Oracle® Revenue Management and Billing

Version 2.3.0.1.0

Database Administrator's Guide

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Oracle Revenue Management and Billing Database Administrator's Guide

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Preface

About This Document

This document will help you to understand how to install and maintain the Oracle Revenue Management and Billing (ORMB) database.

Intended Audience

This document is intended for the following audience:

- End-Users
- Database Administrators
- Consulting Team
- Implementation Team

Organization of the Document

The information in this document is organized into the following sections:

Section No.	Section Name	Description
Section 1	Database Overview	Lists the database server supported on each platform. It also lists the dos and don'ts while maintaining a database.
Section 2	Database Installation	Explains how to install the Oracle Revenue Management and Billing database.
Section 3	Database Design	Lists the naming conventions for various database objects. It also lists and describes the column data types and foreign key constraints.
Section 4	Database Implementation Guidelines	Lists and describes the general guidelines for implementing the database components.
Section 5	Conversion Tools	Explains how to work with the database conversion tools.
Appendix A	New Objects in the Oracle Revenue Management and Billing V2.3.0.1.0 Database	Lists the objects that are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.
Appendix B	New Objects in the Oracle Utilities Application Framework 4.2.0.2.0 Database	Lists the objects that are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database.

Section No.	Section Name	Description
Appendix C	Oracle Application Framework System Table Guide	Lists and describes the system tables of Oracle Utilities Application Framework. It also explains the guidelines for updating these system tables.
Appendix D	License and Copyright Notices	Lists all notices with reference to usage of third party products.

Related Documents

You can refer to the following documents for more information:

Document	Description
Oracle Revenue Management and Billing Release Notes Version 2.3.0.1.0	Provides a brief description about the new features and enhancements made in this release. It also highlights the bug fixes and known issues in this release.
Oracle Revenue Management and Billing Installation Guide	Lists the pre-requisites, supported platforms, and hardware and software requirements for installing the Oracle Revenue Management and Billing application. It also explains how to install the Oracle Revenue Management and Billing application.
Oracle Revenue Management and Billing Quick Installation Guide	Provides high-level information on how to install the Oracle Revenue Management and Billing application.

Contents

1. Database Overview

This section provides an overview of the Oracle Revenue Management and Billing database, including:

- Supported Database Platforms
- Database Maintenance Rules

1.1 Supported Database Platforms

This section defines the platforms on which Oracle Revenue Management and Billing is verified to operate.

1.1.1 Supported Platforms Summary Table

Oracle Revenue Management and Billing is supported on the following platforms:

Platform	Database Server
AIX 6.1 TL5 (POWER 64-bit), AIX 7.1 TL1 (POWER 64-bit)	Oracle Database Server 11.2.0.4 (64-bit)
Oracle Linux 5.8, 6.2, 6.4 and 6.5 x86_64 (64-bit)	Oracle Database Server 11.2.0.4 (64-bit)
Red Hat Enterprise Linux[1] 5.8, 6.2, 6.4 and 6.5 x86_64 (64-bit)	Oracle Database Server 11.2.0.4 (64-bit)
Windows Server 2008 R2 x86_64 (64-bit)	Oracle Database Server 11.2.0.4 (64-bit)

Note:

Oracle Corporation distributes Oracle Linux with the following two kernels:

- **Red Hat Compatible Kernel** – This kernel is identical to the kernel shipped in Red Hat Enterprise Linux.
- **Unbreakable Enterprise Kernel** – This kernel is based on a later Linux 2.6-series kernel, with Oracle's own enhancements for OLTP, InfiniBand, SSD disk access, NUMA-optimizations, Reliable Datagram Sockets (RDS), async I/O, OCFS2, and networking.

Oracle claims that the Unbreakable Enterprise Kernel is compatible with Red Hat Enterprise Linux, and Oracle middleware and third-party Red Hat Enterprise Linux-certified applications can be installed and run unchanged on Unbreakable Enterprise Kernel. However, for users requiring strict compatibility with Red Hat or for users running kernel modules dependent on specific kernel versions, the Red Hat Compatible Kernel offers 100% compatibility with Red Hat Enterprise Linux.

Oracle Revenue Management 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.

[1] Oracle Revenue Management and Billing is tested and certified on Oracle Linux 5.8, 6.2, 6.4 and 6.5. Oracle Linux is 100% userspace-compatible with Red Hat Enterprise Linux, and therefore Oracle Revenue Management and Billing is supported on Red Hat Enterprise Linux.

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 small non-production 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.

1.1.2 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 Revenue Management 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 Revenue Management and Billing production environment.

The exception from this rule is Hibernate Version 4.1 GA. This version should not be upgraded.

Always contact Oracle Support prior to applying vendor updates that do not guarantee backward compatibility.

1.2 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.

1.2.1 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.

1.2.2 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.

2. Installing Oracle Revenue Management and Billing Version 2.3.0.1.0 Database

This section provides the instructions for installing the Oracle Revenue Management and Billing database. This section includes:

2.1 Installation Overview

Note: Refer to the *Oracle Revenue Management and Billing Installation Guide* for the hardware and software versions required for the installation on UNIX or Windows platform.

The following types of installation are available for Oracle Revenue Management and Billing:

- Initial Install — a database with no demo data
- 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.

In the Initial Install, you will create an empty database on a UNIX or Windows database server on which you operate the production instance of Oracle Revenue Management and Billing.

In the Demo Install, you will create an empty database on a UNIX or Windows database server using the CDXDBA script.

The Oracle Revenue Management 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 `FW42020\Install-Upgrade` folder prior to initial 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 Revenue Management 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 the Demo Install section 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.

2.2 Oracle Database Installation

This section describes how to install Oracle Database for Oracle Revenue Management and Billing Version 2.3.0.1.0. It contains the following topics:

- Initial Install, or Installing Version 2.3.0.1.0 for the First Time
- Demo Install

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

2.2.1 Initial Install, or Installing Version 2.3.0.1.0 for the First Time

This section describes how to install the database components of Oracle Revenue Management and Billing. It includes the following topics:

- Copying and Decompressing Install Media
- Creating the Database
- Installing Oracle Utilities Application Framework
- Installing Oracle Revenue Management and Billing
- Post Installation Tasks

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 Revenue Management and Billing Installation Guide* for more information.

Before you begin with the installation, ensure that you have Oracle Client installed on the Windows desktop.

2.2.1.1 Copying and Decompressing Install Media

To copy and decompress the Oracle Revenue Management and Billing database:

1. Download the Oracle Revenue Management and Billing V2.3.0.1.0 Oracle Database package from the Oracle Revenue Management and Billing V2.3.0.1.0 media pack which is available on Oracle Software Delivery Cloud. A zip file is downloaded.
2. Create a temporary directory named `TEMPDIR` on your local machine.
3. Unzip the downloaded file in the `TEMPDIR` directory. The contents include two sub-folders:
   - `Demo_dump`
   - `Upgrade`
4. Browse to the `..\TEMPDIR\Upgrade` directory. It contains the `RMB_Blueprint_V23010_44526.zip` file.
5. Unzip the `RMB_Blueprint_V23010_44526.zip` file. The contents include two sub-folders:
   - `FW`
   - `RMB`

2.2.1.2 Creating the Database

Note: You must have Oracle Database Server 11.2.0.4 installed on your machine in order to create the database.

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. Login to the database as `sys` user and execute the `..\RMB\Database_Creation\Unix\11g\users.sql` file.

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 `..\RMB\Database_Creation` 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

Note: Ensure that you do not create more than one schema on a database.

Creating the Database on UNIX Using CDXDBA

The files for creating the database are located in the `../RMB/Database_Creation/Unix` directory.

Follow these steps to create a database:

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

   ```
   perl cdxdba.plx
   ```

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

Parameter	Value
Enter the instance name (DEMO)	`<ORACLE_SID>` Example: `DEMO`
Enter ORACLE_BASE: the directory where the setup files for the database will be created (/orasw/app/oracle)	`<ORACLE_BASE>` Example: `/orasw/app/oracle`
Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (/orasw/app/oracle/product/)	`<ORACLE_HOME>` Example: `/orasw/app/oracle/product/`
Enter ORACLE_DATA: the directory where the data files for the database will be created (/db05/oradata)	`<ORACLE_DATA>` Example: `/db05/oradata`
Enter the character set for the database (AL32UTF8)	`AL32UTF8`

4. Enter the required parameter values based on the settings of your database server. The following message appears confirming whether you want to create the database:

   ```
   Do you want to continue (Y/N)?
   ```

5. Enter **Y**. The database is created. The following message appears indicating whether you want to import demo dump into the database.

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

6. Enter **N** to exit the database utility.

Creating the Database on Windows Using CDXDBA

The files for creating the database are located in the `..\RMB\Database_Creation\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 `CDXDBA.exe` utility, 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. Enter **C** to create an empty database on the machine.

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

Parameter	Value
Enter the instance name (DEMO)	`<DB Name>` Example: `RMB_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>` Example: `c:\app\oracle`
Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (C:\app\product\11.2.0\dbhome_1)	`<Oracle_Home>` 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. Enter the required parameter values based on the settings of your database server. The following message appears confirming whether you want to create the database:

   ```
   Do you want to continue (Y/N)?
   ```

4. Enter **Y**. The database is created. The following options are displayed:

   ```
   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
```

5. Enter **Q** to exit the database utility.

2.2.1.3 Installing Oracle Utilities Application Framework

You need to install the following framework versions in the specified order:

1. Install Oracle Utilities Application Framework Version 4.2.0.0.0
2. Install Oracle Utilities Application Framework Version 4.2.0.2.0
3. Install Rollup Pack for Oracle Utilities Application Framework Version 4.2.0.2.0

Installing Oracle Utilities Application Framework Version 4.2.0.0.0

To install Oracle Utilities Application Framework Version 4.2.0.0.0:

1. Download the Oracle Revenue Management and Billing V2.3.0.0.0 Oracle Database package from the Oracle Revenue Management and Billing V2.3.0.0.0 media pack which is available on Oracle Software Delivery Cloud. A zip file is downloaded.
2. Create a temporary directory named `TEMP` on your local machine.
3. Unzip the downloaded file in the `TEMP` directory. The contents include two sub-folders:
   - `Demo_dump`
   - `New_Customer`
4. Browse to the `..\TEMP\New_Customer` directory. It contains the `RMB_Blueprint_V23000_37958.zip` file.
5. Unzip the `RMB_Blueprint_V23000_37958.zip` file. The contents include two sub-folders:
   - `FW`
   - `RMB`
6. Run `CdxDBI.exe` from the `..\FW\FW420\Upgrade\Oracle\Install-Upgrade` directory.

