

**Oracle® Revenue Management and Billing for
Financial Services**

Version 2.2.4.0

Database Administrator's Guide

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Preface

Purpose

This document will help you to understand the installation procedure of the database and provides guidelines that should be followed while implementing the database.

Intended Audience

The following are the intended audience of this document:

- Users
- Consulting staff
- Administrators

Organization of the Document

The information in this document is organized into the following chapters and appendices:

Chapter No.	Chapter Name	Chapter Description
Chapter 1	Database Overview	Provides an overview of the supported database platforms and the database maintenance rules.
Chapter 2	Database Installation	Provides the procedure for installing and configuring the database.
Chapter 3	Database Design	Provides information related to the database design.
Chapter 4	Database Implementation	Provides the guidelines that should be followed while implementing the database.
Appendix A	License and Copyright Notices	Lists all the notices with reference to usage of the various third party products.

Conventions

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

Related Documents

The following documents are related to this document:

- *Oracle Revenue Management and Billing Release Notes* - Provides information about release notes and known issues.
- *Oracle Revenue Management and Billing Quick Installation Guide* – Provides quick reference for installing the ORMB application.
- *Oracle Revenue Management and Billing Installation Guide* – Provides complete reference for installing the ORMB application.
- *Oracle Revenue Management and Billing Upgrade Guide* – Provides complete reference for upgrading the ORMB application.

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Chapter 1: Database Overview

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

- Supported Database Platforms
- Database Maintenance Rules

Supported Database Platforms

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

Supported Platforms Summary Table

Oracle Revenue Management and Billing supports Oracle Database Server 11g on all operating systems on which those servers are available. Oracle Revenue Management and Billing has been tested and certified on the following platforms:

Platform	Database Version
AIX 5.3 TL8 (POWER 64-bit)	Oracle Database Server 11.1.0.6
	Oracle Database Server 11.2.0.2
AIX 6.1 TL1 (POWER 64-bit)	Oracle Database Server 11.1.0.6
	Oracle Database Server 11.2.0.2
Windows 2003 Server SP2 (x86_64 64-bit)	Oracle Database Server 11.1.0.6
	Oracle Database Server 11.2.0.2
Oracle Enterprise Linux 5.5 (64-bit) (x86_64 64 bit)	Oracle Database Server 11.1.0.6
	Oracle Database Server 11.2.0.2

Support for Software Patches and Upgrades

Due to the ongoing nature of software improvement, vendors will be issuing patches and service packs for the operating systems, application servers and database servers on top of specific versions that Oracle Revenue Management and Billing has been tested with.

If it is necessary to apply an upgrade, please do that in a test environment prior to updating Oracle Revenue Management and Billing production.

The only exceptions from this rule are Hibernate and C3PO software. For these, the exact versions mentioned in this guide must be installed. Please always check with Oracle Revenue Management and Billing support prior to installing Hibernate and C3PO updates.

Always contact Oracle Revenue Management and Billing Support prior to applying vendor updates that does 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 schema containing the base database objects used by the product.

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

What is Permitted to Be Changed

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 to 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 as long they don't conflict with the existing indexes and views shipped with the application.
- 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, datafile 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 to site standards unless otherwise advised by Oracle Support or outlined in this document.

What is Not Permitted to Be Changed

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

- Roles provided must not be altered in any way.
- 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 indexes must not be removed.

Chapter 2: Database Installation

This section provides the steps required to install or upgrade the Oracle Revenue Management and Billing database, including:

- Installation Overview
- Oracle Database Installation

Installation Overview

Note: Refer to the *Oracle Revenue Management and Billing Installation Guide* for the hardware and software versions required for the installation on the UNIX Server, Windows Server or Linux Server. This installation is for database of Oracle Revenue Management and Billing V2.2.4.

There are two types of installations to be considered:

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

For an Initial Install, create an empty database on the UNIX/Linux or Windows server, populate the database with RMB Media Pack which bundles FW and RMB component.

The Packaged Demo Database bundles all applied Framework and RMB configuration metadata along with Demo transaction data. In order to install the Demo Database Package, please follow the steps outlined in the Database Creation section.

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.

For an Upgrade you will make sure that the base installation has been performed previously and refer the *Oracle Revenue Management and Billing Upgrade Guide* for further steps.

