

Oracle® Revenue Management and Billing

Version 2.9.0.0.0

Installation Guide

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Oracle Revenue Management and Billing Installation Guide

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Preface

About This Document

This document will help you to understand the prerequisites, supported platforms, and hardware and software requirements for installing the Oracle Revenue Management and Billing (ORMB) application. It explains how to install Oracle Utilities Application Framework and Oracle Revenue Management and Billing on the application server.

Intended Audience

This document is intended for the following audience:

- End-Users
- System Administrators
- Consulting Team
- Implementation Team

The intended audience should have:

- Required experience for installing and configuring application servers and other software.
- Administrative privileges on the host where you want to install the software.

Organization of the Document

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

Section No.	Section Name	Description
Section 1	Overview	Provides an overview on how to install the Oracle Revenue Management and Billing application.
Section 2	Application Architecture Overview	Provides an overview of the Oracle Revenue Management and Billing architecture.
Section 3	Supported Platforms and Hardware Requirements	Lists the software and hardware requirements for each application tier.
Section 4	Planning the Installation	Explains how to install and configure the Oracle Revenue Management and Billing application. It also provides checklist and worksheets which help you in the installation and configuration process.
Section 5	Installing Application Server Prerequisite Software	Lists the software that you need to install for each supported operating system and application server combination.
Section 6	Configuring WebSphere Application Server	Explains how to configure the WebSphere Basic or WebSphere Network Deployment environments before installing OUAF and after installing ORMB.

Section No.	Section Name	Description
Section 7	Installing the Application Server Component of Oracle Utilities Application Framework	Explains how to install Oracle Utilities Application Framework.
Section 8	Installing the Application Server Component of Oracle Revenue Management and Billing	Explains how to install the Oracle Revenue Management and Billing application. It also explains how to install the Oracle Revenue Management and Billing online help.
Section 9	Additional Tasks	Lists and describes the additional tasks that you need to perform after installing the application.
Appendix A	Application Framework Prerequisite Patches	Lists the framework patches that you need to install prior to installing the Oracle Revenue Management and Billing application.
Appendix B	ORMB V2.9.0.0.0 Rollup Packs	Lists the rollup packs available for Oracle Revenue Management and Billing Version 2.9.0.0.0. It also explains how to apply a rollup pack.
Appendix C	ORMB V2.9.0.0.0 Bug Fixes	Lists the bugs fixed in Oracle Revenue Management and Billing Version 2.9.0.0.0.
Appendix D	License and Copyright Notices	Lists all notices with reference to usage of third party products.

Related Documents

You can refer to the following documents for more information:

Document	Description
<i>Oracle Revenue Management and Billing Version 2.9.0.0.0 Release Notes</i>	Provides a brief description about the new features, enhancements, UI and database level changes, supported platforms, framework upgrade, supported upgrades, and technology upgrade made in this release. It also highlights the discontinued features, bug fixes, and known issues in this release.
<i>Oracle Revenue Management and Billing Quick Installation Guide</i>	Provides high-level information on how to install the Oracle Revenue Management and Billing (ORMB) application and selected additional software.
<i>Oracle Revenue Management and Billing Database Administrator's Guide</i>	Provides information about the Oracle Database Server and Client required for installing the Oracle Revenue Management and Billing database. It explains how to install database with and without demo data. It provides database configuration guidelines including recommended settings for the Oracle Exadata Database machine.

Document	Description
<i>Oracle Revenue Management and Billing Server Administration Guide</i>	Explains the Oracle Revenue Management and Billing (ORMB) architecture and technical know-how required for configuring and using the ORMB application. It explains how to configure and deploy web and business application servers. In addition, it explains how to monitor client machines, web and/or business application servers, and database connections.
<i>Oracle Revenue Management and Billing Security Guide</i>	Lists the security features available in the Oracle Revenue Management and Billing application. It explains how to configure security for the Oracle Revenue Management and Billing application using the default security features.

Conventions

The following conventions are used across the document:

Convention	Meaning
boldface	Boldface indicates graphical user interface elements associated with an action, or terms defined in the text.
<i>italic</i>	Italic indicates a document or book title.
<code>monospace</code>	Monospace indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or information that an end-user needs to enter in the application.

Change Log

Revision	Last Update	Updated Section	Comments
17.1	13-May-2020	Section 5.1.2: Web/Application Server Tier	Updated Information
		Section 7.2.4: Copying and Decompressing Install Media	Added Information
		Section 7.3: Installing Oracle Utilities Application Framework Version 4.4.0.0.0	Updated Information
		Section 7.4.1: Installing Rollup Pack for OUAF Version 4.4.0.0.0	Added Information
		Section 8.2: Installing the Application	Updated Information
		Section 8.3: Post Installation Tasks	Added Information
		Section 8.3.1: Applying the 31066976 Patch	Updated Information
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		Section 8.3.5: Applying the 31130102 Patch	Added Section
		Section 8.3.6: Applying the 31190091 Patch	Added Section
		Section 8.3.7: Applying the 31172781 Patch	Added Section
		Section 8.3.8: Applying the 31222633 Patch	Added Section
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		Appendix B: ORMB V2.9.0.0.0 Rollup Packs	Added Information
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		Section 7.2.5: Set Permissions for the CISTAB File in Linux	Updated Information
		Section 7.3: Installing Oracle Utilities Application Framework Version 4.4.0.0.0	Updated Information
		Section 8: Installing the Application Server Component of Oracle Revenue Management and Billing	Updated Information
		Section 8.5: Installing User Documentation	Updated Information
		Appendix D: License and Copyright Notices	Updated Information
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1. Overview

This section provides an overview of the installation of Oracle Revenue Management and Billing (ORMB) application.

1.1 Installation Overview

Installing Oracle Revenue Management and Billing involves the following steps:

1. Review the different tiers of the application architecture as described in the [Application Architecture Overview](#) section.
2. Understand the hardware requirements for installing the application and the supported platforms for the application and database servers as described in the [Supported Platforms and Hardware Requirements](#) section.

Note: The installation and administration of the database server tier is described in detail in *Oracle Revenue Management and Billing Database Administrator's Guide*.

3. Install the database as described in *Oracle Revenue Management and Billing Database Administrator's Guide*.
4. Plan your installation as described in the [Planning the Installation](#) section.
5. Install all required third-party software as described in the [Installing Application Server Prerequisite Software](#) section. The required software is listed for each supported combination of operating system and application server.
6. Install the framework for the application as described in the [Installing the Application Server Component of Oracle Utilities Application Framework](#) section.
7. Install Oracle Revenue Management and Billing as described in the [Installing the Application Server Component of Oracle Revenue Management and Billing](#) section.
8. Follow the installation guidelines described in the [Additional Tasks](#) section.

2. Application Architecture Overview

This section provides an overview of the Oracle Utilities Application Framework application architecture.

2.1 Application Architecture

The Oracle Utilities Application Framework application is deployed on multiple tiers.

Please see *Oracle Revenue Management and Billing Server Administration Guide* for a more detailed description of the application architecture and individual tiers.

2.1.1 Tier 1: Desktop/Client, or Presentation Tier

This tier is implemented in a browser-based client. Users use a desktop client web browser to log in to and use the Oracle Revenue Management and Billing application.

Note: A desktop machine having Microsoft Windows and Oracle Database Client is required to perform some of the Oracle Revenue Management and Billing product installation steps.

2.1.2 Tier 2: Web/Business Application Server, or Business Logic Tier

This tier is implemented in a web application server, business application server, or the batch server. The business application component can be installed as part of the web application server, or as a separate component. Except where explicitly noted, most of the Oracle Utilities Application Framework installation documentation assumes that the web application and business application servers reside together. The batch infrastructure will also run within this tier. You can have multiple batch server instances that serve the application.

2.1.3 Tier 3: Database, or Persistence Tier

This tier is implemented in a database server. The database server stores data maintained by the Oracle Revenue Management and Billing application. More specifically, the database tier contains the data server files and database executables that physically store the tables, indexes, and other database objects for your system.

3. Supported Platforms and Hardware Requirements

This section gives an overview of the tiers on which the product is implemented, and shows each of the operating system/server combinations on which the product is supported. It includes:

- Software and Hardware Considerations
- Requirements by Tier
- Supported Platforms
- Application Server Space Requirements
- Support for Software Patches and Upgrades

3.1 Software and Hardware Considerations

There are many factors that can influence software and hardware decisions. For example, your system may have to satisfy specific performance, availability, or scalability requirements, or to support running in a language other than English. These business requirements, together with the chosen system architecture, should be used in initial software and hardware planning.

Some of the questions that you should answer before beginning the installation include:

- On which hardware platform and operating system will Oracle Revenue Management and Billing be deployed?
- Which web server product will Oracle Revenue Management and Billing deploy on?
- Which database product will Oracle Revenue Management and Billing deploy on?
- Do you plan to deploy multiple Oracle Revenue Management and Billing instances on the same physical server?
- How do you plan to deploy Oracle Revenue Management and Billing?
 - Web/application/database on the same physical server
 - Web/application on one server and database on separate server
 - Each component on its own server

For detailed descriptions of various deployment architecture choices that may aid in planning, please see *Oracle Utilities Application Framework Architecture Guidelines* available on [My Oracle Support](#) (Article ID 807068.1).

The final hardware and software decisions must comply with the specific requirements of Oracle Revenue Management and Billing, as described in the rest of this section.

3.2 Requirements by Tier

The application is deployed on multiple Tiers:

- Tier 1, Desktop
- Tier 2, Web/Business Application Server
- Tier 3, Database Server

3.2.1 Tier 1, Desktop: Software and Hardware Requirements

Configuration	Processor	Memory (RAM)	Monitor Display
Minimum	Pentium IV - 2.0 GHz	1024 MB	1024x768 ¹ 16-bit Color
Recommended ²	Pentium IV - 3.0+ GHz, or any Core 2 Duo or any Athlon X2	2048 MB	1280x1024 ² 32-bit Color

Web Browser Requirements

The following operating system and web browser software are supported:

- Windows 10 (64-bit) with Internet Explorer 11.x³ (not in compatibility mode)
- Windows 10 (64-bit) with Google Chrome Enterprise Version 67 or higher

3.2.2 Tier 2, Web/Business Application Server: Software and Hardware Requirements

Please refer the [Supported Platforms](#) section to determine which web application servers can be used with the operating system that will be hosting this tier.

The recommendations that follow are based on a standard installation with both the web application and business application servers on the same machine and the system running with the default values. The default values may not support a production environment. You should adjust these values according to your production needs. Refer to *Oracle Revenue Management and Billing Server Administration Guide* on how to change the default values. The minimum resource requirements exclude third-party software installation requirements. Refer to the third- party vendors for specific requirements. The following sizing excludes the Oracle database server installation.

3.2.3 Tier 3, Database Server: Software and Hardware Requirements

See the [Supported Platforms](#) section for supported database servers.

¹ To reduce the amount of scrolling required for pages that are longer than 768 or 1024 pixels, consider placing the monitor into vertical position (with narrow side on the bottom).

² The recommended configuration improves client performance.

³ Here, **x** represents the vendor supported version.

3.3 Supported Platforms

The installation has been tested and certified to operate on many operating system, application server, and database server combinations. For the software requirements for each of these combinations, see the [Installing Application Server Prerequisite Software](#) section for more information. This section includes the following topics:

- Operating Systems and Application Servers
- Oracle Database Servers
- Oracle WebLogic Server Information

3.3.1 Operating Systems and Application Servers

The following table lists the operating system and application server combinations on which Oracle Revenue Management and Billing Version 2.9.0.0.0 is supported:

Operating System and Web Browser (Client)	Operating System (Server)	Chipset	Application Server	Database Server
Windows 10 (64-bit) with Internet Explorer 11.x ⁴ or Google Chrome Enterprise Version 67 or higher	AIX 7.2 TL0+ ⁵ (64-bit)	POWER 64-bit	WebLogic 12.2.1.3 (64-bit)	Oracle Database Server 18c (12.2.0.2) SP1+ Oracle Database Server 19c
	Oracle Linux 7.x ⁴ (64-bit)	x86_64	WebLogic 12.2.1.3 (64-bit)	Oracle Database Server 18c (12.2.0.2) SP1+
			IBM WebSphere 9.0.5.2	Oracle Database Server 19c
	Oracle Solaris 11.3+ ⁵	SPARC 64-bit	WebLogic 12.2.1.3 (64-bit)	Oracle Database Server 18c (12.2.0.2) SP1+ Oracle Database Server 19c
	Red Hat Enterprise Linux ⁶ 7.x ⁴ (64-bit)	x86_64	WebLogic 12.2.1.3 (64-bit)	Oracle Database Server 18c (12.2.0.2) SP1+
			IBM WebSphere 9.0.5.2	Oracle Database Server 19c

⁴ Here, **x** represents the vendor supported version.

⁵ Version numbers suffixed with "+" are the MINIMUM version supported. That version and all future 4th digit updates will be supported.

⁶ Oracle Revenue Management and Billing is tested and certified on Oracle Linux 7.x. Oracle Linux is 100% userspace-compatible with Red Hat Enterprise Linux, and therefore Oracle Revenue Management and Billing is supported on Red Hat Enterprise Linux.

Operating System and Web Browser (Client)	Operating System (Server)	Chipset	Application Server	Database Server
	Windows Server 2012 R2 (64-bit)	x86_64	WebLogic 12.2.1.3 (64-bit)	Oracle Database Server 18c (12.2.0.2) SP1+ Oracle Database Server 19c

Note:

Oracle Corporation distributes Oracle Linux with the following two kernels:

Red Hat Compatible Kernel – This kernel is identical to the kernel shipped in Red Hat Enterprise Linux.

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

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

We strongly recommend you to install Oracle Revenue Management and Billing (ORMB) on Windows platform only for non-production activities, such as User Acceptance Testing (UAT), development setup, and so on.

Refer to the Oracle Utilities SDK Documentation for supported development environment configuration.

3.3.2 Oracle Database Servers

Oracle Revenue Management and Billing Version 2.9.0.0.0 is supported with Oracle Database Server 18c (12.2.0.2) SP1+ and 19c on all operating systems listed above. The following Oracle Database Server Editions are supported:

- Oracle Database Server Enterprise Edition

Note: Oracle Database Enterprise Edition with the **Advanced Compression** and **Partitioning** options is strongly recommended in all situations.

Oracle Database Client 18c or 19c is required as a pre-requisite for installing the Oracle Revenue Management and Billing application.

3.3.3 Oracle WebLogic Server Information

You must download and install Oracle WebLogic Server using Fusion Middleware Infrastructure Installer 12.2.1.3.

Note:

You need to apply the **WLS PATCH SET UPDATE 12.2.1.3.181016** patch (Patch Number: 28298734) after installing Oracle WebLogic Server.

While creating a domain, select the **Oracle Restricted JRF - 12.2.1 [oracle_common]** option from the **Create Domain Using Product Templates** page in the **Fusion Middleware Configuration Wizard**. The **WebLogic Coherence Cluster Extension - 12.2.1 [wlsrserver]** option is selected automatically.

3.4 Application Server Space Requirements

For each application server environment, a minimum of 4 GB of real memory is required, plus 6 GB of swap space. The approximate disk space requirements in a standard installation are as follows (the size represents the MINIMUM required):

Location	Size	Usage
Install DIR (\$\$PLEBASE) Location	12 GB recommended	This is the location where the application and framework is installed. The startup, shutdown, and other online log files are stored in this location. The size and space that is used should be monitored because various debugging options can significantly affect the size of log files.
Log DIR (\$\$PLOUTPUT) Location	10 GB recommended 2 GB minimum	This location is used for storing batch log files and output from batch jobs. The size of this space should be influenced by which batches are executed and how often, and the amount of debugging information that is collected.
Location of the application web work files on the web servers	5 GB recommended 2 GB minimum	This location is used by the various web server vendors to expand the application. It should be considered when installing these products. Refer to the individual web server documentation to determine the location of the temporary files.
Installation Temporary Area	10 GB minimum	The application is installed from this location. You need enough space to decompress the files and install the application.
Oracle Data Area	14 GB minimum	This is the location where the Oracle Database data files are stored. The size of this space should be based on the requirements of the production environment. For an initial or demo database install, 4 GB should be sufficient.

3.5 Support for Software Patches and Upgrades

Due to the ongoing nature of software improvement, vendors will issue patches and service packs for the operating systems, application servers and database servers on top of specific versions on which Oracle Utilities Application Framework is tested.

If it is necessary to upgrade, you must first upgrade the testing environment that is running on the same platform as the production environment prior to updating the Oracle Revenue Management and Billing production environment.

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

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

4. Planning the Installation

This section provides information for planning an Oracle Revenue Management and Billing installation, including:

- Installation and Configuration Overview
- Before You Install
- Installation Checklist
- Installation and Configuration Worksheets
- Installation Menu Functionality Overview

4.1 Installation and Configuration Overview

The following diagram provides an overview of the steps that need to be taken to install and configure Oracle Revenue Management and Billing:

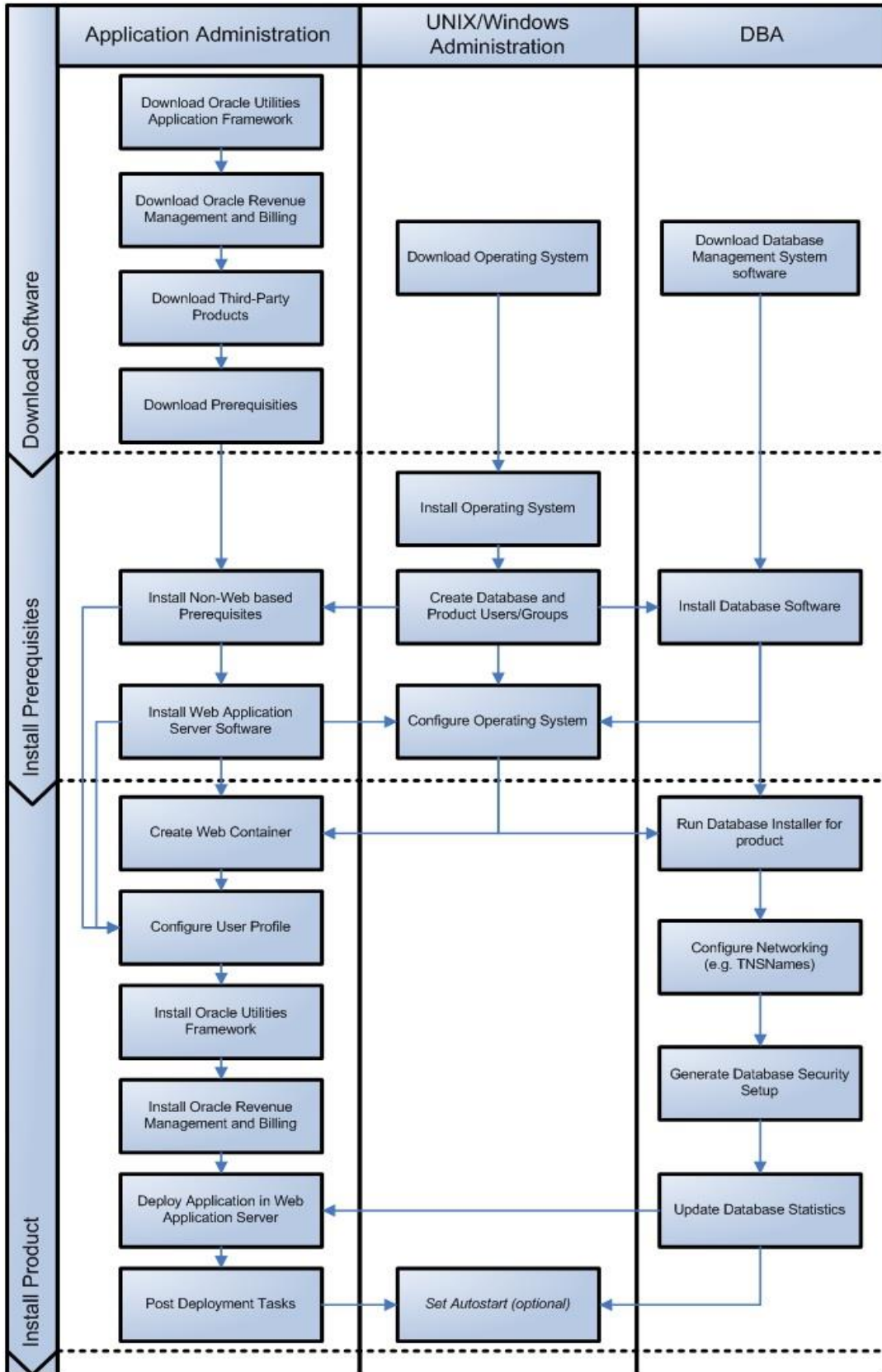


Figure 1: ORMB Installation and Configuration Steps

4.2 Before You Install

Refer to [My Oracle Support](#) for up-to-date additional information on installing Oracle Revenue Management and Billing.

