Oracle Utilities Work and Asset Management

Database Administrator's Guide

Release 2.1.1

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Oracle Utilities Work and Asset Management Database Administrator's Guide, 2.1.1

Contents

Preface

This guide provides instructions for installing and maintaining the database for Oracle Utilities Work and Asset Management and is intended for database administrators who will be installing and maintaining the database for Oracle Utilities Work and Asset Management.

Related Documents

For more information, refer to the following documents for this release:

Installation Guides

- Oracle Utilities Work and Asset Management Release Notes
- Oracle Utilities Work and Asset Management Quick Install Guide
- Oracle Utilities Work and Asset Management Installation Guide
- Oracle Utilities Work and Asset Management DBA Guide
- Oracle Utilities Work and Asset Management License Information User Guide

User Guides

- Oracle Utilities Work and Asset Management and Oracle Utilities Operational Device Management Business User's Guide
- Oracle Utilities Work and Asset Management and Oracle Utilities Operational Device Management Administrative Guide

Supplemental Documents

- Oracle Utilities Work and Asset Management Server Administration Guide
- Oracle Utilities Work and Asset Management Security Guide

Updates to this Documentation

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

Conventions

The following text conventions are used in this document:

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

Chapter 1

Database Overview

This section provides an overview of the Oracle Utilities Work and Asset Management database, including:

- Supported Database Platforms
- Database Maintenance Rules

Supported Database Platforms

Oracle Utilities Work and Asset Management is certified on the following platforms:

Platform	Database Version
AIX 7.1 TL01 SP1 (POWER 64-bit)	Oracle Database Server 12.1.0.1+ (64-bit)
Oracle Enterprise Linux 6.x or 7.x (64-bit) x86_64 (64-bit)/ Red Hat Enterprise Linux 6.x or 7.x (64-bit) x86_64 (64-bit)	Oracle Database Server 12.1.0.1+ (64-bit)
Oracle Solaris 11 (SPARC 64-bit)	Oracle Database Server 12.1.0.1+ (64-bit)
Windows Server 2012 R2 (x86_64 64-bit)	Oracle Database Server 12.1.0.1+ (64-bit)

The following Oracle Database Server Editions are supported:

- Oracle Database Enterprise Edition
- Oracle Database Standard Edition

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

Refer to My Oracle Support for additional details.

Support for Software Patches and Upgrades

Due to the ongoing nature of software improvement, vendors will periodically issue patches and service packs for the operating systems, application servers and database servers on top of specific versions that Oracle products have already been tested against.

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 production environment itself.

The exception from this rule is Hibernate software version 4.1.0. This version should not be upgraded.

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

Database Maintenance Rules

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

- A set of users to administrate, execute and read the database schema provided.
- A set of database roles to implement security for each of the users provided.
- A tablespace and a schema containing the base database objects used by the product.

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

Permitted Database Changes

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

- Users supplied by product may be changed according to the site standards.
- Database objects may be added to the schema according to database naming standards outlined later in this document.
- Database views and indexes may be created against base database objects. Please make sure to prefix new items with "CM" (for customer modification).
- Database storage attributes for base indexes and base tables may be changed according to site standards and hardware used.
- Tablespace names, attributes and locations may be changed according to site standards.
- Database topology (that is, base table/index to tablespace, tablespace to data file, data file to location) may be altered according to tuning and/or site standards.
- Database triggers may be created against base database objects unless they attempt to contravene base data integrity rules.
- Database initialization and parameter settings may be altered according to site standards unless otherwise advised by Oracle Support or outlined in this document.

Non-Permitted Database Changes

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

- Base objects must not be removed or altered in the following ways:
  - Columns in base tables must not be altered in anyway (altered, removed or added).
  - Columns in Indexes must not be altered or removed.
  - Tables must not be renamed or removed.
  - Base views must not be renamed or removed.
  - Base Triggers and Sequences must not be renamed or removed.
  - Base indexes must not be altered or removed.

Chapter 2

Database Installation Overview

This chapter provides an overview to the installation of the database for the Oracle Utilities Work and Asset Management. This section includes:

- Installation Overview
- Installation Types

Installation Overview

Refer to Supported Database Platforms for information about the supported platforms on which Oracle Utilities Work and Asset Management is verified to operate.

The following types of installation are available for Oracle Utilities Work and Asset Management:

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

Pre-Requisites

The database installation requires:

- Java Development Kit Version 7.0
- Oracle Database 12c Release 1 Client (12.1.0.1+) - 32-bit

  This must be installed on the Windows desktop where the install package is staged and run.

Creating the Database

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

1. Create the database using the Database Configuration Assistant (DBCA). Refer to https://docs.oracle.com/database/121/ADMQS/install.htm#ADMQS002 for more information. Make sure to set character set for database as AL32UTF8.

   Note: While prior versions of the product have included the cdxdba programs (cdxdba.plx for UNIX or CDXDBA.exe for Windows), this is no longer supported going forward, and the Database Configuration Assistant should be used instead.

2. Enable Mandatory Software Options
   - Oracle Spatial OR Oracle Locator
   - Oracle Text
3. Run following SQL to make sure it is successful

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

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

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

5. Create required roles as follows:

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

6. Create users as follows:

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

```
   GRANT CONNECT TO CISADM;
   GRANT RESOURCE TO CISADM;
   GRANT DBA TO CISADM WITH ADMIN OPTION;
   GRANT CREATE ANY SYNONYM TO CISADM;
   GRANT SELECT ANY DICTIONARY TO CISADM;

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

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

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

7. Review the Storage.xml file under the FW43010\Install-Upgrade folder prior to an initial install or upgrade install. This file allocates all base tables and indexes to the default tablespace CISTS_01 and the required users and roles. Information in this file is used by ORADBI while installing the Oracle Utilities Work and Asset Management database objects. Refer to Updating Storage.xml for more details on updating this file.

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

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

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

```
   <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.

Installation Types

The first step in the installation procedure is to determine the installation type that meets your business requirements. The following are the possible installation types:

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

Refer to Supported Database Platforms for information about the supported platforms on which Oracle Utilities Work and Asset Management is verified to operate.

Initial Install

Customers installing Oracle Utilities Work and Asset Management v2.1.1 for the first time, must refer to chapter Installing the Oracle Utilities Work and Asset Management Database- Initial Installation for complete instructions.

Demo Install

For a demo installation, follow instructions in the chapter Installing the Oracle Utilities Work and Asset Management database- Demo Installation.

Chapter 3

Installing the Oracle Utilities Work and Asset Management Database- Initial Installation

This section provides the instructions for installing the Oracle Utilities Work and Asset Management v2.1.1 database. This section includes:

Initial Install

This section describes how to install the database components of Oracle Utilities Work and Asset Management, including:

- Copying and Decompressing Install Media
- Database Creation
- Installing the WAM Schema
- Generating Database Statistics

Copying and Decompressing Install Media

To copy and decompress the database:

1. Download the Oracle Utilities Work and Asset Management v2.1.1.0.0 Oracle Database Multiplatform from the Oracle Software Delivery Cloud.
2. Unzip the 'WAM-V2.1.1.0.0-Database.zip' file to a temporary folder. This file contains FW and WAM folders with all the database components required to install the database.

Database Creation

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

Creating the Database on UNIX

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

Refer to https://docs.oracle.com/database/121/ADMQS/install.htm#ADMQS002 for more information. Make sure to set character set for database as AL32UTF8.

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

Creating the Database on Windows

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

Refer to https://docs.oracle.com/database/121/ADMQS/install.htm#ADMQS002 for more information. Make sure to set character set for database as AL32UTF8.

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

Installing the WAM Schema

You must install the Oracle Utilities Application Framework V4.3.0.1.0 prior to Oracle Utilities Work and Asset Management v2.1.1. The files for Oracle Utilities Application Framework installation are located in the FW43010 folder. The installation process will prompt you for the following information:

- The target database name in which the product is to be installed
- A database user that will own the application schema (for example, CISADM).
- A database user that has read-write (select/update/insert/delete) privileges to the objects in the application schema (for example, CISUSER). The application will access the database as this user.
- A database user with read-only privileges to the objects in the application schema. (for example, CISREAD).