Oracle Database Installation

The following section outlines the instructions for installing the Oracle Database for Oracle Revenue Management and Billing.

Note: The Database Creation program can be executed on Windows, UNIX and Linux systems. However, ORMB application and Oragensec programs can only be executed from Windows system.

Database Creation

This step is not required if you are performing a database upgrade from a previous version of the application.

Note: The database install will create an empty database with at least one tablespace for storing the application objects before running the install. The default name of the application tablespace is CISTS_01. If you do not use the default name or want to spread the application objects across multiple tablespaces, you must edit the Storage.par file, supplied with the install package, before the installation process.

UNIX

For installation, the required file is located in the following folder:

Unix-Oracle-Database/Database/Database Creation

To install the database in UNIX:

1. FTP the **install.tar.Z** file from the UNIX folder to a temporary directory on the UNIX server.
2. Extract the scripts from this file, run the command:

```
zcat install.tar.Z | tar -xf -
```
3. To create the database set the ORACLE_HOME and ORACLE_BASE variables.
4. Execute the utility cdxdba.plx by entering following command:

```
perl cdxdba.plx
```
5. The script will prompt the following:
 - Enter the instance name (DEMO)
 - Enter ORACLE_BASE: the directory where the setup files for the database will be created (/orasw/app/oracle)
 - Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (/orasw/app/oracle/product/10203)
 - Enter ORACLE_DATA: the directory where the data files for the database will be created (/db05/oradata)
 - Enter the character set for the database (UTF8)
6. Enter the values based on the settings of your database server. You can also accept the default values displayed if they match your database server settings. You will be prompted to confirm the settings and select Y or N to create the database.

```
ORACLE_SID: DEMO
ORACLE_HOME: /orasw/app/oracle/product/10203
ORACLE_BASE: /orasw/app/oracle
ORACLE_DATA: /db05/oradata
Character Set: UTF8
```

Do you want to continue (Y/N)?

7. Once the database has been created, you will be prompted with the questions:

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

- Select N to exit the database utility.
- Select Y to import the Demo Install data.

For the Demo Install use the dump file DemoDB.dmp.

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

Enter the name of the dump file (DemoDB.dmp): **DemoDB.dmp**

Enter the name of the log file (DemoDB.log): **DemoDB.log**

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

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

Windows

For installation, the required file is located in the following folder:

Windows-Oracle-Database\Database\Database Creation

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

To install the database in Windows:

1. Run the utility CDXDBA.exe located in the Windows folder.

The utility will display a list with the following options:

- E - Export a schema from the database
 - R - Refresh a schema with a database dump
 - C - Create/Recreate a local database
 - H - See help for the command line options
2. Select option **C** to create an empty database on your machine.
 3. The script will prompt the following:
 - Enter the instance name (DEMO)
 - Enter the character set of the database (UTF8)
 - Enter ORACLE_BASE: the directory where the setup files for the database will be created (c:\oracle)
:D:\oracle

- Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (c:\oracle\product\11.2.0\Db_1)
- Enter ORACLE_DATA: the directory where the data files for the database will be created(D:\oracle\oradata)

Enter the values based on the settings of your database server. You can also accept the default values displayed if they match your database server settings.

4. Once the database has been created, you can exit the utility by selecting Q or select the option R - Refresh a schema with a database dump file to load the Demo Install data.

Option **R** causes the utility to drop all the objects from the schema and import the schema from a database dump file.

For the Demo Install use the dump file DemoDB.dmp.

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

Security Configuration

The configuration utility and scripts are located in the Security folder and needs to be invoked from Windows system.

Execute the OraGenSec.exe utility.

The script will prompt for parameter values:

- Enter the Oracle user that owns the schema (e.g. CISADM): **cisadm**
- Enter the password for the CISADM 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): Generate security for All objects in the Database?
 - (O/o): Generate security for specific Objects inputted in this terminal?
 - (F/f): Generate security for specific objects generated from an input File?

Choose the relevant option and continue. The utility configures security for the CISADM schema objects.

Populating Language Data

At this point, the Oracle Revenue Management and Billing demo database is ready for usage. Please note that this database contains data in ENGLISH language only.

Initial Installation

This section describes the initial installation of the Oracle Revenue Management and Billing Application Database blueprints on a blank database.

