1_BO_LIFECYCLE_STATUS_VW	BO Lifecycle Status View

Dropped Tables

None

Unsupported Tables

None

Added Columns

None

Dropped Columns

None

Unsupported Table Columns

These columns will be deprecated in a future release.

- CI_XAI_SNDR_CTX: CTXT_VAL column is not used.

Column Format Change

None

Appendix H

Upgrades to the Oracle Utilities Application Framework 4.2.0.3 Database

This section describes the database upgrade process for the Oracle Utilities Application Framework database from V4.2.0.1 to V4.2.0 Service Pack 3 (v4.2.0.3). It highlights changes made to the administrative tables and how those changes should be applied to the data in order for your current database to work with the V4.2.0.3 application, and to preserve the business logic implemented in the previous version of the application. The changes that do not require data upgrade are not described in this document. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V4.2.0.3 is not the scope of this documentation. The upgrade scripts do not turn on the newly added functionality by default. For new functionality, refer the V4.2.0.3 User Guides.

This section includes:

Automatic Data Upgrade

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

Long Context Value on XAI Receiver

A new field Context Value Long (F1_CTXT_VAL_LONG) is added to XAI Receiver Table (CI_XAI_RCVR_CTX). This new field is a longer version of the existing field CTXT_VAL. CTXT_VAL which supported only 50 characters. To accommodate long encryption key generated by the Java key generator for keystore, the new column is added on the XAI Receiver Table to store the encrypted key. The existing column CTXT_VAL on this table would be unsupported. For this to be possible, as a part of upgrade script, all the current data in CTXT_VAL column would be updated into F1_CTXT_VAL_LONG column. The CTXT_VAL is deprecated and will be dropped in subsequent release.

Schema Change

New Tables

The following new tables were added to Oracle Utilities Application Framework.

Tables	Description
F1_BKT_CONFIG	Bucket Configuration
F1_BKT_CONFIG_L	Bucket Configuration Language
F1_BKT_CONFIG_REL_OBJ	Bucket Configuration Related Object
F1_BKT_CONFIG_VAL	Bucket Configuration Value
F1_BKT_CONFIG_VAL_L	Bucket Configuration Value Language
F1_IWS_ANN	Inbound Web Service Annotation
F1_IWS_ANN_CHAR	Inbound Web Service Annotation Characteristics
F1_IWS_ANN_L	Inbound Web Service Annotation Language
F1_IWS_ANN_PARM	Inbound Web Service Annotation Parameter
F1_IWS_ANN_TYPE	Inbound Web Service Annotation Type
F1_IWS_ANN_TYPE_CHAR	Inbound Web Service Annotation Type Characteristics
F1_IWS_ANN_TYPE_L	Inbound Web Service Annotation Type Language
F1_IWS_ANN_TYPE_PARM	Inbound Web Service Annotation Type Parm
F1_IWS_ANN_TYPE_PARM_L	Inbound Web Service Annotation Type Parameter Language
F1_IWS_SVC	Inbound Web Service

Tables	Description
F1_IWS_SVC_ANN	Inbound Web Service Link to Annotation
F1_IWS_SVC_CHAR	Inbound Web Service Characteristics
F1_IWS_SVC_L	Inbound Web Service Language
F1_IWS_SVC_LOG	Inbound Web Service Log
F1_IWS_SVC_LOG_PARM	Inbound Web Service Log Parameter
F1_IWS_SVC_OPER	Inbound Web Service Operations
F1_IWS_SVC_OPER_L	Inbound Web Service Operations Language
F1_MAP_OVRD	UI Map Override
F1_KEY_HASH	Keystore Signature
F1_REQ_CHAR	Request Characteristic

New Views

Views	Description
F1_BO_LIFECYCLE_STATUS_VW	BO Lifecycle Status View

Dropped Tables

None

Unsupported Tables

None

Added Columns

The following table columns are added to Oracle Utilities Application Framework.

Table	Column	Required
CI_XAI_RCVR_CTX	F1_CTXT_VAL_LONG	Y

Dropped Columns

None

Unsupported Table Columns

These columns will be deprecated in a future release.

- CI_XAI_SNDR_CTX: CTXT_VAL column is not used.

Column Format Change

Table Name	Column Name	From	To
CI_XAI_JDBC_CON	DATABASE_PASSWORD	VARCHAR2:64	VARCHAR2:128

Appendix I

Upgrades to the Oracle Utilities Application Framework 4.2.0.2 Database

This section describes the database upgrade process for the Oracle Utilities Application Framework database from V4.2.0.1 to V4.2.0 Service Pack 2 (v4.2.0.2). It highlights changes made to the administrative tables and how those changes should be applied to the data in order for your current database to work with the V4.2.0.2 application, and to preserve the business logic implemented in the previous version of the application. The changes that do not require data upgrade are not described in this document. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V4.2.0.2 is not the scope of this documentation. The upgrade scripts do not turn on the newly added functionality by default. For new functionality, refer the V4.2.0.2 User Guides.

This section includes:

Automatic Data Upgrade

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

Long Context Value on XAI Receiver

A new field Context Value Long (F1_CTXT_VAL_LONG) is added to XAI Receiver Table (CI_XAI_RCVR_CTX). This new field is a longer version of the existing field CTXT_VAL. CTXT_VAL which supported only 50 characters. To accommodate long encryption key generated by the Java key generator for keystore, the new column is added on the XAI Receiver Table to store the encrypted key. The existing column CTXT_VAL on this table would be unsupported. For this to be possible, as a part of upgrade script, all the current data in CTXT_VAL column would be updated into F1_CTXT_VAL_LONG column. The CTXT_VAL is deprecated and will be dropped in subsequent release.

Schema Change

New Tables

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

Tables	Description
F1_BKT_CONFIG	Bucket Configuration
F1_BKT_CONFIG_L	Bucket Configuration Language
F1_BKT_CONFIG_REL_OBJ	Bucket Configuration Related Object
F1_BKT_CONFIG_VAL	Bucket Configuration Value
F1_BKT_CONFIG_VAL_L	Bucket Configuration Value Language
F1_IWS_ANN	Inbound Web Service Annotation
F1_IWS_ANN_CHAR	Inbound Web Service Annotation Characteristics
F1_IWS_ANN_L	Inbound Web Service Annotation Language
F1_IWS_ANN_PARM	Inbound Web Service Annotation Parameter
F1_IWS_ANN_TYPE	Inbound Web Service Annotation Type
F1_IWS_ANN_TYPE_CHAR	Inbound Web Service Annotation Type Characteristics
F1_IWS_ANN_TYPE_L	Inbound Web Service Annotation Type Language
F1_IWS_ANN_TYPE_PARM	Inbound Web Service Annotation Type Parm
F1_IWS_ANN_TYPE_PARM_L	Inbound Web Service Annotation Type Parameter Language
F1_IWS_SVC	Inbound Web Service

Tables	Description
F1_IWS_SVC_ANN	Inbound Web Service Link to Annotation
F1_IWS_SVC_CHAR	Inbound Web Service Characteristics
F1_IWS_SVC_L	Inbound Web Service Language
F1_IWS_SVC_LOG	Inbound Web Service Log
F1_IWS_SVC_LOG_PARM	Inbound Web Service Log Parameter
F1_IWS_SVC_OPER	Inbound Web Service Operations
F1_IWS_SVC_OPER_L	Inbound Web Service Operations Language
F1_MAP_OVRD	UI Map Override

New Views

None

Dropped Tables

None

Unsupported Tables

None

Added Columns

The following table columns are added to Oracle Utilities Application Framework.

Table	Column	Required
CI_XAI_RCVR_CTX	F1_CTXT_VAL_LONG	Y

Dropped Columns

None

Unsupported Table Columns

These columns will be deprecated in a future release.

- CI_XAI_SNDR_CTX: CTXT_VAL column is not used.

Column Format Change

Table Name	Column Name	From	To
CI_XAI_JDBC_CON	DATABASE_PASSWORD	VARCHAR2:64	VARCHAR2:128

New System Data

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

Application Service

The following application services are added after Oracle Utilities Application Framework v 4.2.0.1.

