

**Oracle® Communications Billing and Revenue
Management**

Business Operations Center Installation Guide

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Preface

This guide provides instructions for installing Oracle Communications Billing and Revenue Management Business Operations Center.

Audience

This guide is intended for system administrators, database administrators, and developers who install and configure Business Operations Center. Business Operations Center requires Oracle Database, Oracle WebLogic Server, and Oracle Identity and Access Management Suite products in production environments. Additionally, Business Operations Center requires Billing and Revenue Management Revenue Assurance Manager, an optional component, to be installed in your Billing and Revenue Management environment.

See the documentation for those products for additional installation and configuration instructions.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit

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<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Related Documents

The following documents contains related information and are referenced in this guide:

- *Administering Security for Oracle WebLogic Server*
- *Oracle Communications Billing and Revenue Management Collecting Revenue Assurance Data*
- *Oracle Communications Billing and Revenue Management Developer's Guide*
- *Oracle Communications Billing and Revenue Management System Administrator's Guide*
- *Oracle Database Online Documentation 11g Release 2*

- *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*
- *Oracle Fusion Middleware Administrator's Guide for Oracle Access Manager with Oracle Security Token Service*
- *Oracle Fusion Middleware Administrator's Guide for Oracle Entitlements Server*
- *Oracle Fusion Middleware Deployment Guide for Oracle Identity and Access Management 11g Release 2*
- *Oracle Fusion Middleware Deploying Applications to Oracle WebLogic Server*
- *Oracle Fusion Middleware Domain Template Reference*
- *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management*
- *Oracle Fusion Middleware Integration Guide for Oracle Identity Management Suite*
- *Oracle Fusion Middleware Securing Oracle WebLogic Server*

Accessing Oracle Communications Documentation

Business Operations Center documentation and additional Oracle documentation, such as Oracle Database, WebLogic, and Identity and Access Management documentation, is available from Oracle Help Center:

- <http://docs.oracle.com>

Additional Oracle Communications documentation is available from the Oracle software delivery web site:

- <https://edelivery.oracle.com>

Document Revision History

The following table lists the revision history for this book.

Version	Date	Description
E72269-01	April 2016	Initial release.
E72269-02	June 2016	Made minor formatting and text changes.
E72269-03	August 2017	Added the following section: Running SQL Scripts
E72269-04	April 2018	Updated the following section: Additional Required Third-Party Software
E72269-05	November 2018	Updated the following section: Additional Required Third-Party Software
E72269-06	December 2019	Updated the following sections: Installing and Configuring Oracle Enterprise Database Creating Database Schemas Using RCU Creating Oracle Identity and Access Management Deployment Repository Additional Required Third-Party Software

Business Operations Center Installation Overview

This chapter provides an overview of Oracle Communications Billing and Revenue Management Business Operations Center components and installation process.

About Installing Business Operations Center

Business Operations Center installation should be performed only by experienced system administrators. You must be familiar with the following before you begin the installation:

- UNIX/Linux operating system
- Oracle Communications Billing and Revenue Management (BRM)
 - BRM Revenue Assurance Manager
- Oracle WebLogic Server
- Oracle Enterprise Database
- Oracle Identity and Access Management (IAM) components, including:
 - Oracle Access Management (OAM)
 - Oracle Entitlements Server (OES)
 - Oracle Identity Manager (OIM)
 - Oracle Unified Directory (OUD)

Additionally, you should have experience installing Java-related packages.

The Business Operations Center installer creates the required schema in the BRM database and deploys Business Operations Center to a WebLogic server domain.

Overview of the Business Operations Center Installation Steps

The following is an overview of the Business Operations Center installation steps:

1. Plan your installation. Planning your installation involves:
 - Determining the scale of your implementation (for example, whether you are installing a small test system or a large production system).

Note: You can install a test or development installation of Business Operations Center without IAM. Do not use these installations in production environments. See "[About Test Installations and Production Installations](#)" for more information.