- A database role that has read-write (select/update/insert/delete) privileges to the objects in the application schema. (for example, CIS_USER).
- A database role with read-only privileges to the objects in the application schema. (for example, CIS_READ).
- Location for jar files. (The Jar files are bundled with the database package.)
- Java Home (for example, C:\Java\jdk1.7.0_21)

Installing the Oracle Utilities Application Framework Database Component

To install the schema for Oracle Utilities Application Framework v4.3.0.1.0, follow these steps:

1. Run ORADBI.exe from the .. FW\FW43010\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 12c Release 1 Client (12.1.0.1+), 32-bit and Java Development Kit Version 7.0 or later installed. The database should already be listed in the local file tnsnames.ora

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

   - Name of the target database: <DB NAME>
   - Name of the database user name: <CISADM>
   - Password of the user name: <Password for CISADM>
   - Location of Java Home: (e.g. C:\Java\jdk1.7.0_21): <Java Home>
   - Location of UGBU Jar files (e.g. C:\Database-Install\JarFiles): <..FW\FW43010\Jarfiles>
   - Oracle user with read-write privileges to the Database Schema: <CISUSER>
   - Oracle user with read-only privileges to the Database Schema: <CISREAD>
   - Oracle database role with read-write privileges to the Database Schema: <CIS_USER>
   - Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
   - Name of the owner of the Database Schema: <CISADM>
   - Enter the password for the CISADM schema (or hit ENTER to quit): <CISADM user's password>
   - Re-enter the password: <CISADM user's password>

Installing Prerequisite Database Single Fixes

Before installing Oracle Utilities Work and Asset Management, you must install Oracle Utilities Framework Prerequisite DB Hot Fixes.

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

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

Applying Hot Fixes from a Windows machine:

Note: You must have Java 7 JDK installed on the machine to use the command. Be sure to install the JDK that is supported for your platform.

1. Copy the FW\FW43010-Rollup\db_patch_standalone.jar to a directory on Windows, under c:\dbpatch_tools and extract the db_patch_standalone.jar or use the following command:

   ```
   cd c:\dbpatch_tools
   ```

```
jar xvf db_patch_standalone.jar
```

2. SET TOOLSBIN=c:\dbpatch_tools\bin
3. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.cmd utility from the ..\FW\FW43010-Rollup\Database directory. The utility will prompt you for the value of the following parameters:
   - Enter the target database type (O/M/D) [O]:
   - Enter the username that owns the schema: <CISADM>
   - Enter the password for the cisadm user: <CISADM Password>
   - Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>

Applying Hotfixes from a Unix Standalone server:

Note: You must have Java 7 JDK installed on the machine to use the command. Be sure to install the JDK that is supported for your platform.

1. Copy the .\FW\FW43010-Rollup\db_patch_standalone.jar to a directory on Unix server, under /tmp/dbpatch_tools and extract the db_patch_standalone.jar using below command:

```
cd /tmp/dbpatch_tools
jar xvf db_patch_standalone.jar
```

2. Export TOOLSBIN=/tmp/dbpatch_tools/bin
3. Apply prerequisite Framework DB single fixes by running the ouafDatabasePatch.sh utility from the ..\FW\FW43010-Rollup directory. The utility prompts you for the value of the following parameters:
   - Enter the target database type (O/M/D) [O]:
   - Enter the username that owns the schema: <CISADM>
   - Enter the password for the cisadm user: <CISADM Password>
   - Enter the name of the Oracle Database Connection String: <DB_Server:DBPORT:ORACLE_SID>

Installing Oracle Utilities Work and Asset Management Database Component

Follow the procedure below to install the database component of Oracle Utilities Work and Asset Management.

1. Run ORADBI.exe from the .. WAM\Install-Upgrade directory.

   Note: Be sure to run ORADBI.exe from a Window 32-bit or 64-bit desktop that has the Oracle Database 12c Release 1 Client (12.1.0.1+), 32-bit and Java Development Kit Version 7.0 or later installed.

2. The utility prompts you to enter values for the following parameters:
   - Name of the target database: <DB NAME>
   - Name of the database user name: <CISADM>
   - Password for the user name: <Password for CISADM>
   - Location of Java Home (e.g. C:\Java\jdk1.7.0_21): <Java Home>
   - Location of UGBU Jar files (e.g.C:\Database-Install\Jarfiles): <.. FW\FW43010\Jarfiles>
   - Oracle user with read-write privileges to the Database Schema: <CISUSER>
   - Oracle user with read-only privileges to the Database Schema: <CISREAD>
   - Oracle database role with read-write privileges to the Database Schema: <CIS_USER>

- Oracle database role with read-only privileges to the Database Schema: <CIS_READ>
- Name of the owner of the target database schema where you want to install or upgrade: <CISADM>
- Enter the password for the CISADM schema (or hit ENTER to quit): <CISADM user's password>
- Re-enter the password: <CISADM user's password>

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

ORADBI Performs the Following Tasks

- Interacts with the user to collect information about the name of Oracle account that will own the application schema (for example, CISADM), password of this account, password of the SYSTEM account in the database, and the name of the Oracle account that the application user will use (for example, CISUSER), and the name of the Oracle account that will be assigned read-only privileges to the application schema (for example, CISREAD).
- Verifies whether tablespace names already exist in the Storage.xml file (if not, the process will abort).
- Installs the schema, installs the system data, and configures security.
- Maintains upgrade log tables in the database.
- Updates release ID when the upgrade is completed successfully.
- If an error occurs while executing a SQL script or another utility, it logs and displays the error message and allows you to re-execute the current step. Log files ORADBI###.log are created in the same folder as ORADBI and contains all the SQL commands executed against the database along with the results. The log files are incremental so that the results are never overwritten. If warning messages are generated during the upgrade, ORADBI prompts the user at the end of the process. Users should check the log files to verify the warning messages. Warning messages are only alerts and do not necessary mean a problem exists.
- Stores the Schema owner and password in the feature configuration table. The password is stored in encrypted format.
- OraDBI can be executed by a non-schema owner.

Generating Database Statistics

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

Enable USER_LOCK package

For In-bound web services to work, the USER_LOCK must be enabled at the database level. This is a one-time step. If this is not already enabled, please enable it using the following steps:

1. Login as SYS user
2. On SQL prompt run

   ```
   @<ORACLE_HOME>/rdbms/admin/userlock.sql
   ```
3. Grant permission by running following SQL:

   ```
   grant execute on USER_LOCK to public;
   ```

Please note that grant can also be made to the database user that the application connects to (for example, cisuser), instead of 'public'.

Chapter 4

Installing the Oracle Utilities Work and Asset Management database- Demo Installation

This section provides the instructions for installing the Oracle Utilities Work and Asset Management demo database. This section includes:

Demo Install

This section describes how to install the demo database components for Oracle Utilities Work and Asset Management, including:

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

Copying and Decompressing Install Media

To copy and decompress the database:

1. Download the Oracle Utilities Work and Asset Management v2.1.1.0.0 Oracle database from the Oracle Software Delivery Cloud.
2. Copy the 'WAM-V2.1.1.0.0-Database.zip' file to your local machine. This file contains FW and WAM folders with all the database components required to install the Oracle Utilities Work and Asset Management database.

Creating the Database

> **Note:** You must have Oracle Database Server 12.1.0.1+ Enterprise Edition installed on your machine in order to create the database.

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

Creating the Database on UNIX

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

Refer to https://docs.oracle.com/database/121/ADMQS/install.htm#ADMQS002 for more information. Make sure to set character set for database as AL32UTF8.

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

Creating the Database on Windows

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

Refer to https://docs.oracle.com/database/121/ADMQS/install.htm#ADMQS002 for more information. Make sure to set character set for database as AL32UTF8.

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

Importing the WAM Demo Dump File

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

1. Set the correct ORACLE_SID and ORACLE_HOME.
2. Run following command to import WAM demo dump:

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

> **Note**: The data_pump_dir must exist in the database created above before continuing with the import. You should also copy the expdp_wam_demo.dmp file to the data_pump_dir. Decompress the expdp_wam_demo.dmp.gz file first

to extract the expdp_wam_demo.dmp file. This file is in ..\WAM\Demo directory

Configuring Security

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

1. Execute the OraGenSec.exe utility.

   Note: Database vault must be disabled before running.

   The script will prompt you for parameter values:

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

The utility configures security for the application owner schema objects.

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

For example:

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

Chapter 5

Database Design

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

Database Object Standard

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

Categories of Data

A table can belong to one of the three categories:

- Control (admin)
- Master
- Transaction

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

Example of tables in each category:

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

All tables have the category information in their index name. The second letter of the index carries this information. See **Indexes** on page 5-3 for more information.