Application Service	Description
CILQTDCP	To Do Entry Creator for Business Service
F1-ANNTYPBOAS	Inbound Web Service Annotation Type BO
F1-BKTCONFIG	Bucket Configuration MO
F1ANN	Inbound Web Service Annotation MO
F1ANNBOAS	Inbound Web Service Annotation BO
F1ANNTPM	Inbound Web Service Annotation Type
F1ANNTPS	Inbound Web Service Annotation Type Query
F1ANNTYPS	Inbound Web Service Annotation Type Query
F1BKTCFG	Bucket Configuration
F1BKTCFQ	Bucket Configuration Query
F1IWSANM	Inbound Web Service Annotation
F1IWSDPL	Inbound Web Service Deployment
F1IWSDPLY	Inbound Web Service Deployment
F1IWSSVC	Inbound Web Service MO
F1IWSVCBOAS	Inbound Web Service BO
F1IWSVCP	Inbound Web Service
F1IWSVCS	Inbound Web Service Query

Access Mode Added to Application Service

None

Batch Control

The following batch controls are added.

Batch Control	Description
F1-NDPUR	Notification Download Purge
F1-TDPG	Purge Completed To Do Entries

XAI Inbound Service

There are no new XAI Inbound Services new to Oracle Utilities Application Framework V4.2.0.1

Appendix J

Upgrades to the Oracle Utilities Application Framework 4.2.0.1 Database

This section describes the database upgrade process for the Oracle Utilities Application Framework database from V4.2.0.0 to V4.2.0.1. It highlights changes made to the administrative tables and how those changes should be applied to the data in order for your current database to work with the V4.2.0.1 application, and to preserve the business logic implemented in the previous version of the application. The changes that do not require data upgrade are not described in this document. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V4.2.0.1 is not the scope of this documentation. The upgrade scripts do not turn on the newly added functionality by default. For new functionality, refer the V4.2.0.1 User Guides. In the last section of this document you will find a list of the new tables that are added in V4.2.0.1.

This section includes:

Automatic Data Upgrade

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

Java Class Generation for Lookups

From Oracle Utilities Application Framework 4.2.0 Service Pack 1 (v4.2.0.1) onwards, the system generates Java classes for all lookups. This requires that the Java names ("Java Field Name" and "Java Value Name") should be populated for all lookup fields and its values must be valid values. If this is not done, the generated classes would result in compile errors.

Oracle Utilities Application Framework has fixed all lookup field and its values so that no compilation errors occur when Artifact Generator generates these classes.

Oracle Utilities Application Framework delivers a set of SQLs, which when executed, populate the Java names on the fields and their values, if the field names and values were earlier missing.

New User-Friendly Schema Editor

From Oracle Utilities Application Framework 4.2.0 Service Pack 1 (v4.2.0.1) onwards, Oracle Utilities introduces a new schema editor called Schema Designer. The Schema Designer is a graphical tool used to maintain a schema. It is available for use on the Business Object, UI Map, Service Script and Data Area maintenance pages. It helps the user in defining a schema without the need for typing an XML document, and provides easy reference to schema element attributes and their default values.

Schema Change

New Tables

None

New Views

None

Dropped Tables

None

Unsupported Tables

None

Added Columns

None

Dropped Columns

None

Unsupported Table Columns

None

Column Format Change

None

New System Data

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

Application Service

None

Access Mode Added to Application Service

None

Batch Control

None

XAI Inbound Service

There are no new XAI Inbound Services new to Oracle Utilities Application Framework V4.2.0.1.

Appendix K

Upgrades to the Oracle Utilities Application Framework 4.2.0 Database

This document describes the database upgrade process for the Oracle Utilities Application Framework database from V2.2.0 Service Pack16 to V4.2.0. 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 V4.2.0 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 document. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V4.2.0 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 V4.2.0 User Guides. In the last section of this document you will find a list of the new tables that are added in V4.2.0.

This section includes:

Automatic Data Upgrade

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

Display/Expand Zones in Portal

To allow the user to display or hide zones in the portal, we need to provide an extra field on the Field Maintenance Page of Portal Zone (CI_PORTAL_ZONE). The new field added to Portal Zone is called Display Switch (DISPLAY_SW). It defines a display switch value of Y or N to display or hide a zone within the portal.

Also to allow the user to expand or collapse the zones in the portal, we need to provide an extra field on the Field Maintenance Page of Portal Zone.). The new field added to Portal Zone is called Zone Collapsed Switch (ZONE_COLLAPSED_SW). It defines a Zone Collapsed switch value of Y or N to collapse or display a zone within the portal.

As a part of the Upgrade Process DISPLAY_SW is set to 'Y' and ZONE_COLLAPSED_SW is set to 'N'.

Long Userid Support

To support Long Userid other than the fixed 8 Character Userid, a new column External Userid (EXT_USER_ID) is added to the User Table (SC_USER) Table. The External Userid column has unique values and it is mapped to Userid (USER_ID). Users are authenticated using External Userid and there after the Userid would be used by the Application. The External Userid (EXT_USER_ID) would be populated as Userid (USER_ID) wherever the External Userid is not populated as a part of the Upgrade Process.

Long Context Value on XAI Sender

A new field Context Value Long (F1_CTXT_VAL_LONG) is added to XAI Sender Table (CI_XAI_SNDR_CTX). This new field is a longer version of the existing field CTXT_VAL. CTXT_VAL supports only 50 characters. To accommodate the long Value for the SOAP Action URL (for making third party web service calls) and long encrypted passwords, the new column is added on the XAI Sender Table. The existing column CTXT_VAL on this table would be unsupported. For this to be possible, as a part of upgrade script, all the current data in CTXT_VAL column would be updated into F1_CTXT_VAL_LONG column. There after the column CTXT_VAL would be updated with a single Blank.

Metadata For Translation

Two new Flags Translatable Flag (F1_TRANSLATABLE_FLG) and Extract for Translation Flag (F1_EXTRACT_TRANSLATION_FLG) are added to aid in Translation, which was originally handled in a Text file. Translatable Flag is added in CI_MD_FLD and indicates whether we translate the label on this field or not and the valid values are yes (F1YS) and no (F1NO). Extract for Translation Flag is added to CI_MD_TBL and CI_MD_TBL_FLD and has a valid values of yes (F1YS) and no (F1NO). A table or a table field, which is marked for extraction, would be included in the extraction process to be sent to WPTG. As a part of upgrade process the flag F1_TRANSLATABLE_FLGis defaulted to yes (F1YS) and F1_EXTRACT_TRANSLATION_FLGis defaulted to no (F1NO).

Online Help

To follow Oracle documentation standards, TUGBU Word documentation for CCB and Framework is converted into DITA XML format. This will involve Conversion of old word files and indexes to DITA xml, Online help generation using DITA open toolkit and Integration of the

new online help with Framework. The DITA documentation architecture requires small individual topics that are built up into topic hierarchies. To support this for Help related Navigation keys in CI_MD_NAV Table, the URL (field- URL_OVRD) is updated based on the set naming strategy. The similar update script is added for HELP_TEXT_URL on CI_MD_TBL as well.

Performance Metadata Flags

Two new Flags Cache Flag (CACHE_FLG) and Key Validation Flag (KEY_VALIDATION_FLG) are added to the Metadata Table (CI_MD_TBL). The Cache FLGwill enable L2 Caching of the Tables and the Key Validation Flag determines if Key Uniqueness is being issued by Framework before Inserting into the database. The valid values for cache flag are not Cached (NONE) and cachedForBatch (BTCH). The valid values for key validation flag are always (ALL), never (NONE) and onlineOnly (ONLI). These Flags can be changed by CM. As a part of the upgrade process the Initial values for CACHE_FLGand KEY_VALIDATION_FLGwould be populated.

Precise Time for Holiday Dates

Two new Fields named Holiday Start Date (F1_HOLIDAY_START_DTTM) Holiday End Date (F1_HOLIDAY_END_DTTM) are added to the Metadata Table (CI_CAL_HOL). This will help in defining the holiday begin and end dates with time. This is different from the existing Holiday dates where we just specify the date. As a part of the upgrade process the field F1_HOLIDAY_START_DTTM would be populated with HOLIDAY_DT with Time as 00:00:00. For F1_HOLIDAY_END_DTTM the default value would be F1_HOLIDAY_START_DTTM+24 Hours.