4.2.1 WebLogic Native Installation

With Oracle Utilities Application Framework V4.4.0.0.0, a WebLogic native installation is required. Refer to the *Oracle WebLogic 12.2.1.x Configuration Guide for Oracle Utilities Framework (Doc ID 2413918.1)* whitepaper on [My Oracle Support](#).

4.2.2 Application Server Clustering

If you are considering application server clustering, refer to the *Oracle WebLogic 12.2.1.x Configuration Guide for Oracle Utilities Framework (Doc ID 2413918.1)* whitepaper on [My Oracle Support](#) for additional information.

Additional information about WebLogic clustering can be found at:

http://docs.oracle.com/cd/E17904_01/web.1111/e13709/toc.htm

4.2.3 Directory Names

Directory cannot contain whitespace characters.

4.3 Installation Checklist

The following checklist will help guide you through the installation process of the application tier. The details for each step are presented in subsequent sections.

1. Install the database as described in *Oracle Revenue Management and Billing Database Administrator's Guide*.
2. Create Group/User ID.
3. Install prerequisite software (for complete details about installing and configuring the prerequisite third-party software for your specific platform, see the [Installing Application Server Prerequisite Software](#) section):
 - Oracle Database Client 18c or 19c
 - Java 8 Update 201 or Later
 - Hibernate 4.1.0
4. Install Oracle WebLogic Server using Fusion Middleware Infrastructure Installer 12.2.1.3.
5. Verify that the software is installed.
6. Set up environment variables.
7. Install Oracle Utilities Application Framework.
8. Install the rollup pack for Oracle Utilities Application Framework (prerequisite single fixes for ORMB).
9. Install Oracle Revenue Management and Billing.
10. Deploy the Oracle Revenue Management and Billing application.
11. Complete the post installation tasks.

12. Optional third-party product integration (such as Reporting tools).

4.4 Installation and Configuration Worksheets

During the installation and configuration of the application you will need to provide a variety of system values. These worksheets will assist you in providing that information. They should be completed before installing the application framework, as described in the [Installing the Application Server Component of Oracle Utilities Application Framework](#) section.

Note: Some web application server information will not be available until the software installation steps have been completed as described in the [Installing Application Server Prerequisite Software](#) section.

4.5 Installation Menu Functionality Overview

The main configuration menu is structured so that related variables and/or options are grouped together and are associated by a menu item number. To access a particular group of variables and options, enter the menu item number associated with that group. Each option within that group is displayed in turn on the screen, along with a prompt so that you can type the desired value for the option, if it is not the same as the default or current value.

When performing the initial installation you need to go through all menu options. The menu options may have a default value, a list of valid values and a validation check.

On each option prompt you can keep the current value by simply leaving the input line empty. In order to erase a variable value you need to enter one dot ("."). The leading spaces will be trimmed out on each values entered.

Note:

When working with the menu you will see the following:

>> Valid Values: [ALFANUM]. This indicates you will need to enter an alphanumeric value in the prompt.

>> Valid Values: [NUM]. This indicates you will need to enter a numeric value in the prompt.

Once all options are set, type <P> at the main menu prompt option. This will save the option values selected throughout the configuration.

During this processing the global variables are validated and the configuration file <SPLEBASE>/etc/ENVIRON.INI is created or updated. This file contains all the variables inputted and calculated. These are needed by the next part of the installation process.

To exit the configuration utility without saving the specified parameter values, type X and then press 'Enter'.

4.5.1 Installation Menu Functionality Details

The Environment Installation Utility requires that Oracle Database Client Home is set in the path for the user performing the installation.

Prior to running the installation utility you will need to review the supported platforms document to ensure you have all of the Third Party software installed.

In this menu if the variables are set prior to execution, that value will be defaulted by the installation utility when performing the installation.

When the installation has been completed successfully, the values will be written to an ENVIRON.INI file. When `splenviron.sh` or `splenviron.cmd` is executed, it will read from the `ENVIRON.INI` file to set the environment variables. See *Oracle Revenue Management and Billing Server Administration Guide* for more information about configuring these values.

Install the Oracle Database Client software specified in the [Supported Platforms](#) section prior to running any of the installation utilities.

The following prompt will appear when executing the installation utility:

```
Enter Oracle Client Home Directory (<ENTER> quit):
```

Note: If the environmental variable `ORACLE_CLIENT_HOME` is set, the install script will validate the variable. If it passes the validation you will not be prompted for it. This is needed in order to run Perl installation utilities.

4.5.2 Encryption Methods

The Oracle Utilities Application Framework installation also uses industry standard cryptography to encrypt passwords that are prompted within the installation. Further information on OUA encryption can be found in the [KeyStore Options](#) section.

When these passwords are entered in the command line, the input values are not reflected on the screen when performing the installation.

4.5.3 Environment Installation Options

The environment installation options are available during installation. Alternatively, you can access these options using the following command:

AIX, Linux:

```
$SPLEBASE/bin/configureEnv.sh -i
```

Windows:

```
%SPLEBASE%\bin\configureEnv.cmd -i
```

The environment installation options are categorized into the following menus:

- Environment ID, Roles, Third Party Software Configuration
- Keystore Options
- Environment Installation Options

4.5.3.1 Environment ID, Roles, Third Party Software Configuration

The following table lists and describes the third party software configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Environment ID	ENVIRONMENT_ID	-
Server Roles	SERVER_ROLES	-
Oracle Client Home Directory	ORACLE_CLIENT_HOME	-
Web Java Home Directory	JAVA_HOME	-
Hibernate JAR Directory	HIBERNATE_JAR_DIR	-
ONS JAR Directory ⁷	ONS_JAR_DIR	-
Web Application Server Home Directory	WEB_SERVER_HOME	-
Additional JAR Directory	WLTHINT3CLIENT_JAR_DIR	-
Note: For more information, see the Setting Up and Using the Additional JAR Directory section.		

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.3.2 Keystore Options

The keystore is a set of files used for encryption, decryption, and hash generation. The files reside at the following locations:

- <SPLEBASE>/ks/.ouaf_keystore
- <SPLEBASE>/ks/.ouaf_storepass

In order to run the application correctly, data encryption, decryption and hash generation of data in the database and on the application server must be performed using the same keystore; otherwise, the application will fail.

The following table lists and describes the keystore menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Import Keystore Directory	KS_IMPORT_KEYSTORE_FOLDER	-
Store Type	KS_STORETYPE	-
Alias	KS_ALIAS	-
Alias Key Algorithm	KS_ALIAS_KEYALG	-
Alias Key Size	KS_ALIAS_KEYSIZE	-

⁷ In order to activate the RAC FCF, the application needs the external `ons.jar` file. This `ons.jar` is located at `$ORACLE_HOME/opmn/lib`. The `ons.jar` should be copied to the application server. During the OUAF installation, the relevant option should be populated with the location of the `ons.jar` file.

Menu Option	Corresponding Parameter	Customer Install Value
HMAC Alias	KS_HMAC_ALIAS	-
Padding	KS_PADDING	-
Mode	KS_MODE	-

For more information on how to setup keystores, refer to *Oracle Revenue Management and Billing Security Guide*.

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.3.3 Environment Installation Options

The following table lists and describes the environment installation menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Environment Mount Point	SPLDIR	-
Log Files Mount Point	SPLDIROUT	-
Environment Name	SPLENVIRON	-
Install Application Viewer Module	WEB_ISAPPVIEWER	-
Install Sample CM Source Code	CM_INSTALL_SAMPLE	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.4 Environment Configuration

The environment configuration options are available during installation. Alternatively, you can access these options using the following command:

AIX, Linux:

```
$SPLEBASE/bin/configureEnv.sh
```

Windows:

```
%SPLEBASE%\bin\configureEnv.cmd
```

The environment configuration options are categorized into the following menus:

- Environment Description
- Business Application Server Configuration
- Web Application Server Configuration
- Database Configuration
- General Configuration Options
- OUAF TrustStore Options

4.5.4.1 Environment Description

The following table lists and describes the environment menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Environment Description	DESC	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.4.2 WebLogic Business Application Server Configuration

The following table lists and describes the WebLogic Business Application Server configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Business Server Host	BSN_WLHOST	-
Business Server Application Name	BSN_APP	-
MPL Admin Port Number	MPLADMINPORT	-
MPL Automatic startup	MPLSTART	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.4.3 WebSphere Network Deployment (ND) Business Application Server Configuration

The following table lists and describes the WebSphere ND Business Application Server configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Business Server Host	BSN_WLHOST	-
Bootstrap Port	BSN_WASBOOTSTRAPPORT	-
WebSphere Server Name	BSN_SVRNAME	-
WebSphere Node Name	BSN_NODENAME	-
WebSphere Cluster Name	BSN_CLUSTNAME	-
Business Server Application Name	BSN_APP	-
MPL Admin Port Number	MPLADMINPORT	-
MPL Automatic startup	MPLSTART	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.4.4 WebSphere Basic Business Application Server Configuration

The following table lists and describes the WebSphere Basic Business Application Server configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Business Server Host	BSN_WLHOST	-
Bootstrap Port	BSN_WASBOOTSTRAPPORT	-
WebSphere Server Name	BSN_SVRNAME	-
WebSphere Node Name	BSN_NODENAME	-
Business Server Application Name	BSN_APP	-
MPL Admin Port Number	MPLADMINPORT	-
MPL Automatic startup	MPLSTART	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.4.5 WebLogic Web Application Server Configuration

The following table lists and describes the WebLogic Web Application Server configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Web Server Host	WEB_WLHOST	-
WebLogic SSL Port Number	WEB_WLSSLPORT	-
WebLogic Console Port Number	WLS_ADMIN_PORT	-
Web Context Root	WEB_CONTEXT_ROOT	-
WebLogic JNDI User ID	WEB_WLSYSUSER	-
WebLogic JNDI Password	WEB_WLSYSPASS	-
WebLogic Server Name	WEB_WLS_SVRNAME	-
Web Server Application Name	WEB_APP	-
Deploy Application Viewer Module	WEB_DEPLOY_APPVIEWER	-
Enable The Unsecured Health Check Service	WEB_ENABLE_HEALTHCHECK	-
MDB RunAs User ID	WEB_IWS_MDB_RUNAS_USER	-
Super User Ids	WEB_IWS_SUPER_USERS	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.4.6 WebSphere Network Deployment (ND) Web Application Server Configuration

The following table lists and describes the WebSphere ND Web Application Server configuration menu options:

Menu Option	Corresponding Parameter	Customer Value	Install Value
Web Server Host	WEB_WLHOST	-	
WebSphere SSL Port Number	WEB_WASSLPORT	-	
Web Context Root	WEB_CONTEXT_ROOT	-	
WebSphere Server Name	WEB_SVRNAME	-	
WebSphere Node Name	WEB_NODENAME	-	
WebSphere Cluster Name	WEB_CLUSTNAME	-	
Web Server Application Name	WEB_APP	-	
WebSphere JNDI System User ID	WEB_WASUSER	-	
WebSphere JNDI System Password	WEB_WASPASS	-	
Deploy Using Archive Files	WEB_DEPLOY_EAR	-	
Deploy Application Viewer Module	WEB_DEPLOY_APPVIEWER	-	
Enable The Unsecured Health Check Service	WEB_ENABLE_HEALTHCHECK	-	
MDB RunAs User ID	WEB_IWS_MDB_RUNAS_USER	-	
Super User Ids	WEB_IWS_SUPER_USERS	-	

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.4.7 WebSphere Basic Web Application Server Configuration

The following table lists and describes the WebSphere Basic Web Application Server configuration menu options:

Menu Option	Corresponding Parameter	Customer Value	Install Value
Web Server Host	WEB_WLHOST	-	
Web Server SSL Port Number	WEB_WLPORT	-	
Web Context Root	WEB_CONTEXT_ROOT	-	
WebSphere Server Name	WEB_SVRNAME	-	
WebSphere Node Name	WEB_NODENAME	-	
Web Server Application Name	WEB_APP	-	

Menu Option	Corresponding Parameter	Customer Install Value
WebSphere JNDI System User ID	WEB_WASUSER	-
WebSphere JNDI System Password	WEB_WASPASS	-
Deploy Using Archive Files	WEB_DEPLOY_EAR	-
Deploy Application Viewer Module	WEB_DEPLOY_APPVIEWER	-
Enable The Unsecured Health Check Service	WEB_ENABLE_HEALTHCHECK	-
MDB RunAs User ID	WEB_IWS_MDB_RUNAS_USER	-
Super User Ids	WEB_IWS_SUPER_USERS	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.4.8 Database Configuration

The following table lists and describes the database configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Application Server Database User ID	DBUSER	-
Application Server Database Password	DBPASS	-
MPL Database User ID	MPL_DBUSER	-
MPL Database Password	MPL_DBPASS	-
XAI Database User ID	XAI_DBUSER	-
XAI Database Password	XAI_DBPASS	-
Batch Database User ID	BATCH_DBUSER	-
Batch Database Password	BATCH_DBPASS	-
Web JDBC DataSource Name	JDBC_NAME	-
Database Name	DBNAME	-
Database Server	DBSERVER	-
Database Port	DBPORT	-
ONS Server Configuration	ONSCONFIG	-
Database Override Connection String	DB_OVERRIDE_CONNECTION	-
Character Based Database	CHAR_BASED_DB	-
Oracle Client Character Set NLS_LANG	NLS_LANG	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

Note:

If any of the database menu option value is changed (thus, potentially connecting to a different schema), the system displays the following warning corresponding to the menu option:

“This database option has been changed. Since the keystore and encrypted data in the database must be compatible, you have two options:

>> load the compatible keystore into the environment;

>> keep the current keystore, re-enter any encrypted information online through the application, and re-generate the database hashes.”

Refer to *Oracle Revenue Management and Billing Security Guide* for more information.

4.5.4.9 General Configuration Options

The following table lists and describes the general configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Batch RMI Port	BATCH_RMI_PORT	-
RMI Port number for JMX Business	BSN_JMX_RMI_PORT_PERFORMANCE	-
RMI Port number for JMX Web	WEB_JMX_RMI_PORT_PERFORMANCE	-
JMX Enablement System User ID	BSN_JMX_SYSUSER	-
JMX Enablement System Password	BSN_JMX_SYSPASS	-
Coherence Cluster Name	COHERENCE_CLUSTER_NAME	-
Coherence Cluster Address	COHERENCE_CLUSTER_ADDRESS	-
Coherence Cluster Port	COHERENCE_CLUSTER_PORT	-
Coherence Cluster Mode	COHERENCE_CLUSTER_MODE	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.4.10 OUAF TrustStore Options

The OUAF TrustStore configuration is required for Inbound Web Services (IWS). The following table lists and describes the OUAF TrustStore menu options:

Menu Option	Corresponding Parameter	Customer Value Install
Import TrustStore Directory	TS_IMPORT_KEYSTORE_FOLDER	-
Store Type	TS_STORETYPE	-
Alias	TS_ALIAS	-
Alias Key Algorithm	TS_ALIAS_KEYALG	-

Menu Option	Corresponding Parameter	Customer Value Install
Alias Key Size	TS_ALIAS_KEYSIZE	-
HMAC Alias	TS_HMAC_ALIAS	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.5 Advanced Menu Options

The advanced menu options are not available during installation. These options can be accessed after installation using the following commands:

AIX, Linux:

```
$SPLEBASE/bin/configureEnv.sh -a
```

Windows:

```
%SPLEBASE%\bin\configureEnv.cmd -a
```

The advanced menu options are categorized into the following menus:

- Advanced Environment Miscellaneous Configuration
- Advanced Environment Memory Configuration
- Advanced Web Application Configuration
- WebLogic Diagnostics
- URI, File and URL Related Options
- Mobile Security Configuration

4.5.5.1 Advanced Environment Miscellaneous Configuration

The following table lists and describes the advanced environment miscellaneous configuration menu options:

Menu Option	Corresponding Parameter	Customer Value Install
OAAF DBMS Scheduler User	OAAF_DBMS_SCHEDULER_USER	-
WebLogic ThreadPoolWorker Enabled	WLS_THREADPOOLWORKERENABLED	-
Online JVM Batch Server Enabled	BATCHENABLED	-
Online JVM Batch Number of Threads	BATCHTHREADS	-
Online JVM Batch Scheduler Daemon Enabled	BATCHDAEMON	-
Enable Batch Edit Functionality	BATCHEDIT_ENABLED	-
Batch Online Log Directory	BATCH_ONLINE_LOG_DIR	-
JDBC Read Timeout	JDBC_TIMEOUT	-
Enable JMS Global Flush For Batch	ENABLE_JMS_GLOBAL_FLUSH	-

Menu Option	Corresponding Parameter	Customer Value Install
Add UsernameToken.xml	ADD_USERNAME_TOKEN_XML	-
IWS Deployment Target	WLS_CLUSTER_NAME	-
Web Admin Server Host	WEB_ADMIN_SERVER	-
Split File Size in MB	TEMPSTORAGE_SPLITFILESIZE	-
GIS Service Running on the same Web Server	GIS	-
GIS Service URL	GIS_URL	-
GIS WebLogic System User ID	GIS_WLSYSUSER	-
GIS WebLogic System Password	GIS_WLSYSPASS	-
Online Display Software Home	ONLINE_DISPLAY_HOME	-
Max Queries To Hold In Cache Across All Threads	XQUERIES_TO_CACHE	-
Seconds Timeout Flush Cache Completely	XQUERY_CACHE_FLUSH_TIMEOUT	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.5.2 Advanced Environment Memory Configuration