Note:

Please run the utility from the command prompt.

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

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

Parameter	Value
Name of the target database	`<DB NAME>`
Name of the owner of the database schema	`<DB_USER>` Example: `CISADM`
Password for the user (in silent mode)	`<DB_USER_PASSWORD>`

Parameter	Value
Location of Java Home	..\jdk1.6.0_20
Location of TUGBU Jar files	..\FW420\jarfiles
Oracle user with read-write privileges to the database schema	<DB_USER> Example: CISUSER
Oracle user with read-only privileges to the database schema	<DB_USER> Example: CISREAD
Oracle database role with read-write privileges to the database schema	<DB_USER_ROLE> Example: CIS_USER
Oracle database role with read-only privileges to the database schema	<DB_USER_ROLE> Example: CIS_READ

7. Enter the required parameter values. A message appears indicating that the process has been completed successfully.

Installing Oracle Utilities Application Framework Version 4.2.0.2.0

To install Oracle Utilities Application Framework Version 4.2.0.2.0:

1. Run OraDBI.exe from the ..\FW\FW42020\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.

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

Parameter	Value
Name of the target database	<DB NAME>
Name of the owner of the database schema	<DB_USER> Example: CISADM
Password for the user (in silent mode)	<DB_USER_PASSWORD>
Location of Java Home	..\jdk1.6.0_20
Location of TUGBU Jar files	..\FW\FW42020\jarfiles
Oracle user with read-write privileges to the database schema	<DB_USER> Example: CISUSER
Oracle user with read-only privileges to the database schema	<DB_USER> Example: CISREAD
Oracle database role with read-write privileges to the database schema	<DB_USER_ROLE> Example: CIS_USER

Parameter	Value
Oracle database role with read-only privileges to the database schema	<DB_USER_ROLE> Example: CIS_READ

2. Enter the required parameter values. A message appears indicating that the process has been completed successfully.

Installing Rollup Pack for Oracle Utilities Application Framework Version 4.2.0.2.0

To install the rollup pack for Oracle Utilities Application Framework Version 4.2.0.2.0:

1. Apply prerequisite Framework DB single fixes by running the CDXPatch.exe utility from the ..\FW\FW42020\FW42020-HFix47 directory.

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

Parameter	Value
Target database type (O/M/D)	O (if you have Oracle database) OR M (if you have MySQL database)
Name of the user that owns the database objects	<DB_USER> Example: CISADM
Password for the user (in silent mode)	<DB_USER_PASSWORD>
Name of the Oracle database	<DB_NAME>
Comma-separated list of Oracle users in which synonyms need to be created	<DB_USER> Example: CISUSER,CISREAD
Database role which has a read-write privilege	<DB_USER_ROLE> Example: CIS_USER
Database role which has a read only privilege	<DB_USER_ROLE> Example: CIS_READ

2. Enter the required parameter values. A message appears indicating that the process has been completed successfully.

Note:

CDXPatch.exe can be executed by selecting it from Windows explorer, or by using a command line from a DOS window. Use the "-h" option 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 Revenue Management and Billing.

2.2.1.4 Installing Oracle Revenue Management and Billing

To install Oracle Revenue Management and Billing Version 2.3.0.1.0 database:

1. Install Oracle Revenue Management and Billing Version 2.3.0.1.0
2. Install Rollup Pack for Oracle Revenue Management and Billing Version 2.3.0.1.0

Installing Oracle Revenue Management and Billing Version 2.3.0.1.0

To install Oracle Revenue Management and Billing Version 2.3.0.1.0:

1. Run `CdxDBI.exe` from the `..\RMB\Upgrade\Oracle\Install-Upgrade` directory.

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

Parameter	Value
Name of the target database	`<DB_NAME>`
Name of the owner of the database schema	`<DB_USER>` Example: `CISADM`
Password for the user (in silent mode)	`<DB_USER_PASSWORD>`
Location of Java Home	`..\jdk1.6.0_20`
Location of TUGBU Jar files	`..\RMB\jarfiles`
Oracle user with read-write privileges to the database schema	`<DB_USER>` Example: `CISUSER`
Oracle user with read-only privileges to the database schema	`<DB_USER>` Example: `CISREAD`
Oracle database role with read-write privileges to the database schema	`<DB_USER_ROLE>` Example: `CIS_USER`
Oracle database role with read-only privileges to the database schema	`<DB_USER_ROLE>` Example: `CIS_READ`

2. Enter the required parameter values. If the target database connection is established successfully, the following message appears in the command line:

   ```
   Ready to upgrade the target database from <Old_RMB_Version> to <New_RMB_Version>. Do you want to continue (Y/N)?:
   ```

3. Enter **Y** and then press **Enter**. The system checks whether the specified user name exists in the database and then reflects the metadata changes in the database. If an error occurs while upgrading the database, the same is reflected in the log file. You can find these log files in the `Install-Upgrade` folder.

Installing Rollup Pack for Oracle Revenue Management and Billing Version 2.3.0.1.0

To install the rollup pack for Oracle Revenue Management and Billing Version 2.3.0.1.0:

1. Download the Additional Rollup Pack – 2.3.0.1.0 patch (Patch Number: 19488009) from My Oracle Support. A zip file is downloaded.

2. Unzip the downloaded file in your local folder. The contents include the `readme.txt` and `Hotfix_for_Multiple_V23010.zip` files.
3. Unzip the `Hotfix_for_Multiple_V23010.zip` file. The contents include the `deploy.zip` file and a document which lists all bugs which are fixed in this rollup pack.
4. Unzip the `deploy.zip` file. The contents include two sub-folders:
    - `Classes`
    - `sql`
5. Connect to the ORMB database using any SQL client (such as SQLPlus) and the `cisadm` credentials.
6. Execute the following SQL queries from the `<DESTINATION_FOLDER_1>\sql` folder in the specified order:
    a. PKG_RMB_TFM_DISAGG.sql
    b. MetadataScriptBug19472832.sql
    c. DROP_PROCEDURE_rmb_parallel_update_sql.sql
    d. Patch_Update_1.sql
    e. Patch_Update_2.sql

Note: The `<DESTINATION_FOLDER_1>` is the location where you have extracted the contents of the `deploy.zip` file.

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.

2.2.1.5 Post Installation Tasks

Once you install the Oracle Revenue Management and Billing Version 2.3.0.1.0 database, you need to do the following:

1. Execute the `postblueprintscript.sql` Query
2. Enable USER_LOCK Package
3. Grant Permissions to the DBMS_LOCK Package and Recompile Database Objects
4. Generate Database Statistics
5. Environment Registration

Executing the PostBlueprintScript.sql Query

The `PostBlueprintScript.sql` query drops the following tables and recreates them with increased initrans values:

- CI_TXN_DETAIL
- CI_TXN_DTL_PRITM
- CI_TXN_DTL_PRITM_SUMMARY
- CI_PRICEITEM_PARM_GRP_K
- CI_BCHG_SQ
- CI_BILL_CHG
- CI_TXN_DETAIL_STG
- CI_TXN_DTL_PRITM_STG
- CI_ROLLBACK_TXN_DETAIL

At present, the table initrans value is set to 50, whereas the index intrans value is set to 100. You can change the intrans value, but ensure that the table initrans value does not exceed 50 and the index intrans value does not exceed 100.

In addition, this SQL query partitions the following two tables based on the CURR_SYS_PRCS_DT primary key. At present, the partitioning interval is set to daily. You can change the partitioning interval, if required. The partitioning interval may vary depending on the volume of transactions. In general, each partition can hold around 50 million rows.

Table Name	Column Used for Partitioning
CI_TXN_DETAIL	CURR_SYS_PRCS_DT
CI_TXN_DTL_PRITM	CURR_SYS_PRCS_DT

To execute the `PostBlueprintScript.sql` query:

1. Connect to the ORMB database using any SQL client (such as Oracle SQL Developer or PL/SQL Developer) and the `cisadm` credentials.

Note: Ensure that the default tablespace for the CISADM user is appropriately set. The objects will be created by the postblueprintscript.sql query in the default tablespace of CISADM.

2. Execute the `PostBlueprintScript.sql` query from the `..\RMB\Upgrade\Oracle\Install-Upgrade` folder.

Enable USER_LOCK Package

To enable inbound web services, you must grant permissions to the USER_LOCK package. This is a one-time activity. To grant permissions to the USER_LOCK package:

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;
   ```

Note: You can also grant permission to a specific database user (for example, CISADM or CISUSER) instead of granting permissions to all database users.

Grant Permissions to the DBMS_LOCK Package and Recompile Database Objects

To grant permissions to the DBMS_LOCK package, execute the following commands:

UNIX:

```
export ORACLE_SID=[DB_NAME]
sqlplus /nolog
conn sys as sysdba
```

Note: On executing the above command, you will be prompted to enter the SYS user password.

```
grant EXECUTE, DEBUG on DBMS_LOCK to CISADM;
ALTER FUNCTION CISADM.FN_GET_PRICE_PARM_INFO_STRING COMPILE;
ALTER FUNCTION CISADM.GETMAXTXNID COMPILE;
ALTER FUNCTION CISADM.GETMAXTXNID_SQ COMPILE;
ALTER FUNCTION CISADM.GET_INVOICE_CONST_BILL_ACCOUNT COMPILE;
ALTER PROCEDURE CISADM.GETMAXID_SQ_PRC COMPILE;
ALTER PROCEDURE CISADM.RMB_BK_VMA_PRICASSGN COMPILE;
ALTER PROCEDURE CISADM.RMB_PARALLEL_UPDATE_SQL COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_MULTI_PARM_PRICE_AGG COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_TFM_DISAGG COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_PRICEASSIGN COMPILE;
grant EXECUTE on CISADM.PKG_RMB_MULTI_PARM_PRICE_AGG to CISADM;
```

Note: These commands should be executed using Oracle SQL Developer.

Windows:

```
set ORACLE_SID=[DB_NAME]
sqlplus /nolog
conn sys as sysdba
```


Note: On executing the above command, you will be prompted to enter the `SYS` user password.