Portal Display Rule

A new flag Allow User Configuration (USER_CONFIG_FLG) is added to the Portal Table (CI_PORTAL). User Configuration Flag indicates if a user is allowed to have individual control of the zones on this portal. This flag is defaulted to 'Y' for all existing Portals during the upgrade process. If the Override User Configuration flag on CI_PORTAL is Blank and Allow User Configuration Flag is set to Y, then display the Portal, else if it set to 'N' then the Portal should not get displayed.

Rownum in Explorer Zones

The number of Records retrieved by the Query in Data Explorer Zone Types would be limited. This is because the entire result is neither required to be displayed and nor required for downloads. The existing Zone Parameter Values for Zone Type-Data Explorer and Zone Type Parameter-NBROFROWS and ROWSTOEXPORT would be updated. As a part of upgrade process when Zone Parameter values do not exists then limitFetch=false would be set. For existing non-blank Zone Parameter values, limitFetch=false count=ZONE_PARM_VAL would be updated.

Script Eligibility Option

As a part of the Upgrade the Script Eligibility option for BPA Scripts is set to "Not Eligible" for Non-CM owned scripts. This will make sure that the product owned BPA script will not be visible through UI.

Search For Old Style Entities

Searches for old style entities design introduces new search zones and updates existing FK references with the new zone searches. As Zone Code is a Cmable column on CI_FK_REF Table so an upgrade script is used to update the new search zone code for the existing FKs where Zone code is not yet populated

Secure Business Services and Service Scripts

Application Services (APP_SVC_ID) is added to Business Service Table (F1_BUS_SVC). Based on the Application Service, the ability to execute a Business Service and a Service Script by different user groups would be controlled. As a part of upgrade process the APP_SVC_ID column for existing Business Services (F1_BUS_SVC) and Service scripts (CI_SCR) would be populated with a Default Application Service (F1-DFLTAPS) where there is no Application Service associated. The default Application Service would be added to all the existing User groups and the 'Execute' Access MODEon this Service would be granted to all the user groups.

Security On User Access

A new flag User Enable (USER_ENABLE_FLG) is added to user Table (SC_USER). The valid values are Enable (ENBL) and Disable (DSBL). When a user depart or is no longer associated with the system then the BO Web service after confirming the status of the user and immediately deny user access to all "authorized" application services when the user is disabled. As a part of the upgrade process the USER_ENABLE_FLGwill be set to 'ENBL' for the existing users in the Users table(SC_USER).

Support Child XML Storage

The child list elements are allowed to contain XML mappings to XML storage fields. The existing implementation of Business Objects storing any XML mapped fields under groups stored the field in the physical storage field as a top-level xml element. This may result in conflict in their storage. So the new Implementation will store the fields like so in the physical CLOB field. The existing Business Object schemas that exist will remain. As a part of Upgrade Process an attribute "fwRel="2" would be added to the root "schema" to provide backward compatibility to already existing Business Object schemas.

Nullable column support

We do support Nullable columns. This means that FW will write NULLs instead of a blank space or zero (for numeric columns). NULLABLE_SW (which already exists) on CI_MD_TBL_FLD is going to be used for this. If the REQUIRED_SW is 'N' and the NULLABLE_SW ='Y' then FW will write a NULL in that column. The artifact generator will create hibernate mapping files with appropriate parameters so that the OUAF hibernate mapping types will know whether a given property supports null value or not.

NULLABLE_SW has existed for a while, but has only been actually read and used for certain fields (dates, and some string and number foreign-key columns). This means that there is the possibility that there is incorrect meta-data for some columns, and that turning on this new feature that uses the suspect meta-data could result in incorrect behavior. As a part of upgrade script all existing Metadata will be fixed which will make sure that the existing tables will not get affected with this change.

This new feature of allowing null values to be stored on table columns will only be supported by Java maintained tables. Thus, enhancing any existing tables to use null columns must take place after ensuring that the tables are maintained directly by Java, and not COBOL code.

Date Time format for ext sys outbound msg type

To support different date time format for external system outbound, a new column date time format (DTTM_FORMAT_FLG) is added to the External System Outbound Message Type (F1_EXTSYS_OUTMSG_PROF) Table. The allowed values are F1OU and F1XS. The date time format (DTTM_FORMAT_FLG) would be populated as 'F1OU' (OUAF format) wherever the it is not populated as a part of the Upgrade Process.

Add char values to product owned char types

To support CM to add char values to product owned characteristic types, a new column custom switch (CUSTOM_SW) is added to char type (CI_CHAR_TYPE) table. The allowed values are customizable ('Y) and Non-customizable ('N'). As a part of upgrade process, CUSTOM_SW will be set as 'N' where this column is not populated.

Database Health Check

From FW420 we created a database health check utility. This feature is going to be shipped with Oracle Enterprise Manager. To support this, a new table named F1_DB_OBJECTS_REPO is introduced which will store metadata information which we do not store explicitly in our preexisting tables. An upgrade script added in FW 420 will add the metadata information about Indexes, Sequences and Triggers added by the customers into F1_DB_OBJECTS_REPO table.

Table Classification Flags

Two new Fields are added to CI_MD_TBL to make explicit Classification of Tables. First is table classification flag (TBL_CLASSIFICATION_FLG) and the second is table volume flag (TBL_VOLUME_FLG). The valid values for Table Classification flag are Admin System Table (F1AS), Admin Non System Table (F1AN), Master Table (F1MT), Transaction Table (F1TT) and Unclassified (F1UC). The valid values for Table Volume flag (which can be modified by the customer) are Low Volume (F1LV), Medium Volume (F1MV), High Volume (F1HV) and Unclassified (F1UC). The UI and the Metadata for these columns are also added. As a part of the upgrade script the Initial values would be populated in these columns.

Timed Batch Jobs

Two New flag Batch Control Type (F1_BATCH_CTRL_TYPE_FLG) and Batch Category Flag (F1_BATCH_CTGY_FLG) are added to Batch Control Table (CI_BATCH_CTRL). The valid values for F1_BATCH_CTRL_TYPE_FLGare Not Timed (F1NT) and Timed (F1TM). The valid values for F1_BATCH_CTGY_FLGare 'Ad Hoc', 'Conversion', 'Extract', 'Monitor' ,'Object Validation', 'Process What's Ready', 'Referential Integrity' and 'To Do Entry'. Along with this there are additional new columns added to the Batch Control Table. Based on this the batch controls will be automatically initialized on a timed basis. As a part of the upgrade process the F1_BATCH_CTRL_TYPE_FLGwill be set to 'F1NT' for the existing data in the Batch Control Table. Similarly the initial values for the column F1_BATCH_CTGY_FLG(which customer can Modify) would be populated.

Update Zone Parameter

A new field Zone Parameter Value override (ZONE_PARM_VAL_OVRD) is added to zone parameter Table (CI_ZONE_PRM). The users would be able to override the existing value for Zone Parameter. For this to be possible, as a part of upgrade script, all Zone Type Parameters with usage as zone, which are not found in Zone parameter, a record needs to be inserted in Zone Parameter with Zone Parameter value as blank.

Schema Changes

New Tables

The following new tables are added to Oracle Utilities Application Framework V4.2.0.

Tables	Description
CI_BATCH_CTRL_ALG	Batch Control Algorithm
F1_ATTACHMENT	Attachment
F1_ATTACHMENT_CHAR	Attachment Characteristics
F1_BUS_OBJ_STATUS_RSN	Status Reason
F1_BUS_OBJ_STATUS_RSN_CHAR	Status Reason Characteristic
F1_BUS_OBJ_STATUS_RSN_L	Status Reason Language
F1_DB_OBJECTS_REPO	Database Objects Repository
F1_EXT_LOOKUP_VAL	Extendable Lookup
F1_EXT_LOOKUP_VAL_L	Extendable Lookup Language
F1_GENERIC_GTT	Generic Global Temporary Table
F1_GEN_PROC	General Process
F1_GEN_PROC_K	General Process Key Table
F1_MANAG_CONTENT	Managed Content
F1_MANAG_CONTENT_L	Managed Content Language
F1_MIGR_DATA_ST	Migration Data Set
F1_MIGR_DATA_ST_ALG	Migration Data Set Algorithm
F1_MIGR_DATA_ST_K	Migration Data Set Key
F1_MIGR_DATA_ST_LOG	Migration Data Set Log
F1_MIGR_DATA_ST_LOG_PARM	Migration Data Set Log Parameter
F1_MIGR_DATA_ST_TBL	Migration Data Set Table
F1_MIGR_OBJ	Migration Object
F1_MIGR_OBJ_ALG	Migration Object Algorithm
F1_MIGR_OBJ_CLOB	Migration Object CLOB
F1_MIGR_OBJ_K	Migration Object Key
F1_MIGR_OBJ_LOG	Migration Object Log
F1_MIGR_OBJ_LOG_PARM	Migration Object Log Parameter
F1_MIGR_OBJ_SQL	Migration Object SQL
F1_MIGR_PLAN	Migration Plan
F1_MIGR_PLAN_INSTR	Migration Plan Instruction