The following table lists and describes the advanced environment memory configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Global JVM Arguments	GLOBAL_JVMARGS	-
Ant Min Heap Size	ANT_OPT_MIN	-
Ant Max Heap Size	ANT_OPT_MAX	-
Ant Additional Options	ANT_ADDITIONAL_OPT	-
Thread Pool Worker Java Min Heap Size	BATCH_MEMORY_OPT_MIN	-
Thread Pool Worker Java Max Heap Size	BATCH_MEMORY_OPT_MAX	-
Thread Pool Worker Additional Options	BATCH_MEMORY_ADDITIONAL_OPT	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.5.3 Advanced Web Application Configuration

The following table lists and describes the advanced web application configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Web Application Cache Settings	WEB_L2_CACHE_MODE	-
Web Server Port Number	WEB_WLPORT	-
CSRF Protection For REST Services	CSRF_PROTECTION	-
OWSM Protection For REST Services	OWSM_PROTECTION_FOR_REST_SERVICES	-
Domain Home Location	WLS_DOMAIN_HOME	-
Batch Cluster URL	WEB_BATCH_CLUSTER_URL	-
Strip HTML Comments	STRIP_HTML_COMMENTS	-
Authentication Login Page Type	WEB_WLAUTHMETHOD	-
Web Form Login Page	WEB_FORM_LOGIN_PAGE	-
Web Form Login Error Page	WEB_FORM_LOGIN_ERROR_PAGE	-
Application Viewer Form Login Page	WEB_APPVIEWER_FORM_LOGIN_PAGE	-
Application Viewer Form Login Error Page	WEB_APPVIEWER_FORM_LOGIN_ERROR_PAGE	-
Help Form Login Page	WEB_HELP_FORM_LOGIN_PAGE	-
Help Form Login Error Page	WEB_HELP_FORM_LOGIN_ERROR_PAGE	-
Web Security Role	WEB_SECURITY_NAME	-
Web Principal Name	WEB_PRINCIPAL_NAME	-
Application Viewer Security Role	WEB_APPVIEWER_ROLE_NAME	-
Application Viewer Principal Name	WEB_APPVIEWER_PRINCIPAL_NAME	-
This is a development environment	WEB_ISDEVELOPMENT	-
Preload All Pages on Startup	WEB_PRELOADALL	-
Maximum Age of a Cache Entry for Text	WEB_MAXAGE	-
Maximum Age of a Cache Entry for Images	WEB_MAXAGEI	-
JSP Recompile Interval(s)	WEB_WLPAGECHECKSECONDS	-
Enable Strict Transport Security	STRICT_TRANSPORT_SECURITY	-
Strict Transport Security Max Age	HSTS_MAX_AGE	-

Menu Option	Corresponding Parameter	Customer Install Value
Strict Transport Security Include Subdomains	HSTS_SUBDOMAINS	-
Strict Transport Security Preload	HSTS_PRELOAD	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.5.4 WebLogic Diagnostics

The following table lists and describes the WebLogic diagnostics menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Diagnostic Context Enabled	WLS_DIAGNOSTIC_CONTEXT_ENABLED	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.5.5 URI, File and URL Related Options

The following table lists and describes the URI, File and URL related menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Restriction URIs Enable	CLOUD_RESTRICTION_URLS_ENABLE	-
Custom SQL Security	CUSTOM_SQL_SECURITY	-
White List Full Path	CLOUD_WHITE_LIST_PATH	-
Custom White List Full Path	CLOUD_CUSTOM_WHITE_LIST_PATH	-
Substitution Variable List File Location	CLOUD_SUBSTITUTION_VARIABLE_LIST_FILE_LOCATION	-
Directory For Variable F1_CMA_FILES	CLOUD_LOCATION_F1_MIGR_ASSISTANT_FILES	-
URI For Variable F1_OAUTH2_URI	CLOUD_LOCATION_F1_OAUTH2_URI	-
URI For Variable F1_BASE_REST_URL	CLOUD_LOCATION_F1_BASE_REST_URL	-
URI for Variable F1_OPEN_API_BASE_URL	CLOUD_LOCATION_F1_OPEN_API_BASE_URL	-
URI For Variable F1_BASE_WEB_URI	CLOUD_LOCATION_F1_BASE_WEB_URI	-
URI For Variable F1_BASE_IWS_URI	CLOUD_LOCATION_F1_BASE_IWS_URI	-
Consolidated Logfile Full Path	CONSOLIDATED_LOG_FILE_PATH	-

Menu Option	Corresponding Parameter	Customer Install Value
Temporary File Location	TMP_FILE_LOCATION	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

4.5.5.6 Mobile Security Configuration

The following table lists and describes the mobile security configuration menu options:

Menu Option	Corresponding Parameter	Customer Install Value
Enable Mobile Application	MOBILE_ENABLED	-
Deploy Only Mobile Web Application	MOBILE_APP_ONLY	-
Mobile Application Directory	MOBILE_APPDIR	-
Allow Self Signed SSL Certificates	ALLOW_SELFSIGNED_SSL	-
Force Http Connection	FORCE_HTTP	-
Web Mobile Form Login Page	WEB_MOBILE_FORM_LOGIN_PAGE	-
Web Mobile Form Login Error Page	WEB_MOBILE_FORM_LOGIN_ERROR_PAGE	-

For more information about the parameter, refer to *Oracle Revenue Management and Billing Server Administration Guide*.

5. Installing Application Server Prerequisite Software

This section describes the software that needs to be installed for each of the supported operating system and application server combinations. This section includes:

- AIX 7.2 Application Server
- Oracle Linux 7.x⁸ and Red Hat Enterprise Linux 7.x⁸ Application Server
- Oracle Solaris 11.3+⁹ Application Server
- Windows 2012 R2 Application Server
- Additional Prerequisite Software Information

5.1 AIX 7.2 Application Server

This section describes the software requirements for operating the application using the AIX application server.

5.1.1 Supported Application Servers

Operating System	Chipsets	Application Server
AIX 7.2 TL0+ ⁹ (64-bit)	POWER 64-bit	WebLogic 12.2.1.3 (64-bit)

5.1.2 Web/Application Server Tier

AIX 7.2 TL0+ Operating System Running on Power5 and Power6 Architecture

UNIX Administrator User ID

The following user groups and accounts have to be created to install and administer the application:

Description	Default Value	Customer Defined Value
ORMB Administrator User ID	<code>cissys</code>	-
ORMB User Group	<code>cisusr</code>	-

Note: It is recommended that you change the default values for security reasons.

Throughout this document the administrator user ID is often referred to as the “`cissys`” user ID-id. You should substitute that with the customer defined user ID when not using the default value. After the initial install, the software should always be managed using that user ID.

⁸ Here, **x** represents the vendor supported version.

⁹ Version numbers suffixed with “+” are the MINIMUM version supported. That version and all future 4th digit updates will be supported.

By default, the `cissys` user ID is the only one given access to the installed files.

1. Create a group called `cisusr` (user group).
2. Create a user called `cissys`. Primary group `cisusr`. Set the primary shell for the `cissys` user to `Korn Shell`.

The shell scripts use the ">" to overwrite shell functionality. Your operating system may be configured to not allow this functionality by default in the users shell.

To avoid file access permission problems when executing scripts, consider placing the following command into `cissys` profile script:

```
set +o noclobber
```

Security Configuration

Various options exist to secure a system. In this application all files will be created with the minimum permissions required to ensure that group-readable, group-writable and group-executable files will have the correct user groups and to restrict the permissions available to legitimate users. In this way, a low privileged end user cannot directly edit configuration files and thereby bypass application security controls.

The following users and group categories must be defined to implement this security. For demonstration purposes the following users and groups will be used. These users must be created according to industry standards (including password policies). All users should be created with a default umask of 007 to ensure files created during normal operation have the correct permissions.

Please replace these users and groups for your installation defaults:

User	Group	Description
<code>Cissys</code>	<code>cisusr</code>	This user will be used to install the application and to apply patches. This user will own all the application files. The same care should be taken with this user ID as if it is 'root'. This user will be able to add, delete and modify the files within the application.
<code>Cisadm</code>	<code>cisusr</code>	Administrative and Operation functions will be available to this user. This user will be able to stop and start the application and batch processes, but will not have access to modify any file other than generated log files.

Note: The Oracle Database Client and WebLogic should be installed as the user who will stop and start the application. For example, if you plan to run the application as the install user these components must belong to `cissys`.

You must use the same user for starting and stopping a process. For example, if `cissys` is used to start the application server, then use `cissys` to stop it as well.

Oracle Database Client 18c or 19c - Runtime Option

Install Oracle Database Client as described in the Oracle Database Client Installation documentation. Use the `cissys` account to install Oracle Database Client. If another user installs Oracle Database Client, make sure the `cissys` user ID has the proper execute permissions.

For the `cissys` user ID, ensure that the `ORACLE_CLIENT_HOME` environment variable is set up, and that `ORACLE_CLIENT_HOME/perl/bin` is the first Perl listed in the `cissys` account's `PATH` variable.

IBM Java Software Development Kit Version 8.0 (64-bit)

At the time of release, AIX Java packages could be obtained from:

<http://www.ibm.com/developerworks/java/jdk/aix/service.html>

The IBM WebSphere Server requires the 64-bit Java platform in order to function. The main prerequisite for the web server is the version of java mentioned above.

For the Administrator User ID (`cissys`), ensure that the environment variable `JAVA_HOME` is set up, and that Java can be found in `cissys`' `PATH` variable.

Hibernate 4.1.0

You must install Hibernate 4.1.0 before installing Oracle Revenue Management and Billing. To install Hibernate External JAR files to the Hibernate Third Party JAR Depot:

1. Create a Hibernate Third Party JAR Depot:

```
export HIBERNATE_JAR_DIR=<Hibernate Third Party JAR Depot>
```

2. Download the `hibernate-release-4.1.0.Final.zip` file from the following location:

<http://sourceforge.net/projects/hibernate/files/hibernate4/>

3. Click the "4.1.0.Final" link to download the zip file.
4. Extract the contents of the zip file:

```
jar xvf hibernate-release-4.1.0.Final.zip
```

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

5. Copy the JAR files to the Hibernate JAR Directory (`$HIBERNATE_JAR_DIR`) using the following commands:

```
cp hibernate-release-4.1.0.Final/lib/optional/ehcache/hibernate-ehcache-4.1.0.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-commons-annotations-4.0.1.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-core-4.1.0.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-jpa-2.0-api-1.0.1.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/javassist-3.15.0-GA.jar $HIBERNATE_JAR_DIR
```



```
cp hibernate-release-4.1.0.Final/lib/required/jboss-transaction-  
api_1.1_spec-1.0.0.Final.jar $HIBERNATE_JAR_DIR
```

6. Another package needs to be downloaded in order to get the `jboss-logging-3.3.0.Final.jar` file. Download the `hibernate-release-5.2.3.Final.zip` file from the following location:

<https://sourceforge.net/projects/hibernate/files/hibernate-orm/>

7. Click the “5.2.3.Final” link to download the zip file.
8. Extract the contents of the zip file:

```
jar xvf hibernate-release-5.2.3.Final.zip
```

9. Copy the `jboss-logging-3.3.0.Final.jar` file to the Hibernate JAR Directory (`$HIBERNATE_JAR_DIR`) using the following command:

```
cp hibernate-release-5.2.3.Final/lib/required/jboss-logging-  
3.3.0.Final.jar to $HIBERNATE_JAR_DIR
```

Oracle WebLogic Server 12.2.1.3 (64-bit)

Oracle WebLogic software can be downloaded from the Oracle web site. This application server will run as a 64-bit application.

- Download and install 64-bit Java (as documented above) before installing WebLogic.
- Download and install WebLogic Server using Fusion Middleware Infrastructure Installer 12.2.1.3.

Note:

You need to apply the **WLS PATCH SET UPDATE 12.2.1.3.181016** patch (Patch Number: 28298734) after installing Oracle WebLogic Server.

While creating a domain, select the **Oracle Restricted JRF - 12.2.1 [oracle_common]** option from the **Create Domain Using Product Templates** page in the **Fusion Middleware Configuration Wizard**. The **WebLogic Coherence Cluster Extension - 12.2.1 [wlserver]** option is selected automatically.

5.2 Oracle Linux 7.x and Red Hat Enterprise Linux 7.x Application Server

This section describes the software requirements for operating the application using the Oracle Linux or Red Hat Enterprise Linux application server.

5.2.1 Supported Application Servers

Operating System	Chipsets	Application Server
Oracle Linux 7.x ¹⁰ (64-bit)	x86_64	Oracle WebLogic 12.2.1.3 (64-bit)
		IBM WebSphere 9.0.5.2 (64-bit)
Red Hat Enterprise Linux 7.x ¹⁰ (64-bit)	x86_64	Oracle WebLogic 12.2.1.3 (64-bit)
		IBM WebSphere 9.0.5.2 (64-bit)

5.2.2 Web/Application Server Tier

Oracle Linux 7.x or Red Hat Enterprise Linux 7.x Operating System Running on x86_64 (64-bit) Architecture

Linux Administrator User ID

The following user groups and accounts have to be created to install and administer the application:

Description	Default Value	Customer Defined Value
ORMB Administrator User ID	<code>cissys</code>	
ORMB User Group	<code>cisusr</code>	

Note: It is recommended that you change the default values for security reasons.

Throughout this document the administrator user ID is often referred to as the "`cissys`" user ID. You should substitute that with the customer defined user ID when not using the default value. After the initial install, the software should always be managed using that user ID.

By default, the `cissys` user ID is the only one given access to the files installed.

1. Create a group called `cisusr` (user group).
2. Create a user called `cissys`. Primary group `cisusr`. Set the primary shell for the `cissys` user to Korn Shell.

The shell scripts use the ">" to overwrite shell functionality. Your operating system may be configured to not allow this functionality by default in the users shell.

¹⁰ Here, **x** represents the vendor supported version.

To avoid file access permission problems when executing scripts, consider placing the following command into `cissys` profile script:

```
set +o noclobber
```

Security Configuration

Various options exist to secure a system. In this application all files will be created with the minimum permissions required to ensure that group-readable, group-writable and group-executable files will have the correct user groups and to restrict the permissions available to legitimate users. In this way, a low privileged end user cannot directly edit configuration files and thereby bypass application security controls.

The following users and group categories must be defined to implement this security. For demonstration purposes the following users and groups will be used. These users must be created according to industry standards (including password policies). All users should be created with a default umask of 007 to ensure files created during normal operation have the correct permissions.

Please replace these users and groups for your installation defaults:

User	Group	Description
<code>cissys</code>	<code>cisusr</code>	This user will be used to install the application and to apply patches. This user will own all the application files. The same care should be taken with this user ID as if it is 'root'. This user will be able to add, delete and modify the files within the application.
<code>cisadm</code>	<code>cisusr</code>	Administrative and Operation functions will be available to this user. This user will be able to stop and start the application and batch processes, but will not have access to modify any file other than generated log files.

Note: The Oracle Database Client and WebLogic should be installed as the user who will stop and start the application. For example, if you plan to run the application as the install user these components must belong to `cissys`.

You must use the same user for starting and stopping a process. For example, if `cissys` is used to start the application server, then use `cissys` to stop it as well.

Oracle Database Client 18c or 19c - Runtime Option

Install Oracle Database Client as described in the Oracle Database Client Installation documentation. Use the `cissys` account to install Oracle Database Client. If another user installs Oracle Database Client, make sure the `cissys` user ID has the proper execute permissions.

For the `cissys` user ID, ensure that the `ORACLE_CLIENT_HOME` environment variable is set up, and that `ORACLE_CLIENT_HOME/perl/bin` is the first Perl listed in the `cissys` account's `PATH` variable.

Oracle Java Development Kit Version 8.0 Update 201 or Later, 64-Bit

At the time of release, Oracle Java packages could be obtained from:

<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

The Oracle WebLogic Server requires the 64-bit version. The main prerequisite for the web server is the version of Java mentioned above.

For the user ID `cissys`, ensure that the environment variable `JAVA_HOME` is setup, and that `java_home/bin` and `java_home/lib` can be found in `cissys`' `PATH` variable.

Hibernate 4.1.0

You must install Hibernate 4.1.0 before installing Oracle Revenue Management and Billing. To install Hibernate External JAR files to the Hibernate Third Party JAR Depot:

1. Create a Hibernate Third Party JAR Depot:

```
export HIBERNATE_JAR_DIR=<Hibernate Third Party JAR Depot>
```

2. Download the `hibernate-release-4.1.0.Final.zip` file from the following location:

<http://sourceforge.net/projects/hibernate/files/hibernate4/>

3. Click the “4.1.0.Final” link to download the zip file.
4. Extract the contents of the zip file:

```
jar xvf hibernate-release-4.1.0.Final.zip
```

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

5. Copy the JAR files to the Hibernate JAR Directory (`$HIBERNATE_JAR_DIR`) using the following commands:

```
cp hibernate-release-4.1.0.Final/lib/optional/ehcache/hibernate-ehcache-4.1.0.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-commons-annotations-4.0.1.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-core-4.1.0.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-jpa-2.0-api-1.0.1.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/javassist-3.15.0-GA.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/jboss-transaction-api_1.1_spec-1.0.0.Final.jar $HIBERNATE_JAR_DIR
```

6. Another package needs to be downloaded in order to get the `jboss-logging-3.3.0.Final.jar` file. Download the `hibernate-release-5.2.3.Final.zip` file from the following location:

<https://sourceforge.net/projects/hibernate/files/hibernate-orm/>

7. Click the “5.2.3.Final” link to download the zip file.

8. Extract the contents of the zip file:

```
jar xvf hibernate-release-5.2.3.Final.zip
```

9. Copy the `jboss-logging-3.3.0.Final.jar` file to the Hibernate JAR Directory (`$HIBERNATE_JAR_DIR`) using the following command:

```
cp hibernate-release-5.2.3.Final/lib/required/jboss-logging-3.3.0.Final.jar to $HIBERNATE_JAR_DIR
```

Oracle WebLogic Server 12.2.1.3 (64-bit)

Oracle WebLogic software can be downloaded from the Oracle web site. This application server will run as a 64-bit application.

- Download and install 64-bit Java (as documented above) before installing WebLogic.
- Download and install WebLogic Server using Fusion Middleware Infrastructure Installer 12.2.1.3.

Note:

You need to apply the **WLS PATCH SET UPDATE 12.2.1.3.181016** patch (Patch Number: 28298734) after installing Oracle WebLogic Server.

While creating a domain, select the **Oracle Restricted JRF - 12.2.1 [oracle_common]** option from the **Create Domain Using Product Templates** page in the **Fusion Middleware Configuration Wizard**. The **WebLogic Coherence Cluster Extension - 12.2.1 [wlserver]** option is selected automatically.

IBM WebSphere Application Server 9.0.5.2 (64-bit)

WebSphere must be purchased and downloaded from IBM. It must be installed and configured prior to the Oracle Revenue Management and Billing installation. This Web application server will run as a 64-bit application.

A single WebSphere server represents a single Oracle Revenue Management and Billing environment. You can install multiple environments on a single WebSphere Installation by creating additional WebSphere servers. Refer to the [Configuring WebSphere Application Server](#) section for the configuration steps.

IBM WebSphere ND Application Server 9.0.5.2 (64-bit)

WebSphere must be purchased and downloaded from IBM. It must be installed and configured prior to the Oracle Revenue Management and Billing installation. This Web application server will run as a 64-bit application.