Naming Standards

The following naming standards must be applied to database objects.

Table

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

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

Some examples are:

- CI_ADJ_TYPE
- CI_ADJ_TYPE_L

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

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

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

Columns

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

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

Some examples are:

- ADJ_STATUS_FLG
- CAN_RSN_CD

Indexes

Index names are composed of the following parts:

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

- **OF**- Owner Flag. The standard is to use the two characters of the product's owner flag. Note that there may be some older indexes that use only the first character of the owner flag. For client specific implementation of index, use CM for Owner Flag. If implementation creates a CM Index on table-columns for which the base product already provides an index, then the CM Index will be overridden by the based index.
- Application specific prefix could be C, F, T or another letter.
- **C/M/T** - The second character can be either C or M or T. C is used for control tables (Admin tables). M is for the master tables. T is reserved for the transaction tables.
- **NNN** - A three-digit number that uniquely identifies the table on which the index is defined.
- **P/S** - P indicates that this index is the primary key index. S is used for indexes other than primary keys.
- **n** is the index number, unique across all indexes on a given table (0 for primary and 1, 2, etc., for the secondary indexes).

Some examples are:

- F1C066P0
- F1C066S1
- 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.

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

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

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

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

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

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

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

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

Sequence

The base sequence name must be prefixed with the owner flag value of the product. For customer modification **CM** must prefix the sequence name. The sequence numbers should be named as below:

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

   [OF][C/M/T]NNN_SEQ

- OF stands for Owner Flag. For example, for Framework its F1. Other examples are 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 e.g: 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, for framework is F1. Other examples are 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, for framework is F1. Other examples are etc.

  For Example: F1FKVALID_SEQ

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

Trigger

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

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

Column Data Type and Constraints

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

User Defined Code

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

System Assigned Identifier

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

Date/Time/Timestamp

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

Number

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

Fixed Length/Variable Length Character Columns

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

Null Column Support

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

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

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

XML Type Support

The product supports XML Type. XML Type provides following advantages

1. The ability to use XQuery for querying nodes in the XML document stored within a column defined as XMLType.
2. The option to use the XML engine, which is built into the Oracle Database, to create indexes using nodes within the XML document stored in the XMLType column.

Cache and Key Validation Flags

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

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

Default Value Setting

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

- When a predefined default value is not available, set the default value of Non-null CHAR or VARCHAR columns to blank except the primary key columns.
- When a predefined default value is not available, set the default value Non-null Number columns to 0 (zero) except the primary key columns.
- No database default values should be assigned to the Non Null Date, Time, and Timestamp columns.

Foreign Key Constraints

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

Standard Columns

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

Owner Flag

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

Version

The Version column is used to for optimistic concurrency control in the application code. Add the Version column to all tables that are maintained by a Row Maintenance program.

Chapter 6

Database Implementation Guidelines

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

- Configuration Guidelines
- Oracle Database Implementation Guidelines.

  Note: Refer to My Oracle Support for more information.

Configuration Guidelines

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

Index

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

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

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

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

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

Table Partitioning Recommendations

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

Transparent Data Encryption Recommendations

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

Please consider the following when implementing TDE:

- Create a wallet folder to store the master key. By default, the wallet folder should be created under $ORACLE_BASE/admin/<sid>.
- The wallet containing the master key can be created using the following command:

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

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

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

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

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

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

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

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

Data Compression Recommendations

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

Exadata Hardware

For Exadata hardware the compression recommendations are:

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

Non- Exadata Hardware

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

CLOB Fields

All CLOB fields should be stored as SecureFiles and Medium compressed. This requires a separate license for Advanced Data Compression. As a part of the schema, we create the product-

owned tables with compression turned OFF at the LOB level. If you have the license for Advanced Data Compression, you can enable compression by updating the storage.xml.

Database Vault Recommendations

The product supports Database Vault. All non-application User IDs can be prevented from using DDL or DML statements against the application schema. So SYS and SYSTEM cannot issue DDL or DML statements against CISADM schema.

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

Application user must be given DML only permissions.

Database Vault can be used to control access during patch process and Install/Upgrade process.

Oracle Fuzzy Search Support

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

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

```
GRANT CTXAPP TO <Application schema owner e.g CISADM>;

GRANT EXECUTE ON CTX_DDL TO <Application schema owner e.g CISADM>;

create index <Application schema owner e.g CISADM>.<Index_Name> on
Application schema owner e.g CISADM>.<Table_Name> (<column_name>)
indextype is ctxsys.context parameters ('sync (on commit)');
begin
ctx_ddl.sync_index('Application schema owner e.g
CISADM>.<Index_Name>');
end
/
```

Storage Recommendations

This section specifies recommended options for storing the database objects.

SecureFile for Storing LOBs

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

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

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

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

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

See **Database Syntax** on page 6-5 for more information on SecureFiles.

Database Configuration Recommendations

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

Large Redo Log File Sizes

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

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

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

Database Syntax

SecureFile

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

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

Database Initialization Parameters

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

db_block_size=8192

log_checkpoint_interval=0

db_file_multiblock_read_count=8

transactions=3000

open_cursors=30000

db_writer_processes=10

optimizer_index_cost_adj=1

optimizer_index_caching=100

db_files=1024

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

sessions=4500

memory_target=0

memory_max_target=0

processes=3000

dml_locks=48600

_b_tree_bitmap_plans=FALSE

Oracle Database Implementation Guidelines

This section provides specific guidelines for implementing the Oracle database.

Oracle Partitioning

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

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

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

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

Database Statistic

During an install process, new database objects may be added to the target database. Before starting to use the database, generate the complete statistics for these new objects by using the DBMS_STATS package. You should gather statistics periodically for objects where the statistics become stale over time because of changing data volumes or changes in column values. New statistics should be gathered after a schema object's data or structure are modified in ways that make the previous statistics inaccurate. For example, after loading a significant number of rows into a table, collect new statistics on the number of rows. After updating data in a table, you do not need to collect new statistics on the number of rows, but you might need new statistics on the average row length.

A sample syntax that can be used is as following:

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

Materialized View

Oracle Enterprise Edition supports query rewrite Materialized view. If you use Oracle Enterprise Edition, you can create following Materialized Views to improve performance of the batch job BATCH C1- TRMDD

```
CREATE MATERIALIZED VIEW F1_BO_LIFECYCLE_STATUS_MVW
(
BUS_OBJ_CD,
LIFE_CYCLE_BO_CD,
BO_STATUS_CD,
BATCH_CD
)
BUILD IMMEDIATE REFRESH ON COMMIT ENABLE QUERY REWRITE AS
SELECT
BO2.BUS_OBJ_CD,BO.LIFE_CYCLE_BO_CD,BOSA.BO_STATUS_CD,LCBOS.BATCH_CD as
LC_BATCH_CD
FROM
F1_BUS_OBJ BO2,
F1_BUS_OBJ BO,
```

```
F1_BUS_OBJ_STATUS LCBOS,
F1_BUS_OBJ_STATUS_ALG BOSA
WHERE
BO2.LIFE_CYCLE_BO_CD =BO.LIFE_CYCLE_BO_CD AND
BO.BUS_OBJ_CD = BOSA.BUS_OBJ_CD AND
BOSA.BO_STATUS_SEVT_FLG = 'F1AT' AND
LCBOS.BUS_OBJ_CD = BO.LIFE_CYCLE_BO_CD AND
LCBOS.BO_STATUS_CD = BOSA.BO_STATUS_CD
/
```

Appendix A

Upgrades to the Oracle Utilities Work and Asset Management 2.1.1 Database

This document describes the database upgrade process for Oracle Utilities Work and Asset Management V2.1.1. It highlights changes made to the administrative tables and how those changes should be applied to the data in order for your current database to work with the V2.1.1 application, and to preserve the business logic implemented in the previous version of the application. The changes that do not require data upgrade are not described in this section of the document. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V2.1.1 is not the scope of this documentation. The upgrade scripts do not turn on the newly added functionality by default. For new functionality, refer to the V2.1.1 User Guides.

This section includes:

Schema Changes

Dropped Tables

The following table has been dropped in this release of Oracle Utilities Work and Asset Management.

- W1_BOM_ATTACHMENT

Dropped Columns

The following columns have been dropped in this release of Oracle Utilities Work and Asset Management.