Database Script and ORMB Application Installation

Unzip Windows-Oracle-Database.zip or Unix-Oracle-Database.zip to your desktop depending on whether you want to install on the Windows or UNIX/Linux server. The contents of these zips include sub folders which are referred to in the Installation process below. In addition, setup a Microsoft Windows desktop with the Oracle Client installed.

Initial Database Installation

The initial installation requires the following to be installed before the installation can be started:

- A database must be created. Site standard techniques or tools may be used to create the database. The templates for creating the database are located under the relevant database version subdirectory of the "Database Creation" directory under :
 - createdb.sql - Create Database
 - createdbcatalog.sql - Build database catalog tables.
 - createdbfiles.sql - Create data files for tablespaces
 - init.ora - Sample initialization parameters for the database
- The users and roles for the product. Templates for this activity are located under the relevant database version subdirectory of the "Database Creation" directory as createcdxusers.sql.

Note:

Please alter a copy of the above files for site specific changes.

The CDXDBA utility provided in the Database Creation folder is usually recommended to automate the process.

Install ORMB Application

The files for the Initial Install of the Oracle Revenue Management and Billing application are located in the Database/Install-Upgrade folder.

The folder contains the scripts and utilities that you will run in order to complete the installation process.

The process prompts for the names of three database users during this process:

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

Perform the following steps:

1. Run CDXDBI.exe. The utility prompts you to enter values for the following parameters:
 - The name of the target database.
 - The password for the SYSTEM user account in the database (in silent mode).
 - The name of the owner of the Database Schema.
 - The password for the user (in silent mode).
 - The Oracle user with read-write privileges to the Database Schema
 - The Oracle user with read-only privileges to the Database Schema

Note: You can execute CDXDBI.exe only from Windows system.

2. The utility at this point is ready to perform the initial install and prompts you for permission to start the process.
3. If you chose to continue, CDXDBI first checks for the existence of each of the users specified and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.
4. After setting up the roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

CDXDBI performs the following tasks:

1. 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).
2. Connects to the database as SYSTEM account, checks whether the user already has the application schema installed to verify whether this is an initial installation.
3. Verifies whether the tablespace names already exist in Storage.par file (the process aborts, if not).
4. Installs the schema, installs the system data, and configures security.
5. Maintains upgrade log tables in the database.
6. Updates release id when the upgrade is completed successfully.
7. If an error occurs while executing a SQL script or another utility, it logs and displays the error message and allows you to re-execute the current step. Log files CDXDBI###.log are created in the same folder as CDXDBI and contains all the SQL commands executed against the database along with the results. The log files are incremental so that the results are never overwritten. If warning messages are generated during the upgrade, CDXDBI prompts the user at the end of the process. Users should check the log files to verify the warning messages. Warning messages are only alerts and do not necessary mean a problem exists.

Post-Install Tasks

Refer to the [Populating Language Data](#) if the application is to run in another language other than ENGLISH.

Database Statistics Generation

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

Demo Install

The Initial installation requires the following to be installed before the installation can be started:

- A database must be created. Site standard techniques or tools may be used to create the database. The templates for creating the database are located under the relevant database version subdirectory of the "Database Creation" directory under :
 - createdb.sql - Create Database
 - createdbcatalog.sql - Build database catalog tables.
 - createdbfiles.sql - Create data files for tablespaces
 - init.ora - Sample initialization parameters for the database
- The users and roles for the product. Templates for this activity are located under the relevant database version subdirectory of the "Database Creation" directory as createcdxusers.sql.

Note:

Please alter a copy of the above files for site specific changes.

The CDXDBA utility provided in the Database Creation folder is usually recommended to automate the process.

Install

Complete the application [Database Creation](#) to create the database and import the Demo Install data into the database. To import the Demo Install data, refer to the steps in the Database Creation section.

Note: The demo data dump will work only on 11G database and not on 10G database.

Post-Install

Configure the security for the database. Refer to [Security Configuration](#).

Refer to the [Populating Language Data](#) if the application is to run in another language other than ENGLISH.

Chapter 3: Database Design

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

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

Database Object Standard

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

Naming Standards

The following naming standards must be applied to database objects.

Table

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

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

Some examples are:

- CI_ADJ_TYPE
- CI_ADJ_TYPE_L

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

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

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

Columns

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

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

- Use the suffix **DTTM** to define Date Time columns.
- Use the suffix **TM** to define Time columns.