```
grant EXECUTE, DEBUG on DBMS_LOCK to CISADM;
ALTER FUNCTION CISADM.FN_GET_PRICE_PARM_INFO_STRING COMPILE;
ALTER FUNCTION CISADM.GETMAXTXNID COMPILE;
ALTER FUNCTION CISADM.GETMAXTXNID_SQ COMPILE;
ALTER FUNCTION CISADM.GET_INVOICE_CONST_BILL_ACCOUNT COMPILE;
ALTER PROCEDURE CISADM.GETMAXID_SQ_PRC COMPILE;
ALTER PROCEDURE CISADM.RMB_BK_VMA_PRICASSGN COMPILE;
ALTER PROCEDURE CISADM.RMB_PARALLEL_UPDATE_SQL COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_MULTI_PARM_PRICE_AGG COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_TFM_DISAGG COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_PRICEASSIGN COMPILE;
grant EXECUTE on CISADM.PKG_RMB_MULTI_PARM_PRICE_AGG to CISADM;
```

Note: These commands should be executed using Oracle SQL Developer.

Generating Database Statistics

During the installation process, new database objects may be added to the target database. Before you use the target database, we recommend you to gather statistics for the database objects. You can gather the statistics for any table using the following statement:

```
BEGIN
DBMS_STATS.GATHER_TABLE_STATS(OWNNAME=>'CISADM',      TABNAME=>'<Table_Name>',
GRANULARITY=>'ALL', CASCADE=>TRUE, METHOD_OPT=> 'FOR ALL COLUMNS SIZE AUTO',
DEGREE=>32);
```

END;

You can also gather schema level statistics using the following statement:

```
BEGIN
DBMS_STATS.GATHER_SCHEMA_STATS(OWNNAME=>'CISADM',     METHOD_OPT=>'FOR     ALL
COLUMNS SIZE AUTO', GRANULARITY=>'ALL', CASCADE=>TRUE, DEGREE=>16;
END;
```

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 Revenue Management and Billing user documentation. Please refer to this documentation before executing the environment registration utility `EnvSetup.exe` included in the post-install folder.

2.2.2 Demo Install

This section describes how to install the demo database components of Oracle Revenue Management and Billing. It includes the following topics:

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

2.2.2.1 Copying and Decompressing Install Media

To copy and decompress the Oracle Revenue Management and Billing database:

1. Download the Oracle Revenue Management and Billing V2.3.0.1.0 Oracle Database package from the Oracle Revenue Management and Billing V2.3.0.1.0 media pack which is available on Oracle Software Delivery Cloud. A zip file is downloaded.
2. Unzip the downloaded file in the `TEMPDIR` directory. The contents include two sub-folders:
   - `Demo_dump`
   - `Upgrade`
3. Browse to the `..\TEMPDIR\Upgrade` directory. It contains the `RMB_Blueprint_V23010_44526.zip` file.
4. Unzip the `RMB_Blueprint_V23010_44526.zip` file. The contents include two sub-folders:
   - `FW`
   - `RMB`

2.2.2.2 Creating the Database and Importing Dump File

Note: You must have Oracle Database Server 11.2.0.4 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.

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 `../RMB/Database_Creation/Unix` directory.

Follow these steps to create a database:

1. FTP the contents of the `Database_Creation` folder to a temporary directory on the UNIX server.
2. To create the database, set the ORACLE_HOME and ORACLE_BASE variables.

3. Execute the `cdxdba.plx` utility using the following command:

   ```
   perl cdxdba.plx
   ```

Note: Ensure that you do not create more than one schema on a database.

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

Parameter	Value
Enter the instance name (DEMO)	<ORACLE_SID> Example: DEMO
Enter ORACLE_BASE: the directory where the setup files for the database will be created (/orasw/app/oracle)	<ORACLE_BASE> Example: /orasw/app/oracle
Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (/orasw/app/oracle/product/)	<ORACLE_HOME> Example: /orasw/app/oracle/product/
Enter ORACLE_DATA: the directory where the data files for the database will be created (/db05/oradata)	<ORACLE_DATA> Example: /db05/oradata
Enter the character set for the database (AL32UTF8)	AL32UTF8

4. Enter the required parameter values based on the settings of your database server. The following message appears confirming whether you want to create the database:

   ```
   Do you want to continue (Y/N)?
   ```

5. Enter **Y**. The database is created. The following message appears indicating whether you want to import demo dump into the database.

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

6. Enter **Y** to import a demo database dump into the database. The utility prompts you to enter values for the following parameters:

Parameter	Value
Enter the name of the dump file (demo_dump.dmp)	demo_dump.dmp
Enter the name of the dump file directory (data_pump_dir)	data_pump_dir
Enter the name of the log file (demo_dump.log)	demo_dump.log

7. Enter the parameter values as mentioned in the above table. The following message appears confirming whether you want to import the schema into the database:

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

8. Enter **Y** and then press **Enter**.

Note:

For the demo install, use the dump file named demo_dump.dmp. It is available in the `..\TEMPDIR\Demo_dump` directory.

The demo data dump will work only on 11g database and not on 10g database.

Before you import the demo dump, ensure that the `data_pump_dir` directory exists in the database. Then, copy the `demo_dump.dmp` file from the `..\TEMPDIR\Demo_dump` directory to the `data_pump_dir` directory.

You must ignore the following error while refreshing the schema:

```
purge dba_recyclebin
*
ERROR at line 1:
ORA-01031: insufficient privileges


purge dba_recyclebin
*
ERROR at line 1:
ORA-01031: insufficient privileges
```

9. 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.

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

1. Create a tablespace named CISTS_01.
2. Log in to the database as `sys` user and execute the `..\RMB\Database_Creation\Unix\11g\users.sql` to create the product users.
3. Create a database directory named 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=demo_dump.dmp logfile=demo_dump.log
   schemas=CISADM
   ```

Creating the Demo Database on Windows

The files for creating the database are located in the `..\RMB\Database_Creation\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. Run the `CDXDBA.exe` utility located in the `Windows` folder.

   The utility will display a list with the following options:

   ```
   E - Export a schema from the database
   R - Refresh a schema with a database dump.
   ```



```
C - Create/Recreate a local database.
H - See help for the command line options
Q - Quit
```

Note: Ensure that you do not create more than one schema on a database.

2. Enter **C** to create an empty database on the machine.

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

Parameter	Value
Enter the instance name (DEMO)	<DB Name> Example: RMB_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> Example: c:\app\oracle
Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (C:\app\product\11.2.0\dbhome_1)	<Oracle_Home> 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. Enter the required parameter values based on the settings of your database server. The following message appears confirming whether you want to create the database:

   ```
   Do you want to continue (Y/N)?
   ```

4. Enter **Y**. The database is created. The following options are displayed:

   ```
   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
   ```

5. Enter **R** to refresh the schema with the demo database dump. The utility prompts you to enter values for the following parameters:

Parameter	Value
Enter the instance name (DEMO)	<DB Name> Example: RMB_DB
Is it a LOCAL database (exists on the same machine) (Y/N)	Y or N
Enter the name of the Oracle account that owns that application schema (cisadm)	CISADM

Parameter	Value
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)	demo_dump.dmp
Enter the name of the log file (imp_demo.log)	demo_dump.log

6. Enter the parameter values as mentioned in the above table. The utility drops all objects from the schema and imports the schema from the database dump file.

Note:

For the demo install, use the dump file named demo_dump.dmp. It is available in the ..\TEMPDIR\Demo_dump directory.

The demo data dump will work only on 11g database and not on 10g database.

Before you import the demo dump, ensure that the data_pump_dir directory exists in the database. Then, copy the demo_dump.dmp file from the ..\TEMPDIR\Demo_dump directory to the data_pump_dir directory.

You must ignore the following error while refreshing the schema:

```
purge dba_recyclebin
*
ERROR at line 1:
ORA-01031: insufficient privileges


purge dba_recyclebin
*
ERROR at line 1:
ORA-01031: insufficient privileges
```