Table Name	Column Name
W1_BOM_ATTACHMENT	ATTACHMENT_ID
W1_BOM_ATTACHMENT	BOM_PART_ID
W1_FT_GL_DTL	ADDL_COMP9

New System Data

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

New Tables

This section provides a listing of the new tables added in this release.

Table Name
W1_ACTIVITY_PLAN_SVC_HIST_TYPE
W1_ASSET_CHAR2
W1_BOM_DOCUMENT
W1_CONFIG_CHAR2
W1_CONFIG_RPT_CHAR2
W1_CONTACT_CHAR2
W1_EXPEDITE_IDENTIFIER
W1_INV_ADJ_ASSET
W1_INVOICE_HEADER
W1_INVOICE_HEADER_CHAR
W1_INVOICE_HEADER_COST_CENTER
W1_INVOICE_HEADER_DOCUMENT
W1_INVOICE_HEADER_IDENTIFIER
W1_INVOICE_HEADER_K
W1_INVOICE_HEADER_LOG
W1_INVOICE_HEADER_LOG_PARM
W1_INVOICE_HEADER_NOTE
W1_INVOICE_LINE
W1_INVOICE_LINE_CHAR
W1_INVOICE_LINE_DOCUMENT
W1_INVOICE_LINE_IDENTIFIER
W1_INVOICE_LINE_K
W1_INVOICE_LINE_LOG
W1_INVOICE_LINE_LOG_PARM
W1_INVOICE_LINE_NOTE
W1_INVOICE_LINE_TAX_LINE
W1_NODE_CHAR2
W1_ON_BLANKET_CONTRACT_LINE_VW

Table Name
W1_ON_BLANKET_CONTRACT_VW
W1_ON_FINANCIAL_TRANS_VW
W1_ON_INVOICE_LINE_VW
W1_ON_INVOICE_VW
W1_ON_MATERIAL_ISSUE_VW
W1_ON_MATERIAL_RETURN_LINE_VW
W1_ON_MATERIAL_RETURN_VW
W1_ON_PURCHASE_ORDER_LINE_VW
W1_ON_PURCHASE_ORDER_VW
W1_ON_RECEIPT_LINE_VW
W1_ON_RECEIPT_VW
W1_ON_RETURN_LINE_VW
W1_ON_STOCK_ITEM_DTL_VW
W1_ON_STOCK_ITEM_VW
W1_ON_STOCK_TRANS_VW
W1_PARENT_ORG_VW
W1_PO_HEADER_IDENTIFIER
W1_STOCK_ITEM_DTL_IDENTIFIER
W1_SVC_HIST_CHAR2
W1_TMPL_ACT_PLAN_SVC_HIST_TYPE
W1_INVOICE_LINE_COST_CENTER

New Columns

The following columns are added to Oracle Utilities Work and Asset Management in this release:

Table Name	Column Name	Description
W1_ACT_RESRC_REQMT	FINAL_DTTM	Final Date/Time
W1_ACT_RESRC_REQMT	ITEM_TYPE_FLG	Item Type
W1_ASSET	MAINT_SPEC_CD	Maintenance Specification
W1_BC_LINE	DESCR4000	Detailed Description
W1_FT	INVOICE_HEADER_ID	Invoice Header ID
W1_FT	INVOICE_LINE_ID	Invoice Line ID
W1_MAINT_TRIGGER	SVC_HIST_TYPE_CD	Service History Type

Table Name	Column Name	Description
W1_MAT_RET_LINE	REPAIRED_FLG	Repaired
W1_MEASUREMENT	CMPL_EVT_ID	Completion Event ID
W1_NODE	TAX_COST_CENTER_CD	Tax Cost Center
W1_NODE	INVOICE_WRITEOFF_ COST_CTR_CD	Invoice Write-Off Cost Center Code
W1_NODE	TAX_EXPENSE_CD	Tax Expense Code
W1_NODE	INVOICE_WRITEOFF_ EXPENSE_CD	Invoice Write-Off Expense Code
W1_NODE_TYPE	NODE_SUBCLASS_FLG	Subclass
W1_PO_HEADER	BC_RELEASE_NUM	Blanket Contract Release Number
W1_PO_LINE	DESCR4000	Detailed Description
W1_PO_LINE	BO_DATA_AREA	Business Object Data Area
W1_PO_LINE_TAX_LINE	EXPENSE_CD	Expense Code
W1_PO_LINE_TAX_LINE	COST_CENTER_CD	Cost Center
W1_PR_LINE	ITEM_TYPE_FLG	Item Type
W1_PR_LINE	DESCR4000	Detailed Description
W1_PR_LINE_TXLN	COST_CENTER_CD	Cost Center
W1_PR_LINE_TXLN	EXPENSE_CD	Expense Code
W1_STOCK_ITEM_DTL	REPAIRED_PRICE	Repaired Price
W1_SVC_HIST	NODE_ID	Location/Organization ID
W1_TIMESHEET_DETAIL	W1_CREW_ID	Crew ID
W1_TMPL_ACT	TMPL_ACT_NUM	Template Activity Number
W1_TMPL_ACT	PRJ_ID	Project ID
W1_TMPL_ACT_RSRC	ITEM_TYPE_FLG	Item Type
W1_TMPL_WO	PRJ_ID	Project ID
W1_TMPL_WO	TMPL_WO_NUM	Template Work Order Number
W1_WORK_REQ	POSITION	Position
W1_WORK_REQ	ROOM	Room
W1_WORK_REQ	BUILDING	Building
W1_WORK_REQ	PLANNER_CD	Planner

New Index

The following indexes are added to Oracle Utilities Work and Asset Management in this release:

Table_name	Index	Column_name
W1_ACT_RESRC_REQMT	W1T370S2	ACT_ID
W1_ACT_RESRC_REQMT_IDENTIFIER	W1T375S0	W1_ID_VALUE, ACT_RESRC_REQMT_ID_TYPE_FLG
W1_ACTIVITY_IDENTIFIER	W1T247S0	W1_ID_VALUE, ACT_ID_TYPE_FLG
W1_ACTIVITY_PLAN_SVC_HIST_TYPE	W1T526P0	SVC_HIST_TYPE_CD, ACT_ID
W1_ACTIVITY_TYPE_IDENTIFIER	W1C242S0	ACT_TYPE_ID_TYPE_FLG, W1_ID_VALUE
W1_APPROVAL_PROF_IDENTIFIER	W1C560S0	W1_ID_VALUE, APPROVAL_PROF_ID_TYPE_FLG
W1_APPROVAL_REQ_IDENTIFIER	W1T294S0	W1_ID_VALUE, APPROVAL_REQ_ID_TYPE_FLG
W1_ASSET_CHAR2	W1T518P0	CHAR_TYPE_CD, ASSET_ID,SEQ_NUM
W1_ASSET_IDENTIFIER	W1M014S0	W1_ID_VALUE, ASSET_ID_TYPE_FLG
W1_BC_HEADER_IDENTIFIER	W1T349S0	BC_HEADER_ID_TYPE_FLG, W1_ID_VALUE
W1_BOM_DOCUMENT	W1M711P0	DOCUMENT_ID, BOM_PART_ID
W1_BUYER_IDENTIFIER	W1C677S0	BUYER_ID_TYPE_FLG, W1_ID_VALUE
W1_CONFIG_CHAR2	W1T522P0	CONFIG_ID,CHAR_TYPE_CD, SEQ_NUM
W1_CONFIG_IDENTIFIER	W1M487S0	W1_ID_VALUE, CONFIG_ID_TYPE_FLG
W1_CONFIG_RPT_CHAR2	W1T523P0	SEQ_NUM, CONFIG_RPT_ID, CHAR_TYPE_CD
W1_CONFIG_RPT_IDENTIFIER	W1M494S0	CFG_RPT_ID_TYPE_FLG, W1_ID_VALUE
W1_CONTACT_CHAR2	W1T520P0	W1_CONTACT_ID, SEQ_NUM, CHAR_TYPE_CD
W1_CREW_IDENTIFIER	W1M519S0	W1_ID_VALUE, CREW_ID_TYPE_FLG
W1_EMPLOYEE_IDENTIFIER	W1M505S0	EMPLOYEE_ID_TYPE_FLG, W1_ID_VALUE