A single WebSphere server represents a single Oracle Revenue Management and Billing environment. You can install multiple environments on a single WebSphere Installation by creating additional WebSphere servers. Refer to the [Configuring WebSphere Application Server](#) section for the configuration steps.

5.3 Oracle Solaris 11.3+ Application Server

This section describes the software requirements for operating the application using the Oracle Solaris 11.3+ application server.

5.3.1 Supported Application Servers

Operating System	Chipsets	Application Server
Solaris 11.3+ ¹¹ (64-bit)	SPARC	Oracle WebLogic 12.2.1.3 (64-bit)

5.3.2 Web/Application Server Tier

Solaris 11.3+ Operating System Running on SPARC-based 64-bit Architecture

UNIX Administrator User ID

The following user groups and accounts have to be created to install and administer the application:

Description	Default Value	Customer Defined Value
ORMB Administrator User ID	<code>ciissys</code>	
ORMB User Group	<code>cisusr</code>	

Note: It is recommended that you change the default values for security reasons.

Throughout this document the administrator user ID is often referred to as the “`ciissys`” user ID. You should substitute that with the customer defined user ID when not using the default value. After the initial install, the software should always be managed using that user ID.

By default, the `ciissys` user ID is the only one given access to the files installed.

1. Create a group called `cisusr` (user group).
2. Create a user called `ciissys`. Primary group `cisusr`. Set the primary shell for the `ciissys` user to `Korn Shell`.

The shell scripts use the “>” to overwrite shell functionality. Your operating system may be configured to not allow this functionality by default in the users shell.

To avoid file access permission problems when executing scripts, consider placing the following command into `ciissys` profile script:

```
set +o noclobber
```

Security Configuration

Various options exist to secure a system. In this application all files will be created with the minimum permissions required to ensure that group-readable, group-writable and group-executable files will have the correct user groups and to restrict the permissions available to legitimate users. In this way, a low privileged end user cannot directly edit configuration files and thereby bypass application security controls.

The following users and group categories must be defined to implement this security. For demonstration purposes the following users and groups will be used. These users must be created according to industry standards (including password policies). All users should be created with a default umask of 007 to ensure files created during normal operation have the correct permissions.

Please replace these users and groups for your installation defaults:

¹¹ Version numbers suffixed with “+” are the MINIMUM version supported. That version and all future 4th digit updates will be supported.

User	Group	Description
<code>cissys</code>	<code>cisusr</code>	This user will be used to install the application and to apply patches. This user will own all the application files. The same care should be taken with this user ID as if it is 'root'. This user will be able to add, delete and modify the files within the application.
<code>cisadm</code>	<code>cisusr</code>	Administrative and Operation functions will be available to this user. This user will be able to stop and start the application and batch processes, but will not have access to modify any file other than generated log files.

Note: The Oracle Database Client and WebLogic should be installed as the user who will stop and start the application. For example, if you plan to run the application as the install user these components must belong to `cissys`.

You must use the same user for starting and stopping a process. For example, if `cissys` is used to start the application server, then use `cissys` to stop it as well.

Oracle Database Client 18c or 19c - Runtime Option

Install Oracle Database Client as described in the Oracle Database Client Installation documentation. Use the `cissys` account to install Oracle Database Client. If another user installs Oracle Database Client, make sure the `cissys` user ID has the proper execute permissions.

For the `cissys` user ID, ensure that the `ORACLE_CLIENT_HOME` environment variable is set up, and that `ORACLE_CLIENT_HOME/perl/bin` is the first Perl listed in the `cissys` account's `PATH` variable.

Oracle Java Development Kit Version 8.0 Update 201 or Later, 64-Bit

At the time of release, Oracle Java packages could be obtained from:

<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

The Oracle WebLogic Server requires the 64-bit version. The main prerequisite for the web server is the version of Java mentioned above.

For the user ID `cissys`, ensure that the environment variable `JAVA_HOME` is setup, and that `java_home/bin` and `java_home/lib` can be found in `cissys`' `PATH` variable.

Hibernate 4.1.0

You must install Hibernate 4.1.0 before installing Oracle Revenue Management and Billing. To install Hibernate External JAR files to the Hibernate Third Party JAR Depot:

1. Create a Hibernate Third Party JAR Depot:


```
export HIBERNATE_JAR_DIR=<Hibernate Third Party JAR Depot>
```
2. Download the `hibernate-release-4.1.0.Final.zip` file from the following location:

<http://sourceforge.net/projects/hibernate/files/hibernate4/>
3. Click the "4.1.0.Final" link to download the zip file.
4. Extract the contents of the zip file:

```
jar xvf hibernate-release-4.1.0.Final.zip
```

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

5. Copy the JAR files to the Hibernate JAR Directory (`$HIBERNATE_JAR_DIR`) using the following commands:

```
cp hibernate-release-4.1.0.Final/lib/optional/ehcache/hibernate-ehcache-4.1.0.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-commons-annotations-4.0.1.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-core-4.1.0.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-jpa-2.0-api-1.0.1.Final.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/javassist-3.15.0-GA.jar $HIBERNATE_JAR_DIR
```

```
cp hibernate-release-4.1.0.Final/lib/required/jboss-transaction-api_1.1_spec-1.0.0.Final.jar $HIBERNATE_JAR_DIR
```

6. Another package needs to be downloaded in order to get the `jboss-logging-3.3.0.Final.jar` file. Download the `hibernate-release-5.2.3.Final.zip` file from the following location:

<https://sourceforge.net/projects/hibernate/files/hibernate-orm>

7. Click the “5.2.3.Final” link to download the zip file.

8. Extract the contents of the zip file:

```
jar xvf hibernate-release-5.2.3.Final.zip
```

9. Copy the `jboss-logging-3.3.0.Final.jar` file to the Hibernate JAR Directory (`$HIBERNATE_JAR_DIR`) using the following command:

```
cp hibernate-release-5.2.3.Final/lib/required/jboss-logging-3.3.0.Final.jar $HIBERNATE_JAR_DIR
```

Oracle WebLogic Server 12.2.1.3 (64-bit)

Oracle WebLogic software can be downloaded from the Oracle web site. This application server will run as a 64-bit application.

- Download and install 64-bit Java (as documented above) before installing WebLogic.
- Download and install WebLogic Server using Fusion Middleware Infrastructure Installer 12.2.1.3.

Note:

You need to apply the **WLS PATCH SET UPDATE 12.2.1.3.181016** patch (Patch Number: 28298734) after installing Oracle WebLogic Server.

While creating a domain, select the **Oracle Restricted JRF - 12.2.1 [oracle_common]** option from the **Create Domain Using Product Templates** page in the **Fusion Middleware Configuration Wizard**. The **WebLogic Coherence Cluster Extension - 12.2.1 [wlsrserver]** option is selected automatically.

5.4 Windows 2012 R2 Application Server

This section describes the software requirements for operating the application using the Windows application server.

5.4.1 Supported Application Servers

Operating System	Chipsets	Application Server
Windows Server 2012 R2 (64-bit)	x86_64	Oracle WebLogic 12.2.1.3 (64-bit)

Note: Windows Server is not supported for the Production environments. Wherever Windows Server is referenced within this document, it is supported only for the Testing or Development environments.

5.4.2 Web/Application Server Tier

File and Directory Names Limitations

File and directory names cannot contain spaces. Due to limitations in Windows, fully qualified filenames cannot exceed 2047 characters.

Oracle Database Client 18c or 19c — Runtime Option

Install Oracle Database Client as described in the Oracle Database Client Installation documentation. Use the `cissys` account to install Oracle Database Client. If another user installs Oracle Database Client, make sure the `cissys` user ID has the proper execute permissions.

For the `cissys` user ID, ensure that the `ORACLE_CLIENT_HOME` environment variable is set up, and that `ORACLE_CLIENT_HOME\perl\bin` is the first Perl listed in the `cissys` account's `PATH` variable.

Oracle Java Development Kit Version 8.0 Update 201 or Later, 64-Bit

At the time of release, Oracle Java packages could be obtained from:

<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

The Oracle WebLogic Server requires the 64-bit version. The main prerequisite for the web server is the version of Java mentioned above.

For the user ID `cissys`, ensure that the environment variable `JAVA_HOME` is setup, and that `java_home\bin` and `java_home\lib` can be found in `cissys`' `PATH` variable.

Hibernate 4.1.0

You must install Hibernate 4.1.0 before installing Oracle Revenue Management and Billing. To install Hibernate External JAR files to the Hibernate Third Party JAR Depot:

1. Create a Hibernate Third Party JAR Depot:


```
set HIBERNATE_JAR_DIR=<Hibernate Third Party JAR Depot>
```
2. Download the `hibernate-release-4.1.0.Final.zip` file from the following location:

<http://sourceforge.net/projects/hibernate/files/hibernate4/>
3. Click the "4.1.0.Final" link to download the zip file.

4. Extract the contents of the zip file:

```
jar xvf hibernate-release-4.1.0.Final.zip
```

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

5. Copy the JAR files to the Hibernate JAR Directory (`$HIBERNATE_JAR_DIR`) using the following commands:

```
cp hibernate-release-4.1.0.Final/lib/optional/ehcache/hibernate-ehcache-4.1.0.Final.jar %HIBERNATE_JAR_DIR%
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-commons-annotations-4.0.1.Final.jar %HIBERNATE_JAR_DIR%
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-core-4.1.0.Final.jar %HIBERNATE_JAR_DIR%
```

```
cp hibernate-release-4.1.0.Final/lib/required/hibernate-jpa-2.0-api-1.0.1.Final.jar %HIBERNATE_JAR_DIR%
```

```
cp hibernate-release-4.1.0.Final/lib/required/javassist-3.15.0-GA.jar %HIBERNATE_JAR_DIR%
```

```
cp hibernate-release-4.1.0.Final/lib/required/jboss-transaction-api_1.1_spec-1.0.0.Final.jar %HIBERNATE_JAR_DIR%
```

6. Another package needs to be downloaded in order to get the `jboss-logging-3.3.0.Final.jar` file. Download the `hibernate-release-5.2.3.Final.zip` file from the following location:

<https://sourceforge.net/projects/hibernate/files/hibernate-orm/>

7. Click the “5.2.3.Final” link to download the zip file.

8. Extract the contents of the zip file:

```
jar xvf hibernate-release-5.2.3.Final.zip
```

9. Copy the `jboss-logging-3.3.0.Final.jar` file to the Hibernate JAR Directory (`%HIBERNATE_JAR_DIR%`) using the following command:

```
cp hibernate-release-5.2.3.Final/lib/required/jboss-logging-3.3.0.Final.jar to %HIBERNATE_JAR_DIR%
```

Oracle WebLogic Server 12.2.1.3 (64-bit)

Oracle WebLogic software can be downloaded from the Oracle web site. This application server will run as a 64-bit application.

- Download and install 64-bit Java (as documented above) before installing WebLogic.
- Download and install WebLogic Server using Fusion Middleware Infrastructure Installer 12.2.1.3.

Note:

You need to apply the **WLS PATCH SET UPDATE 12.2.1.3.181016** patch (Patch Number: 28298734) after installing Oracle WebLogic Server.

While creating a domain, select the **Oracle Restricted JRF - 12.2.1 [oracle_common]** option from the **Create Domain Using Product Templates** page in the **Fusion Middleware Configuration Wizard**. The **WebLogic Coherence Cluster Extension - 12.2.1 [wlserver]** option is selected automatically.

5.5 Additional Prerequisite Software Information

This section outlines additional information related to installing the prerequisite software, including:

- Setting Up and Using the Additional JAR Directory

5.5.1 Setting Up and Using the Additional JAR Directory

The **Additional JAR Directory** menu option must be populated if the Web Application Server Home directory is not set. For example, if the environment is used only for batch generation and the server has no WebLogic installed. In this scenario, the additional JAR directory must be created prior to the installation and the following list of WebLogic JARs should be copied to that directory (full path from the actual WebLogic location which must be installed in the web server).

```
<Web Application Server Home Directory>/server/lib/wlthint3client.jar
```

```
<Web Application Server Home  
Directory>/../oracle_common/modules/org.codehaus.woodstox.stax2-  
api.jar
```

```
<Web Application Server Home  
Directory>/../oracle_common/modules/org.glassfish.jersey.core.jersey-  
client.jar
```

```
<Web Application Server Home  
Directory>/../oracle_common/modules/org.glassfish.jersey.core.jersey-  
common.jar
```

```
<Web Application Server Home  
Directory>/../oracle_common/modules/org.glassfish.jersey.bundles.repac  
kaged.jersey-guava.jar
```

```
<Web Application Server Home  
Directory>/../oracle_common/modules/org.glassfish.jersey.core.jersey-  
server.jar
```

```
<Web Application Server Home  
Directory>/../oracle_common/modules/org.glassfish.jersey.media.jersey-  
media-jaxb.jar
```

```
<Web Application Server Home  
Directory>/../oracle_common/modules/org.glassfish.jersey.media.jersey-  
media-multipart.jar
```

```
<Web Application Server Home  
Directory>/../oracle_common/modules/com.fasterxml.woodstox.woodstox-  
core.jar
```

If the **Additional JAR Directory** menu option is configured, the `initialSetup` process will pull the JARs from the specified directory. However, if the **Additional JAR Directory** menu option is not configured, the `initialSetup` process will pull the JARs from the Web Application Server Home directory.

6. Configuring WebSphere Application Server

This section describes tasks that you should complete before you install the Oracle Utilities Application Framework. It also describes configuration tasks you should complete after installing Oracle Revenue Management and Billing. It includes the following:

- Configuring WebSphere Basic
- Configuring WebSphere Network Deployment

6.1 Configuring WebSphere Basic

6.1.1 Preinstallation Tasks

This section describes tasks that you should complete to configure a WebSphere Basic application server before you install the Oracle Utilities Application Framework.

Note: When working within the WebSphere console make sure to apply and save your changes to the Master Configuration when appropriate.

6.1.1.1 Setting of WebSphere Security

There are several security configuration options within WebSphere. In a production environment you must use the security implementation appropriate for your security requirements. During the release cycle, we used the User account repository of the Federated repository. The following procedures describe how to apply these security settings.

Note: Refer to the IBM WebSphere Application Server documentation for more details.

1. Start the WebSphere Administrative Console and log in.
2. Go to Security, Global security.
 - Check Enable administrative security.
 - Check Enable application security.
 - Select Federated repositories from the Available realm definitions
3. Click Apply.

6.1.1.2 Setting WebSphere Application Groups

1. Start the WebSphere Administrative Console and log in.
2. Go to Users and Groups - Manage Groups.
 - Create the group name of `cisusers` (default group).
3. Click Create.

6.1.1.3 Setting WebSphere Application Users

1. Start the WebSphere Administrative Console and log in.
2. Go to Users and Groups - Manage Users.
 - Create the User ID of `SYSUSER` (example user)
 - Add the Group Membership of `cisusers` (created in the previous step) to the user.
3. Click Create.

6.1.1.4 Setting WebSphere JNDI Users

1. Start the WebSphere Administrative Console and log in.
2. Go to Users and Groups, Manage Users.
 - Create the user ID of JNDI (example user).
 - Add the Group Membership of `cisusers` (created in the previous step) to the JNDI user, created in this step.
3. Click Create.

6.1.1.5 Creation of Additional Servers in WebSphere - Sample Script

You must also provide the name of servers during OUAF installation. You can use the following sample script to create additional servers using the `wsadmin.sh` tool.

Note: There are several other ways to accomplish this task.

1. Initialize the `wsadmin.sh` session:

```
<$WAS_HOME>/bin/wsadmin.sh -host localhost -port  
<SoapConnectorPort> -conntype SOAP -username <WebSphereUserName>  
-password <WebSphereUserPassword>
```

Note: Substitute `$WAS_HOME`, `WebSphereUserName`, `SoapConnectorPort`, `WebSphereUserPassword`, with values that are appropriate for your installation. For example:

```
/ouaf/IBM/WebSphere85/AppServer/bin/wsadmin.sh -host localhost -port  
8889 -conntype SOAP
```

2. Create the server instance:

```
<wsadmin> $AdminTask createApplicationServer <nodeName> {-name  
<ServerName>}
```

3. Save the configuration using the following command:

```
<wsadmin> $AdminConfig save
```

6.1.1.6 Setting General Server Properties

1. Connect to the WebSphere administrative console.
2. Select Servers, Server Types, WebSphere application servers, and then select Application Servers.
3. Select your server name.

4. Under the section General Properties.
 - Deselect Parallel start.
 - Deselect Run in development mode.
5. Click OK.
6. Click Save to commit the setting.

6.1.1.7 Enabling SOAP Communication with WebSphere

The OUAF configuration scripts communicate with WebSphere as a SOAP client by using Jython commands to perform environment maintenance (for example, stop, start, deploy, undeploy).

To enable SOAP communication with WebSphere:

1. In a text editor, open the following file:
`$WAS_HOME/profiles/<PROFILE_NAME>/properties/soap.client.props`
2. Edit the property lines as follows:
 - `com.ibm.SOAP.requestTimeout=0`
 - `com.ibm.SOAP.loginUserId=< WebSphere_User_Id >`
 - `com.ibm.SOAP.loginPassword=< WebSphere_Password >`

Note: Refer to IBM WebSphere Application Server documentation for more details.

3. If you want to encode the password in the `soap.client.props` file, then run the `PropFilePasswordEncoder` command from the `$WAS_HOME/profiles/<PROFILE_NAME>/bin` directory.

This command is specific to IBM WebSphere Application Server. It encodes passwords located in plain-text property files.

4. Save and close the file.

6.1.1.8 Enabling RMI Communication with WebSphere (Web Services Enable Environment)

The Inbound Web Services (IWS) Deployment configuration scripts communicate with WebSphere using RMI for IWS commands to perform actions for IWS (for example, deploy and undeploy of the `WebService.war` file). When the following items are not completed, the deployment run would appear to "hang", most importantly if submitted from the OUAF online Inbound Web Services Deployment page.

To allow the deployment tasks to know RMI communication with WebSphere:

1. In a text editor, open the following file:
`$WAS_HOME/profiles/<PROFILE_NAME>/properties/sas.client.props`
2. Edit the property lines as follows:
 - `com.ibm.CORBA.loginSource=properties`
 - `com.ibm.CORBA.loginUserId=<WebSphere user ID>`
 - `com.ibm.CORBA.loginPassword=<WebSphere user password>`

Note: Refer to IBM WebSphere Application Server documentation for more details. If you want to encode the password in the `sas.client.props` file, then run the `PropFilePasswordEncoder` command from the `$WAS_HOME/profiles/<PROFILE_NAME>/bin` directory.

This command is specific to IBM WebSphere Application Server. It encodes passwords located in plain-text property files.

3. Save and close the file.

6.1.1.9 Obtaining the Bootstrap Port and WC_defaulthost_secure

You must also provide these port numbers during Oracle Utilities Application Framework installation. Obtain the bootstrap port number and the `WC_defaulthost_secure` by using the WebSphere administrative console.

Note: The WebSphere application server1 must be running to obtain the bootstrap port number and the `WC_defaulthost_secure` port number.