Some examples are:

- ADJ_STATUS_FLG
- CAN_RSN_CD

Indexes

Index names are composed of the following parts:

[X][C/M/T]NNN[P/S]

- **X** - letter X is used as a leading character of all base index names prior to Version 2.0.0. Now the first character of product owner flag value should be used instead of letter X. For client specific implementation index in Oracle, use CM.
- **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.

Some examples are:

- XC001P0
- XT206S1
- XT206C2
- CM206S2

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

Sequence

The base sequence name must be prefixed with the 'RMB' and table name.

example :

- RMB_CL_TXN_HEADER

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. For example, Index names in base product are prefixed by X; the Implementers' index name must not be prefixed with X.

Warning! Ensure that any schema changes made for any custom based work does not conflict with names included in the application. It is mandatory that you choose a prefix for any additional database objects you create to support custom functionality. The convention recommended is to use “CM_” prefix for objects. The same principle applies to metadata supporting the schema objects created in the application repository.

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 Constraints

The Non-null constraints are implemented for all columns except optional DATE, TIME or TIMESTAMP columns.

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 RMB Framework limits the data modification of the tables that have owner flag to the data owned by the product.

Version

The Version column is used to for optimistic concurrency control in the application code. Add the Version column to all tables that are maintained by a Row Maintenance program irrespective of the language used (COBOL or JAVA).

Warning! Ensure that any schema changes made for any custom based work does not conflict with names included in the application. It is mandatory that you choose a prefix for any additional database objects you create to support custom functionality. The convention recommended is to use “CM_” prefix for objects. The same principle applies to metadata supporting the schema objects created in the application repository.

Chapter 4: 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 MetaLink 560367.1 for more advice.

Configuration Guidelines

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

Index

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

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

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

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

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

Table Partitioning Recommendations

Oracle Utilities has two recommendations for partitioning tables.

1. No partitioning for non-RAC environments.
2. Minimum of 'n' partitions for selective database objects, where 'n' is number of RAC nodes.

Transparent Data Encryption Recommendations

Oracle RMB Framework supports Oracle Transparent Data Encryption (TDE) with the AES128 Encryption Algorithm. 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 it involves additional hardware utilization from the system.

Advanced Data Compression Recommendations

Oracle Utilities supports Advanced Data Compression. This is available from Oracle 11gR1 onwards. It reduces the database storage by 40%. As the compressed data goes into SGA the potential IO is also reduced. Make sure that the hardware resources are sufficiently sized for this as it involves additional hardware utilization from the system.

Storage Recommendations

This section specifies recommended options for storing the database objects.

SecureFile for Storing LOBs

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

- The storage options with SecureFiles for Heap Tables should be ENABLE STORAGE IN ROW, CACHE and COMPRESS.
- For the IOT Table the PCTTHRESHOLD 50 OVERFLOW clause should be specified and the storage options with SecureFiles should be ENABLE STORAGE IN ROW, CACHE and COMPRESS.
 - The PCTTHRESHOLD should be specified as a percentage of the block size. This value defines the maximum size of the portion of the row that is stored in the Index block when an overflow segment is used.
 - The CHUNK option for storage, which is the data size used when accessing or modifying LOB values, can be set to higher than one database block size if big LOBs are used in the IO Operation.
 - For SecureFiles, make sure that the initialization parameter db_securefile is set to PERMITTED (the default).
 - The Tablespace where you are creating the SecureFiles should be enabled with Automatic Segment Space Management (ASSM). In Oracle Database 11g, the default mode of Tablespace creation is ASSM so it may already be set for the Tablespace. If it's not, then you have to create the SecureFiles on a new ASSM Tablespace.

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

Database Configuration Recommendations

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

Large Redo Log File Sizes

The Redo Log files are written by the Log Writer Background process. These Log files are written in a serial manner. Once a Log File is full, a Log Switch occurs and the next Log file starts getting populated. It is recommended that the size of the Redo Log files should be sufficiently high so that you do not see frequent Log Switches in the Alert logs of the database. Frequent Log Switches impact the IO performance and can be avoided by having a larger Redo log File size. Frequent Log Switches impacts the IO performance and can be avoided by having a bigger Redo log File Size.