Table_name	Index	Column_name
W1_EU_IDENTIFIER	W1M513S0	EU_ID_TYPE_FLG, W1_ID_VALUE
W1_EXPEDITE_IDENTIFIER	W1T499S0	EXPEDITE_ID_TYPE_FLG, W1_ID_VALUE
W1_EXPEDITE_IDENTIFIER	W1T499P0	EXPEDITE_ID, EXPEDITE_ID_TYPE_FLG
W1_EXPEDITE_IDENTIFIER	W1T499S1	EXPEDITE_ID_TYPE_FLG, EXPEDITE_ID, W1_ID_VALUE
W1_INV_ADJ_ASSET	W1T524P0	ASSET_ID, INV_ADJ_ID
W1_INVOICE_HEADER	W1T500S1	INVOICE_HEADER_ID, BUS_OBJ_CD, BO_STATUS_CD
W1_INVOICE_HEADER	W1T500P0	INVOICE_HEADER_ID
W1_INVOICE_HEADER_CHAR	W1T502S1	SRCH_CHAR_VAL
W1_INVOICE_HEADER_CHAR	W1T502P0	CHAR_TYPE_CD, INVOICE_HEADER_ID, SEQ_NUM
W1_INVOICE_HEADER_COST_CENTER	W1T508P0	COST_CENTER_CD, INVOICE_HEADER_ID
W1_INVOICE_HEADER_DOCUMENT	W1T506P0	DOCUMENT_ID, INVOICE_HEADER_ID
W1_INVOICE_HEADER_IDENTIFIER	W1T503S1	INVOICE_HEADER_ID, INVOICE_HEADER_ID_TYPE_FLG, W1_ID_VALUE
W1_INVOICE_HEADER_IDENTIFIER	W1T503S0	INVOICE_HEADER_ID_TYPE_FLG, W1_ID_VALUE
W1_INVOICE_HEADER_IDENTIFIER	W1T503P0	INVOICE_HEADER_ID_TYPE_FLG, INVOICE_HEADER_ID
W1_INVOICE_HEADER_K	W1T501P0	ENV_ID, INVOICE_HEADER_ID
W1_INVOICE_HEADER_LOG	W1T504P0	INVOICE_HEADER_ID, SEQNO
W1_INVOICE_HEADER_LOG	W1T504S1	CHAR_VAL_FK1, CHAR_TYPE_CD
W1_INVOICE_HEADER_LOG	W1T504S2	CHAR_VAL, CHAR_TYPE_CD
W1_INVOICE_HEADER_LOG_PARM	W1T505P0	INVOICE_HEADER_ID, SEQNO, PARM_SEQ

Table_name	Index	Column_name
W1_INVOICE_HEADER_NOTE	W1T507P0	INVOICE_HEADER_ID, SEQNO
W1_INVOICE_LINE	W1T509P0	INVOICE_LINE_ID
W1_INVOICE_LINE	W1T509S1	BUS_OBJ_CD, INVOICE_LINE_ID, BO_STATUS_CD
W1_INVOICE_LINE_CHAR	W1T511P0	CHAR_TYPE_CD, INVOICE_LINE_ID, SEQ_NUM
W1_INVOICE_LINE_CHAR	W1T511S1	SRCH_CHAR_VAL
W1_INVOICE_LINE_COST_CENTER	W1T516P0	INVOICE_LINE_ID, EXPENSE_CD, COST_CENTER_CD
W1_INVOICE_LINE_DOCUMENT	W1T514P0	INVOICE_LINE_ID, DOCUMENT_ID
W1_INVOICE_LINE_IDENTIFIER	W1T527P0	INVOICE_LINE_ID_TYPE_FLG, INVOICE_LINE_ID
W1_INVOICE_LINE_K	W1T510P0	ENV_ID, INVOICE_LINE_ID
W1_INVOICE_LINE_LOG	W1T512S2	CHAR_TYPE_CD, CHAR_VAL
W1_INVOICE_LINE_LOG	W1T512S1	CHAR_VAL_FK1, CHAR_TYPE_CD
W1_INVOICE_LINE_LOG	W1T512P0	SEQNO, INVOICE_LINE_ID
W1_INVOICE_LINE_LOG_PARM	W1T513P0	INVOICE_LINE_ID, PARM_SEQ,SEQNO
W1_INVOICE_LINE_NOTE	W1T515P0	SEQNO, INVOICE_LINE_ID
W1_INVOICE_LINE_TAX_LINE	W1T517P0	EFFDT, TAX_RATE_SCHED_CD, SEQ_NUM, INVOICE_LINE_ID
W1_MAINT_SCHEDULE_IDENTIFIER	W1M655S0	MAINT_SCHED_ID_TYPE_FLG, W1_ID_VALUE
W1_MAINT_TRIGGER_IDENTIFIER	W1M701S0	MAINT_TRIGGER_ID_TYPE_FLG, W1_ID_VALUE
W1_MANUFACTURER_IDENTIFIER	W1C225S0	W1_ID_VALUE, MANUFACTURER_ID_TYPE_FLG
W1_MAT_DISP_IDENTIFIER	W1T459S0	MAT_DISP_ID_TYPE_FLG, W1_ID_VALUE

Table_name	Index	Column_name
W1_MEASUREMENT_TYPE_IDENTIFIER	W1C522S0	MEASUREMENT_TYPE_ID_TYPE_FLG, W1_ID_VALUE
W1_NODE_CHAR2	W1T519P0	NODE_ID,SEQ_NUM, CHAR_TYPE_CD
W1_ODC_IDENTIFIER	W1T335S0	ODC_ID_TYPE_FLG, W1_ID_VALUE
W1_PO_HEADER_IDENTIFIER	W1T525S0	PO_HEADER_ID_TYPE_FLG, W1_ID_VALUE
W1_PO_HEADER_IDENTIFIER	W1T525P0	PO_HEADER_ID, PO_HEADER_ID_TYPE_FLG
W1_PO_HEADER_IDENTIFIER	W1T525S1	PO_HEADER_ID_TYPE_FLG, W1_ID_VALUE,PO_HEADER_ID
W1_PO_LINE_COST_CENTER	W1T420P0	EXPENSE_CD
W1_PR_LINE_COST	W1T445P0	EXPENSE_CD
W1_PROJECT_IDENTIFIER	W1M603S0	PRJ_ID_TYPE_FLG, W1_ID_VALUE
W1_RCPT_HDR_IDENTIFIER	W1T462S0	RCPT_HDR_ID_TYPE_FLG, W1_ID_VALUE
W1_RESRC_TYPE_IDENTIFIER	W1M558S0	RESRC_TYPE_ID_TYPE_FLG, W1_ID_VALUE
W1_SPECIFICATION_IDENTIFIER	W1C229S0	SPECIFICATION_ID_TYPE_FLG, W1_ID_VALUE
W1_STOCK_ITEM_DTL_IDENTIFIER	W1M712S1	STOCK_ITEM_DTL_ID_TYPE_FLG, W1_ID_VALUE, STOCK_ITEM_DTL_ID
W1_STOCK_ITEM_DTL_IDENTIFIER	W1M712P0	STOCK_ITEM_DTL_ID, STOCK_ITEM_DTL_ID_TYPE_FLG
W1_STOCK_ITEM_DTL_IDENTIFIER	W1M712S0	STOCK_ITEM_DTL_ID_TYPE_FLG, W1_ID_VALUE
W1_SVC_HIST_CHAR2	W1T521P0	SEQ_NUM,SVC_HIST_ID, CHAR_TYPE_CD
W1_SVC_HIST_IDENTIFIER	W1M280S0	SVC_HIST_ID_TYPE_FLG, W1_ID_VALUE
W1_TIMESHEET_IDENTIFIER	W1M590S0	TIMESHEET_ID_TYPE_FLG, W1_ID_VALUE
W1_TMPL_ACT_IDENTIFIER	W1M621S0	W1_ID_VALUE, TMPL_ACT_ID_TYPE_FLG
W1_TMPL_ACT_PLAN_SVC_HIST_TYPE	W1M713P0	SVC_HIST_TYPE_CD, TMPL_ACT_ID
W1_TMPL_ACT_RSRC_IDENTIFIER	W1M629S0	W1_ID_VALUE, TMPL_ACT_RSRC_ID_TYPE_FLG

Table_name	Index	Column_name
W1_TMPL_WO_IDENTIFIER	W1M612S0	TMPL_WO_ID_TYPE_FLG, W1_ID_VALUE
W1_WARRANTY_IDENTIFIER	W1M525S0	W1_ID_VALUE, WARRANTY_ID_TYPE_FLG
W1_WO_IDENTIFIER	W1T233S0	W1_ID_VALUE, WO_ID_TYPE_FLG
W1_WORK_REQ_IDENTIFIER	W1T299S0	W1_ID_VALUE, WORK_REQ_ID_TYPE_FLG

Appendix B

Upgrades to the Oracle Utilities Application Framework Database

This section describes the database upgrade process for the Oracle Utilities Application Framework database from V4.3.0.0.1 to V4.3.0.1.0. It highlights changes made to the administrative tables and how those changes should be applied to the data in order for your current database to work with the V4.3.0.1.0 application, and to preserve the business logic implemented in the previous version of the application. The changes that do not require data upgrade are not described in this document. The tasks that need to be performed after running the upgrade scripts are included.