Tables	Description
F1_MIGR_PLAN_INSTR_ALG	Migration Plan Instruction Algorithm
F1_MIGR_PLAN_INSTR_L	Migration Plan Instruction Language
F1_MIGR_PLAN_L	Migration Plan Language
F1_MIGR_REQ	Migration Request
F1_MIGR_REQ_INSTR	Migration Request Instruction
F1_MIGR_REQ_INSTR_ENTITY	Migration Request Instruction Entity
F1_MIGR_REQ_INSTR_L	Migration Request Instruction Language
F1_MIGR_REQ_L	Migration Request Language
F1_MIGR_TRANS	Migration Transaction
F1_MIGR_TRANS_K	Migration Transaction Key
F1_MIGR_TRANS_LOG	Migration Transaction Log
F1_MIGR_TRANS_LOG_PARM	Migration Transaction Log Parameter
F1_REQ	Request
F1_REQ_K	Request Key
F1_REQ_LOG	Request Log
F1_REQ_LOG_PARM	Request Log Parameters
F1_REQ_TYPE	Request Type
F1_REQ_TYPE_L	Request Type Language
F1_REQ_TYPE_LOG	Request Type Log
F1_REQ_TYPE_LOG_PARM	Request Type Log Parameters
F1_SVC_TASK	Service Task
F1_SVC_TASK_CHAR	Service Task Characteristics
F1_SVC_TASK_K	Service Task Key
F1_SVC_TASK_LOG	Service Task Log
F1_SVC_TASK_LOG_PARM	Service Task Log Parameters
F1_SVC_TASK_REL_OBJ	Service Task Related Objects
F1_SVC_TASK_TYPE	Service Task Type
F1_SVC_TASK_TYPE_CHAR	Service Task Type Characteristics
F1_SVC_TASK_TYPE_L	Service Task Type Language
F1_SYNC_REQ	Sync Request
F1_SYNC_REQ_CHAR	Sync Request Characteristic
F1_SYNC_REQ_EXTRACT	Sync Request Extract
F1_SYNC_REQ_IN	Inbound Sync Request

Tables	Description
F1_SYNC_REQ_IN_CHAR	Inbound Sync Request Characteristic
F1_SYNC_REQ_IN_EXCP	Inbound Sync Request Exception
F1_SYNC_REQ_IN_EXCP_PARM	Inbound Sync Request Exception Parameters
F1_SYNC_REQ_IN_K	Inbound Sync Request Key Table
F1_SYNC_REQ_IN_LOG	Inbound Sync Request Log
F1_SYNC_REQ_IN_LOG_PARM	Inbound Sync Request Log Parameter
F1_SYNC_REQ_IN_REL_OBJ	Inbound Sync Request Related Object
F1_SYNC_REQ_K	Sync Request Key Table
F1_SYNC_REQ_LOG	Sync Request Log
F1_SYNC_REQ_LOG_PARM	Sync Request Log Parameter
F1_WEB_SVC	Web Service Adapter
F1_WEB_SVC_CHAR	Web Service Adapter Characteristics
F1_WEB_SVC_GTT	Web Services Global Temporary Table
F1_WEB_SVC_L	Web Service Adapter Language
F1_WEB_SVC_LOG	Web Service Adapter Log
F1_WEB_SVC_LOG_PARM	Web Service Adapter Log Parameter
F1_WEB_SVC_OPERATIONS	Web Service Adapter Operations

New Views

View	Description
CI_USR_ACC_GRP_VW	Access Group by User View
F1_ATTACHMENT_VW	Attachment View

Dropped Tables

CI_MD_LOOKUP

CI_MODULE

CI_SCR_STEP_K

CI_XAI_SVC_VERS

CI_XAI_SVC_VERS_L

Unsupported Tables

None

Added Columns

The following Table Columns are added to Oracle Utilities Application Framework V4.2.0.

Table	Column	Required
CI_BATCH_CTRL	BATCH_LANGUAGE_CD	N
CI_BATCH_CTRL	BATCH_THREAD_CNT	N
CI_BATCH_CTRL	EMAILID	N
CI_BATCH_CTRL	F1_BATCH_CTGY_FLG	N
CI_BATCH_CTRL	F1_BATCH_CTRL_TYPE_FLG	Y
CI_BATCH_CTRL	F1_TIMER_ACTIVE_FLG	N
CI_BATCH_CTRL	MAX_COMMIT_RECS	N
CI_BATCH_CTRL	TIMER_INTERVAL	N
CI_BATCH_CTRL	TRC_PGM_END_SW	N
CI_BATCH_CTRL	TRC_PGM_STRT_SW	N
CI_BATCH_CTRL	TRC_SQL_SW	N
CI_BATCH_CTRL	TRC_STD_SW	N
CI_BATCH_CTRL	USER_ID	N
CI_BATCH_JOB	BATCH_NBR	N
CI_CAL_HOL	F1_HOLIDAY_END_DTTM	Y
CI_CAL_HOL	F1_HOLIDAY_START_DTTM	Y
CI_CHAR_TYPE	CUSTOM_SW	Y
CI_FK_REF	ZONE_CD	N
CI_INSTALL_PROD	PROD_TYPE_FLG	N
CI_MD_FLD	F1_TRANSLATABLE_FLG	Y
CI_MD_FLD	F1_TRANSLATION_CONTEXT	N
CI_MD_FLD_L	DESCRLONG_OVRD	N
CI_MD_MENU_ITEM	ACCESS_MODE	N
CI_MD_MENU_ITEM	APP_SVC_ID	N
CI_MD_TBL	CACHE_FLG	Y
CI_MD_TBL	F1_EXTRACT_TRANSLATION_FLG	Y
CI_MD_TBL	F1_TRANSLATION_CONTEXT	N
CI_MD_TBL	KEY_VALIDATION_FLG	Y
CI_MD_TBL	TBL_CLASSIFICATION_FLG	Y
CI_MD_TBL	TBL_VOLUME_FLG	Y
CI_MD_TBL_FLD	F1_EXTRACT_TRANSLATION_FLG	Y

Table	Column	Required
CI_MD_TBL_FLD	F1_TRANSLATION_CONTEXT	N
CI_MSG	F1_TRANSLATION_CONTEXT	N
CI_PORTAL	USER_CONFIG_FLG	Y
CI_PORTAL_ZONE	DISPLAY_SW	Y
CI_PORTAL_ZONE	SORT_SEQ	N
CI_PORTAL_ZONE	SORT_SEQ_OVRD	N
CI_PORTAL_ZONE	ZONE_COLLAPSED_SW	Y
CI_PORTAL_ZONE	ZONE_REFRESH_PERIOD	N
CI_SYSDATA_LOG	GROUP_FIX_NAME	N
CI_TIME_ZONE	F1_TIMEZONE_NAME	N
CI_TIME_ZONE_L	DFLT_TIME_ZONE_LABEL	N
CI_TIME_ZONE_L	SHIFT_TIME_ZONE_LABEL	N
CI_USR_ZONE	ZONE_DATA_AREA	N
CI_USR_ZONE	ZONE_REFRESH_PERIOD	N
CI_XAI_RCVR_CTX	F1_CTXT_VAL_LONG	Y
CI_XAI_SNDR_CTX	F1_CTXT_VAL_LONG	Y
CI_ZONE_L	DESCRLONG_OVRD	N
CI_ZONE_PRM	ZONE_PARM_VAL_OVRD	N

Dropped Columns

Table Name	Column Name
CI_SCR_PRMPT	SCR_STEP_ID
CI_SCR_STEP_L	SCR_STEP_ID
F1_MAP_L	HTML_DEFN
CI_SCR_PRMPT_L	SCR_STEP_ID
CI_XAI_IN_SVC_L	DESCR254
CI_XAI_IN_SVC	XAI_VERSION_ID
CI_SCR_STEP	SCR_STEP_ID
CI_XAI_JDBC_CO	DATABASE_NAME
CI_SCR_FLD_MAP	SCR_STEP_ID
CI_XAI_SNDR_CTX	CTXT_VAL