To view the bootstrap port number and the `WC_defaulthost_secure`:

1. Log on to the WebSphere administrative console.
2. Select Servers, Server Types, WebSphere application servers, `<server_name>` and then select Ports under Communications.
3. The bootstrap port is displayed as `BOOTSTRAP_ADDRESS`.
4. The `WC_defaulthost_secure` is displayed as `WC_defaulthost_secure`.
5. Note the values for `WC_defaulthost_secure` and `BOOTSTRAP_ADDRESS`. The Oracle Utilities Application Framework will prompt you for this information during the installation.

6.1.1.10 Set Up a Virtual Host for the Server

1. Select Environment, Virtual Host, `default_host`, and then select Host Alias.
2. Click New.
3. Enter the following:
 - Host Name: *
 - Port: `WC_defaulthost_secure` Port Number

6.1.1.11 Obtaining the WebSphere Node Name

You must also provide the node name during the installation. Obtain the node name by using the WebSphere administrative console.

Note: The WebSphere application server must be running to obtain the bootstrap port number.

To obtain the node name:

1. Connect to the WebSphere administrative console.
2. Select Servers, Server Types, WebSphere application servers, `<server_name>`.

Note: Take note of the value for the Node Name.

6.1.1.12 Installing Oracle Utilities Application Framework as a Non-Root User with IBM WebSphere Installed as Root

Installing Oracle Utilities Application Framework as a non-root user on a WebSphere application server running on AIX requires certain permissions. Prior to the installation, verify that the operating system user account installing the framework has to write and execute permissions on the directories in which WebSphere will be installed.

6.1.2 Post Installation Tasks

This sections describes tasks that you should complete after you have installed Oracle Revenue Management and Billing on a WebSphere application server.

6.1.2.1 Setting Environment Entries

1. Connect to the WebSphere administrative console.
2. Select Servers, Server Types, WebSphere application servers.
3. Select the server name.
4. Go to Server Infrastructure, and then click Java and Process Management.
5. Select Process Definition.
6. Go to Environment Entries.
7. Click New and add the following Environment Entries:
 - Name: SPLEBASE
 - Value: <\${SPLEBASE}>

Note: Substitute \${SPLEBASE} with appropriate values for your installation.

- Name: SPLWAS
- Value: WAS

Note:

This value needs to be set for WebServices (IWS).

You will need to restart the server_name before you attempt to start the application on the server.

8. Click OK.
9. Click Save to commit the setting.

6.1.2.2 Setting JVM Memory and Arguments

For Oracle Utilities Application Framework, JVM memory settings must be changed for production environments and/or when processing large volume in a nonproduction environment.

Perform the following steps to set the JVM memory size. The WebSphere application server must be running to set the memory size.

To set the JVM memory size:

1. Connect to the WebSphere administrative console.
2. Select Servers, Server Types, WebSphere application servers.
3. Select the server name.

4. Go to Server Infrastructure, and then click Java and Process Management.
5. Select Process Definition.
6. Go to Additional Properties, and then click Java Virtual Machine.
7. Enter 2048 for Minimum Heap Size.
8. Enter 4096 for Maximum Heap Size.

Note: Modify the memory settings based on your production installation needs.

9. Enter
`Djava.security.auth.login.config=<${SPLEBASE}/splapp/config/java.l
ogin.config` for Generic JVM arguments.

Note: Substitute \$SPLEBASE with appropriate values for your installation. You will need to restart the server_name before you attempt to start the application on the server.

10. Click OK.
11. Click Save to commit the setting.

6.1.2.3 Setting Server Custom Properties

The following custom properties have been need in the past to enable WebSphere Classloader to load the `correct xalan.jar` file.

To set the Custom Properties:

1. Connect to the WebSphere administrative console.
2. Select Servers, Server Types, WebSphere application servers.
3. Select the server name.
4. Go to Server Infrastructure, and then click Java and Process Management.
5. Select Process Definition.
6. Go to Additional Properties, and then click Java Virtual Machine.
7. Go to Additional Properties, and then click Custom Properties.
8. Click New.
9. Enter the following information:
 - o Name: `javax.xml.transform.TransformerFactory`
 - o Value: `org.apache.xalan.processor.TransformerFactoryImpl`
10. Click OK.
11. Click Save to commit the setting.

6.1.2.4 Setting the Web Container Custom Properties

To set the Web Container Custom Properties:

1. Connect to the WebSphere administrative console.
2. Select Servers, Server Types, WebSphere application servers.
3. Select the server name.
4. Go to Container Settings, and then click Web Container Settings.
5. Select Web container.

6. Go to Additional Properties, and then click Custom properties.
7. Click New.
8. Enter the following information:
 - o Name: `com.ibm.ws.webcontainer.invokefilterscompatibility`
 - o Value: `true`
9. Click OK.
10. Click Save to commit the setting.

6.1.2.5 Starting and Stopping WebSphere Servers

To start WebSphere on AIX, use the following script:

```
$WAS_HOME/profiles/<profile_name>/bin/startServer.sh
```

For example, execute:

```
$WAS_HOME/profiles/<profile_name>/bin/startServer.sh <server_name>
```

To stop WebSphere on AIX, use the following script:

```
$WAS_HOME/profiles/<profile_name>/bin/stopServer.sh
```

For example, execute:

```
$WAS_HOME/profiles/<profile_name>/bin/stopServer.sh <server_name>
```

Note: The Oracle Utilities Application Framework script `spl.sh` does not stop or start the IBM WebSphere servers. It only stops and starts the Oracle Utilities Application Framework-based applications.

6.1.2.6 Deployment via the Admin Console

The following sections describe how to deploy the application using the Admin Console.

Deployment Overview

The application needs to be deployed in the following order:

1. `SPLService.ear`
2. `SPLWeb.ear`

Note: The `SPLService.ear` must be successfully deployed before deploying `SPLWeb.ear`.

Deploying SPLService.ear

1. Select the ear file to deploy.
 - Select Applications, Install New Application.
 - Select Remote file system.
 - Browse to the `SPLService.ear` or enter the full path to the file.
 - The ear files can be found under `$SPLEBASE/splapp/applications`.
 - Click Next.
2. Select Option Fast Path - Prompt only when additional information is required. Click Next.
3. On the Select Installation Options page ensure that Deploy enterprise beans is checked. Click Next.
4. Assign the module to the WebSphere server instance.

When deploying an application from the console, make sure you select the correct server and then click Apply.
5. Review the summary page. Review the installation options.
6. Click Finish. The application will then deploy. The deployment process takes about 5 minutes.
7. Click Save. The save process may take more than 20 minutes.

Deploying SPLWeb.ear

1. Select the ear file to deploy.
 - Select Applications, Install New Application.
 - Select Remote file system.
 - Browse to the `SPLWeb.ear` or enter the full path to the file.
 - The ear files can be found under `$SPLEBASE/splapp/applications`.
 - Click Next.
2. Select Option Fast Path - Prompt only when additional information is required. Click Next.
3. Assign the module to the WebSphere server instance.

Note: When deploying an application from the console, make sure you select the correct server and then click Apply.

4. Review the summary page. Review the installation options.
5. Click Finish. The application will then deploy. The deployment process takes about 5 minutes.
6. Click Save. The save process may take about more than 20 minutes.

Configuring the Applications

You need to apply these steps to both the SPLWeb and SPLService applications unless specified.

1. Set the startup order of the applications (this applies only to SPLWeb):
 - Select the SPLWeb application from Applications, Enterprise Applications.
 - Select Startup behavior.
 - Change the startup order to 2.
 - Click OK.
 - Click OK and Save directly to master configuration.
2. Set the class loading order (for both SPLService.ear and SPLWeb.ear): Select Class loading and update detection.
 - Set Polling interval to 0.
 - Under Class loader order select Classes loaded with application class loader first. Click OK and Save to master configuration.
3. Set the module starting weight:
 - SPLService only: Set the Starting weight to 1.
 - SPLWeb only: For each module (.war) set the Starting weight to 10000 and change the Class loader order to Classes loaded with application class loader first.
4. Set EJB JNDI names (this applies only to SPLService). Select Enterprise Java Bean Properties and enter the following values:
 - EJB module: SPLServiceBean
 - JNDI name for all interfaces
 - Target Resource JNDI Name: `ouaf/servicebean`
 - EJB module: TUGBULiteServiceBean
 - JNDI name for all interfaces
 - Target Resource JNDI Name: `ouaf/liteservicebean`
5. Click Ok.

Configuring the Application Security

After using the supplied script to deploy the application to WebSphere you will need to configure each application's security before starting the application.

Using the WebSphere administration console select Applications, Application Types, WebSphere enterprise applications, <Business Server Application Name>, <server name> (for example, SPLService-server2), Security role to user/group mapping.

For role `cisusers`:

- Check Select and the click Map Users:
- Search for SYSUSER, JNDI User, and Admin Console User and add them to the Selected users list.
- Click OK.

Note: Repeat the process for <Web Server Application Name>-<server name> (for example, SPLWeb-server2).

Restarting the WebSphere Server

It is recommended to stop and then restart the WebSphere server. If the application is deployed in server1 you can use the admin console to stop and start the server. If the application is deployed in another server you will need to use the scripts that are supplied with WebSphere (stopServer.sh, startServer.sh).

Note: WebSphere admin console runs under server1.

Application URL

The Web link to the WebSphere application will be:

```
https://<hostname>:<WC_defaulthost_secure>/<context_root>/loginPage.jsp
```

For example, <https://oracle:9081/ouaf/loginPage.jsp>

6.2 Configuring WebSphere Network Deployment

6.2.1 Preinstallation Tasks

This section describes tasks that you should complete to configure a WebSphere ND application server before you install the Oracle Utilities Application Framework.

When working within the WebSphere Network Deployment (WebSphere ND) console make sure to apply and save your changes to the Master Configuration when appropriate.

6.2.1.1 Setting of WebSphere ND Security

There are several security configuration options within WebSphere ND. In a production environment you must use the security implementation appropriate for your security requirements. During the release cycle, we used the User account repository of the Federated repository. The following procedures describe how to apply these security settings.

Note: Refer to IBM WebSphere ND Application Server documentation for more details.

1. Start the WebSphere ND DPMGR Administrative Console and log in.
2. Go to Security, Global security.
 - Check Enable administrative security.
 - Check Enable application security.
 - Select Federated repositories from the Available realm definitions.
3. Click Apply.

6.2.1.2 Setting WebSphere ND Application Groups

1. Start the WebSphere ND Administrative Console and log in.
2. Go to Users and Groups - Manage Groups.
 - Create the group name of cisusers (default group).
3. Click Create.

6.2.1.3 Setting WebSphere ND Application Users

1. Start the WebSphere ND Administrative Console and log in.
2. Go to Users and Groups - Manage Users.
 - Create the user ID of `SYSUSER` (example user).
 - Add the Group Membership of `cisusers` (created in the previous step) to the user.
3. Click Create.

6.2.1.4 Setting WebSphere ND JNDI Users

1. Start the WebSphere Administrative Console and log in.
2. Go to Users and Groups - Manage Users.
 - Create the user ID of JNDI (example user).
 - Add the Group Membership of `cisusers` to the User ID of JNDI (created above)
3. Click Create.

6.2.1.5 Setting General Server Properties

1. Connect to the WebSphere ND DPMGR administrative console
2. Select Servers, Server Types, WebSphere application servers.
3. Select the server name.
4. Under the section General Properties.
 - Deselect Parallel start.
 - Deselect Run in development mode.
5. Click OK.
6. Click Save to commit the setting.

6.2.1.6 Enabling SOAP Communication with WebSphere ND

The OUAF configuration scripts communicates with WebSphere ND Deployment Manager as a SOAP client by using Jython commands to perform environment maintenance (e.g. stop, start, deploy, undeploy).

To enable SOAP communication with WebSphere ND:

1. In a text editor, open the following file:
`$WAS_HOME/profiles/<PROFILE_NAME>/properties/soap.client.props`
2. Edit the property lines as follows:
 - `com.ibm.SOAP.requestTimeout=0`
 - `com.ibm.SOAP.loginuserid=<WebSphere_User_Id>`
 - `com.ibm.SOAP.loginPassword=<WebSphere_Password>`

Note: Refer to IBM WebSphere Application Server documentation for more details.

3. If you want to encode the password in the `soap.client.props` file, then run the `PropFilePasswordEncoder` command from the `$WAS_HOME/profiles/<PROFILE_NAME>/bin` directory.

This command is specific to IBM WebSphere ND Application Server, and it encodes passwords located in plain-text property files.

4. Save and close the file.

6.2.1.7 Enabling RMI Communication with WebSphere (Web Services Enable Environment)

The Inbound Web Services (IWS) Deployment configuration scripts communicate with WebSphere using RMI for IWS commands to perform actions for IWS (for example, deploy and undeploy of the `WebService.war` file). When the following items are not completed, the deployment run would appear to "hang", most importantly if submitted from the OUAF online Inbound Web Services Deployment page.

To allow the deployment tasks to know RMI communication with WebSphere:

1. In a text editor, open the following file:

```
$WAS_HOME/profiles/<PROFILE_NAME>/properties/sas.client.props
```

2. Edit the property lines as follows:

- o `com.ibm.CORBA.loginSource=properties`
- o `com.ibm.CORBA.loginUserid=<WebSphere user ID>`
- o `com.ibm.CORBA.loginPassword=<WebSphere user password>`

Note: Refer to IBM WebSphere Application Server documentation for more details. If you want to encode the password in the `sas.client.props` file, then run the `PropFilePasswordEncoder` command from the `$WAS_HOME/profiles/<PROFILE_NAME>/bin` directory.

This command is specific to IBM WebSphere Application Server. It encodes passwords located in plain-text property files.

3. Save and close the file.

6.2.1.8 Creation of Additional Servers in WebSphere ND

You must also provide the server names during the installation.

Note: There are several other ways to accomplish this task.

1. Select Servers, New Servers.

This will lead you through a list of steps for creating a new server.

2. Select server type from the drop down list: WebSphere application server. Click Next.
3. Select node from the drop down list that has been created for to host the WebSphere server.
4. Enter the Server name.

Note: Both the Node Name and Server Name will be needed for during the OUAF installation process.

5. Select a server template of default. Click Next

6. Check the box to Generate Unique Ports. Click Next
7. Confirm new server. Click Finished.

6.2.1.9 Obtaining the Bootstrap Port and WC_defaulthost_secure

You must also provide these port numbers during Oracle Utilities Application Framework installation. Obtain the bootstrap port number and the WC_defaulthost_secure by using the WebSphere ND administrative console.

Note: The WebSphere ND Deployment Manager server must be running to obtain the bootstrap port number and the WC_defaulthost_secure port number.

To view the bootstrap port number and the WC_defaulthost_secure:

1. Log on to the WebSphere ND administrative console.
2. Select Servers, Application Servers, <server_name>, and then select Ports under Communication.

The bootstrap port is displayed as BOOTSTRAP_ADDRESS. The WC_defaulthost_secure is displayed as WC_defaulthost_secure.

3. Note the values for WC_defaulthost_secure and BOOTSTRAP_ADDRESS. The Oracle Utilities Application Framework will prompt you for this information during the installation.

6.2.1.10 Set up a New Virtual Host for your Server

1. Select Environment, Virtual Host, default_host, and then select Host Alias.
2. Click New.
3. Enter the following:
 - Host Name:
 - Port: WC_defaulthost_secure Port Number

6.2.1.11 Obtaining the WebSphere ND Node Name

You must also provide the node name during OUAF installation. Obtain the node name by using the WebSphere ND administrative console.

Note: The IBM WebSphere ND application server must be running to obtain the bootstrap port number.

To obtain the node name

1. Connect to the WebSphere ND administrative console
2. In the left pane, click Servers.
3. Click Application Servers under Servers.
4. Click the server instance (server_name, default) on the right section.
5. Click the Runtime tab.
6. Enter the value for the Node Name.

Note: If the value of State is not started, then restart the server instance.

6.2.1.12 Installing Oracle Utilities Application Framework as a Non-Root User with IBM WebSphere Installed as Root

Prior to attempting to install Oracle Utilities Application Framework as a non-root user on the IBM WebSphere ND application server running on AIX, verify that the operating system user account installing Oracle Utilities Application Framework has write and execute permissions on the directories in which IBM WebSphere ND will be installed.

6.2.2 Post-Installation Tasks

This sections describes tasks that you should complete after you have installed the Oracle Utilities Application Framework and Oracle Revenue Management and Billing on a WebSphere application server.

6.2.2.1 Setting Environment Entries

1. Connect to the IBM WebSphere ND administrative console.
2. Select Servers and then select Application Servers.
3. Select the server name.
4. Go to Server Infrastructure, and then click Java and Process Management.
5. Select Process Definition.
6. Go to Environment Entries.
7. Click New and add the following Environment Entries:
 - Name: SPLEBASE
 - Value: <\$SPLEBASE>

Note: Substitute \$SPLEBASE with appropriate values for your installation.

- Name: SPLWAS
- Value: WAS

Note: This value needs to be set for WebServices (IWS).

You will need to restart the server_name before you attempt to start the application on the server.

8. Click OK.
9. Click Save to commit the setting.

6.2.2.2 Setting JVM Memory and Arguments

For Oracle Utilities Application Framework, JVM memory settings must be changed for production environments and/or when processing large volume in a nonproduction environment.

Perform the following steps to set the JVM memory size. The IBM WebSphere ND application server must be running to set the memory size.

To set the JVM memory size:

1. Connect to the IBM WebSphere ND administrative console.
2. Select Servers, and then select Application Servers.
3. Select the server name.

4. Go to Server Infrastructure, and then click Java and Process Management.
5. Select Process Definition.
6. Go to Additional Properties, and then click Java Virtual Machine.
7. Enter 2048 for Minimum Heap Size.
8. Enter 4096 for Maximum Heap Size.

Note: Modify the memory settings based on your production installation needs.

9. Enter
`Djava.security.auth.login.config=<${SPLEBASE}/splapp/config/java.l
ogin.config` for Generic JVM arguments.

Note: Substitute \$SPLEBASE with appropriate values for your installation.

10. You will need to restart the server_name before you attempt to start the application on the server.
11. Click OK.
12. Click Save to commit the setting.

6.2.2.3 Setting Server Custom Properties

The following custom properties have been need in the past to enable WebSphere ND Classloader to load the correct `xalan.jar` file.

To set the Custom Properties:

1. Connect to the WebSphere ND administrative console.
2. Select Servers, and then select Application Servers.
3. Select the server name.
4. Go to Server Infrastructure, and then click Java and Process Management.
5. Select Process Definition.
6. Go to Additional Properties, and then click Java Virtual Machine.
7. Go to Additional Properties, and then click Custom Properties.
8. Click New.
9. Enter the following information:
 - Name: `javax.xml.transform.TransformerFactory`
 - Value: `org.apache.xalan.processor.TransformerFactoryImpl`
10. Click OK.
11. Click Save to commit the setting.

6.2.2.4 Setting Up the Web Container Custom Properties

To set the Web Container Custom Properties:

1. Connect to the WebSphere ND administrative console.
2. Select Servers, and then select Application Servers.
3. Select the server name.
4. Go to Container Settings, and then click Web Container Settings.

5. Select Web container
6. Go to Additional Properties, and then click Custom properties.
7. Click New.
8. Enter the following information:
 - Name: com.ibm.ws.webcontainer.invokefilterscompatibility
 - Value: true
9. Click OK.
10. Click Save to commit the setting.