The added functionality of V4.3.0.1.0 is not the scope of this documentation. The upgrade scripts do not turn on the newly added functionality by default. For new functionality, refer the V4.3.0.1.0 User Guides.

This section includes:

Automatic Data Upgrade

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

Schema Change

New Tables

The following table is added to Oracle Utilities Application Framework.

Table	Description
F1_EXT_LOOKUP_VAL_CHAR	Extendable Lookup Characteristics

New Views

None

Dropped Tables

None

Unsupported Tables

None

Added Columns

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

Table	Column	Required
F1_EXT_LOOKUP_VAL	BASE_BO_DATA_AREA	N
CI_BATCH_CTRL_P	TEXT_SECURITY_FLG	N

Dropped Columns

None

Unsupported Table Columns

None

Column Format Change

Table Name	Column Name	From	To
CI_BATCH_CTRL	EMAILID	VARCHAR(70)	VARCHAR(254)
CI_BATCH_JOB	EMAILID	VARCHAR(70)	VARCHAR(254)
SC_USER	EMAILID	VARCHAR(70)	VARCHAR(254)

Appendix C

Oracle Application Framework System Table Guide

This section lists the system tables owned by the Oracle Utilities Application Framework V4.3.0.1 and explains the data standards of the system tables. The data standards are required for the installation of Oracle Utilities Application Framework, development within the Oracle Utilities Application Framework, and the configuration and customization of Oracle Utilities products. Adhering to the data standards is a prerequisite for seamless upgrade to future releases.

This section includes:

About the Application Framework System Tables

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

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

System Table Standards

System table standards must be observed for the following reasons:

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

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

Guidelines for System Table Updates

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

Business Configuration Tables

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

Application Security and User Profile

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

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

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

Currency Code

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

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

Display Profile

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

Properties	Description
Tables	CI_DISP_PROF, CI_DISP_PROF_L
Initial Data	North America (NORTHAM) and Europe (EURO) and HIJRI Format (HIJRI). **Configuration Note**: In order to use HIJRI Format display profile, additional configuration is needed to define the mappings between Hijri dates and Gregorian dates. Refer to the Display Profile documentation for more information.

Configuration Note: In order to use HIJRI Format display profile, additional configuration is needed to define the mappings between Hijri dates and Gregorian dates.
Refer to the Display Profile documentation for more information.

Installation Options

Installation Option has only one row that is shipped with the initial installation of the Oracle Utilities Application Framework. The updatable columns in these tables are customer data and will

not be overridden by the upgrade process unless a special script is written and included in the upgrade process.

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

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

Language Code

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

Properties	Description
Tables	CI_LANGUAGE
Initial Data	English (ENG).

To Do Priority and Role

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

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

Development and Implementation System Tables

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

Standards

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

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

Note that the system supports a system upgrade rule called Override Owner flag. If duplicate data rows (data row with same primary key values) are found at the time of upgrade, the owner flag values will get overridden. The lower level application system data will override the upper level system data. For example, F1 overrides C1, F1&C1 override CM, and so on. This rule will be

applied to the following tables: CI_CHAR_ENTITY, CI_MD_MO_ALG, C1_PORTAL_OPT, F1_BUS_OBJ_ALG, F1_BUS_OBJ_STATUS_ALG, CI_MD_MO_OPT, F1_BUS_OBJ_OPT, F1_BUS_OBJ_STATUS_OPT, F1_BUS_OBJ_STATUS, F1_BUS_OBJ_STATUS_L

Algorithm Type

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

Algorithm

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

Application Security

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

Batch Control

Properties	Description
Tables	CI_BATCH_CTRL, CI_BATCH_CTRL_L, CI_BATCH_CTRL_P, CI_BATCH_CTRL_P_L
Standard Data Fields	Batch Process (BATCH_CD), Program Name (PROGRAM_NAME)
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) and Security flag (TEXT_SECURITY_FLG) on Batch Control Parameters Table (CI_BATCH_CTRL_P)

Business Object

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

Business Service

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

Characteristics

Properties	Description
Tables	CI_CHAR_TYPE, CI_CHAR_TYPE_L, CI_CHAR_ENTITY, CI_CHAR_VAL, CI_CHAR_VAL_L
Standard Data Fields	Characteristic Type (CHAR_TYPE_CD), Characteristic Value (CHAR_VAL) on CI_CHAR_VAL If the characteristic type is customizable, Customer Modification can insert new characteristic values. CM must prefix when implementers introduce a new characteristic value.
Customer Modification	Adhoc Characteristic Value Validation Rule (ADHOC_VAL_ALG_CD), Allow Search by Characteristic Value (SEARCH_FLG).

Configuration Migration Assistant

Properties	Description
Tables	F1_MIGR_PLAN,F1_MIGR_PLAN_L,F1_MIGR_PLAN_INSTR,F1_MIGR_PLAN_INSTR_L, F1_MIGR_PLAN_INSTR_ALG, F1_MIGR_REQ, F1_MIGR_REQ_L, F1_MIGR_REQ_INSTR, F1_MIGR_REQ_INST R_L, F1_MIGR_REQ_INSTR_ENTITY
Standard Data Fields	Migration Plan Code (MIGR_PLAN_CD), Migration Request Code (MIGR_REQ_CD)
Customer Modification	None

Data Area

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

Display Icon

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

Extendable Lookup

Properties	Description
Tables	F1_EXT_LOOKUP_VAL, F1_EXT_LOOKUP_VAL_L
Standard Data Fields	Business Object (BUS_OBJ_CD), Extendable Lookup Value (F1_EXT_LOOKUP_VALUE)
Customer Modification	Business Object Data Area (BO_DATA_AREA) Override Description (DESCR_OVRD) on Extendable Lookup Field Value Language Table (F1_EXT_LOOKUP_VAL_L) **Note:** When the product releases base owned records in Extendable Lookup, if there are additional elements the business object will map the element to the BO_DATA_AREA if the value is allowed to be modified by an implementation.

Foreign Key Reference

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

Inbound Web Service

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

Lookup

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

Map

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

Managed Content

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

Messages

Properties	Description
Tables	CI_MSG_CATEGORY, CI_MSG_CATEGORY_L, CI_MSG, CI_MSG_L
Standard Data Fields	Message Category (MESSAGE_CAT_NBR) • Messages are grouped in categories and each category has message numbers between 1 and 99999. A range of message categories is assigned to a product. An implementation may only use categories assigned for customization use. • Implementer Message Categories are 80000 and 90000 • Reserved for Tests - 99999 Message Number (MESSAGE_NBR) for message categories • Message numbers below 1000 are reserved for common messages. Implementers must not use message numbers below 1000. Message Number (MESSAGE_NBR) for Java message categories • Subsystem Standard Messages - 00001 thru 02000 • Reserved - 02001 thru 09999 • Published Messages - 10001 thru 11000 • Package Messages - 10001 thru 90000 • Reserved - 90001 thru 99999 • Each package is allocated 100 message numbers, each starting from 101. • Published Messages are messages that are special-interest messages that implementations need to know about and are therefore published in the user docs. Examples of these include messages that are highly likely to be changed for an implementation, or messages that are embedded into other texts/messages and therefore the message number is never shown • Reserved message number ranges are for future use and therefore must not be used by all products.
Customer Modification	Override Description (DESCRLONG_OVRD), Message Text Override (MESSAGE_TEXT_OVRD)