Database Syntax

SecureFile

```
CREATE TABLE <Table_Name>
( COLUMN1 .....,
  COLUMN2 (CLOB)
)
LOB(COLUMN2) STORE AS SECUREFILE (CACHE COMPRESS);
CREATE TABLE <Table_Name>
( COLUMN1 .....,
  COLUMN2 (CLOB)
  CONSTRAINT <N> 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=10000
db_file_multiblock_read_count=8
transactions=3000
open_cursors=1200
optimizer_index_cost_adj=1
optimizer_index_caching=100
session_cached_cursors=50
trace_enabled=FALSE
db_files=1024
dbwr_io_slaves=10 (Only if Asynchronous IO is not Supported)
sessions=1528
sec_case_sensitive_logon=FALSE
processes=1000
dml_locks=4860
```

Oracle Database Implementation Guidelines

This section provides guidelines for implementing the Oracle database.

Optimizer Mode

Please set the Optimizer Mode in Init.ora to 'CHOOSE'.

Index Organized Tables (IOT)

Consider creating the following tables as IOT in the production size databases.

CI_FT (Financial Transactions) - Index on the FT_ID.

CI_TREND (Trend Table) - Index on the primary key. Create additional indexes.

Note. There is a slight chance that the upgrade will fail on IOT tables when the primary key structure is changed in the base tables.

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 will work the 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.

Tables to consider for Partitioning

The following is the list of the tables we suggest are candidates for partitioning. The partitioning key is the primary key of the table. Please review your usage of the application and partition tables as necessary.

Table Name	Reason for Partitioning
CI_ACC_CUR	Voluminous Data
CI_ACCT	Voluminous Data
CI_ACCT_MSG	Voluminous Data
CI_ADJ	Voluminous Data
CI_ADJ_K	Voluminous Data
CI_ADM_RVW_SCH	Voluminous Data
CI_APAY_CLR_STG	Voluminous Data

Table Name	Reason for Partitioning
CI_BILL	Voluminous Data
CI_BILL_EXCP	Voluminous Data
CI_BILL_K	Voluminous Data
CI_BILL_MSG_PRM	Voluminous Data
CI_BILL_MSGS	Voluminous Data
CI_BILL_ROUTING	Voluminous Data
CI_BILL_SA	Voluminous Data
CI_BSEG	Voluminous Data
CI_BSEG_K	Voluminous Data
CI_BSEG_CALC	Voluminous Data
CI_BSEG_CALC_LN	Voluminous Data
CI_BSEG_EXCP	Voluminous Data
CI_BSEG_ITEM	Voluminous Data
CI_BSEG_MSG	Voluminous Data
CI_BSEG_READ	Voluminous Data
CI_BSEG_SQ	Voluminous Data
CI_EXT_STMT	Voluminous Data
CI_FT	Voluminous Data
CI_FT_K	Voluminous Data
CI_FT_GL	Voluminous Data
CI_FT_PROC	Voluminous Data
CI_PARTY	Voluminous Data
CI_PAYPLAN	Voluminous Data
CI_PAY_EVENT	Voluminous Data
CI_PAY_EVENT_K	Voluminous Data
CI_PAY_SEG	Voluminous Data
CI_PAY_SEG_K	Voluminous Data
CI_PAY_TNDR	Voluminous Data
CI_PAY_TNDR_K	Voluminous Data
CI_PER	Voluminous Data
CI_PREM	Voluminous Data
CI_PRICEASGN	Voluminous Data
CI_REG	Voluminous Data
CI_REG_K	Voluminous Data

Table Name	Reason for Partitioning
CI_SA	Voluminous Data
CI_SA_REL	Voluminous Data
CI_WO_EVT	Voluminous Data
CI_WO_EVT_CC	Voluminous Data
CI_WO_PROC	Voluminous Data
CI_WO_PROC_K	Voluminous Data
CI_WO_PROC_SA	Voluminous Data
CI_APPTXN	Voluminous Data
CI_APPTXN_CHAR	Voluminous Data
CI_APPTXN_ITEM	Voluminous Data
CI_APPTXN_ITEM_CHAR	Voluminous Data
CI_APPTXN_K	Voluminous Data
CI_APPTXN_LOG	Voluminous Data

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This is MIME::Lite 3.01 Maintenance release

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