- Assessing how many physical computers you need and which software components to install on which computers.
 - Planning the system topology (for example, determining whether you want a standalone deployment or a clustered deployment).
2. Review system requirements. System requirements include:
 - Hardware requirements, such as disk space and physical RAM
 - Software requirements, such as operating system (OS) versions and OS patch requirements, OS kernel tuning requirements, required Oracle software, including:
 - Enterprise Database
 - WebLogic Server
 - IAM
 - Java Development Kit (JDK)See "[Business Operations Center Requirements](#)" for required versions.
 - Information requirements, such as IP addresses, administrative user credentials, host names, and port numbers
 - BRM Server including installation of Revenue Assurance Manager
See "[Installing Revenue Assurance Manager](#)" in *Oracle Communications Billing and Revenue Management Collecting Revenue Assurance Data* for more information.
 3. Prepare your IAM foundation by completing the pre-installation tasks:
See "[Business Operations Center Pre-Installation Tasks](#)" for more information.
 4. Install Business Operations Center using the Oracle Universal Installer (OUI) Business Operations Center installer.
See "[Installing Business Operations Center](#)" for more information.
 5. Perform the required post-installation configuration tasks.
See "[Business Operations Center Post-Installation Tasks](#)" for more information.
 6. Verify the installation.
See "[Verifying the Business Operations Center Installation](#)" for more information.

Ensuring a Successful Business Operations Center Installation

Business Operations Center uses additional Oracle software products including Enterprise Database, WebLogic Server, and IAM. Familiarize yourself with these products and their installation procedures before installing Business Operations Center.

Note: IAM has important pre-installation requirements including kernel tuning, operating system configuration files editing (for example, editing **limits.conf**), and tuning database parameters. Ensure that these requirements have been met when completing the pre-installation tasks before running the Business Operations Center installer so that your installation is successful.

See *Oracle Fusion Middleware System Requirements and Specifications for Oracle Identity and Access Management* for detailed information at:

http://docs.oracle.com/html/E38978_03/r2_im_requirements.htm

Consult additional product documentation on the Oracle Help Center for required information at:

<https://docs.oracle.com>

To ensure that the Business Operations Center installation is successful, follow these guidelines:

- As you install each component (for example, the Enterprise Database and WebLogic Server), verify that the component installed successfully before continuing the installation process.
- Pay close attention to the system requirements. Before you begin installing the application, ensure that your system has the required base software and meets the minimum technical requirements. In addition, ensure that you know all the required configuration values, such as host names and port numbers.
- Make a note of any new configuration values as you create them. You will be required to enter configuration values later in the procedure.

Planning Your Business Operations Center Installation

This chapter provides information on planning your Oracle Communications Billing and Revenue Management Business Operations Center installation.

About Planning Your Business Operations Center Installation

When planning a Business Operations Center installation, consider how many physical servers are required to support the Oracle WebLogic Server domains and Oracle Identity and Access Management (IAM) components needed in your environment. High-availability requirements may increase the number of hosts.

Consider the security and networking requirements necessary for securing Business Operations Center communications with your Oracle Communications Billing and Revenue Management (BRM) system in addition to software and hardware requirements.

See "[Business Operations Center Requirements](#)" for information about required hardware and software and the chapter on Business Operations Security in *Oracle Communications Billing and Revenue Management Security Guide*.

About Test Installations and Production Installations

Install Business Operations Center either as a test or production installation depending on your required environment. Both test and production Business Operations Center installations must connect to a BRM system with Revenue Assurance Manager installed. See *Oracle Communications Billing and Revenue Management Collecting Revenue Assurance Data* for more information.

About Test Installations

Use test installations when setting up internal development or testing Business Operations Center instances. Test installations allow users to use Business Operations Center without IAM security. The deployed Business Operations Center application in your test WebLogic server domain connects directly to your BRM system using native WebLogic server user management.

Test installations include the following components:

- WebLogic Server
- WebLogic Server domain to host Business Operations Center with Business Operations Center security disabled

- Deployed Business Operations Center application WAR
- Creation of Business Operations Center schema in the BRM database

This guide includes information on installing test installations. You do not need to perform the IAM pre-installation steps for test installations. See "[Installing Business Operations Center for Testing](#)" for more information on test installations.

About Production Installations

Use production installations when setting up secure Business Operations Center instances using IAM security. Production installations require user authentication and authorization for securing access to Business Operations Center. This guide provides general guidelines in installing and configuring IAM components. It does not contain detailed information on configuring IAM components. Consult the respective product documentation using the links provided in this guide for more information on configuring IAM components.

Production installations include the following components:

- Database creation with Oracle Repository Creation Utility (RCU)
- WebLogic Server
- Oracle Identity and Access Management (IAM) components, including:
 - Oracle Access Manager (OAM)
 - Oracle Entitlements Server (OES) Administration Server and Client Domains
 - Oracle Identity Manager (OIM)
 - Oracle Unified Domain (OUD)
- Deployed Business Operations Center application WAR on each OES Client domain
- Creation of Business Operations Center schema in the BRM database

Database Planning

Business Operations Center production installations require an Enterprise Database used by IAM. This database is in addition to your BRM server database used for the Business Operations Center schema. Database sizing requirements depend on the number of Business Operations Center users in your environment.