Meta Data - Table and Field

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

Meta Data - Constraints

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

Meta Data - Menu

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

Properties	Description
Tables	CI_MD_MENU, CI_MD_MENU_L, CI_MD_MENU_ITEM, CI_MD_MENU_ITEM_L, CI_MD_MENU_LINE, CI_MD_MENU_LINE_L
Standard Data Fields	Menu Name (MENU_NAME), Menu Item Id (MENU_ITEM_ID), Menu Line Id (MENU_LINE_ID)

Properties	Description
Customer Modification	Override Label (OVRD_LABEL) on Menu Line Language Table (CI_MD_MENU_LINE_L)

Meta Data - Program, Location and Services

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

Meta Data - Maintenance Object

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

Meta Data - Work Tables

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

Meta Data - Search Object

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

Navigation Option

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

Portal and Zone

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

Sequence

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

Schema

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

Script

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

To Do Type

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

XAI Configuration

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

XAI Services

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

Oracle Utilities Application Framework Only Tables

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

- CI_MD_AT_DTL / CI_MD_AT_DTL_L
- CI_MD_ATT_TY
- CI_MD_CTL / CI_MD_CTL_L
- CI_MD_CTL_TMPL
- CI_MD_ELTY / CI_MD_ELTY_L
- CI_MD_ELTY_AT
- CI_MD_LOOKUP_F
- CI_MD_PDF / CI_MD_PDF_VAL
- CI_MD_MSG / CI_MD_MSG_L
- CI_MD_SRC_TYPE / CI_MD_SRC_TYPE_L
- CI_MD_TMPL / CI_MD_TMPL_L
- CI_MD_TMPL_ELTY

- CI_MD_TMPL_VAR / CI_MD_TMPL_VAR_L
- CI_MD_VAR / CI_MD_VAR_DTL / CI_MD_VAR_DTL_L
- CI_XAI_EXECUTER / CI_XAI_EXECUTER_L

System Table List

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

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

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

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

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

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

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

Table Name	Upgrade Action	Description
CI_MD_SOCG	MG	Search Object Criteria Group
CI_MD_SOCG_FLD	MG	Search Object Criteria Group Field
CI_MD_SOCG_FLDAT	MG	Search Criteria Group Field Attribute
CI_MD_SOCG_L	MG	Search Object Criteria Group Language
CI_MD_SOCG_SORT	MG	Search Criteria Group Result Sort Order
CI_MD_SO_L	MG	Search Object Language
CI_MD_SO_RSFLD	MG	Search Object Result Field
CI_MD_SO_RSFLDAT	MG	Search Object Result Field Attribute
CI_MD_SVC	MG	MD Service
CI_MD_SVC_L	MG	MD Service Language
CI_MD_SVC_PRG	MG	MD Service Program
CI_MD_TAB_MOD	MG	UI Tab Module
CI_MD_TBL	MG	MD Table
CI_MD_TBL_FLD	MG	MD Table Field
CI_MD_TBL_FLD_L	MG	MD Table Field Language
CI_MD_TBL_L	MG	MD Table Language
CI_MD_WRK_TBL	MG	Work Table
CI_MD_WRK_TBLFLD	MG	Work Table Field
CI_MD_WRK_TBL_L	MG	Work Table Language
CI_MSG	MG	Message
CI_MSG_CATEGORY	MG	Message Category
CI_MSG_CATEGORY_L	MG	Message Category Language
CI_MSG_L	MG	Message Language
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
C1_PORTAL_OPT	MG	Portal Option
CI_PORTAL_ZONE	MG	Portal Zone
CI_SCR	MG	Script
CI_SCR_CRT	MG	Script Criteria
CI_SCR_CRT_GRP	MG	Script Criteria Group

Table Name	Upgrade Action	Description
CI_SCR_CRT_GRP_L	MG	Script Criteria Group Language
CI_SCR_DA	MG	Script Data Area
CI_SCR_FLD_MAP	MG	Script Field Mapping
CI_SCR_L	MG	Script Language
CI_SCR_PRMPT	MG	Script Prompt
CI_SCR_PRMPT_L	MG	Script Prompt Language
CI_SCR_STEP	MG	Script Step
CI_SCR_STEP_L	MG	Script Step Language
CI_SEQ	MG	Sequence
CI_TD_DRLKEY_TY	MG	To Do Type Drill Key
CI_TD_SRTKEY_TY	MG	To Do Type Sort Key
CI_TD_SRTKEY_TY_L	MG	To Do Type Sort Key Language
CI_TD_TYPE	MG	To Do Type
CI_TD_TYPE_L	MG	To Do Type Language
CI_UI_ZONE	MG	Context Sensitive Zone
CI_USR_NAV_LINK	MG	User Favorite Links
CI_XAI_ADAPTER	MG	XAI Adapter
CI_XAI_ADAPTER_L	MG	XAI Adapter Lang
CI_XAI_CLASS	MG	Message Class
CI_XAI_CLASS_L	MG	Message Class Language
CI_XAI_ENV_HNDL	MG	XAI Envelope Handler
CI_XAI_ENV_HNDL_L	MG	XAI Envelope Handler Language
CI_XAI_IN_SVC	MG	XAI Inbound Service
CI_XAI_IN_SVC_L	MG	XAI Inbound Service Language
CI_XAI_SVC_PARM	MG	XAI Inbound Service Parameters
CI_ZONE	MG	Zone
CI_ZONE_HDL	MG	Zone Type
CI_ZONE_HDL_L	MG	Zone Type Language
CI_ZONE_HDL_PRM	MG	Zone Type Parameters
CI_ZONE_HDL_PRM_L	MG	Zone Type Parameters Language
CI_ZONE_L	MG	Zone Language
CI_ZONE_PRM	MG	Zone Parameters
F1_BUS_OBJ	MG	Business Object
F1_BUS_OBJ_ALG	MG	Business Object Algorithm

Table Name	Upgrade Action	Description
F1_BUS_OBJ_L	MG	Business Object Language
F1_BUS_OBJ_OPT	MG	Business Object Option
F1_BUS_OBJ_STATUS	MG	Business Object Status
F1_BUS_OBJ_STATUS_ALG	MG	Business Object Status Algorithm
F1_BUS_OBJ_STATUS_L	MG	Business Object Status Language
F1_BUS_OBJ_STATUS_OPT	MG	Business Object Status Option
F1_BUS_OBJ_STATUS_RSN	MG	Status Reason
F1_BUS_OBJ_STATUS_RSN_L	MG	Status Reason Language
F1_BUS_OBJ_TR_RULE	MG	Business Object Transition Rule
F1_BUS_OBJ_TR_RULE_L	MG	Business Object Transition Rule Language
F1_BUS_SVC	MG	Business Service
F1_BUS_SVC_L	MG	Business Service Language
F1_DATA_AREA	MG	Data Area
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_EXT_LOOKUP_VAL_CHAR	MG	Extendable Lookup Characteristics
F1_IWS_ANN	MG	Web Service Annotation
F1_IWS_ANN_L	MG	Web Service Annotation Language
F1_IWS_ANN_PARM	MG	Web Service Annotation Parameter
F1_IWS_ANN_TYPE	MG	Web Service Annotation Type
F1_IWS_ANN_TYPE_L	MG	Web Service Annotation Type Language
F1_IWS_ANN_TYPE_PARM	MG	Web Service Annotation Type Parm
F1_IWS_ANN_TYPE_PARM_L	MG	Web Service Annotation Type Parameter Language
F1_IWS_SVC	MG	Inbound Web Service
F1_IWS_SVC_L	MG	Inbound Web Service Language
F1_IWS_SVC_OPER	MG	Inbound Web Service Operations
F1_IWS_SVC_OPER_L	MG	Inbound Web Service Operations Language
F1_MANAG_CONTENT	MG	Managed Content
F1_MANAG_CONTENT_L	MG	Managed Content Language