6.2.2.5 Starting and Stopping WebSphere ND servers

You can use the WebSphere ND console to stop and start the servers. You can also use the command line scripts supplied with WebSphere ND.

Note: The Oracle Utilities Application Framework utility named `spl.sh` does not stop or start the IBM WebSphere ND servers. It only stops and starts the Oracle Revenue Management and Billing application.

6.2.2.6 Deployment via the Admin Console

The following sections describe how to deploy the application using the Admin Console.

Deployment Overview

The application needs to be deployed in the following order:

1. `SPLService.ear`
2. `SPLWeb.ear`

Note: The `SPLService.ear` must be successfully deployed before deploying `SPLWeb.ear`.

Deploying SPLService.ear

1. Select the ear file to deploy.
 - Select Applications, Install New Application.
 - Select Remote file system.
 - Browse to the `SPLService.ear` or enter the full path to the file.
 - The ear files can be found under `$SPLEBASE/splapp/applications`.
2. Click Next.
3. Select Option Fast Path - Prompt only when additional information is required.
Click Next.
4. On the Select Installation Options page, ensure that the Deploy enterprise beans option is selected. Click Next.
5. Assign the module to the IBM WebSphere ND server instance.
6. When deploying an application from the console, make sure you select the correct server and then click Apply.
7. Review the summary page. Review the installation options.
8. Click Finish. The application will then deploy. The deployment process takes about 5 minutes.

9. Click Save. The save process can take about more than 20 minutes.

Deploying SPLWeb.ear

1. Select the ear file to deploy.
 - Select Applications, Install New Application.
 - Select Remote file system.
 - Browse to the SPLWeb.ear or enter the full path to the file.
 - The ear files can be found under `$SPLEBASE/splapp/applications`.
2. Click Next.
3. Select Option Fast Path - Prompt only when additional information is required. Click Next.
4. Assign the module to the IBM WebSphere ND server instance.
5. When deploying an application from the console, make sure you select the correct server and then click Apply.
6. Review the summary page. Review the installation options
7. Click Finish. The application will then deploy. The deployment process takes about 5 minutes.
8. Click Save. The save process can take about more than 20 minutes.

Configuring the Applications

You need to apply these steps to both the SPLWeb and SPLService applications unless specified.

1. Set the startup order of the applications (this applies only to SPLWeb):
 - Select the SPLWeb application from Applications, Enterprise Applications.
 - Select Startup behavior.
 - Change the startup order to 2.
 - Click OK.
2. Click OK and Save directly to master configuration.
3. Set the class loading order (for both SPLService.ear and SPLWeb.ear): Select Class loading and update detection.
 - Set Polling interval to 0.
 - Under Class loader order select Classes loaded with application class loader first. Click OK and Save to master configuration.
4. Set the module starting weight:
 - SPLService only - set the Starting weight to 1.
 - SPLWeb only - for each module (.war) set the Starting weight to 10000 and change the Class loader order to Classes loaded with application class loader first
5. Set EJB JNDI names (this applies only to SPLService). Select Enterprise Java Bean Properties and enter the following values:
 - EJB module: SPLServiceBean
 - JNDI name for all interfaces
 - Target Resource JNDI Name: `ouaf/servicebean`
 - EJB module: TUGBULiteServiceBean
 - JNDI name for all interfaces

- Target Resource JNDI Name: `ouaf/liteservicebean`
6. Click Ok.

Configuring the Application Security

After using the supplied script to deploy the application to IBM WebSphere ND you will need to configure each application's security before starting the application.

Using the IBM WebSphere ND administration console select Applications, Enterprise Applications, Business-<server name> (for example, SPLService-server2), Security role to user/group mapping.

For role cisusers:

- Check All Authenticated.
- Check Select and click Look up users:
- Search for SYSUSER, JNDI User, and Admin Console User and add them to the Selected users list.
- Click OK.

Note: Repeat the process for <Web Server Application Name>-<server name> (for example, SPLWeb-server2).

Restarting the IBM WebSphere ND Server

It is recommended to stop and then restart the WebSphere ND server.

Application URL

The Web link to the IBM WebSphere ND application will be:

`https://<hostname>:<WC_defaulthost_secure>/<context_root>/loginPage.jsp`

For example, `https://oracle:9085/ouaf/loginPage.jsp`

7. Installing the Application Server Component of Oracle Utilities Application Framework

Installing the Oracle Utilities Application Framework (“the framework”) is the prerequisite and foundation for installing a framework-based application such as Oracle Revenue Management and Billing. This section describes the process for installing the Oracle Utilities Application Framework, including:

- Installation Overview
- Pre-Installation Tasks
- Installing Oracle Utilities Application Framework Version 4.4.0.0.0
- Post Installation Tasks

7.1 Installation Overview

The installation packages for your Oracle Utilities Application Framework-based application must be downloaded from [Oracle Software Delivery Cloud](#). You need to do a fresh installation of the application server and you cannot upgrade an existing application server.

Before you proceed with the installation process:

1. Complete the database installation or upgrade process. For more information, refer to *Oracle Revenue Management and Billing Database Administrator’s Guide*.
2. Make sure that you have installed all required third-party software as described in the [Installing Application Server Prerequisite Software](#) section.

Once the Oracle Utilities Application Framework installation is successfully completed and the framework application environment is created, Oracle Revenue Management and Billing can be installed on top of the framework environment.

You can download the installation packages from [Oracle Software Delivery Cloud](#).

This section describes how to install a working Oracle Utilities Application Framework Server, which can then be further configured manually to allow for production performance levels.

Application server installation packages delivered for this version are multi-platform and are ready to install on any supported platform (as described in the [Supported Platforms](#) section).

7.2 Pre-Installation Tasks

7.2.1 Hardware and Software Version Prerequisites

The [Supported Platforms](#) section contains all of the available platforms that are required with this release of the product.

7.2.2 Database Installation

Verify that the database has been installed and is operational. See *Oracle Revenue Management and Billing Database Administrator's Guide* for more information.

7.2.3 Installation Prerequisites

The [Installing Application Server Prerequisite Software](#) section describes all preparations that need to be done on the server prior to installing the application server. Please read carefully the server setup requirements and make sure that all prerequisite software is installed and that all required environment variables are set. Correct server setup and proper environment variable settings are an essential prerequisite for successful environment installation.

7.2.4 Copying and Decompressing Install Media

The Oracle Utilities Application Framework V4.4.0.0.0 installation file is delivered in the JAR format for AIX, Linux, Solaris, and Windows platforms.

If you are planning to install multiple Oracle Utilities Application Framework V4.4.0.0.0 environments operated by different Oracle Utilities Administrator User IDs, you must complete each of the following installation steps for each administrator user ID.

To copy and decompress the install media, perform the following steps:

1. Login to the application server host with the Oracle Utilities Application Framework administrator user ID (default `cissys`).
2. Download the Oracle Utilities Customer Care and Billing 2.7.0.1.0 - Oracle Utilities Application Framework (4.4.0.0.0) Installation Package from the Oracle Utilities Customer Care and Billing 2.7.0.1.0 media pack which is available on [Oracle Software Delivery Cloud](#). A zip file is downloaded.
3. Create a temporary directory such as `c:\ouaf\temp` or `/ouaf/temp`. (Referred to below as `<TEMPDIR>`.)

Note: This directory must be located outside any current or other working Oracle Utilities application environment. All files placed in this directory which are required for installation can be deleted after completing the installation successfully.

4. Unzip the downloaded file in your local directory. The contents include the `FW-V4.4.0.0.0-MultiPlatform.jar` file.
5. Copy the `FW-V4.4.0.0.0-MultiPlatform.jar` file from your local directory to `<TEMPDIR>`. If you are using FTP to transfer this file, remember to use the `BINARY` option for the FTP transfer.
6. Decompress the JAR file:

```
cd <TEMPDIR>
jar -xvf FW-V4.4.0.0.0-MultiPlatform.jar
```

Note: You will need to have Java JDK installed on the machine used to `(un)jar` the application server installation package. Please install the JDK that is supported for the install on your platform to be able to use the `jar` command. This is the location of Java packages:

<http://www.oracle.com/technetwork/java/archive-139210.html>

The contents of the JAR file include a sub-directory named `FW-V4.4.0.0.0-SP0`.

Note: If you are using IBM WebSphere, you need to download the WAS CHANGES FOR FW 4.4.0.0.0 WITH FW PRE-REQUIRES patch (Patch Number: 30779997) from [My Oracle Support](#). On unzipping the downloaded directory, the `WAS_FW44000` directory is extracted. It contains the following files:

```
>> Files.zip
>> ORMB-V29000-FW-PREREQ-MultiPlatform.jar
>> README.txt
```

You need to follow the instructions given in the `README.txt` file and then install Oracle Utilities Application Framework (OUAF) Version 4.4.0.0.0. Otherwise, erroneous results might occur.

The WAS CHANGES FOR FW 4.4.0.0.0 WITH FW PRE-REQUIRES patch is a password protected patch. You need to contact Oracle Support to provide the password for downloading the patch.

7.2.5 Set Permissions for the CISTAB File in Linux

Every Oracle Utilities Application Framework environment installed on a server must be registered in the `/etc/cistab` file located on that server. On Linux servers, generally only the root user ID has write permissions to the `/etc` directory. Since the installation process is run by the Oracle administrator user ID (`cissys`), this user ID may not be able to write to `/etc/cistab` table.

The install utility checks permissions and if it identifies a lack of the necessary permissions, it generates a script in the `<TEMPDIR>/FW-V4.4.0.0.0-SP0` directory named `cistab_<SPLENVIRON>.sh`. Run the generated script using the root account before continuing with the installation process. The script initializes the `cistab` file in `/etc` directory (if it is the first Oracle Utilities Application Framework application environment on the server) and registers a new environment.

The generated script also changes the owner of `/etc/cistab` file to the Oracle Utilities Application Framework administrator user ID, so that the next time a new environment is created by the same Oracle Utilities Framework administrator user ID, you do not need to run the generated script with the root user ID. Instead the install utility itself proceeds with the registration.

7.3 Installing Oracle Utilities Application Framework Version 4.4.0.0.0

To install Oracle Utilities Application Framework (OUAF) Version 4.4.0.0.0:

1. Login to the application server using the administrator's credentials.

Note: On UNIX machine, login using the `cissys` credentials. And, on Windows machine, login using the administrator's credentials.

2. Install and configure the required third-party software for the application server.

Note: You must install the prerequisite third party software depending on the platform on which you want to install Oracle Utilities Application Framework. For more details, refer to the [Installing Application Server Prerequisite Software](#) section.

- Set the Java Home path using the following command:

```
export PATH=/<Java_Home>/bin:$PATH
```

Note:

The `<Java_Home>` is the location where you have installed Java 1.8.

The above command is applicable only for Linux platform.

- Change to the `<TEMPDIR>/FW-V4.4.0.0.0-SP0` directory.

Note: The `<TEMPDIR>` directory is the location where you have extracted the contents of the `FW-V4.4.0.0.0-MultiPlatform.jar` file.

- Execute the application installation utility using the following command:

AIX, Linux:

```
ksh ./install.sh
```

Windows:

```
install.cmd
```

The following message appears in the command line:

```
Enter Oracle Client Home Directory (<Enter> quit):
```

- Type `<ORACLE_CLIENT_HOME>`, and then press **Enter**. The following environment installation menus appear in the command line:
 - 1. Environment ID, Roles, Third Party Software Configuration
 - 2. Keystore Options
 - 50. Environment Installation Options

Note:

The `<ORACLE_CLIENT_HOME>` is the location where Oracle Database Client is installed. This is required to execute the Perl installation utilities.

If the `ORACLE_CLIENT_HOME` environment variable is set, the installation utility will not request you to provide this information.

- Type **1** to define values for the third party software configuration, and then press **Enter**. The utility prompts you to enter values for a list of menu options.
- Specify the required value for menu options, and then press **Enter**.

Note: For more details about these menu options, refer to the [Environment ID, Roles, Third Party Software Configuration](#) section.

- Type **2** to define values for the keystore options, and then press **Enter**. The utility prompts you to enter values for a list of menu options.
- Specify the required value for menu options, and then press **Enter**.

Note: For more details about these menu options, refer to the [Keystore Options](#) section.

11. Type **50** to define values for the environment installation options, and then press **Enter**. The utility prompts you to enter values for a list of menu options.
12. Specify the required value for menu options, and then press **Enter**. The specified values are stored in the `$SPLEBASE/etc/ENVIRON.INI` file.

Note:

`$SPLEBASE` or `%SPLEBASE%` is the path where the application environment is installed.

Before you specify the environment installation options, ensure that you have created an output directory named Log File Mount Point. If this output directory does not exist, the installation will not be successfully executed.

For more details about these menu options, refer to the [Environment Installation Options](#) section.

13. Type **P** to proceed with the installation. The following environment configuration menus appear in the command line:

- 1. Environment Description
- 2. Business Application Server Configuration
- 3. Web Application Server Configuration
- 4. Database Configuration
- 5. General Configuration Options
- 6. OUAF TrustStore Options

Note: During this step, the specification of a new environment and permissions on mount points and directories are validated against the `/etc/cistab` file.

14. Type **1**, and then press **Enter**. The utility prompts you to enter the environment description.
15. Specify the environment description, and then press **Enter**.

Note: For more details, refer to the [Environment Description](#) section.

16. Type **2** to define values for the business application server configuration, and then press **Enter**. The utility prompts you to enter values for a list of menu options.
17. Specify the required value for menu options, and then press **Enter**.

Note: For more details about these menu options, refer to the [Business Application Server Configuration](#) section.

18. Type **3** to define values for the web application server configuration, and then press **Enter**. The utility prompts you to enter values for a list of menu options.
19. Specify the required value for menu options, and then press **Enter**.

Note: For more details about these menu options, refer to the [Web Application Server Configuration](#) section.

20. Type **4** to define values for the database configuration, and then press **Enter**. The utility prompts you to enter values for a list of menu options.
21. Specify the required value for menu options, and then press **Enter**.

Note: For more details about these menu options, refer to the [Database Configuration](#) section.

22. Type **5** to define values for the general configuration options, and then press **Enter**. The utility prompts you to enter values for a list of menu options.
23. Specify the required value for menu options, and then press **Enter**.

Note: For more details about these menu options, refer to the [General Configuration Options](#) section.

24. Type **6** to define values for the OUAF TrustStore Options, and then press **Enter**. The utility prompts you to enter values for a list of menu options.
25. Specify the required value for menu options, and then press **Enter**.

Note: For more details about these menu options, refer to the [OUAF TrustStore Options](#) section.

26. Type **P** to proceed with the installation. The Oracle Utilities Application Framework Version 4.4.0.0.0 is installed on the application server.

Note:

The utility contains default values for some of the menu options. If required, you can change their values. While executing the `install` utility, you must set the value for the required menu options. Otherwise, the installation process will not be completed successfully.

The values that you specify for the menu options are stored in the `$SPLEBASE/etc/ENVIRON.INI` file.

Once the installation process is completed, the following utilities are automatically executed in the specified order:

1. `initialSetup` - The `initialSetup` utility updates the configuration files including the WAR files on the system. On the Linux machine, this utility is available in the `$SPLEBASE/bin` directory. And, on the Windows machine, this utility is available in the `%SPLEBASE%\bin` directory.

2. `splenviron` - Once the `ENVIRON.INI` file is created and contains the correct environment parameters, the `splenviron` utility sets up all the necessary environment variables and shell settings for the application server to function correctly. On the Linux machine, this utility is available in the `$SPLEBASE/bin` directory. And, on the Windows machine, this utility is available in the `%SPLEBASE%\bin` directory. The following are some of the key environment variables that are set using the `splenviron` utility:

- `$PATH`
- `$SPLEBASE (%SPLEBASE%)` - Indicates the `<SPLDIR>/<SPLENVIRON>` directory
- `$SPLOUTPUT (%SPLOUTPUT%)` - Indicates the `<SPLDIROUT>/<SPLENVIRON>` directory
- `$SPLENVIRON (%SPLENVIRON%)` - Indicates the environment name

For future operations or any post installation steps, you need to first execute the following command to setup your session to the new environment:

AIX, Linux:

```
$SPLEBASE/bin/splenviron.sh -e $SPLENVIRON
```

Windows:

```
%SPLEBASE%\bin\splenviron.cmd -e %SPLENVIRON%
```

You need to execute this script each time you want to be connected to the specific environment before performing manual operations such as shutdown, startup or performing an additional application product installation.

When you have finished the install process, your current online session will be connected to the new environment.

For more information, see the [Planning the Installation](#) section for settings and configuration.

7.4 Post Installation Tasks

Once you install Oracle Utilities Application Framework V4.4.0.0.0, you need to do the following:

1. [Install Rollup Pack for Oracle Utilities Application Framework Version 4.4.0.0.0](#)

7.4.1 Installing Rollup Pack for OUAF Version 4.4.0.0.0

To install the rollup pack for Oracle Utilities Application Framework Version 4.4.0.0.0:

1. Do the following:

If you are using the following application server...	Then...
IBM WebSphere	a. Copy the <code>ORMB-V29000-FW-PREREQ-MultiPlatform.jar</code> file from the <code>WAS_FW44000</code> directory to the <code>TEMPDIR</code> directory.
Oracle WebLogic	b. Download the Oracle Utilities Application Framework V4.4.0.0.0 Single Fix Prerequisite Rollup for RMB V2.9.0.0.0 package from the Oracle Revenue Management and Billing V2.9.0.0.0 media pack which is available on Oracle Software Delivery Cloud . A zip file is downloaded. c. Unzip the downloaded file in the <code>TEMPDIR</code> directory. The contents include the <code>ORMB-V29000-FW-PREREQ-MultiPlatform.jar</code> file.

2. Decompress the JAR file using the following command:

```
cd <TEMPDIR>
jar -xvf ORMB-V29000-FW-PREREQ-MultiPlatform.jar
```

A sub-directory named `FW-V4.4.0.0.0-Rollup` is extracted. It contains the following two sub-directories:

- `Application`
- `Database`

3. Initialize the application environment where you want to install the rollup pack using the following command:

AIX, Linux:

```
$SPLEBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
$SPLEBASE\bin\splenvron.cmd -e %SPLENVIRON%
```

4. Change to the `Application` directory using the following command:

```
cd <TEMPDIR>/FW-V4.4.0.0.0-Rollup/Application
```

5. Execute the `installSFgroup` utility using the following command:

AIX, Linux:

```
chmod a+x installSFgroup.sh
```

```
chmod a+x FW*/*.sh
```

```
./installSFgroup.sh
```

Windows:

```
installSFgroup.cmd
```

8. Installing the Application Server Component of Oracle Revenue Management and Billing

This section describes the procedure for installing Oracle Revenue Management and Billing on top of the previously created Oracle Utilities Application Framework environment. This section includes:

- Pre-installation Tasks
- Installing the Application
- Post Installation Tasks
- Creating the billView Directory
- Installing User Documentation
- Operating the Application
- Installing Service Packs and Patches

You can download the installation package from [Oracle Software Delivery Cloud](#).

To proceed with the Oracle Revenue Management and Billing installation, you need to be connected to the target framework application environment. See the detailed installation instructions in the following section.