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

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

1. Create a tablespace named CISTS_01.
2. Log in to the database as `sys` user and execute the `..\RMB\Database_Creation\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=demo_dump.dmp logfile=demo_dump.log
schemas=CISADM
```

2.2.2.3 Post Demo Database Creation Tasks

Once you create the demo database, you need to do the following:

1. Install Rollup Pack for Oracle Revenue Management and Billing Version 2.3.0.1.0
2. Execute the `postblueprintscript.sql` Query
3. Enable USER_LOCK Package
4. Grant Permissions to the DBMS_LOCK Package and Recompile Database Objects
5. Generate Database Statistics
6. Environment Registration

Installing Rollup Pack for Oracle Revenue Management and Billing Version 2.3.0.1.0

To install the rollup pack for Oracle Revenue Management and Billing Version 2.3.0.1.0:

1. Download the Additional Rollup Pack – 2.3.0.1.0 patch (Patch Number: 19488009) from My Oracle Support. A zip file is downloaded.
2. Unzip the downloaded file in your local folder. The contents include the `readme.txt` and `Hotfix_for_Multiple_V23010.zip` files.
3. Unzip the `Hotfix_for_Multiple_V23010.zip` file. The contents include the `deploy.zip` file and a document which lists all bugs which are fixed in this rollup pack.
4. Unzip the `deploy.zip` file. The contents include two sub-folders:
   - `Classes`
   - `sql`
5. Connect to the ORMB database using any SQL client (such as SQLPlus) and the `cisadm` credentials.
6. Execute the following SQL queries from the `<DESTINATION_FOLDER_1>\sql` folder in the specified order:
   a. PKG_RMB_TFM_DISAGG.sql
   b. MetadataScriptBug19472832.sql
   c. DROP_PROCEDURE_rmb_parallel_update_sql.sql
   d. Patch_Update_1.sql
   e. Patch_Update_2.sql

Note: The `<DESTINATION_FOLDER_1>` is the location where you have extracted the contents of the `deploy.zip` file.

Executing the PostBlueprintScript.sql Query

The `PostBlueprintScript.sql` query drops the following tables and recreates them with increased initrans values:

- CI_TXN_DETAIL

- CI_TXN_DTL_PRITM
- CI_TXN_DTL_PRITM_SUMMARY
- CI_PRICEITEM_PARM_GRP_K
- CI_BCHG_SQ
- CI_BILL_CHG
- CI_TXN_DETAIL_STG
- CI_TXN_DTL_PRITM_STG
- CI_ROLLBACK_TXN_DETAIL

At present, the table initrans value is set to 50, whereas the index intrans value is set to 100. You can change the intrans value, but ensure that the table initrans value does not exceed 50 and the index intrans value does not exceed 100.

In addition, this SQL query partitions the following two tables based on the CURR_SYS_PRCS_DT primary key. At present, the partitioning interval is set to daily. You can change the partitioning interval, if required. The partitioning interval may vary depending on the volume of transactions. In general, each partition can hold around 50 million rows.

Table Name	Column Used for Partitioning
CI_TXN_DETAIL	CURR_SYS_PRCS_DT
CI_TXN_DTL_PRITM	CURR_SYS_PRCS_DT

To execute the `PostBlueprintScript.sql` query:

1. Connect to the ORMB database using any SQL client (such as Oracle SQL Developer or PL/SQL Developer) and the `cisadm` credentials.

Note: Ensure that the default tablespace for the CISADM user is appropriately set. The objects will be created by the postblueprintscript.sql query in the default tablespace of CISADM.

2. Execute the `PostBlueprintScript.sql` query from the `..\RMB\Upgrade\Oracle\Install-Upgrade` folder.

Enable USER_LOCK Package

To enable inbound web services, you must grant permissions to the USER_LOCK package. This is a one-time activity. To grant permissions to the USER_LOCK package:

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;
```

Note: You can also grant permission to a specific database user (for example, CISADM or CISUSER) instead of granting permissions to all database users.

Grant Permissions to the DBMS_LOCK Package and Recompile Database Objects

To grant permissions to the DBMS_LOCK package, execute the following commands:

UNIX:

```
export ORACLE_SID=[DB_NAME]
sqlplus /nolog
conn sys as sysdba
```

Note: On executing the above command, you will be prompted to enter the SYS user password.

```
grant EXECUTE, DEBUG on DBMS_LOCK to CISADM;
ALTER FUNCTION CISADM.FN_GET_PRICE_PARM_INFO_STRING COMPILE;
ALTER FUNCTION CISADM.GETMAXTXNID COMPILE;
ALTER FUNCTION CISADM.GETMAXTXNID_SQ COMPILE;
ALTER FUNCTION CISADM.GET_INVOICE_CONST_BILL_ACCOUNT COMPILE;
ALTER PROCEDURE CISADM.GETMAXID_SQ_PRC COMPILE;
ALTER PROCEDURE CISADM.RMB_BK_VMA_PRICASSGN COMPILE;
ALTER PROCEDURE CISADM.RMB_PARALLEL_UPDATE_SQL COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_MULTI_PARM_PRICE_AGG COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_TFM_DISAGG COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_PRICEASSIGN COMPILE;
grant EXECUTE on CISADM.PKG_RMB_MULTI_PARM_PRICE_AGG to CISADM;
```

Note: These commands should be executed using Oracle SQL Developer.

Windows:

```
set ORACLE_SID=[DB_NAME]
sqlplus /nolog
conn sys as sysdba
```

Note: On executing the above command, you will be prompted to enter the SYS user password.

```
grant EXECUTE, DEBUG on DBMS_LOCK to CISADM;
ALTER FUNCTION CISADM.FN_GET_PRICE_PARM_INFO_STRING COMPILE;
ALTER FUNCTION CISADM.GETMAXTXNID COMPILE;
ALTER FUNCTION CISADM.GETMAXTXNID_SQ COMPILE;
ALTER FUNCTION CISADM.GET_INVOICE_CONST_BILL_ACCOUNT COMPILE;
ALTER PROCEDURE CISADM.GETMAXID_SQ_PRC COMPILE;
ALTER PROCEDURE CISADM.RMB_BK_VMA_PRICASSGN COMPILE;
ALTER PROCEDURE CISADM.RMB_PARALLEL_UPDATE_SQL COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_MULTI_PARM_PRICE_AGG COMPILE;
```

```
ALTER PACKAGE CISADM.PKG_RMB_TFM_DISAGG COMPILE;
ALTER PACKAGE CISADM.PKG_RMB_PRICEASSIGN COMPILE;
grant EXECUTE on CISADM.PKG_RMB_MULTI_PARM_PRICE_AGG to CISADM;
```

Note: These commands should be executed using Oracle SQL Developer.

Generating Database Statistics

During the installation process, new database objects may be added to the target database. Before you use the target database, we recommend you to gather statistics for the database objects. You can gather the statistics for any table using the following statement:

```
BEGIN
DBMS_STATS.GATHER_TABLE_STATS(OWNNAME=>'CISADM',      TABNAME=>'<Table_Name>',
GRANULARITY=>'ALL', CASCADE=>TRUE, METHOD_OPT=> 'FOR ALL COLUMNS SIZE AUTO',
DEGREE=>32);
```

END;

You can also gather schema level statistics using the following statement:

```
BEGIN
DBMS_STATS.GATHER_SCHEMA_STATS(OWNNAME=>'CISADM',     METHOD_OPT=>'FOR     ALL
COLUMNS SIZE AUTO', GRANULARITY=>'ALL', CASCADE=>TRUE, DEGREE=>16;
END;
```

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 Revenue Management and Billing user documentation. Please refer to this documentation before executing the environment registration utility `EnvSetup.exe` included in the post-install folder.

2.2.2.4 Configuring Security

The configuration utility and scripts are located in the `..\RMB\Security` folder. To configure security, follow these steps:

1. Execute the `OraGenSec.exe` utility.

Note: Database vault must be disabled before running.

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

Parameter	Value
Name of the owner of the database schema	`<DB_USER>` Example: `CISADM`
Password for the user (in silent mode)	`<DB_USER_PASSWORD>` Example: `CISADM`

Parameter	Value
Name of the Oracle database	<DB_NAME>
Comma-separated list of Oracle users in which synonyms need to be created	<DB_USER> Example: CISUSER,CISREAD

2. Enter the required parameter values. The following message appears in the command line:

   (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)

   (F/f): Generate security for specific objects generated from an input File? (e.g. Security_Objects.txt)

3. Enter **A** to generate security for all objects in the database, and then press **Enter**. A message appears indicating that the database connection is established and security is defined for all objects in the database.

Note:

If you run Oragensec in the Interactive Mode (i.e. 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]I[Schema OwnerIs Password]I[Database Name] -u [Read/Write User]I[Read Only User] -r [Read Only Role]I[Read Write Role] -a A -l [Logfile Name)

3. Database Design

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

- Database Object Standard
- Column Data Type and Constraints
- Standard Columns

3.1 Database Object Standard

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

3.1.1 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 the Indexes section for more information.

3.1.2 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.

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.

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 W1, W2, 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 W1, W2, 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 W1, W2, 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.

3.2 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.

3.2.1 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.

3.2.2 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.

3.2.3 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.

3.2.4 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.

3.2.5 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.

3.2.6 Null Column Support

Oracle Utilities Application Framework 4.1.0, Group Fix 2 and later versions support null 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.

3.2.7 XML Type Support

Oracle Utilities Application Framework Version 4.2.0.0.0 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.

3.2.8 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.

3.2.9 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.

3.2.10 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.

3.2.11 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.

3.3 Standard Columns

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

3.3.1 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.

3.4 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).

4. Database Implementation Guidelines

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

- Configuration Guidelines

4.1 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 the following topics:

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

4.1.1 Index

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

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

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

4.1.2 Temporary and Undo Tablespace

To begin with, we recommend you to set the temporary tablespace to at least 100GB auto extendable till 200GB and the undo tablespace to at least 100GB auto extendable till 300GB. The upper limit of both the tablespaces will vary as per the volume of the data and preferred chunk size of the batch.

4.1.3 Table Partitioning

You can partition the following tables based on the CURR_SYS_PRCS_DT primary key:

- CI_TXN_DETAIL
- CI_TXN_DTL_PRITM

To partition these two tables, you need to execute the `postblueprintscript.sql` query which is available in the `..\RMB\Upgrade\Oracle\Install-Upgrade` directory. For more information, refer to the Execute the `PostBlueprintScript.sql` Query section.

Note: When you execute the **Transaction Validation and Initial Product Determination (C1-TXNIP)** batch on different dates, a partition is created for each date on the table. For example, when you execute the **Transaction Validation and Initial Product Determination (C1-TXNIP)** batch on 1st Aug, 2nd Aug, and 3rd Aug, three partitions are created on the table – one for the respective date. But, when you execute the **Transaction Validation and Initial Product Determination (C1-TXNIP)** batch multiple times (with same and different division and/or parameters) on the same date, the processed data will be on the same partition. All other aggregation batches (such as, C1-TXNVP, C1-TXNEX, C1-TXNSQ, C1-TXNCM, and C1-TXNCU) will refer to one or more table partitions and process the data accordingly. If you are executing all batches on 1st Aug, each batch will refer to the 1st Aug partition on the table. But, if you are executing the **Transaction Validation and Initial Product Determination (C1-TXNIP)** batch on 1st Aug, 2nd Aug, and 3rd Aug and the **Product Pricing Verification (C1-TXNVP)** batch on 3rd Aug, then the C1-TXNVP batch will process the data available on three partitions - 1st Aug, 2nd Aug, and 3rd Aug. This means that each batch will refer to a range of partitions whose data is not yet processed. For more information about these batches, refer to *Oracle Revenue Management and Billing Banking User Manual*.

Before you partition any product tables, consult with Oracle Support, Oracle Partner, or Oracle Consulting that may be supporting your implementation process.