Unsupported Table Columns

None

Column Format Change

Table Name	Column Name	From	To
CI_ALG_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_ALG_TYPE_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_ARC_ROOT_PK	FIELD_VAL	VARCHAR2:50	VARCHAR2:254
CI_BATCH_CTRL_P_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_DATA_DIFF	DATA_DIFF_INFO	VARCHAR2:200	VARCHAR2:512
CI_DATA_DIFF_PK	FIELD_VAL	VARCHAR2:50	VARCHAR2:254
CI_MD_MENU_ITEM_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_MD_MENU_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_MSG_L	MESSAGE_TEXT	VARCHAR2:100	VARCHAR2:254
CI_MSG_L	MESSAGE_TEXT_OVRD	VARCHAR2:100	VARCHAR2:254
CI_NT_DWN_PROF_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_NT_DWN_TYPE_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_NT_UP_XTYPE_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_NT_XID_L	DESCR50	VARCHAR2:50	VARCHAR2:100
CI_ROOT_OBJ_PK	FIELD_VAL	VARCHAR2:50	VARCHAR2:254

New System Data

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

Application Service

The following Application Services are new to V4.2.0.

Application Service	Description
F1-APAYEXPCRTYPEBOAS	Request Type - To Do Summary Email Type
F1-ATTACHMENTBOAS	Attachment Based BO
F1-DECRPTBOAS	Decision Report BO
F1-EXPUSERSREQBOAS	Request - To Do Summary Email BO
F1-GENPROC	General Process MO
F1-MIGROBJBOAS	Migration Object Export BO
F1-MIGROBJIMP	Migration Object Import BO
F1-MIGRTXBOAS	Migration Transaction Export BO
F1-STASKTYPE	Service Task Type MO
F1-SVCTASK	Service Task MO
F1-SYNCREQ	Sync Request MO
F1-SYNCREQIN	Inbound Sync Request MO
F1-SYNCREQUESTBOAS	Sync Request BO
F1-WEBSVCBOAS	Web Service Adapter BO
F1ADMIN	System Admin Functions via Browser Client
F1APPSEC	Application Security Portal
F1ATTACH	Attachment Information
F1ATTACHMENT	Attachment
F1BTCLSP	Batch Cluster
F1CATTCH	Attachment Search Portal
F1CLTHDP	Batch Cluster Thread Details
F1CLUSTP	Batch Cluster
F1CONFIGLOG	Show User Config Log (Debugging Tool)
F1DEBUG	Debug Option Access via Browser Client
F1EMHLAU	Embedded Help Portal
F1EXLKP	Extendable Lookup Portal
F1EXLKPS	Extendable Lookup Query Portal
F1LCAMRP	Request MO

Application Service	Description
F1LEXTLKUP	Extended Lookup Value MO
F1LTAMTP	Request Type MO
F1MGDEXP	Migration Data Set Export
F1MGDEXS	Migration Data Set Export Query
F1MGDIMP	Migration Data Set Import
F1MGDIMS	Migration Data Set Import Query
F1MGOIMP	Migration Object Import
F1MGPLNM	Migration Plan
F1MGPLNS	Migration Plan Query
F1MGREQM	Migration Request
F1MGREQS	Migration Request Query
F1MIGRDEXP	Migration Data Set Export BO
F1MIGRDIMP	Migration Data Set Import BO
F1MIGRDS	Migration Data Set MO
F1MIGROBJ	Migration Object MO
F1MIGRPLAN	Migration Plan MO
F1MIGRREQ	Migration Request MO
F1MIGRTIMP	Migration Transaction Import BO
F1MIGRTX	Migration Transaction MO
F1MTXIMP	Migration Transaction Import
F1REQ	Request Portal
F1REQTYP	Request Type Portal
F1STRDIS	Status Reason Display Portal
F1STREAS	Status Reason Portal
F1SUBRQQ	Request Query Portal
F1SYNCRM	Sync Request Portal
F1SYNCRQ	Sync Request Query Portal
F1TBLEXC	Translatable Strings Exceeding Capacity
F1UIZONE	Context Sensitive Zone
F1WBSVCM	Web Service Adapter
F1WBSVCS	Web Service Adapter Query Portal
F1WEBSVC	Web Service
F1_BTST	Batch Run Statistics Portal

Application Service	Description
FWLSTRJP	Status Reason MO
FWLTMGCT	Managed Content

Access Mode Added to Application Service

The following Access MODEis added to existing Application Services and is new to V4.2.0.

Application Service	Description	Access Mode
CILTUSEP	User	Enable/Disable (ENBL)
CILTWSDP	Feature Configuration	Super User (F1SU)

Batch Control

The following Batch Controls are new to V4.2.0.

Batch Control	Description
F1-ARQPR	Request Monitor
F1-LKPIL	Standard Lookup Initial Load
F1-MGDPR	Migration Data Set Monitor
F1-REQTY	Request Type Monitor
F1-SAKRQ	Sync Request Allocate Keys Monitor
F1-SRLRQ	Sync Request Load Records Monitor
F1-STKDF	Service Task Monitor (Deferred)
F1-STKTR	Service Task Monitor
F1-SUBRQ	Request Monitor (Deferred)
F1-SYNEF	Sync Request Extract
F1-SYNIL	Sync Request Initial Load
F1-SYNRQ	Sync Request Monitor
F1-SYSRQ	Sync Request Monitor (Deferred)
LDAPIMP	ZZ Ldap Import Example
WX-NOTIF	Self-Service Notification Monitor

XAI Inbound Service

The following XAI Inbound Service is new to V4.2.0.

XAI Inbound Svc Id	Zone Type	Description
F113943194	F1-UpdateAndTransitionSyncRequest	Update Master Data Sync Request
F118739517	F1-SmsReceive	Receive SMS Message XAI Service
F156528210	F1-ORAGEOCD	Geocode Address XAI Inbound Service

Appendix L

Oracle Utilities Application Framework System Table Guide

This section lists the system tables owned by the Oracle Utilities Application Framework V4.2.0.3 and explains the data standards of the system tables. The data standards are required for the installation of Oracle Utilities Application Framework, development within the Oracle Utilities Application Framework, and the configuration and customization of Oracle Utilities products. Adhering to the data standards is a prerequisite for seamless upgrade to future releases.

This section includes:

About the Application Framework System Tables

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

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

System Table Standards

System table standards must be observed for the following reasons:

- The product installation and upgrade process and customer modification data extract processes depend on the data prefix and owner flag values to determine the system data owned by each product.
- The standards ensure that there will be no data conflict in the product being developed and the future Oracle Utilities Application Framework release.
- The standards ensure that there will be no data conflict between customer modifications and future Oracle Utilities product releases.
- The data prefix is used to prevent test data from being released to production.

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

Guidelines for System Table Updates

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

Business Configuration Tables

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

Application Security and User Profile

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

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

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

Currency Code

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

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

DB Process

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

Display Profile

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

Properties	Description
Tables	CI_DISP_PROF, CI_DISP_PROF_L

Properties	Description
Initial Data	North America (NORTHAM) and Europe (EURO).

Installation Options

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

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

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

Language Code

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

Properties	Description
Tables	CI_LANGUAGE
Initial Data	English (ENG).