You must initialize the Framework environment along with the required Patch Set prior to proceeding with Oracle Revenue Management and Billing Application product installation.

8.1 Pre-installation Tasks

This section describes the steps that should be taken before installing Oracle Revenue Management and Billing.

8.1.1 Copying and Decompressing Install Media

The installation file is delivered in zip format for AIX, Linux, and Windows platforms. Oracle Revenue Management and Billing is delivered in a separate installation package for each supported Operating System.

Please refer to the [Supported Platforms](#) section for version and installation details regarding the database and operating system versions. Also refer [Installing Application Server Prerequisite Software](#) section for prerequisite third-party software installation instructions.

To copy and decompress the install media, perform the following steps:

1. Login to the host server using the Oracle Revenue Management and Billing administrator User ID (default `cissys`). This is the same User ID that was used to install Oracle Utilities Application Framework.
2. Download the Oracle Revenue Management and Billing V2.9.0.0.0 Multiplatform package from the Oracle Revenue Management and Billing V2.9.0.0.0 media pack which is available on [Oracle Software Delivery Cloud](#). A zip file is downloaded.

3. Unzip the downloaded file in the `<TEMPDIR>` directory.

Note:

You will need to have Java JDK installed on the machine used to unjar the application server installation package. Please install the JDK that is supported for the install on your platform to be able to use the jar command. This is the location of Java packages:

<http://java.sun.com/products/archive/index.html>.

For Windows installs, include the location of the JDK in your path before you execute the jar command.

The contents of the zip file include a directory named `ORMB.V2.9.0.0.0`.

8.2 Installing the Application

To install Oracle Revenue Management and Billing (ORMB) Version 2.9.0.0.0:

1. Login to the application server using the administrator's credentials.
2. Initialize the application environment (on which you want to install the application) using the following command:

AIX, Linux:

```
$SPLEBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
%SPLEBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where, `$SPLEBASE` or `%SPLEBASE%` is the path where the application environment is installed, and `$SPLENVIRON` or `%SPLENVIRON%` is the name of the application environment for which you want to set the environment variables.

3. Stop the managed server where the application is hosted using the WebLogic Console.
4. Change to the `ORMB.V2.9.0.0.0` directory using the following command:

AIX, Linux:

```
cd <TEMPDIR>/ORMB.V2.9.0.0.0
```

Windows:

```
cd <TEMPDIR>\ORMB.V2.9.0.0.0
```

5. Execute the `install` utility using the following command:

AIX, Linux:

```
./install.sh
```

Windows:

```
install.cmd
```

The following message appears in the command line:

```
Do you wish to proceed with the installation? (Y,N):
```

6. Type **Y** and then press **Enter**. A message appears informing you to type **P** if you want to proceed with the installation.

7. Type **P**, and then press **Enter**.

Note:

If you want to set the advanced menu options, execute the `configureEnv` utility using the following command:

AIX, Linux:

```
$SPLEBASE/bin/configureEnv.sh -a
```

Windows:

```
%SPLEBASE%\bin\configureEnv.cmd -a
```

You cannot set the advanced menu options during the installation process. These options can be set only after the application is installed. For more information, refer to the [Advanced Menu Options](#) section.

8.3 Post Installation Tasks

Once you install Oracle Revenue Management and Billing (ORMB) Version 2.9.0.0.0, you need to apply the following on the application environment:

1. [MANDATORY PATCH 1 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31066976\)](#)
2. [MANDATORY PATCH 2 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31074070\)](#)
3. [UPDATE ONLINE HELP FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31008818\)](#)
4. [MANDATORY PATCH 3 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31122862\)](#)
5. [MANDATORY PATCH 4 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31130102\)](#)
6. [MANDATORY PATCH 5 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31190091\)](#)
7. [MANDATORY PATCH 6 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31172781\)](#)
8. [MANDATORY PATCH 7 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31222633\)](#)
9. [MANDATORY PATCH 8 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31248602\)](#)
10. [MANDATORY PATCH 9 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31313821\)](#)
11. [MANDATORY PATCH 10 FOR ORMB VERSION 2.9.0.0.0 \(Patch Number: 31314417\)](#)

The above patch list is not comprehensive. For the complete list of patches that you need to apply on the application environment, see the *ORMB V29000 Patch Guide (Doc ID: 2704165.1)* which is available on [My Oracle Support](#).

Alternatively, instead of individually applying the above listed patches, you can download and install the rollup packs, if available, to apply a set of patches at once. For more information about the rollup packs, see [Appendix B: ORMB V2.9.0.0.0 Rollup Packs](#).

8.3.1 Applying the 31066976 Patch

Once you install ORMB, you need to apply the MANDATORY PATCH 1 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31066976). To apply the MANDATORY PATCH 1 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 1 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31066976) from [My Oracle Support](#). A zip file is downloaded.

- Unzip the downloaded file in your local directory. The contents include three files - README.txt, MultiPlatform.zip, and Bug_31066976_Product_Fix_Design.pdf.
- Unzip the MultiPlatform.zip file in your local directory. The contents include the V2.9.0.0.0-31066976_MultiPlatform directory.
- Change to the V2.9.0.0.0-31066976_MultiPlatform directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_1>/V2.9.0.0.0-31066976_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_1>\V2.9.0.0.0-31066976_MultiPlatform
```

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

The contents include a file named CCB.V2.9.0.0.0-31066976.jar and a directory named database.

- Decompress the CCB.V2.9.0.0.0-31066976.jar file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31066976.jar
```

The contents include two directories - META-INF and CCB.V2.9.0.0.0-31066976.

- Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
`${SPL}BASE/bin/splenvron.sh -e `${SPL}ENVIRON
```

Windows:

```
%`${SPL}BASE%\bin\splenvron.cmd -e %`${SPL}ENVIRON%
```

Where,

`\${SPL}BASE or `\${SPL}BASE% is the path where the application environment is installed and `\${SPL}ENVIRON or %`\${SPL}ENVIRON% is the name of the application environment.

- Change to the CCB.V2.9.0.0.0-31066976 directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_1>/V2.9.0.0.0-31066976_MultiPlatform/CCB.V2.9.0.0.0-31066976
```

Windows:

```
cd <DESTINATION_FOLDER_1>/V2.9.0.0.0-31066976_MultiPlatform\CCB.V2.9.0.0.0-31066976
```

- Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.2 Applying the 31074070 Patch

Once you apply the MANDATORY PATCH 1 FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the MANDATORY PATCH 2 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31074070). To apply the MANDATORY PATCH 2 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 2 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31074070) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - `README.txt`, `MultiPlatform.zip`, and `Bug_31074070_Product_Fix_Design.pdf`.
3. Unzip the `MultiPlatform.zip` file in your local directory. The contents include the `V2.9.0.0.0-31074070_MultiPlatform` directory.
4. Change to the `V2.9.0.0.0-31074070_MultiPlatform` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_2>/V2.9.0.0.0-31074070_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_2>\V2.9.0.0.0-31074070_MultiPlatform
```

Note: The `<DESTINATION_FOLDER_2>` directory is the location where you have extracted the contents of the `MultiPlatform.zip` file.

The contents include a file named `CCB.V2.9.0.0.0-31074070.jar` and a directory named `database`.

5. Decompress the `CCB.V2.9.0.0.0-31074070.jar` file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31074070.jar
```

The contents include two directories - `META-INF` and `CCB.V2.9.0.0.0-31074070`.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$SPLBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
%SPLBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where,

`$SPLBASE` or `%SPLBASE%` is the path where the application environment is installed and `$SPLENVIRON` or `%SPLENVIRON%` is the name of the application environment.

7. Change to the `CCB.V2.9.0.0.0-31074070` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_2>/V2.9.0.0.0-31074070_MultiPlatform/CCB.V2.9.0.0.0-31074070
```

Windows:

```
cd <DESTINATION_FOLDER_2>/V2.9.0.0.0-31074070_MultiPlatform\CCB.V2.9.0.0.0-31074070
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.3 Applying the 31008818 Patch

Once you apply the MANDATORY PATCH 2 FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the UPDATE ONLINE HELP FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31008818). To apply the UPDATE ONLINE HELP FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the UPDATE ONLINE HELP FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31008818) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - `README.txt`, `MultiPlatform.zip`, and `Bug_31008818_Product_Fix_Design.pdf`.
3. Unzip the `MultiPlatform.zip` file in your local directory. The contents include the `V2.9.0.0.0-31008818_MultiPlatform` directory.
4. Change to the `V2.9.0.0.0-31008818_MultiPlatform` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_3>/V2.9.0.0.0-31008818_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_3>\V2.9.0.0.0-31008818_MultiPlatform
```

Note: The `<DESTINATION_FOLDER_3>` directory is the location where you have extracted the contents of the `MultiPlatform.zip` file.

The contents include a file named `CCB.V2.9.0.0.0-31008818.jar`.

5. Decompress the `CCB.V2.9.0.0.0-31008818.jar` file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31008818.jar
```

The contents include two directories - `META-INF` and `CCB.V2.9.0.0.0-31008818`.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$SPLEBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
%SPLEBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where,

`$SPLEBASE` or `%SPLEBASE%` is the path where the application environment is installed and `$SPLENVIRON` or `%SPLENVIRON%` is the name of the application environment.

7. Change to the `CCB.V2.9.0.0.0-31008818` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_3>/V2.9.0.0.0-31008818_MultiPlatform/CCB.V2.9.0.0.0-31008818
```

Windows:

```
cd <DESTINATION_FOLDER_3>/V2.9.0.0.0-31008818_MultiPlatform\CCB.V2.9.0.0.0-31008818
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.4 Applying the 31122862 Patch

Once you apply the UPDATE ONLINE HELP FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the MANDATORY PATCH 3 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31122862). To apply the MANDATORY PATCH 3 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 3 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31122862) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - README.txt, MultiPlatform.zip, and Bug_31122862_Product_Fix_Design.pdf.
3. Unzip the MultiPlatform.zip file in your local directory. The contents include the V2.9.0.0.0-31122862_MultiPlatform directory.
4. Change to the V2.9.0.0.0-31122862_MultiPlatform directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_4>/V2.9.0.0.0-31122862_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_4>\V2.9.0.0.0-31122862_MultiPlatform
```

Note: The <DESTINATION_FOLDER_4> directory is the location where you have extracted the contents of the MultiPlatform.zip file.

The contents include a file named CCB.V2.9.0.0.0-31122862.jar and a directory named database.

5. Decompress the CCB.V2.9.0.0.0-31122862.jar file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31122862.jar
```

The contents include two directories - META-INF and CCB.V2.9.0.0.0-31122862.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$SPLBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
%SPLBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where,

`$SPLBASE` or `%SPLBASE%` is the path where the application environment is installed and `$SPLENVIRON` or `%SPLENVIRON%` is the name of the application environment.

7. Change to the `CCB.V2.9.0.0.0-31122862` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_4>/V2.9.0.0.0-31122862_MultiPlatform/CCB.V2.9.0.0.0-31122862
```

Windows:

```
cd <DESTINATION_FOLDER_4>/V2.9.0.0.0-31122862_MultiPlatform\CCB.V2.9.0.0.0-31122862
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.5 Applying the 31130102 Patch

Once you apply the MANDATORY PATCH 3 FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the MANDATORY PATCH 4 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31130102). To apply the MANDATORY PATCH 4 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 4 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31130102) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - `README.txt`, `MultiPlatform.zip`, and `Bug_31130102_Product_Fix_Design.pdf`.
3. Unzip the `MultiPlatform.zip` file in your local directory. The contents include the `V2.9.0.0.0-31130102_MultiPlatform` directory.
4. Change to the `V2.9.0.0.0-31130102_MultiPlatform` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_5>/V2.9.0.0.0-31130102_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_5>\V2.9.0.0.0-31130102_MultiPlatform
```

Note: The `<DESTINATION_FOLDER_5>` directory is the location where you have extracted the contents of the `MultiPlatform.zip` file.

The contents include a file named `CCB.V2.9.0.0.0-31130102.jar` and a directory named `database`.

5. Decompress the `CCB.V2.9.0.0.0-31130102.jar` file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31130102.jar
```

The contents include two directories - `META-INF` and `CCB.V2.9.0.0.0-31130102`.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$SPLEBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
%SPLEBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where,

`$SPLEBASE` or `%SPLEBASE%` is the path where the application environment is installed and `$SPLENVIRON` or `%SPLENVIRON%` is the name of the application environment.

7. Change to the `CCB.V2.9.0.0.0-31130102` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_5>/V2.9.0.0.0-  
31130102_MultiPlatform/CCB.V2.9.0.0.0-31130102
```

Windows:

```
cd <DESTINATION_FOLDER_5>/V2.9.0.0.0-  
31130102_MultiPlatform\CCB.V2.9.0.0.0-31130102
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.6 Applying the 31190091 Patch

Once you apply the MANDATORY PATCH 4 FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the MANDATORY PATCH 5 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31190091). To apply the MANDATORY PATCH 5 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 5 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31190091) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - `README.txt`, `MultiPlatform.zip`, and `Bug_31190091_Product_Fix_Design.pdf`.
3. Unzip the `MultiPlatform.zip` file in your local directory. The contents include the `V2.9.0.0.0-31190091_MultiPlatform` directory.

4. Change to the `V2.9.0.0.0-31190091_MultiPlatform` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_6>/V2.9.0.0.0-31190091_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_6>\V2.9.0.0.0-31190091_MultiPlatform
```

Note: The `<DESTINATION_FOLDER_6>` directory is the location where you have extracted the contents of the `MultiPlatform.zip` file.

The contents include a file named `CCB.V2.9.0.0.0-31190091.jar` and a directory named `database`.

5. Decompress the `CCB.V2.9.0.0.0-31190091.jar` file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31190091.jar
```

The contents include two directories - `META-INF` and `CCB.V2.9.0.0.0-31190091`.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$$SPLEBASE/bin/splenviron.sh -e $$SPLENVIRON
```

Windows:

```
%SPLEBASE%\bin\splenviron.cmd -e %SPLENVIRON%
```

Where,

`$$SPLEBASE` or `%SPLEBASE%` is the path where the application environment is installed and `$$SPLENVIRON` or `%SPLENVIRON%` is the name of the application environment.

7. Change to the `CCB.V2.9.0.0.0-31190091` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_6>/V2.9.0.0.0-31190091_MultiPlatform/CCB.V2.9.0.0.0-31190091
```

Windows:

```
cd <DESTINATION_FOLDER_6>/V2.9.0.0.0-31190091_MultiPlatform\CCB.V2.9.0.0.0-31190091
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.7 Applying the 31172781 Patch

Once you apply the MANDATORY PATCH 5 FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the MANDATORY PATCH 6 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31172781). To apply the MANDATORY PATCH 6 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 6 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31172781) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - README.txt, MultiPlatform.zip, and Bug_31172781_Product_Fix_Design.pdf.
3. Unzip the MultiPlatform.zip file in your local directory. The contents include the V2.9.0.0.0-31172781_MultiPlatform directory.
4. Change to the V2.9.0.0.0-31172781_MultiPlatform directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_7>/V2.9.0.0.0-31172781_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_7>\V2.9.0.0.0-31172781_MultiPlatform
```

Note: The <DESTINATION_FOLDER_7> directory is the location where you have extracted the contents of the MultiPlatform.zip file.

The contents include a file named CCB.V2.9.0.0.0-31172781.jar and a directory named database.

5. Decompress the CCB.V2.9.0.0.0-31172781.jar file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31172781.jar
```

The contents include two directories - META-INF and CCB.V2.9.0.0.0-31172781.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$SPLBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
%SPLBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where,

\$SPLBASE or %SPLBASE% is the path where the application environment is installed and \$SPLENVIRON or %SPLENVIRON% is the name of the application environment.

7. Change to the `CCB.V2.9.0.0.0-31172781` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_7>/V2.9.0.0.0-31172781_MultiPlatform/CCB.V2.9.0.0.0-31172781
```

Windows:

```
cd <DESTINATION_FOLDER_7>/V2.9.0.0.0-31172781_MultiPlatform\CCB.V2.9.0.0.0-31172781
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.8 Applying the 31222633 Patch

Once you apply the MANDATORY PATCH 6 FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the MANDATORY PATCH 7 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31222633). To apply the MANDATORY PATCH 7 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 7 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31222633) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - `README.txt`, `MultiPlatform.zip`, and `Bug_31222633_Product_Fix_Design.pdf`.
3. Unzip the `MultiPlatform.zip` file in your local directory. The contents include the `V2.9.0.0.0-31222633_MultiPlatform` directory.
4. Change to the `V2.9.0.0.0-31222633_MultiPlatform` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_8>/V2.9.0.0.0-31222633_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_8>\V2.9.0.0.0-31222633_MultiPlatform
```

Note: The `<DESTINATION_FOLDER_8>` directory is the location where you have extracted the contents of the `MultiPlatform.zip` file.

The contents include a file named `CCB.V2.9.0.0.0-31222633.jar` and a directory named `database`.

5. Decompress the `CCB.V2.9.0.0.0-31222633.jar` file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31222633.jar
```

The contents include two directories - `META-INF` and `CCB.V2.9.0.0.0-31222633`.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$SPLEBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
%SPLEBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where,

`$SPLEBASE` or `%SPLEBASE%` is the path where the application environment is installed and `$SPLENVIRON` or `%SPLENVIRON%` is the name of the application environment.

7. Change to the `CCB.V2.9.0.0.0-31222633` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_8>/V2.9.0.0.0-  
31222633_MultiPlatform/CCB.V2.9.0.0.0-31222633
```

Windows:

```
cd <DESTINATION_FOLDER_8>/V2.9.0.0.0-  
31222633_MultiPlatform\CCB.V2.9.0.0.0-31222633
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.9 Applying the 31248602 Patch

Once you apply the MANDATORY PATCH 7 FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the MANDATORY PATCH 8 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31248602). To apply the MANDATORY PATCH 8 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 8 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31248602) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - `README.txt`, `MultiPlatform.zip`, and `Bug_31248602_Product_Fix_Design.pdf`.
3. Unzip the `MultiPlatform.zip` file in your local directory. The contents include the `V2.9.0.0.0-31248602_MultiPlatform` directory.

4. Change to the `V2.9.0.0.0-31248602_MultiPlatform` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_9>/V2.9.0.0.0-31248602_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_9>\V2.9.0.0.0-31248602_MultiPlatform
```

Note: The `<DESTINATION_FOLDER_9>` directory is the location where you have extracted the contents of the `MultiPlatform.zip` file.

The contents include a file named `CCB.V2.9.0.0.0-31248602.jar` and a directory named `database`.

5. Decompress the `CCB.V2.9.0.0.0-31248602.jar` file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31248602.jar
```

The contents include two directories - `META-INF` and `CCB.V2.9.0.0.0-31248602`.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$(SPLEBASE)/bin/splenvron.sh -e $(SPLENVIRON)
```

Windows:

```
%SPLEBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where,

`$(SPLEBASE)` or `%SPLEBASE%` is the path where the application environment is installed and `$(SPLENVIRON)` or `%SPLENVIRON%` is the name of the application environment.