4.1.4 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.

4.1.5 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.

4.1.5.1 Exadata Hardware

For Exadata hardware, the compression recommendations are:

- For high volumes 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.

4.1.5.2 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.

4.1.5.3 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.

4.1.6 Database Vault Recommendations

We support Database Vault from the Oracle Utilities Application Framework 4.2.0.0.0. All non-application User IDs can be prevented from using DDL or DML statements against the application schema. So SYS and SYSTEM cannot issue DDL or DML statements against `CISADM` schema. The application-specific administration account can issue DDL statements but should not be able to perform

any DML or DCL statements. Application user must be given DML only permissions. Database Vault can be used to control access during patch process and Install/Upgrade process. Configuration is also supported beginning with the Oracle Utilities Application Framework 4.2.0.0.0 patch application with Database Vault.

4.1.7 Oracle Fuzzy Search Support

Oracle Utilities Application Framework Version 4.2.0.0.0 onwards 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>i

GRANT EXECUTE ON CTX_DDL TO <Application schema owner e.g CISADM>i 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 (Isync (on commit)I)i

begin

ctx_ddl.sync_index('Application schema owner e.g

CISADM>.<Index_Name>')i

end

/
```

4.1.8 Information Lifecycle Management (ILM) and Data Archiving Support

Oracle Utilities Application Framework Version 4.2.0.2.0 provides support for Data Archiving based on Information Lifecycle Management (ILM).

Information Lifecycle Management is a methodology designed to manage data over its lifecycle. The implementation of ILM involves Oracle Utilities Application Framework based processes for high volume transactional objects. These processes evaluate eligible historical records and mark them eligible/not-eligible for archiving. Records marked eligible for archiving can then be migrated to lower cost storage or archived without compromising referential integrity in the production database. These processes are highly customizable in order to cater to an implementation's particular requirements.

Detailed guidelines for setting up the configuration to support Information Lifecycle Management are outlined in the white paper "Information Lifecycle Management (ILM) and Data Archiving Solution for Oracle Revenue Management and Billing" and can be downloaded from My Oracle Support. The whitepaper also includes best practices for the initial setup and ongoing maintenance of the information lifecycle management based solution.

4.1.9 Storage Recommendations

This section specifies recommended options for storing the database objects.

4.1.9.1 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 the Database Syntax section for more information on SecureFiles.

4.1.10 Database Configuration Recommendations

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

4.1.10.1 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.

We recommend you to set the redo log file size to at least 4GB or more depending on the volume of transactions. This will help you to ensure that there are not more than 5 to 6 log switches per hour.

4.1.11 Database Syntax

4.1.11.1 SecureFile

```
CREATE TABLE <Table_Name>
( COLUMNl _.I
COLUMN2 (CLOB)
)
LOB(COLUMN2) STORE AS SECUREFILE (CACHE COMPRESS)i

CREATE TABLE <Table_Name> ( COLUMNl _.I
COLUMN2 (CLOB)
CONTRAINT <> PRIMARY KEY(_)
)
ORGANIZATION INDEX PCTTHRESHOLD 50 OVERFLOW
LOB(COLUMN2) STORE AS SECUREFILE (ENABLE STORAGE IN ROW CHUNK CACHE COMPRESS)i
```

4.1.12 Database Initialization Parameters

This section recommends value for each parameter in the `init.ora` file. These parameters are a starting point for database tuning. The actual or optimal value for a production environment may differ from one deployment to another.

The following recommendations must be treated as guidelines and not as the actual values:

Parameter	Recommended Value
MEMORY_MAX_TARGET	60-70% of total available RAM on the node
MEMORY_TARGET	Value should be less than or equal to the value set for the MEMORY_MAX_TARGET parameter and at the same time it should be greater than or equal to the sum of SGA_TARGET and PGA_AGGREGATE_TARGET
SGA_TARGET	50-70% of the value defined for the MEMORY_TARGET parameter
SGA_MAX_SIZE	70-80% of the value defined for the MEMORY_MAX_TARGET parameter
DB_CACHE_SIZE	4GB
PGA_AGGREGATE_TARGET	2GB
STATISTICS_LEVEL	TYPICAL or ALL **Note:** This parameter is mandatory when you want to use automatic memory management.

Parameter	Recommended Value
OPTIMIZER_INDEX_COST_ADJ	100 **Note:** The value for this parameter should not be changed because it can drastically degrade the batch performance.
OPTIMIZER_INDEX_CACHING	0 **Note:** The value for this parameter should not be changed because it can drastically degrade the batch performance.
DB_BLOCK_SIZE	8192
LOG_CHECKPOINT_INTERVAL	0
DB_FILE_MULTIBLOCK_READ_COUNT	8
TRANSACTIONS	3000
OPEN_CURSORS	30000
DB_WRITER_PROCESSES	10 **Note:** The value for this parameter must be within the range of 1 to 20. Ideally, it must be set to 1 or CPU_COUNT/8, whichever is greater.
DB_FILES	1024
DBWR_IO_SLAVES	10 **Note:** You must set this parameter to a nonzero value only when the system does not support asynchronous IO.
SESSIONS	4500
PROCESSES	3000
DML_LOCKS	48600
_B_TREE_BITMAP_PLANS	FALSE
SESSION_CACHED_CURSORS	500

For example, we recommend you to specify the following values when 100GB of RAM is available on the node:

MEMORY_MAX_TARGET = 70G

MEMORY_TARGET = 50G

SGA_TARGET = 40G

SGA_MAX_SIZE = 50G

DB_CACHE_SIZE = 4G

PGA_AGGREGATE_TARGET = 2G

STATISTICS_LEVEL=TYPICAL

4.1.13 Shrink Tables

A large number of rows are inserted and then deleted from the following three tables:

- CI_TXN_DTL_PRITM_SUMMARY
- CI_TXN_DETAIL_STG
- CI_ROLLBACK_TXN_DETAIL

Therefore, these tables need to be shrunk periodically. To shrink these tables, execute the following statements using any SQL client:

```
ALTER TABLE CI_TXN_DTL_PRITM_SUMMARY ENABLE ROW MOVEMENT;

ALTER TABLE CI_TXN_DTL_PRITM_SUMMARY SHRINK SPACE CASCADE;

ALTER TABLE CI_TXN_DETAIL_STG ENABLE ROW MOVEMENT;

ALTER TABLE CI_TXN_DETAIL_STG SHRINK SPACE CASCADE;

ALTER TABLE CI_ROLLBACK_TXN_DETAIL ENABLE ROW MOVEMENT;

ALTER TABLE CI_ROLLBACK_TXN_DETAIL SHRINK SPACE CASCADE;
```

You can execute these statements either manually or through a batch process which is configured to run at regular interval.

Note: Shrink operations can be performed only on segments in locally managed tablespaces with Automatic Segment Space Management (ASSM).

Once the above statements are executed, you must gather statistics using the following statements:

```
BEGIN

DBMS_STATS.GATHER_TABLE_STATS(OWNNAME=>'CISADM',
TABNAME=>'CI_TXN_DTL_PRITM_SUMMARY',     GRANULARITY=>'ALL',     CASCADE=>TRUE,
METHOD_OPT=>'FOR ALL COLUMNS SIZE AUTO', DEGREE=>32);

DBMS_STATS.GATHER_TABLE_STATS(OWNNAME=>'CISADM',
TABNAME=>'CI_TXN_DETAIL_STG',                GRANULARITY=>'ALL',CASCADE=>TRUE,
METHOD_OPT=>'FOR ALL COLUMNS SIZE AUTO', DEGREE=>32);

DBMS_STATS.GATHER_TABLE_STATS(OWNNAME=>'CISADM',
TABNAME=>'CI_ROLLBACK_TXN_DETAIL',      GRANULARITY=>'ALL',      CASCADE=>TRUE,
METHOD_OPT=>'FOR ALL COLUMNS SIZE AUTO', DEGREE=>32);