To Do Priority and Role

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

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

Development and Implementation System Tables

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

Standards

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

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

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, F1_BUS_OBJ_ALG, F1_BUS_OBJ_STATUS_ALG, CI_MD_MO_OPT, F1_BUS_OBJ_OPT, F1_BUS_OBJ_STATUS_OPT, F1_BUS_OBJ_STATUS, F1_BUS_OBJ_STATUS_L

Algorithm Type

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

Algorithm

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

Application Security

Properties	Description
Tables	SC_APP_SERVICE, SC_APP_SERVICE_L, CI_APP_SVC_ACC
Standard Data Fields	Application Service ID (APP_SVC_ID).
Customer Modification	None

Batch Control

Properties	Description
Tables	CI_BATCH_CTRL, CI_BATCH_CTRL_L, CI_BATCH_CTRL_P, CI_BATCH_CTRL_P_L
Standard Data Fields	Batch Process (BATCH_CD), Program Name (PROGRAM_NAME)

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

Business Object

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

Business Service

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

Characteristics

Properties	Description
Tables	CI_CHAR_TYPE, CI_CHAR_TYPE_L, CI_CHAR_ENTITY, CI_CHAR_VAL, CI_CHAR_VAL_L
Standard Data Fields	Characteristic Type (CHAR_TYPE_CD)
Customer Modification	Adhoc Characteristic Value Validation Rule (ADHOC_VAL_ALG_CD) on Characteristic Entity Table (CI_CHAR_ENTITY)

Configuration Migration Assistant

Properties	Description
Tables	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_INST R_L, F1_MIGR_REQ_INSTR_ENTITY
Standard Data Fields	Migration Plan Code (MIGR_PLAN_CD), Migration Request Code (MIGR_REQ_CD)
Customer Modification	None

Data Area

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

Display Icon

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

Extendable Lookup

Properties	Description
Tables	F1_EXT_LOOKUP_VAL, F1_EXT_LOOKUP_VAL_L
Standard Data Fields	Business Object (BUS_OBJ_CD), Extendable Lookup Value (F1_EXT_LOOKUP_VALUE)
Customer Modification	Override Description (DESCR_OVRD) on Extendable Lookup Field Value Language Table (F1_EXT_LOOKUP_VAL_L)

Foreign Key Reference

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

Inbound Web Service

Properties	Description
Tables	F1_IWS_SVC_L,F1_IWS_SVC,F1_IWS_SVC_OPER_L,F1_IWS_SVC_OPER, F1_IWS_ANN_L,F1_IWS_ANN_PARM, F1_IWS_ANN,F1_IWS_ANN_TYPE_L, F1_IWS_ANN_TYPE, F1_IWS_ANN_TYPE_PARM,F1_IWS_ANN_TYPE_PARM_L
Standard Data Fields	Webservice Name (IN_SVC_NAME), Annotation (ANN_CD), Annotation Type (ANN_TYPE_CD)
Customer Modification	Debug (DEBUG_SW), Active (ACTIVE_SW), Trace (TRACE_SW), Post Error (POST_ERROR_SW), Request XSL (REQUEST_XSL), Response XSL (RESPONSE_XSL)

Lookup

Properties	Description
Tables	CI_LOOKUP_FIELD, CI_LOOKUP_VAL, CI_LOOKUP_VAL_L,
Standard Data Fields	Field Name (FIELD_NAME) • A lookup field name must have corresponding field metadata. The name of the lookup field column must be assigned to avoid conflicts among different products. If you follow the standards for database field names, a Customer Modification lookup field name will be automatically Customer Modification prefixed. Field Value (FIELD_VALUE) • If a lookup field is customizable, Customer Modification can insert new lookup values. X or Y must prefix when implementers introduce a new lookup value. • Product development may add lookup values to an Oracle Utilities Application Framework owned lookup field. When a new value is added, the Owner Flag is used to prefix the value. For example, when Oracle Utilities Customer Care and Billing adds a new value to the algorithm entity flag (ALG_ENTITY_FLG), it is prefixed with C1.
Customer Modification	Override Description (DESCR_OVRD) on Lookup Field Value Language Table (CI_LOOKUP_VAL_L)

Map

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

Managed Content

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

Messages

Properties	Description
Tables	CI_MSG_CATEGORY, CI_MSG_CATEGORY_L, CI_MSG, CI_MSG_L
Standard Data Fields	Message Category (MESSAGE_CAT_NBR) • Messages are grouped in categories and each category has message numbers between 1 and 99999. A range of message categories is assigned to a product. An implementation may only use categories assigned for customization use. • Implementer Message Categories are 8000 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	Override Description (DESCRLONG_OVRD), Message Text Override (MESSAGE_TEXT_OVRD)

Meta Data - Table and Field

Properties	Description
Tables	CI_MD_TBL, CI_MD_TBL_FLD, CI_MD_TBL_L, CI_MD_TBL_FLD_L, CI_MD_FLD, CI_MD_FLD_L, F1_DB_OBJECTS_REPO

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

Meta Data - Constraints

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

Meta Data - Menu

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

Properties	Description
Tables	CI_MD_MENU, CI_MD_MENU_L, CI_MD_MENU_ITEM, CI_MD_MENU_ITEM_L, CI_MD_MENU_LINE, CI_MD_MENU_LINE_L

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

Meta Data - Program, Location and Services

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

Meta Data - Maintenance Object

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

Meta Data - Work Tables

Properties	Description
Tables	CI_MD_WRK_TBL, CI_MD_WRK_TBL_L, CI_MD_WRK_TBLFLD, CI_MD_MO_WRK

Properties	Description
Standard Data Fields	Work Table Name (WRK_TBL_NAME)
Customer Modification	None

Meta Data - Search Object

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

Navigation Option

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

Portal and Zone

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

Sequence

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

Schema

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

Script

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

To Do Type

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

XAI Configuration

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

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

XAI Services

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

Oracle Utilities Application Framework Only Tables

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

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

System Table List

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

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

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

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

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

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

Table Name	Upgrade Action	Description
CI_DISP_ICON	MG	Display Icon
CI_DISP_ICON_L	MG	Display Icon Language
CI_FK_REF	MG	Foreign Key Reference
CI_FK_REF_L	MG	Foreign Key Reference Language
CI_LANGUAGE	MG	Language Code
CI_LOOKUP_FIELD	MG	Lookup Field
CI_LOOKUP_VAL	MG	Lookup Field Value
CI_LOOKUP_VAL_L	MG	Lookup Field Value Language
CI_MD_CONST	MG	Constraints
CI_MD_CONST_FLD	MG	Constraint Fields
CI_MD_FLD	MG	Field
CI_MD_FLD_L	MG	Field Language
CI_MD_MENU	MG	Menu Information
CI_MD_MENU_IMOD	MG	Menu Item Module Maint
CI_MD_MENU_ITEM	MG	Menu Item
CI_MD_MENU_ITEM_L	MG	Menu Item Language
CI_MD_MENU_L	MG	Menu Language
CI_MD_MENU_LINE	MG	Menu Line
CI_MD_MENU_LINE_L	MG	Menu Line Language
CI_MD_MENU_MOD	MG	Menu Product Components
CI_MD_MO	MG	Maintenance Object
CI_MD_MO_ALG	MG	Maintenance Object Algorithm
CI_MD_MO_L	MG	Maintenance Object Language
CI_MD_MO_OPT	MG	Maintenance Object Option
CI_MD_MO_TBL	MG	Maintenance Object Table
CI_MD_MO_WRK	MG	Maintenance Object Work Tables
CI_MD_NAV	MG	Navigation Key
CI_MD_PRG_COM	MG	Program Components
CI_MD_PRG_ELEM	MG	UI Page Elements
CI_MD_PRG_EL_AT	MG	UI Page Element Attributes

Table Name	Upgrade Action	Description
CI_MD_PRG_LOC	MG	Program Location
CI_MD_PRG_MOD	MG	Program Module
CI_MD_PRG_SEC	MG	UI Page Sections
CI_MD_PRG_SQL	MG	MD SQL Meta Data
CI_MD_PRG_TAB	MG	UI Tab Meta Data
CI_MD_PRG_VAR	MG	Program Variable
CI_MD_SO	MG	Search Object
CI_MD_SOCG	MG	Search Object Criteria Group
CI_MD_SOCG_FLD	MG	Search Object Criteria Group Field
CI_MD_SOCG_FLDAT	MG	Search Criteria Group Field Attribute
CI_MD_SOCG_L	MG	Search Object Criteria Group Language
CI_MD_SOCG_SORT	MG	Search Criteria Group Result Sort Order
CI_MD_SO_L	MG	Search Object Language
CI_MD_SO_RSFLD	MG	Search Object Result Field
CI_MD_SO_RSFLDAT	MG	Search Object Result Field Attribute
CI_MD_SVC	MG	MD Service
CI_MD_SVC_L	MG	MD Service Language
CI_MD_SVC_PRG	MG	MD Service Program
CI_MD_TAB_MOD	MG	UI Tab Module
CI_MD_TBL	MG	MD Table
CI_MD_TBL_FLD	MG	MD Table Field
CI_MD_TBL_FLD_L	MG	MD Table Field Language
CI_MD_TBL_L	MG	MD Table Language
CI_MD_WRK_TBL	MG	Work Table
CI_MD_WRK_TBLFLD	MG	Work Table Field
CI_MD_WRK_TBL_L	MG	Work Table Language
CI_MSG	MG	Message
CI_MSG_CATEGORY	MG	Message Category
CI_MSG_CATEGORY_L	MG	Message Category Language
CI_MSG_L	MG	Message Language