7. Change to the `CCB.V2.9.0.0.0-31248602` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_9>/V2.9.0.0.0-31248602_MultiPlatform/CCB.V2.9.0.0.0-31248602
```

Windows:

```
cd <DESTINATION_FOLDER_9>/V2.9.0.0.0-31248602_MultiPlatform\CCB.V2.9.0.0.0-31248602
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.10 Applying the 31313821 Patch

Once you apply the MANDATORY PATCH 8 FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the MANDATORY PATCH 9 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31313821). To apply the MANDATORY PATCH 9 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 9 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31313821) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - README.txt, MultiPlatform.zip, and Bug_31313821_Product_Fix_Design.pdf.
3. Unzip the MultiPlatform.zip file in your local directory. The contents include the V2.9.0.0.0-31313821_MultiPlatform directory.
4. Change to the V2.9.0.0.0-31313821_MultiPlatform directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_10>/V2.9.0.0.0-31313821_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_10>\V2.9.0.0.0-31313821_MultiPlatform
```

Note: The <DESTINATION_FOLDER_10> directory is the location where you have extracted the contents of the MultiPlatform.zip file.

The contents include a file named CCB.V2.9.0.0.0-31313821.jar and a directory named database.

5. Decompress the CCB.V2.9.0.0.0-31313821.jar file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31313821.jar
```

The contents include two directories - META-INF and CCB.V2.9.0.0.0-31313821.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$SPLBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
%SPLBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where,

\$SPLBASE or %SPLBASE% is the path where the application environment is installed and \$SPLENVIRON or %SPLENVIRON% is the name of the application environment.

7. Change to the CCB.V2.9.0.0.0-31313821 directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_10>/V2.9.0.0.0-31313821_MultiPlatform/CCB.V2.9.0.0.0-31313821
```

Windows:

```
cd <DESTINATION_FOLDER_10>/V2.9.0.0.0-  
31313821_MultiPlatform\CCB.V2.9.0.0.0-31313821
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

8.3.11 Applying the 31314417 Patch

Once you apply the MANDATORY PATCH 9 FOR ORMB VERSION 2.9.0.0.0 patch, you need to apply the MANDATORY PATCH 10 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31314417). To apply the MANDATORY PATCH 10 FOR ORMB VERSION 2.9.0.0.0 patch:

1. Download the MANDATORY PATCH 10 FOR ORMB VERSION 2.9.0.0.0 patch (Patch Number: 31314417) from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include three files - README.txt, MultiPlatform.zip, and Bug_31314417_Product_Fix_Design.pdf.
3. Unzip the MultiPlatform.zip file in your local directory. The contents include the V2.9.0.0.0-31314417_MultiPlatform directory.
4. Change to the V2.9.0.0.0-31314417_MultiPlatform directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_11>/V2.9.0.0.0-31314417_MultiPlatform
```

Windows:

```
cd <DESTINATION_FOLDER_11>\V2.9.0.0.0-31314417_MultiPlatform
```

Note: The <DESTINATION_FOLDER_11> directory is the location where you have extracted the contents of the MultiPlatform.zip file.

The contents include a file named CCB.V2.9.0.0.0-31314417.jar and a directory named database.

5. Decompress the CCB.V2.9.0.0.0-31314417.jar file using the following command:

```
jar -xvf CCB.V2.9.0.0.0-31314417.jar
```

The contents include two directories - META-INF and CCB.V2.9.0.0.0-31314417.

6. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$(SPLBASE)/bin/splenvron.sh -e $(SPLENVIRON)
```

Windows:

```
%SPLBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```


Where,

`$$SPLEBASE` or `%SPLEBASE%` is the path where the application environment is installed and
`$$SPLENVIRON` or `%SPLENVIRON%` is the name of the application environment.

7. Change to the `CCB.V2.9.0.0.0-31314417` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_11>/V2.9.0.0.0-  
31314417_MultiPlatform/CCB.V2.9.0.0.0-31314417
```

Windows:

```
cd <DESTINATION_FOLDER_11>/V2.9.0.0.0-  
31314417_MultiPlatform\CCB.V2.9.0.0.0-31314417
```

8. Install the patch using the following command:

AIX, Linux:

```
./installSF.sh
```

Windows:

```
installSF.cmd
```

9. Start the managed server using the WebLogic Console.

8.4 Creating the billView Directory

Once you apply all required patches and single fixes, you need to create a directory named `billView` in the `$$SPLAPP` directory.

8.5 Installing User Documentation

User manuals and other technical documents are available in the Portable Document Format (PDF). You can download Oracle Revenue Management and Billing release specific documentation library (for example, Oracle Revenue Management and Billing Version 2.9.X.X.X Documentation Library) using the following URL:

<http://www.oracle.com/technetwork/indexes/documentation/fsgbu-1364781.html>

The online help is provided in the HTML format. It is located inside the Oracle Revenue Management and Billing application server installation package. It is automatically installed and can be launched from the user interface. The online help files are available under the `applications` directory. In case of Oracle WebLogic application server, the online help is packaged in the file named `ohelp.ear`. The online help is provided in English (ENG).

8.6 Operating the Application

At this point your installation and custom integration process is complete. Be sure to read *Oracle Revenue Management and Billing Server Administration Guide* for more information on further configuring and operating the Oracle Revenue Management and Billing system.

8.7 Installing Service Packs and Patches

Periodically, Oracle Revenue Management and Billing releases a service pack of single fixes for its products. A service pack is an update to an existing release that includes solutions to known problems and other product enhancements. A service pack is not a replacement for an installation, but a pack consisting of a collection of changes and additions for it. The service pack may include changes to be applied to the application server, the database, or both. The service pack includes all files necessary for installing the collection of changes, including installation instructions.

Between services packs, Oracle Revenue Management and Billing releases patches to fix individual bugs. For information on installing patches, see knowledge base article ID 974985.1 on [My Oracle Support](#). Service packs and patches can be downloaded from [My Oracle Support](#).

9. Additional Tasks

This section describes tasks that should be completed after installing Oracle Revenue Management and Billing, including:

- Importing Self-Signed Certificates
- Customizing Configuration Files
- Centralized Properties Customization
- Generating the Application Viewer
- Building Javadocs Indexes
- Configuring the Environment for Batch Processing
- Customizing the Logo
- Deploying Inbound Web Services (IWS)
- Domain Templates
- Invoking Custom Batch Notifier

9.1 Importing Self-Signed Certificates

If you are using self-signed certificates and the inbound web services (IWS) feature, then it is necessary to import these certificates into the ouaf truststore file. Perform the following commands:

1. Start WebLogic.
2. Initialize a command shell and setup the environment by running the following:

AIX, Linux:

```
$SPLBASE/bin/splenvron.sh -e $SPLENVIRON
```

For example:

```
/ouaf/TEST_ENVIRON1/bin/splenvron.sh -e TEST_ENVIRON1
```

Windows:

```
%SPLBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

For example:

```
D:\ouaf\TEST_ENVIRON1\bin\splenvron.cmd -e TEST_ENVIRON1
```

3. Execute the following script to generate all information.

AIX, Linux:

```
$SPLBASE/bin/initialSetup.sh -i [<server>:<port>]
```

Windows:

```
%SPLBASE%\bin\initialSetup.cmd -i [<server>:<port>]
```

Note:

If the server name and port number are not specified, these details are retrieved from the `ENVIRON.INI` file.

This needs to be performed before deploying the IWS application.

9.2 Customizing Configuration Files

You may wish to modify various configuration files. If you wish to make custom modifications in configuration files, create a 'CM copy' of the template file or user exit. This preserves your changes whenever `initialSetup` is executed; otherwise, your changes to the delivered template files will be lost if it is patched in the future.

For example, to customize hibernate properties of the SPLWeb web application, perform the following:

1. Locate the `hibernate.properties.template` file in the `$SPLEBASE/templates` directory.
2. Copy the file and rename it to `cm.hibernate.properties.template`.
3. Make the required changes in the `cm.hibernate.properties.template` file.
4. Update the application war file with the latest changes by executing the following command:

AIX, Linux:

```
$SPLEBASE/bin/initialSetup.sh
```

Windows:

```
%SPLEBASE%\bin\initialSetup.cmd
```

Refer to the Oracle Utilities Application Framework SDK documentation for more details.

9.3 Centralized Properties Customization

This feature gives the ability to add, modify, and remove properties in one file. The properties are propagated to the specified property files. The template process, which is part of the `initialSetup` step, will look at the `etc/cm_properties.ini` file (this can be created as a Customer Customization). If the file exists, the content will be processed for the relevant properties.

Note: Product teams might use the `etc/<PROD>_properties.ini` file format (where `<PROD>` could be one of the list of installed products included in the `etc/PRODUCT.txt` file). If it exists, it will be processed as well.

cm_properties.ini examples

Type of entries that could be included into the `cm_properties.ini` file and relevant type of action:

```
<PROPERTIES_FILE>:<PROPERTY_NAME>=<VALUE>
```

- Override `<PROPERTY_NAME>` in `<PROPERTIES_FILE>` with `<VALUE>` if exists.
- Insert `<PROPERTY_NAME>` in `<PROPERTIES_FILE>` with `<VALUE>` if it doesn't exist.

```
<PROPERTY_NAME>=<VALUE>
```

- Override <PROPERTY_NAME> in all property files with <VALUE>, if <PROPERTY_NAME> exists

```
<PROPERTIES_FILE>:<PROPERTY_NAME>=[DELETE]
```

- Remove <PROPERTY_NAME> from <PROPERTIES_FILE> if it exists.

```
<PROPERTY_NAME>=[DELETE]
```

- Remove <PROPERTY_NAME> from all property files, if <PROPERTY_NAME> exists.

Template example -> hibernate.service.properties.template:

```
hibernate.user = @DBUSER@
hibernate.pass = @DBPASS@
hibernate.ucp.validate_connection = true
```

ENVIRON.INI example:

```
DBUSER=cisadm
```

cm_properties.ini example:

```
hibernate.service.properties.template:hibernate.user=clouduser
hibernate.password=cloudpwd
hibernate.iws.properties.template:hibernate.user=clouduser
hibernate.service.properties.template:hibernate.ucp.validate_connection=[DELETE]
hibernate.service.properties.template:new.property=test
```

hibernate.service.properties generated properties file result:

```
### The following line was overridden because of the
<PROD>_properties.ini file setting:
hibernate.user=clouduser
### The following line was overridden because of the
<PROD>_properties.ini file setting:
hibernate.password=cloudpwd
### The following line was deleted because of the
<PROD>_properties.ini file setting:
# hibernate.ucp.validate_connection = true
### The following line was appended because of the
<PROD>_properties.ini file setting:
new.property = test
```

hibernate.iws.properties generated properties file result:

```
### The following line was overridden because of the
<PROD>_properties.ini file setting:
hibernate.user=clouduser
### The following line was overridden because of the
<PROD>_properties.ini file setting:
hibernate.password=cloudpwd
```

9.4 Generating the Application Viewer

You may extend application viewer capabilities within an environment by generating additional items. These items that can be generated include information about algorithm types, algorithms, maintenance objects, and data dictionary information. The Javadocs indexes are also rebuilt.

To generate the additional items in the application viewer:

1. Shut down the environment.
2. Initialize a command shell and setup environment:

AIX, Linux:

```
$SPLEBASE/bin/splenviron.sh -e $SPLENVIRON
```

For example:

```
/ouaf/TEST_ENVIRON1/bin/splenviron.sh -e TEST_ENVIRON1
```

Windows:

```
%SPLEBASE%\bin\splenviron.cmd -e %SPLENVIRON%
```

For example:

```
D:\ouaf\TEST_ENVIRON1\bin\splenviron.cmd -e TEST_ENVIRON1
```

3. Execute the following script to generate all information:

AIX, Linux:

```
ksh $SPLEBASE/bin/genappvieweritems.sh
```

Windows:

```
%SPLEBASE%\bin\genappvieweritems.cmd
```

4. Restart your application.

9.5 Building Javadocs Indexes

Rebuilding Javadoc indexes is already part of generating application viewer above. However, there are times when you need to run it separately. For example, this is required after customer modifications (CM) have been applied to an environment when it includes Java code.

Perform the following to rebuild the Javadoc indexes.

Windows:

```
%SPLEBASE%\bin\buildJavadocsIndex.cmd
```

AIX, Linux:

```
ksh $SPLEBASE/bin/buildJavadocsIndex.sh
```

9.6 Configuring the Environment for Batch Processing

See *Oracle Revenue Management and Billing Server Administration Guide* for information on configuring the environment for batch processing.

9.7 Customizing the Logo

To replace the Oracle Utilities logo on the main menu with another image, put the new image `<customer_logo_file>.gif` file into the directory `$SPLEBASE/etc/conf/root/cm` and create a new “External” Navigation Key called `CM_logoImage`. To do that, run the Oracle Utilities application from the browser with the parameters:

```
https://<hostname>:<port>/cis.jsp?utilities=true&tools=true
```

From the Admin menu, select Navigation Key. Add the above Navigation Key with its corresponding URL Override path. The syntax for the URL path is:

Windows:

```
https://<host_name>:<websslport>/<Web_Context>/cm/<customer_logo_file>.gif
```

AIX, Linux:

```
https://<host_name>:<websslport>/<Web_Context>/cm/<customer_logo_file>.gif
```

The root directory may be deployed in war file format for runtime environment (`SPLApp.war`). Use provided utilities to incorporate your cm directory into `SPLApp.war` file.

9.8 Deploying Inbound Web Services (IWS)

All existing XAI Inbound Services have been duplicated as Inbound Web Services as the application moves toward deprecation of XAI and full transition to IWS in the next release. The duplicated services are designed to work seamlessly in this release, and customers providing custom services are encouraged to migrate to IWS to take full advantage of the new, more efficient Web service technology. For more information on migrating from XAI to IWS, please refer to *Migrating from XAI to IWS Oracle Utilities Application Framework (Doc ID: 1644914.1)* on [My Oracle Support](#).

Note: This is an optional step for customers using IWS instead of XAI services.

For deploying IWS, please follow the steps below:

AIX, Linux:

1. Execute this step in `$SPLEBASE/bin`. Please note that the application server should be up before running the below command.

```
ksh ./iwsdeploy.sh
```

Windows:

2. Execute this step in `%SPLEBASE%\bin`. Please note that the application server should be up before running the below command.

```
iwsdeploy.cmd
```

9.9 Domain Templates

Configure the WebLogic application server to deploy it. Refer to the *Oracle WebLogic 12.2.1.x Configuration Guide for Oracle Utilities Framework (Doc ID 2413918.1)* whitepaper on [My Oracle Support](#).

9.10 Invoking Custom Batch Notifier

You need to do this additional task to ensure that the To Dos are generated once the following batches are executed:

- Upload and Validate Usage Data File (C1-ODFU)
- Billable Charge Creation (C1-ODBCH)
- Adhoc Billing (C1-FABL)
- Freeze and Complete Adhoc Bills (C1-FCADH)
- Any other standard or custom batch which is configured to generate notification once the batch is completed.

To generate custom notification once a batch is completed, you need to do the following:

1. Add the following line in the `../$SPLEBASE/templates/threadpoolworker.properties.template` file:

```
com.splwg.batch.custom.notifier=com.splwg.ccb.domain.batch.CustomBatchNotifier
```
2. Re-initialize the environment using the following command:

AIX, Linux:

```
$SPLEBASE/bin/initialSetup.sh
```

Windows:

```
%SPLEBASE%\bin\initialSetup.cmd
```

3. Restart your application.

Appendix A : Application Framework Prerequisite Patches

Oracle Utilities Application Framework patches must be installed prior to installing Oracle Revenue Management and Billing. These patches are available in the rollup pack named Oracle Utilities Application Framework V4.4.0.0.0 Single Fix Prerequisite Rollup for RMB V2.9.0.0.0. The `BUGLIST.txt` file in the `FW-V4.4.0.0.0-Rollup\Application` directory lists the bugs for which patches are available in the rollup pack.

Appendix B : ORMB V2.9.0.0.0 Rollup Packs

Instead of individually applying the patches, you can download and apply the release-specific rollup packs. The following table indicates whether a patch is included in any rollup pack:

Patch Number	Patch Description	Rollup Pack
31066976	MANDATORY PATCH 1 FOR ORMB VERSION 2.9.0.0.0	31319753 - ROLLUP PACK ORMB V2.9.0.0.0
31074070	MANDATORY PATCH 2 FOR ORMB VERSION 2.9.0.0.0	
31008818	UPDATE ONLINE HELP FOR ORMB VERSION 2.9.0.0.0	
31122862	MANDATORY PATCH 3 FOR ORMB VERSION 2.9.0.0.0	
31130102	MANDATORY PATCH 4 FOR ORMB VERSION 2.9.0.0.0	
31190091	MANDATORY PATCH 5 FOR ORMB VERSION 2.9.0.0.0	
31172781	MANDATORY PATCH 6 FOR ORMB VERSION 2.9.0.0.0	
31222633	MANDATORY PATCH 7 FOR ORMB VERSION 2.9.0.0.0	
31248602	MANDATORY PATCH 8 FOR ORMB VERSION 2.9.0.0.0	
31313821	MANDATORY PATCH 9 FOR ORMB VERSION 2.9.0.0.0	
31314417	MANDATORY PATCH 10 FOR ORMB VERSION 2.9.0.0.0	

Note: The above patch list is not comprehensive. For the complete list of patches that you need to apply on the application environment, see the *ORMB V29000 Patch Guide (Doc ID: 2704165.1)* which is available on [My Oracle Support](#).

B.1 Applying a Rollup Pack

Once you install ORMB, you need to apply the above listed rollup packs. To apply the rollup pack:

1. Download the rollup pack from [My Oracle Support](#). A zip file is downloaded.
2. Unzip the downloaded file in your local directory. The contents include `README.txt` and three directories named `RMB_V2.9.0.0.0_App_Rollup`, `RMB_V2.9.0.0.0_DB_Rollup`, and `RMB_V2.9.0.0.0_PFDs`.
3. Initialize the application environment (on which you want to install the patch) using the following command:

AIX, Linux:

```
$SPLEBASE/bin/splenvron.sh -e $SPLENVIRON
```

Windows:

```
%SPLEBASE%\bin\splenvron.cmd -e %SPLENVIRON%
```

Where,

`$SPLEBASE` or `%SPLEBASE%` is the path where the application environment is installed and `$SPLENVIRON` or `%SPLENVIRON%` is the name of the application environment.

4. Change to the `RMB_V2.9.0.0.0_App_Rollup` directory using the following command:

AIX, Linux:

```
cd <DESTINATION_FOLDER_1>/RMB_V2.9.0.0.0_App_Rollup
```

Windows:

```
cd <DESTINATION_FOLDER_1>\RMB_V2.9.0.0.0_App_Rollup
```

Note: The `<DESTINATION_FOLDER_1>` directory is the location where you have extracted the contents of the rollup pack.

5. Install the patch using the following command:

AIX, Linux:

```
./installSFgroup.sh
```

Windows:

```
installSFgroup.cmd
```

Appendix C : ORMB V2.9.0.0.0 Bug Fixes

To view a list of bugs fixed in the current release, refer to *Oracle Revenue Management and Billing Version 2.9.0.0.0 Release Notes*.

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- poi-excelant-4.1.0.jar
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- poi-ooxml-schemas-4.1.0.jar
- poi-scratchpad-4.1.0.jar
- serializer-2.7.2.jar
- velocity-1.7.jar
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marked - a markdown parser

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swagger-ui.js

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