END;
```


5. Conversion Tools

This section describes the following database conversion tools:

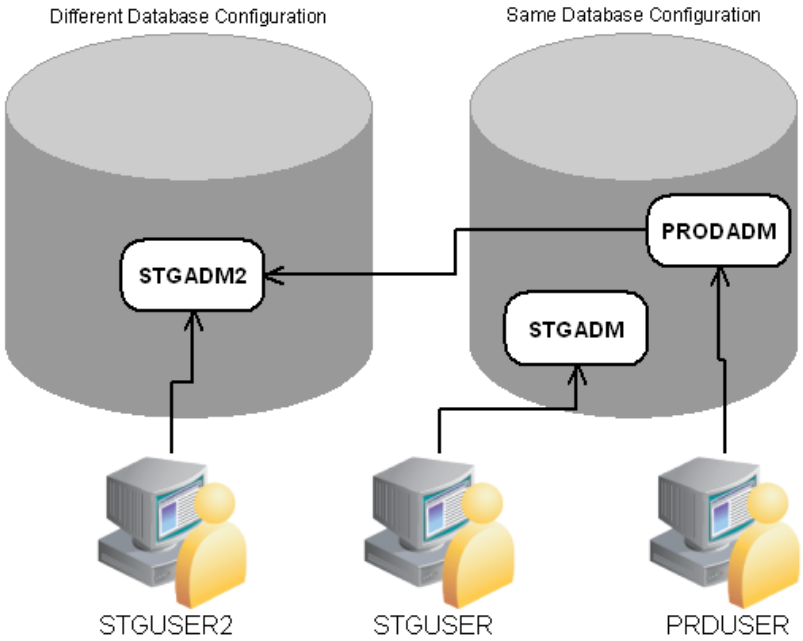
- Database Configuration
- Script Installation
- Preparing the Production Database
- Preparing the Staging Database

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.

5.1 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.

5.2 Script Installation

The Conversion Setup utility, `ConvSetup.exe`, is provided in this release of Oracle Revenue Management 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.

5.3 Preparing the Production Database

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

5.4 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 the `ConvSetup.exe` utility from the `..\RMB\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.

The `ConvSetup.exe` utility 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 : New Objects in the Oracle Revenue Management and Billing V2.3.0.1.0 Database

This section lists the objects that are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database. These objects are classified under the following two sections:

- Schema Changes
- New System Data

A.1 Schema Changes

This section lists schema related changes made in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

A.1.1 New Tables

The following tables are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database:

Table Name	Description
CI_LOGICAL_DAY	Logical Day
CI_BATCH_NOTIFIER	Batch Notifier
CI_BATCH_RUN_CNTRL	Batch Run Control
CI_BATCH_RUN_SEQUENCE	Batch Run Sequence
CI_PRC_AGRD	Agreed Pricing Table
CI_PRC_INH_PL	Pricing Inherited Price List Table
CI_PRC_PL	Price List Pricing Table
CI_DISAGG_BCHG_DETAIL	Aggregated Billable Charges Identified for Disaggregation
CI_DISAGG_TXN_PRITM_DETAIL	Transaction Legs Identified for Disaggregation
CI_ROLLBACK_TXN_DETAIL	Transaction Detail
CI_TXN_DETAIL_STG	Transaction Detail Staging
CI_TXN_DTL_PRITM_STG	Transaction Detail Price Item Staging

A.1.2 Dropped Tables

The following tables are dropped from the Oracle Revenue Management and Billing V2.3.0.1.0 database:

Table Name	Description
CI_TXN_PRITM_PARM_DTL	Price Item Param Detail

A.1.3 Unsupported Tables

None

A.1.4 Added Columns

The following columns are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database:

Table	Column	Description	Required
CI_BCHG_HSTG	BATCH_CD	Batch Control	N
	BATCH_NBR	Batch Number	N
	BATCH_RERUN_NBR	Batch Rerun Number	N
CI_TXN_DETAIL	DISAGG_SW	Disaggregation Switch	N
	DISAGG_CNT	Disaggregated count	N
	PROCESSING_DT	Txn Processing Date	N
	CURR_SYS_PRCS_DT	Current Txn Processing Date	Y
	LAST_SYS_PRCS_DT	Last System Processing Date	Y
CI_TXN_DTL_PRITM	TXN_PRITM_STATUS_CD	Transaction Price Item Status Code	N
	IS_DISAGG	Is Disaggregated	N
	PROCESSING_DT	Txn Processing Date	N
	ORG_DIVISION	Original Division	N
	CURR_SYS_PRCS_DT	Current Txn Processing Date	Y
	LAST_SYS_PRCS_DT	Last System Processing Date	Y
CI_PRICEITEM_PARM_GRP_K	PARM_STR	Delimiter Separated Parameter Code and Value String	N
CI_TXN_DISAGG_REQ	REQUEST_SRC	Request Source	N

A.1.5 Unsupported Table Columns

None

A.1.6 Column Format Change

The format of the following columns is changed in the Oracle Revenue Management and Billing V2.3.0.1.0 database:

Table Name	Column Name	From	To
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
CI_ADJ_APREQ	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
CI_BCHG_UP_XTYP_L	DESCR50	VARCHAR2(50)	VARCHAR2(100)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
CI_BILL_ROUTING	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	CITY_UPR	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
CI_ENRL_ADDR	ADDRESS1_UPR	VARCHAR2(64)	VARCHAR2(254)
CI_EXT_STMT_LOG	DESCRLONG	VARCHAR2(2000)	VARCHAR2(4000)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
CI_PER	COUNTY	VARCHAR2(30)	VARCHAR2(90)

Table Name	Column Name	From	To
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
	POSTAL	VARCHAR2(10)	VARCHAR2(12)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
CI_PER_ADDR	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
CI_PER_ADDR_OVRD	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
CI_PER_ADDR_SEAS	CITY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	CITY_UPR	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
CI_PREM	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)

Table Name	Column Name	From	To
	ADDRESS1_UPR	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	CITY_UPR	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
CI_PRM_ALT_ADDR	ADDRESS1_UPR	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
CI_QUOTE_RTG	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
CI_SPR_L	DESCR50	VARCHAR2(50)	VARCHAR2(100)
	ADDRESS2	VARCHAR2(64)	VARCHAR2(254)
	ADDRESS3	VARCHAR2(64)	VARCHAR2(254)
	COUNTY	VARCHAR2(30)	VARCHAR2(90)
	ADDRESS4	VARCHAR2(64)	VARCHAR2(254)
	CITY	VARCHAR2(30)	VARCHAR2(90)
CI_SS_ADDR_OVRD	ADDRESS1	VARCHAR2(64)	VARCHAR2(254)
CI_STM_CNST	DESCR50	VARCHAR2(50)	VARCHAR2(100)

A.2 New System Data

The system data is used to configure various features in Oracle Revenue Management and Billing. This section lists the system data that is newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

A.2.1 Business Object

The following business objects are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

Business Object	Description
C1_DISAG	BO for disaggregation updation

A.2.2 Application Service

The following application services are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

Application Service	Description
C1-BRD	Billed Revenue Query
C1_BRD_P	Billed Revenue

A.2.3 Business Service

The following business services are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

Business Service	Description
C1-DISAGREEGATION	Disaggregation
C1-DISAGRUPDATE	Disaggregation update
C1_RetrieveAcctNoTypes	List of Account Identifier Types
C1_RetrieveDivisions	List of Divisions on the basis of user access group
C1-RetrievePersonIdTypes	List of Person Id Types
C1_CurrencyTypeList	Valid Currency Types
C1_BillCycleTypes	Bill Cycle Types
C1_FetchDateforParm	Fetches Date Comparison For Product Parameters

A.2.4 Batch Control

The following batch controls are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

Batch Control	Description
C1-FCADH	Freeze and Complete Adhoc Bills
C1-ODBCH	Billable Charge Creation
C1-ODFU	Upload and Validate Usage Data File

Batch Control	Description
C1-IAENT	Identify Affected Transactions
C1-PDTXN	Process Non Aggregated Transactions
C1-DARSU	Update Disaggregation Request Status
C1-PNDBL	Pending Bill Generation
C1-BLGEN	Bill Segment Generation
C1-BLPPR	Bill Completion
C1-TXNRP	Refresh Pricing Batch

The following batch controls are dropped from the Oracle Revenue Management and Billing V2.3.0.1.0 database. They are no longer supported from this release onwards.

Batch Control	Description
C1-TXNDA	Transaction Feed : Disaggregation

A.2.5 Lookups

The following lookups are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

Field Name	Field Value	Description
SRC_TABLE_NAME	1	Staging Table
	2	Main Table
	3	Rollback Table
BILLABLE_CHG_ACT_CD	10	Delete
	20	Cancel
	30	Do Nothing
	40	Recalculate
TXN_ACT_CD	10	Delete
REQUEST_STATUS_TYPE_FLAG	COMP	COMPLETE
	PEN	PENDING
REQUEST_SOURCE_TYPE_FLAG	AUTO	AUTOMATIC
	BACH	BATCH
	MANL	MANUAL
CI_REQUEST_TYPE	ACC	Account
	PER	Person

A.2.6 Script

The following scripts are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

Script	Description
C1-FRZCOMP	Freeze and Complete
CI_GENERATE	Generate Bill
C1-DISADD	Disaggregation
C1_VAL_BRD	Validation Script for Billing Revenue Data Search
C1-VAL-DISAG	Disaggregation Search
C1-VAL_DISPE	Disaggregation Search

A.2.7 To Do Type

The following To Do types are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

To Do Type Code	Description
C1-FABL	TO DO Type for Adhoc Billing
C1-FCADH	TO DO Type for Freeze and Complete Adhoc bills
C1-ODFU	TO DO Type for On Demand Billing File Upload/Revalidation
C1-ODBCH	TO DO Type for billable charge creation for uploaded files

A.2.8 UI Map

The following UI maps are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

UI Map	Description
C1-DISADDUI	Add Disaggregation Request
CI_RJCT_POPUP1	Pop up message for Disaggregate All option selected
C1-BRDSearchUI	Billing Revenue Data
C1-DisagrAccount	Transaction Detail Search for status Uploaded
C1-DisagrPerson	Transaction Detail Search - Initial Product Determined

A.2.9 Zone

The following zones are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

Zone	Zone Type	Description
C1-TXNINPDST	F1-DE-QUERY	Derived Sub- Transaction M for INPD and COMP
C1-TXNIGERST	F1-DE-QUERY	Derived Sub- Transaction M for Ignore & Error
C1-TXNICSTVP	F1-DE-QUERY	Derived Sub- Transaction V for INPD & COMP
C1-TXNIESTVP	F1-DE-QUERY	Derived Sub- Transaction V for Ignore & Error
C1-PRCRSSRCH	F1-DE	Search Rate Schedule
C1_FETCHPARM	F1-DE-QUERY	Fetches and Compares Parameters While Editing Product Date
C1-DISAGR	F1-DE-MULQRY	Search
C1-DISAGRACC	F1-DE-QUERY	Account
C1-DISAGRPER	F1-DE-QUERY	Person

A.2.10 Portal

The following portals are newly added in the Oracle Revenue Management and Billing V2.3.0.1.0 database.

Portal	Description