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

Table Name	Upgrade Action	Description
CI_XAI_ENV_HNDL_L	MG	XAI Envelope Handler Language
CI_XAI_IN_SVC	MG	XAI Inbound Service
CI_XAI_IN_SVC_L	MG	XAI Inbound Service Language
CI_XAI_SVC_PARM	MG	XAI Inbound Service Parameters
CI_ZONE	MG	Zone
CI_ZONE_HDL	MG	Zone Type
CI_ZONE_HDL_L	MG	Zone Type Language
CI_ZONE_HDL_PRM	MG	Zone Type Parameters
CI_ZONE_HDL_PRM_L	MG	Zone Type Parameters Language
CI_ZONE_L	MG	Zone Language
CI_ZONE_PRM	MG	Zone Parameters
F1_BUS_OBJ	MG	Business Object
F1_BUS_OBJ_ALG	MG	Business Object Algorithm
F1_BUS_OBJ_L	MG	Business Object Language
F1_BUS_OBJ_OPT	MG	Business Object Option
F1_BUS_OBJ_STATUS	MG	Business Object Status
F1_BUS_OBJ_STATUS_ALG	MG	Business Object Status Algorithm
F1_BUS_OBJ_STATUS_L	MG	Business Object Status Language
F1_BUS_OBJ_STATUS_OPT	MG	Business Object Status Option
F1_BUS_OBJ_STATUS_RSN	MG	Status Reason
F1_BUS_OBJ_STATUS_RSN_L	MG	Status Reason Language
F1_BUS_OBJ_TR_RULE	MG	Business Object Transition Rule
F1_BUS_OBJ_TR_RULE_L	MG	Business Object Transition Rule Language
F1_BUS_SVC	MG	Business Service
F1_BUS_SVC_L	MG	Business Service Language
F1_DATA_AREA	MG	Data Area

Table Name	Upgrade Action	Description
F1_DATA_AREA_L	MG	Data Area Language
F1_DB_OBJECTS_REPO	MG	Database Objects Repository
F1_EXT_LOOKUP_VAL	MG	Extendable Lookup
F1_EXT_LOOKUP_VAL_L	MG	Extendable Lookup Language
F1_IWS_ANN	MG	Inbound Web Service Annotation
F1_IWS_ANN_L	MG	Inbound Web Service Annotation Language
F1_IWS_ANN_PARM	MG	Inbound Web Service Annotation Parameter
F1_IWS_ANN_TYPE	MG	Inbound Web Service Annotation Type
F1_IWS_ANN_TYPE_L	MG	Inbound Web Service Annotation Type Language
F1_IWS_ANN_TYPE_PARM	MG	Inbound Web Service Annotation Type Parm
F1_IWS_ANN_TYPE_PARM_L	MG	Inbound Web Service Annotation Type Parameter Language
F1_IWS_SVC	MG	Inbound Web Service
F1_IWS_SVC_L	MG	Inbound Web Service Language
F1_IWS_SVC_OPER	MG	Inbound Web Service Operations
F1_IWS_SVC_OPER_L	MG	Inbound Web Service Operations Language
F1_MANAG_CONTENT	MG	Managed Content
F1_MANAG_CONTENT_L	MG	Managed Content Language
F1_MAP	MG	UI Map
F1_MAP_L	MG	UI Map Language
F1_MIGR_PLAN	MG	Migration Plan
F1_MIGR_PLAN_INSTR	MG	Migration Plan Instruction
F1_MIGR_PLAN_INSTR_ALG	MG	Migration Plan Instruction Algorithm
F1_MIGR_PLAN_INSTR_L	MG	Migration Plan Instruction Language
F1_MIGR_PLAN_L	MG	Migration Plan Language

Table Name	Upgrade Action	Description
F1_MIGR_REQ	MG	Migration Request
F1_MIGR_REQ_INSTR	MG	Migration Request Instruction
F1_MIGR_REQ_INSTR_ENTITY	MG	Migration Request Instruction Entity
F1_MIGR_REQ_INSTR_L	MG	Migration Request Instruction Language
F1_MIGR_REQ_L	MG	Migration Request Language
F1_SCHEMA	MG	Schema
SC_ACCESS_CNTL	MG	User Group Access Control
SC_APP_SERVICE	MG	Application Service
SC_APP_SERVICE_L	MG	Application Service Language
SC_USR_GRP_PROF	MG	User Group Profile
CI_ACC_GRP	KP	Access Group
CI_ACC_GRP_DAR	KP	Access Group / Data Access Group
CI_ACC_GRP_L	KP	Access Group Language
CI_APP_SVC_SCTY	KP	Security Type Application Service
CI_CAL_HOL	KP	Work Calendar Holidays
CI_CAL_HOL_L	KP	Work Calendar Holidays Language
CI_CAL_WORK	KP	Work Calendar
CI_CAL_WORK_L	KP	Work Calendar Language
CI_CHTY_TDTY	KP	To Do Type Template Characteristics
CI_COUNTRY	KP	Country
CI_COUNTRY_L	KP	Country Language
CI_CURRENCY_CD	KP	Currency Code
CI_CURRENCY_CD_L	KP	Currency Code Language
CI_DAR	KP	Data Access Role
CI_DAR_L	KP	Data Access Language
CI_DAR_USR	KP	Data Access User
CI_DB_INSTR	KP	DB Process Instruction

Table Name	Upgrade Action	Description
CI_DB_INSTR_ALG	KP	DB Process Instruction Algorithm
CI_DB_INSTR_L	KP	DB Process Instruction Language
CI_DB_INST_OVRD	KP	DB Process Instruction Override
CI_DB_PROC	KP	DB Process
CI_DB_PROC_L	KP	DB Process Language
CI_DISP_PROF	KP	Display Profile
CI_DISP_PROF_L	KP	Display Profile Language
CI_ENV_REF	KP	Environment Reference
CI_ENV_REF_L	KP	Environment Reference Language
CI_FUNC	KP	Function
CI_FUNC_FLD	KP	Function Field
CI_FUNC_FLD_L	KP	Function Field Language
CI_FUNC_L	KP	Function Language
CI_GEO_TYPE	KP	Geographic Type
CI_GEO_TYPE_L	KP	Geographic Type Language
CI_INSTALL_ALG	KP	Installation Algorithm
CI_INSTALL_MSG	KP	Installation Message
CI_INSTALL_MSG_L	KP	Installation Message Language
CI_INSTALL_PROD	KP	Installation Product
CI_MD_RPT	KP	Report Definition
CI_MD_RPT_L	KP	Report Language
CI_MD_RPT_LBL	KP	Report Labels
CI_MD_RPT_PARM	KP	Report Parameters
CI_MD_RPT_PARM_L	KP	Report Parameters Language
CI_MD_TOOLREP_XML	KP	MD Tool Reference XML
CI_MD_TOOL_REP	KP	MD Tool Reference
CI_NT_DNTY_CTXT	KP	Notification Download Type Context
CI_NT_DWN_FORM	KP	Notification Download Format

Table Name	Upgrade Action	Description
CI_NT_DWN_FORM_L	KP	Notification Download Format Language
CI_NT_DWN_PROF	KP	Notification Download Profile
CI_NT_DWN_PROF_L	KP	Notification Download Profile Language
CI_NT_DWN_TYPE	KP	Notification Download Type
CI_NT_DWN_TYPE_L	KP	Notification Download Type Language
CI_NT_UP_XTYPE	KP	Notification Upload Type
CI_NT_UP_XTYPE_L	KP	Notification Upload Type Language
CI_NT_XID	KP	External System
CI_NT_XID_L	KP	External System Language
CI_PHONE_TYPE	KP	Phone Type
CI_PHONE_TYPE_L	KP	Phone Type Language
CI_ROLE	KP	Role
CI_ROLE_L	KP	Role Language
CI_ROLE_USER	KP	Role User
CI_RPT_OPTION	KP	Report Options
CI_SC_AUTH_LVL	KP	Security Type Auth Level
CI_SC_AUTH_LVL_L	KP	Security Type Auth Level Language
CI_SC_TYPE	KP	Security Type
CI_SC_TYPE_L	KP	Security Type Language
CI_SEAS_SHIFT	KP	Seasonal Time Shift Schedule
CI_SEAS_TM_SHIFT	KP	Seasonal Time Shift
CI_SEAS_TM_SHIFT_L	KP	Seasonal Shift Language
CI_STATE	KP	State
CI_STATE_L	KP	State Language
CI_TD_EX_LIST	KP	To Do Type Message Overrides
CI_TD_TYPE_ALG	KP	To Do Type Algorithms
CI_TD_TYPE_CHAR	KP	To Do Type Characteristic
CI_TD_VAL_ROLE	KP	To Do Type Role