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

Table Name	Upgrade Action	Description
CI_DAR_USR	KP	Data Access User
CI_DISP_PROF	KP	Display Profile
CI_DISP_PROF_L	KP	Display Profile Language
CI_FUNC	KP	Function
CI_FUNC_FLD	KP	Function Field
CI_FUNC_FLD_L	KP	Function Field Language
CI_FUNC_L	KP	Function Language
CI_GEO_TYPE	KP	Geographic Type
CI_GEO_TYPE_L	KP	Geographic Type Language
CI_INSTALL_ALG	KP	Installation Algorithm
CI_INSTALL_MSG	KP	Installation Message
CI_INSTALL_MSG_L	KP	Installation Message Language
CI_INSTALL_PROD	KP	Installation Product
CI_MD_RPT	KP	Report Definition
CI_MD_RPT_L	KP	Report Language
CI_MD_RPT_LBL	KP	Report Labels
CI_MD_RPT_PARM	KP	Report Parameters
CI_MD_RPT_PARM_L	KP	Report Parameters Language
CI_MD_TOOLREP_XML	KP	MD Tool Reference XML
CI_MD_TOOL_REP	KP	MD Tool Reference
CI_NT_DNTY_CTXT	KP	Notification Download Type Context
CI_NT_DWN_FORM	KP	Notification Download Format
CI_NT_DWN_FORM_L	KP	Notification Download Format Language
CI_NT_DWN_PROF	KP	Notification Download Profile
CI_NT_DWN_PROF_L	KP	Notification Download Profile Language
CI_NT_DWN_TYPE	KP	Notification Download Type
CI_NT_DWN_TYPE_L	KP	Notification Download Type Language
CI_NT_UP_XTYPE	KP	Notification Upload Type
CI_NT_UP_XTYPE_L	KP	Notification Upload Type Language
CI_NT_XID	KP	External System
CI_NT_XID_L	KP	External System Language
CI_PHONE_TYPE	KP	Phone Type
CI_PHONE_TYPE_L	KP	Phone Type Language
CI_ROLE	KP	Role

Table Name	Upgrade Action	Description
CI_ROLE_L	KP	Role Language
CI_ROLE_USER	KP	Role User
CI_RPT_OPTION	KP	Report Options
CI_SC_AUTH_LVL	KP	Security Type Auth Level
CI_SC_AUTH_LVL_L	KP	Security Type Auth Level Language
CI_SC_TYPE	KP	Security Type
CI_SC_TYPE_L	KP	Security Type Language
CI_SEAS_SHIFT	KP	Seasonal Time Shift Schedule
CI_SEAS_TM_SHIFT	KP	Seasonal Time Shift
CI_SEAS_TM_SHIFT_L	KP	Seasonal Shift Language
CI_STATE	KP	State
CI_STATE_L	KP	State Language
CI_TD_EX_LIST	KP	To Do Type Message Overrides
CI_TD_TYPE_ALG	KP	To Do Type Algorithms
CI_TD_TYPE_CHAR	KP	To Do Type Characteristic
CI_TD_VAL_ROLE	KP	To Do Type Role
CI_TIME_ZONE	KP	Time Zone
CI_TIME_ZONE_L	KP	Time Zone Language
CI_USR_GRP_SC	KP	User Group Security Type
CI_USR_BOOKMARK	KP	User Bookmarks
CI_USR_PORTAL	KP	User Portal
CI_USR_SCR	KP	User Scripts
CI_USR_ZONE	KP	User Zone
CI_USR_ZONE_SAVE	KP	User Zone Save
CI_WFM	KP	Feature Configuration
CI_WFM_L	KP	Feature Configuration Language
CI_WFM_MSG	KP	Feature Configuration Message
CI_WFM_OPT	KP	Feature Configuration Options
CI_WF_EVT_TYPE	KP	WF Event Type
CI_WF_EVT_TYPE_L	KP	WF Event Type Language
CI_WF_PP	KP	WF Process Profile
CI_WF_PP_L	KP	WF Process Profile Language
CI_WF_PP_NT	KP	WF Process Notification
CI_WF_PP_NT_CRT	KP	WF Process Notification Criteria

Table Name	Upgrade Action	Description
CI_WF_PROC_SCHED	KP	WF Process Creation Schedule
CI_WF_PROC_SCHED_K	KP	WF Process Creation Schedule Key
CI_WF_PROC_TMPL	KP	WF Process Template
CI_WF_PROC_TMPL_L	KP	WF Process Template Language
CI_WF_RESP	KP	WF Response
CI_WF_RESP_DEP	KP	WF Response Dependency
CI_XAI_JDBC_CON	KP	XAI JDBC Connection
CI_XAI_JDBC_CON_L	KP	XAI JDBC Connection Language
CI_XAI_JMS_CON	KP	XAI JMS Connection
CI_XAI_JMS_CON_L	KP	XAI JMS Connection Language
CI_XAI_JMS_Q	KP	XAI JMS Queue
CI_XAI_JMS_Q_L	KP	XAI JMS Queue Language
CI_XAI_JMS_TPC	KP	XAI JMS Topic
CI_XAI_JMS_TPC_L	KP	XAI JMS Topic Language
CI_XAI_JNDI_SVR	KP	XAI JNDI Server
CI_XAI_JNDI_SVR_L	KP	XAI JNDI Server Language
CI_XAI_OPTION	KP	Message Option
CI_XAI_RCVR	KP	XAI Receiver
CI_XAI_RCVR_CTX	KP	XAI Receiver Context
CI_XAI_RCVR_L	KP	XAI Receiver Language
CI_XAI_RCVR_RGRP	KP	XAI Receiver Rule Group
CI_XAI_RCVR_RSP	KP	XAI Receiver Response
CI_XAI_RGRP	KP	XAI Rule Group
CI_XAI_RGRP_ATT	KP	XAI Rule Group Attachment
CI_XAI_RGRP_L	KP	XAI Rule Group Language
CI_XAI_ROUTING	KP	XAI Routing
CI_XAI_RT_TYPE	KP	XAI Route Type
CI_XAI_RT_TYPE_L	KP	XAI Route Type Language
CI_XAI_RULE	KP	XAI Rule
CI_XAI_SENDER	KP	Message Sender
CI_XAI_SENDER_L	KP	Message Sender Language
CI_XAI_SNDR_CTX	KP	Message Sender Context
F1_BKT_CONFIG	KP	Bucket Configuration
F1_BKT_CONFIG_L	KP	Bucket Configuration Language

Table Name	Upgrade Action	Description
F1_BKT_CONFIG_REL_OBJ	KP	Bucket Configuration Related Object
F1_BKT_CONFIG_VAL	KP	Bucket Configuration Value
F1_BKT_CONFIG_VAL_L	KP	Bucket Configuration Value Language
F1_BUS_OBJ_STATUS_RSN_CHAR	KP	Status Reason Characteristic
F1_EXTSYS_OUTMSG_PROF	KP	External System Outbound Message Type
F1_INSTALLATION	KP	Installation Option - Framework
F1_IWS_ANN_CHAR	KP	Web Service Annotation Characteristics
F1_IWS_ANN_TYPE_CHAR	KP	Web Service Annotation Type Characteristics
F1_IWS_SVC_ANN	KP	Inbound Web Service Link to Annotation
F1_IWS_SVC_CHAR	KP	Inbound Web Service Characteristics
F1_IWS_SVC_LOG	KP	Inbound Web Service Log
F1_IWS_SVC_LOG_PARM	KP	Inbound Web Service Log Parameter
F1_MAP_OVRD	KP	UI Map Override
F1_MD_DB_OBJ	KP	MD Database Object
F1_MST_CONFIG	KP	Master Configuration
F1_OUTMSG_TYPE	KP	Outbound Message Type
F1_OUTMSG_TYPE_L	KP	Outbound Message Type Language
F1_REQ_TYPE	KP	Request Type
F1_REQ_TYPE_L	KP	Request Type Language
F1_REQ_TYPE_LOG	KP	Request Type Log
F1_REQ_TYPE_LOG_PARM	KP	Request Type Log Parameters
F1_SVC_TASK_TYPE	KP	Service Task Type
F1_SVC_TASK_TYPE_CHAR	KP	Service Task Type Characteristics
F1_SVC_TASK_TYPE_L	KP	Service Task Type Language
F1_WEB_SVC	KP	Web Service Adapter
F1_WEB_SVC_CHAR	KP	Web Service Adapter Characteristics
F1_WEB_SVC_L	KP	Web Service Adapter Language
F1_WEB_SVC_LOG	KP	Web Service Adapter Log
F1_WEB_SVC_LOG_PARM	KP	Web Service Adapter Log Parameter
F1_WEB_SVC_OPERATIONS	KP	Web Service Adapter Operations
SC_USER	KP	User
SC_USER_CHAR	KP	User Characteristic
SC_USER_GROUP	KP	User Group
SC_USER_GROUP_L	KP	User Group Language

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