C1_BRD_P	Billed Revenue
C1DISAGR	Disaggregation Request

Appendix B : New Objects in the Oracle Utilities Application Framework V4.2.0.2.0 Database

This section lists the objects that are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database. These objects are classified under the following two sections:

- Schema Changes
- New System Data

B.1 Schema Changes

This section lists schema related changes made in the Oracle Utilities Application Framework V4.2.0.2.0 database.

B.1.1 New Tables

None

B.1.2 New Views

None

B.1.3 Dropped Tables

None

B.1.4 Unsupported Tables

None

B.1.5 Added Columns

None

B.1.6 Dropped Columns

None

B.1.7 Unsupported Table Columns

None

B.1.8 Column Format Change

None

B.2 New System Data

The system data is used to configure various features in Oracle Revenue Management and Billing. This section lists the system data that is newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database.

B.2.1 Algorithm Type

The following algorithm types are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database:

Algorithm Type	Description
F1-BAT-LVSVC	Batch Control Level of Service for Periodic Batch Jobs
F1-LDAPPREPR	LDAP Import Callback to process data retrieved from LDAP

B.2.2 Algorithm

The following algorithms are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database:

Algorithm	Description
F1-BAT-LSDEF	Batch Level of Service Algorithm
F1-LDAPPREPR	LDAP Import Preprocess Sample Algorithm

B.2.3 Application Service

None

B.2.4 Access Mode Added to Application Service

None

B.2.5 Batch Control

None

B.2.6 Business Object

The following business objects are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database:

Business Object	Description
F1-SchemaBoolTrue	Schema Boolean True
F1-SchemaBooleanValues	Schema Boolean Values
F1-SchemaDataTypes	Field Element Data Types
F1-SchemaDefaultSysVariables	Default System Variables
F1-SchemaDefaultTypes	Default AttributeTypes
F1-SchemaDispNoneKey	Schema Display None Key
F1-SchemaDispNoneOperator	Schema Display None Operator
F1-SchemaElementSuppress	Schema Element Suppress
F1-SchemaElementVisibleOn	Schema Element Visible on
F1-SchemaFlatFieldRowValues	Flattened Field Row Values
F1-SchemaFlatRowType	Flattened Row Types
F1-SchemaListOrderBy	Schema List Order By
F1-SchemaPageActions	Schema Page Actions
F1-SchemaSearchBy	Schema Search by
F1-SchemaSectColumns	Schema Section Columns
F1-SchemaSelectKey	Schema Select Key
F1-SchemaXMLNameSpaces	Schema XML Name Spaces

B.2.7 FK Reference

The following foreign key references are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database:

FK Reference	Description
F1-MOCFL	MO CLOB Field
F1-MOTBL	Table with Search Zone
F1EX-BO	BO Option - External System

B.2.8 Lookups

The following lookups are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database:

Lookup Field Name	Field Value	Language	Description
ALG_ENTITY_FLG	F1ES	ENG	Installation – Email Service

Lookup Field Name	Field Value	Language	Description
	F1LP	ENG	Installation – Ldap Import Preprocess
	F1LS	ENG	Batch – Level of Service
EXT_SYS_TYP_FLG	F1BC	ENG	Business Intelligence Configuration
F1BC_OPT_TYP_FLG	F1D1	ENG	External Data Source Indicator 1
	F1D2	ENG	External Data Source Indicator 2
F1_BATCH_CTRL_SEVT_FLG	F1LS	ENG	Get Level of Service
F1_BATCH_LEVEL_OF _SERVICE_FLG	DISA	ENG	Disabled
	ERRO	ENG	Error
	NORM	ENG	Normal
	WARN	ENG	Warning
F1_SVC_TASK_CL_FLG	WXSS	ENG	Self-Service
INS_ALG_ENTITY_FLG	F1ES	ENG	Email Service – Validate Attachments
	F1LP	ENG	Ldap Import Preprocess
MANAG_CONTENT_TYPE_FLG	F1HT	ENG	HTML

B.2.9 Maintenance Object

None

B.2.10 Script

None

B.2.11 To do Type

None

B.2.12 Portal

None

B.2.13 Portal Zone

The following portal zones are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database:

Portal	Zone
F1_SCHEMA_BS	F1-SE-GUI
F1_SCHEMA_DA	F1-SE-GUI
F1_SCHEMA_MP	F1-SE-GUI
F1_SCHEMA_SS	F1-SE-GUI

B.2.14 UI Map

The following UI maps are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database:

Map	Description
F1-MoFldSearchFilter	Field Search by Mo Filter Area
F1-MoTblSearchFilter	Table Search by MO Filter Area
F1-SE-HideDefaultButtons	Hide Save and Cancel buttons
F1-SE-InputButtons	Apply schema node attribute changes
F1-SE-NestRowConditionalAtts	Nested Row conditional attributes
F1-SE-NestRowFlatPropsMapFr	Nested Row Flattening Attributes
F1-SE-RowConditionalAtts	Row conditional attributes
F1-SE-RowFilterFlatPropsMapFr	Row Filter Flattening Attributes
F1-SE-RowFlatPropsMapFr	Row Flattening Attributes Map Fragement

B.2.15 XAI Inbound Service

None

B.2.16 Zone Type

None

B.2.17 Zone

The following zones are newly added in the Oracle Utilities Application Framework V4.2.0.2.0 database:

Zone	Zone Type	Description
F1-MOCLBFLDS	F1-DE-QUERY	Field (Clob) Search by Maintenance Object
F1-MOTBLS	F1-DE-QUERY	Table Search by Maintenance Object
F1-RETFCONFG	F1-DE-SINGLE	Retrieve Feature Config from Feature Type
F1-ZONSRCH	F1-DE-QUERY	Zone Code/ Description
F1_TBLFLDS	F1-DE-SINGLE	Table's field search

Appendix C : Oracle Application Framework System Table Guide

This section lists the system tables owned by the Oracle Utilities Application Framework V4.2.0.1.0 and explains the data standards of the system tables. The data standards are required for the installation of Oracle Utilities Application Framework, development within the Oracle Utilities Application Framework, and the configuration and customization of Oracle Utilities products. Adhering to the data standards is a prerequisite for seamless upgrade to future releases.

This section includes:

- About the Application Framework System Tables
- System Table Standards
- Guidelines for System Table Updates
- System Table List

C.1 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.

C.2 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.

C.3 Guidelines for System Table Updates

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

C.3.1 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.

C.3.2 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.

C.3.3 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).

C.3.4 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.

C.3.5 Display Profile

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

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

C.3.6 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.

C.3.7 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).

C.3.8 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

C.3.9 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.

C.3.9.1 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 Product Name environment, Cl should prefix the new Algorithm Type code. The fields that are subject to this rule are listed in Standard Data Fields property.

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

Starting with Version 2.2 of the framework a new system data upgrade rule was introduced - Override Owner flag. If duplicate data rows (data row with same primary key values) are found at the time of upgrade, the owner flag values will get overridden. The lower level application system data will override the upper level system data. For example, F1 overrides Cl, F1&Cl 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

C.3.9.2 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

C.3.9.3 Algorithm

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

C.3.9.4 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). Revenue Management and Billing products prior to version 2.0 will continue to use CI as a prefix for the application service.
Customer Modification	None

C.3.9.5 Batch Control

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

C.3.9.6 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).

C.3.9.7 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)

C.3.9.8 Characteristics

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

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

C.3.9.9 Data Area

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

C.3.9.10 Display Icon

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

C.3.9.11 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)

C.3.9.12 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)

C.3.9.13 Lookup

Properties	Description
Tables	CI_LOOKUP_FIELD, CI_LOOKUP_VAL, CI_LOOKUP_VAL_L

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

C.3.9.14 Map

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

C.3.9.15 Managed Content

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

C.3.9.16 Messages

Properties	Description
Tables	CI_MSG_CATEGORY, CI_MSG_CATEGORY_L, CI_MSG, CI_MSG_L

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

C.3.9.17 Meta Data - Table and Field

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

C.3.9.18 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

C.3.9.19 Meta Data - Menu

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

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

C.3.9.20 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),

C.3.9.21 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

C.3.9.22 Meta Data - Work Tables