Table Name	Upgrade Action	Description
CI_TIME_ZONE	KP	Time Zone
CI_TIME_ZONE_L	KP	Time Zone Language
CI_USR_GRP_SC	KP	User Group Security Type
CI_USR_PORTAL	KP	User Portal
CI_USR_SCR	KP	User Scripts
CI_USR_ZONE	KP	User Zone
CI_WFM	KP	Feature Configuration
CI_WFM_L	KP	Feature Configuration Language
CI_WFM_MSG	KP	Feature Configuration Message
CI_WFM_OPT	KP	Feature Configuration Options
CI_WF_EVT_TYPE	KP	WF Event Type
CI_WF_EVT_TYPE_L	KP	WF Event Type Language
CI_WF_PP	KP	WF Process Profile
CI_WF_PP_L	KP	WF Process Profile Language
CI_WF_PP_NT	KP	WF Process Notification
CI_WF_PP_NT_CRT	KP	WF Process Notification Criteria
CI_WF_PROC_SCHED	KP	WF Process Creation Schedule
CI_WF_PROC_SCHED_K	KP	WF Process Creation Schedule Key
CI_WF_PROC_TMPL	KP	WF Process Template
CI_WF_PROC_TMPL_L	KP	WF Process Template Language
CI_WF_RESP	KP	WF Response
CI_WF_RESP_DEP	KP	WF Response Dependency
CI_XAI_JDBC_CON	KP	XAI JDBC Connection
CI_XAI_JDBC_CON_L	KP	XAI JDBC Connection Language
CI_XAI_JMS_CON	KP	XAI JMS Connection
CI_XAI_JMS_CON_L	KP	XAI JMS Connection Language
CI_XAI_JMS_Q	KP	XAI JMS Queue

Table Name	Upgrade Action	Description
CI_XAI_JMS_Q_L	KP	XAI JMS Queue Language
CI_XAI_JMS_TPC	KP	XAI JMS Topic
CI_XAI_JMS_TPC_L	KP	XAI JMS Topic Language
CI_XAI_JNDI_SVR	KP	XAI JNDI Server
CI_XAI_JNDI_SVR_L	KP	XAI JNDI Server Language
CI_XAI_OPTION	KP	XAI Option
CI_XAI_RCVR	KP	XAI Receiver
CI_XAI_RCVR_CTX	KP	XAI Receiver Context
CI_XAI_RCVR_L	KP	XAI Receiver Language
CI_XAI_RCVR_RGRP	KP	XAI Receiver Rule Group
CI_XAI_RCVR_RSP	KP	XAI Receiver Response
CI_XAI_RGRP	KP	XAI Rule Group
CI_XAI_RGRP_ATT	KP	XAI Rule Group Attachment
CI_XAI_RGRP_L	KP	XAI Rule Group Language
CI_XAI_ROUTING	KP	XAI Routing
CI_XAI_RT_TYPE	KP	XAI Route Type
CI_XAI_RT_TYPE_L	KP	XAI Route Type Language
CI_XAI_RULE	KP	XAI Rule
CI_XAI_SENDER	KP	XAI Sender
CI_XAI_SENDER_L	KP	XAI Sender Language
CI_XAI_SNDR_CTX	KP	XAI Sender Context
F1_BKT_CONFIG	KP	Bucket Configuration
F1_BKT_CONFIG_L	KP	Bucket Configuration Language
F1_BKT_CONFIG_REL_OBJ	KP	Bucket Configuration Related Object
F1_BKT_CONFIG_VAL	KP	Bucket Configuration Value
F1_BKT_CONFIG_VAL_L	KP	Bucket Configuration Value Language
F1_BUS_OBJ_STATUS_RSN_CHAR	KP	Status Reason Characteristic
F1_EXTSYS_OUTMSG_PROF	KP	External System Outbound Message Type
F1_INSTALLATION	KP	Installation Option - Framework

Table Name	Upgrade Action	Description
F1_IWS_ANN_CHAR	KP	Inbound Web Service Annotation Characteristics
F1_IWS_ANN_TYPE_CHAR	KP	Inbound Web Service Annotation Type Characteristics
F1_IWS_SVC_ANN	KP	Inbound Web Service Link to Annotation
F1_IWS_SVC_CHAR	KP	Inbound Web Service Characteristics
F1_IWS_SVC_LOG	KP	Inbound Web Service Log
F1_IWS_SVC_LOG_PARM	KP	Inbound Web Service Log Parameter
F1_MAP_OVRD	KP	UI Map Override
F1_MD_DB_OBJ	KP	MD Database Object
F1_MST_CONFIG	KP	Master Configuration
F1_OUTMSG_TYPE	KP	Outbound Message Type
F1_OUTMSG_TYPE_L	KP	Outbound Message Type Language
F1_REQ_TYPE	KP	Request Type
F1_REQ_TYPE_L	KP	Request Type Language
F1_REQ_TYPE_LOG	KP	Request Type Log
F1_REQ_TYPE_LOG_PARM	KP	Request Type Log Parameters
F1_SVC_TASK_TYPE	KP	Service Task Type
F1_SVC_TASK_TYPE_CHAR	KP	Service Task Type Characteristics
F1_SVC_TASK_TYPE_L	KP	Service Task Type Language
F1_WEB_SVC	KP	Web Service Adapter
F1_WEB_SVC_CHAR	KP	Web Service Adapter Characteristics
F1_WEB_SVC_L	KP	Web Service Adapter Language
F1_WEB_SVC_LOG	KP	Web Service Adapter Log
F1_WEB_SVC_LOG_PARM	KP	Web Service Adapter Log Parameter
F1_WEB_SVC_OPERATIONS	KP	Web Service Adapter Operations
SC_USER	KP	User

Table Name	Upgrade Action	Description
SC_USER_CHAR	KP	User Characteristic
SC_USER_GROUP	KP	User Group
SC_USER_GROUP_L	KP	User Group Language
SC_USR_GRP_USR	KP	User Group User
CI_MD_ATT_TY	RF	MD Element Attribute Type
CI_MD_AT_DTL	RF	MD Element Attribute Type Detail
CI_MD_AT_DTL_L	RF	MD Element Attribute Type Detail Language
CI_MD_CTL	RF	Generator Control
CI_MD_CTL_L	RF	Generator Control Language
CI_MD_CTL_TMPL	RF	Generator Control Template
CI_MD_ELTY	RF	MD Element Type
CI_MD_ELTY_AT	RF	Element Type Attributes
CI_MD_ELTY_L	RF	Element Type Language
CI_MD_LOOKUP_F	RF	MD Lookup Field
CI_MD_MSG	RF	MD Message
CI_MD_MSG_L	RF	MD Message Language
CI_MD_PDF	RF	Predefined Fields
CI_MD_PDF_VAL	RF	Predefined Values
CI_MD_SRC_TYPE	RF	Source Type
CI_MD_SRC_TYPE_L	RF	Source Type Language
CI_MD_TMPL	RF	Template
CI_MD_TMPL_ELTY	RF	Template Element Types
CI_MD_TMPL_L	RF	Template Language
CI_MD_TMPL_VAR	RF	Template Variable
CI_MD_TMPL_VAR_L	RF	Template Variable Language
CI_MD_VAR	RF	Variable
CI_MD_VAR_DTL	RF	Variable Detail
CI_MD_VAR_DTL_L	RF	Variable Detail Language
CI_XAI_EXECUTER	RF	XAI Executer
CI_XAI_EXECUTER_L	RF	XAI Executer Language