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

C.3.9.23 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

C.3.9.24 Migration Plan

Properties	Description
Tables	F1_MIGR_PLAN, F1_MIGR_PLAN_L, F1_MIGR_PLAN_INSTR, F1_MIGR_PLAN_INSTR_L, F1_MIGR_PLAN_INSTR_ALG
Standard Data Fields	Migration Plan (MIGR_PLAN_CD)
Customer Modification	None

C.3.9.25 Migration Request

Properties	Description
Tables	F1_MIGR_REQ, F1_MIGR_REQ_L, F1_MIGR_REQ_INSTR, F1_MIGR_REQ_INSTR_L, F1_MIGR_REQ_INSTR_ENTITY
Standard Data Fields	Migration Request (MIGR_REQ_CD)
Customer Modification	None

C.3.9.26 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

C.3.9.27 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).

C.3.9.28 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.

C.3.9.29 Schema

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

C.3.9.30 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

C.3.9.31 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)

C.3.9.32 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.

C.3.9.33 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)

C.3.10 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

C.4 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

Table Name	Upgrade Action	Description
CI_ALG_VER	MG	Algorithm Version
CI_APP_SVC_ACC	MG	Application Service Access Mode
CI_BATCH_CTRL	MG	Batch Control
CI_BATCH_CTRL_ALG	KP	Batch Control Algorithm
CI_BATCH_CTRL_L	MG	Batch Control Language
CI_BATCH_CTRL_P	MG	Batch Control Parameters
CI_BATCH_CTRL_P_L	MG	Batch Control Parameters Language
CI_CHAR_ENTITY	MG	Characteristic Type Entity
CI_CHAR_TYPE	MG	Characteristic Type
CI_CHAR_TYPE_L	MG	Characteristic Type Language
CI_CHAR_VAL	MG	Characteristic Type Value
CI_CHAR_VAL_L	MG	Characteristic Type Value Language
CI_CURRENCY_CD	KP	Currency Code
CI_CURRENCY_CD_L	KP	Currency Code Language
CI_DB_INSTR	KP	DB Process Instruction
CI_DB_INSTR_ALG	KP	DB Process Instruction Algorithm
CI_DB_INSTR_L	KP	DB Process Instruction Language
CI_DB_INST_OVRD	KP	DB Process Instruction Override
CI_DB_PROC	KP	DB Process
CI_DB_PROC_L	KP	DB Process Language
CI_DISP_ICON	MG	Display Icon
CI_DISP_ICON_L	MG	Display Icon Language
CI_DISP_PROF	KP	Display Profile
CI_DISP_PROF_L	KP	Display Profile Language
CI_FK_REF	MG	Foreign Key Reference
CI_FK_REF_L	MG	Foreign Key Reference Language
CI_LANGUAGE	MG	Language Code
CI_LOOKUP_FIELD	MG	Lookup Field
CI_LOOKUP_VAL	MG	Lookup Field Value
CI_LOOKUP_VAL_L	MG	Lookup Field Value Language
CI_MD_ATT_TY	RF	MD Element Attribute Type

Table Name	Upgrade Action	Description
CI_MD_AT_DTL	RF	MD Element Attribute Type Detail
CI_MD_AT_DTL_L	RF	MD Element Attribute Type Detail Language
CI_MD_CONST	MG	Constraints
CI_MD_CONST_FLD	MG	Constraint Fields
CI_MD_CTL	RF	Generator Control
CI_MD_CTL_L	RF	Generator Control Language
CI_MD_CTL_TMPL	RF	Generator Control Template
CI_MD_ELTY	RF	MD Element Type
CI_MD_ELTY_AT	RF	Element Type Attributes
CI_MD_ELTY_L	RF	Element Type Language
CI_MD_FLD	MG	Field
CI_MD_FLD_L	MG	Field Language
CI_MD_LOOKUP	RF	MD Lookup Field Value
CI_MD_LOOKUP_F	RF	MD Lookup Field
CI_MD_MENU	MG	Menu Information
CI_MD_MENU_IMOD	MG	Menu Item Module Maint
CI_MD_MENU_ITEM	MG	Menu Item
CI_MD_MENU_ITEM_L	MG	Menu Item Language
CI_MD_MENU_L	MG	Menu Language
CI_MD_MENU_LINE	MG	Menu Line
CI_MD_MENU_LINE_L	MG	Menu Line Language
CI_MD_MENU_MOD	MG	Menu Product Components
CI_MD_MO	MG	Maintenance Object
CI_MD_MO_ALG	MG	Maintenance Object Algorithm
CI_MD_MO_L	MG	Maintenance Object Language
CI_MD_MO_OPT	MG	Maintenance Object Option
CI_MD_MO_TBL	MG	Maintenance Object Table
CI_MD_MO_WRK	MG	Maintenance Object Work Tables
CI_MD_MSG	RF	MD Message
CI_MD_MSG_L	RF	MD Message Language
CI_MD_NAV	MG	Navigation Key

Table Name	Upgrade Action	Description
CI_MD_PDF	RF	Predefined Fields
CI_MD_PDF_VAL	RF	Predefined Values
CI_MD_PRG_COM	MG	Program Components
CI_MD_PRG_ELEM	MG	UI Page Elements
CI_MD_PRG_EL_AT	MG	UI Page Element Attributes
CI_MD_PRG_LOC	MG	Program Location
CI_MD_PRG_MOD	MG	Program Module
CI_MD_PRG_SEC	MG	UI Page Sections
CI_MD_PRG_SQL	MG	MD SQL Meta Data
CI_MD_PRG_TAB	MG	UI Tab Meta Data
CI_MD_PRG_VAR	MG	Program Variable
CI_MD_SO	MG	Search Object
CI_MD_SOCG	MG	Search Object Criteria Group
CI_MD_SOCG_FLD	MG	Search Object Criteria Group Field
CI_MD_SOCG_FLDAT	MG	Search Criteria Group Field Attribute
CI_MD_SOCG_L	MG	Search Object Criteria Group Language
CI_MD_SOCG_SORT	MG	Search Criteria Group Result Sort Order
CI_MD_SO_L	MG	Search Object Language
CI_MD_SO_RSFLD	MG	Search Object Result Field
CI_MD_SO_RSFLDAT	MG	Search Object Result Field Attribute
CI_MD_SRC_TYPE	RF	Source Type
CI_MD_SRC_TYPE_L	RF	Source Type Language
CI_MD_SVC	MG	MD Service
CI_MD_SVC_L	MG	MD Service Language
CI_MD_SVC_PRG	MG	MD Service Program
CI_MD_TAB_MOD	MG	UI Tab Module
CI_MD_TBL	MG	MD Table
CI_MD_TBL_FLD	MG	MD Table Field
CI_MD_TBL_FLD_L	MG	MD Table Field Language
CI_MD_TBL_L	MG	MD Table Language
CI_MD_TMPL	RF	Template

Table Name	Upgrade Action	Description
CI_MD_TMPL_ELTY	RF	Template Element Types
CI_MD_TMPL_L	RF	Template Language
CI_MD_TMPL_VAR	RF	Template Variable
CI_MD_TMPL_VAR_L	RF	Template Variable Language
CI_MD_VAR	RF	Variable
CI_MD_VAR_DTL	RF	Variable Detail
CI_MD_VAR_DTL_L	RF	Variable Detail Language
CI_MD_WRK_TBL	MG	Work Table
CI_MD_WRK_TBLFLD	MG	Work Table Field
CI_MD_WRK_TBL_L	MG	Work Table Language
CI_MSG	MG	Message
CI_MSG_CATEGORY	MG	Message Category
CI_MSG_CATEGORY_L	MG	Message Category Language
CI_MSG_L	MG	Message Language
CI_NAV_OPT	MG	Navigation Option
CI_NAV_OPT_CTXT	MG	Navigation Option Context
CI_NAV_OPT_L	MG	Navigation Option Language
CI_NAV_OPT_USG	MG	Navigation Option Usage
CI_PORTAL	MG	Portal
CI_PORTAL_L	MG	Portal Language
CI_PORTAL_ZONE	MG	Portal Zone
CI_SCR	MG	Script
CI_SCR_CRT	MG	Script Criteria
CI_SCR_CRT_GRP	MG	Script Criteria Group
CI_SCR_CRT_GRP_L	MG	Script Criteria Group Language
CI_SCR_DA	MG	Script Data Area
CI_SCR_FLD_MAP	MG	Script Field Mapping
CI_SCR_L	MG	Script Language
CI_SCR_PRMPT	MG	Script Prompt
CI_SCR_PRMPT_L	MG	Script Prompt Language
CI_SCR_STEP	MG	Script Step

Table Name	Upgrade Action	Description
CI_SCR_STEP_L	MG	Script Step Language
CI_SEQ	MG	Sequence
CI_TD_DRLKEY_TY	MG	To Do Type Drill Key
CI_TD_SRTKEY_TY	MG	To Do Type Sort Key
CI_TD_SRTKEY_TY_L	MG	To Do Type Sort Key Language
CI_TD_TYPE	MG	To Do Type
CI_TD_TYPE_L	MG	To Do Type Language
CI_USR_NAV_LINK	MG	User Favorite Links
CI_USR_PORTAL	KP	User Portal
CI_USR_ZONE	KP	User Zone
CI_XAI_ADAPTER	MG	XAI Adapter
CI_XAI_ADAPTER_L	MG	XAI Adapter Lang
CI_XAI_CLASS	MG	XAI Class
CI_XAI_CLASS_L	MG	XAI Class Language
CI_XAI_ENV_HNDL	MG	XAI Envelope Handler
CI_XAI_ENV_HNDL_L	MG	XAI Envelope Handler Language
CI_XAI_EXECUTER	RF	XAI Executer
CI_XAI_EXECUTER_L	RF	XAI Executer Language
CI_XAI_FORMAT	RF	XAI Format
CI_XAI_FORMAT_L	RF	XAI Format Language
CI_XAI_IN_SVC	MG	XAI Inbound Service
CI_XAI_IN_SVC_L	MG	XAI Inbound Service Language
CI_XAI_JNDI_SVR	KP	XAI JNDI Server
CI_XAI_JNDI_SVR_L	KP	XAI JNDI Server Language
CI_XAI_OPTION	KP	XAI Option
CI_XAI_RCVR	KP	XAI Receiver
CI_XAI_RCVR_CTX	KP	XAI Receiver Context
CI_XAI_RCVR_L	KP	XAI Receiver Language
CI_XAI_RCVR_RGRP	KP	XAI Receiver Rule Group
CI_XAI_RCVR_RSP	KP	XAI Receiver Response
CI_XAI_SENDER	KP	XAI Sender

Table Name	Upgrade Action	Description
CI_XAI_SENDER_L	KP	XAI Sender Language
CI_XAI_SNDR_CTX	KP	XAI Sender Context
CI_XAI_SVC_PARM	MG	XAI Inbound Service Parameters
CI_ZONE	MG	Zone
CI_ZONE_HDL	MG	Zone Type
CI_ZONE_HDL_L	MG	Zone Type Language
CI_ZONE_HDL_PRM	MG	Zone Type Parameters
CI_ZONE_HDL_PRM_L	MG	Zone Type Parameters Language
CI_ZONE_L	MG	Zone Language
CI_ZONE_PRM	MG	Zone Parameters
F1_BUS_OBJ	MG	Business Object
F1_BUS_OBJ_ALG	MG	Business Object Algorithm
F1_BUS_OBJ_L	MG	Business Object Language
F1_BUS_OBJ_OPT	MG	Business Object Option
F1_BUS_OBJ_STATUS	MG	Business Object Status
F1_BUS_OBJ_STATUS_ALG	MG	Business Object Status Algorithm
F1_BUS_OBJ_STATUS_L	MG	Business Object Status Language
F1_BUS_OBJ_STATUS_OPT	MG	Business Object Status Option
F1_BUS_OBJ_STATUS_RSN	MG	Status Reason
F1_BUS_OBJ_STATUS_RSN_CHAR	KP	Status Reason Characteristic
F1_BUS_OBJ_STATUS_RSN_L	MG	Status Reason Language
F1_BUS_OBJ_TR_RULE	MG	Business Object Transition Rule
F1_BUS_OBJ_TR_RULE_L	MG	Business Object Transition Rule Language
F1_BUS_SVC	MG	Business Service
F1_BUS_SVC_L	MG	Business Service Language
F1_DATA_AREA	MG	Data Area
F1_DATA_AREA_L	MG	Data Area Language
F1_DB_OBJECTS_REPO	MG	Database Objects Repository
F1_EXT_LOOKUP_VAL	MG	Extendable Lookup
F1_EXT_LOOKUP_VAL_L	MG	Extendable Lookup Language
F1_INSTALLATION	KP	Installation Option - Framework

Table Name	Upgrade Action	Description
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
F1_MIGR_REQ	MG	Migration Request
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_USER	KP	User
SC_USER_GROUP	KP	User Group
SC_USER_GROUP_L	KP	User Group Language
SC_USR_GRP_PROF	MG	User Group Profile
SC_USR_GRP_USR	KP	User Group User

Appendix D : License and Copyright Notices

This section provides license and copyright information for the associated products. It includes the following notices:

D.1 Third-Party Products

The following sections provide notices and information about the third party products indicated.

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