See "[Installing and Configuring Oracle Enterprise Database](#)" for information on setting up the required database for Business Operations Center.

Authentication and Authorization Planning

When planning a Business Operations Center installation, consider IAM requirements carefully. Each OES Client domain hosts a deployed instance of Business Operations Center and connects to IAM for authentication and authorization. Determine how many OES Client domains are needed to support the Business Operations Center deployments required by your transaction volume.

Note: Use a single IAM instance when installing Business Operations Center and Oracle Communications Billing Care in the same BRM environment.

See "Reviewing System Requirements and Certification" in *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management* for more information on sizing your IAM host requirements.

About Installing a Secure System

In production environments, you must ensure that communication between components and access to the system servers are secure. The Business Operations Center installer prompts you to select security options. After you install Business Operations Center, enable SSL communication between Business Operations Center and BRM. For information about securing Business Operations Center, see the chapter on Business Operations Center in *Oracle Communications Billing and Revenue Management Security Guide*.

Business Operations Center Requirements

This chapter describes Oracle Communications Billing and Revenue Management Business Operations Center software and hardware requirements.

Software Requirements

Business Operations Center is deployed on an Oracle WebLogic Server domain configured as an Oracle Entitlements Server (OES) client domain. The OES Client domain connects to the following Oracle Identity and Access Management (IAM) components:

- OES Administration Server for resource authorization
- Oracle Access Management (OAM) for domain authorization
- Oracle Identity and Access Management (OIM) is used for user authentication
- Oracle Unified Directory (OUD) for user directory management

IAM requires an Oracle Enterprise Database for storing authentication and authorization policies, and user information. Use the Fusion Middleware Repository Creation Utility (RCU) to create the necessary database schemas in your database. See *Fusion Middleware Repository Creation Utility User's Guide* for more information on the RCU.

Business Operations Center is supported only on the software and hardware listed in the following sections. You must install and connect all required software components for a secure installation.

Supported Operating Systems

[Table 3–1](#) lists operating systems supported for Business Operations Center.

Table 3–1 Business Operations Center Operating Systems Requirements

Product	Version
Oracle Linux, x86-64 (64bit)	6UL3+
Red Hat Enterprise Linux, x86-64 (64bit)	5 UL3+
Oracle Solaris for SPARC (64bit)	10 Update 4+

Additional Software Requirements

[Table 3–2](#) lists software required for running Business Operations Center.

Download required Oracle software from the Oracle Software Delivery Cloud:

<http://edelivery.oracle.com>

or Oracle Technology Network:

<http://www.oracle.com/technetwork/indexes/downloads/index.html>

or Oracle support Web site:

<https://support.oracle.com>

Table 3–2 Business Operations Center Software Requirements

Product	Version
Oracle WebLogic Server 11g Enterprise Edition	10.3.6
Oracle Database Server	The same version used by the BRM 7.5 installation that Business Operations Center connects to. See the installation guide for your database host operating system for additional information on database hardware and software requirements at: http://docs.oracle.com/cd/B28359_01/nav/portal_11.htm
Oracle Fusion Middleware Repository Creation Utility 11g	11.1.1.9.0
Oracle Communications Billing and Revenue Management (BRM) on Linux x86 or x86-64 or Solaris SPARC (64 bit) with Revenue Assurance Manager installed and configured	7.5 Patch Set 15 and later patch sets
Internet Browser	(Windows only) Microsoft Internet Explorer 11 Mozilla Firefox 39 Google Chrome 43 Apple Safari 8.0.6
64bit Java Development Kit (JDK)	1.7.0_80

The Business Operations Center installer validates the JDK version and checks for a running OES Client domain before deploying Business Operations Center. Detected errors, any missing or unavailable components, or any connectivity-related issues are displayed in the Business Operations Center installer.

For production installations, you must install the required software listed in [Table 3–2](#) and perform the required pre-installation procedures listed in "[Business Operations Center Pre-Installation Tasks](#)" before running the Business Operations Center installer. Test installations can be done on a basic WebLogic domain but still require a database on which to create the Business Operations Center schema.

Additional Required Third-Party Software

Business Operations Center requires the third-party software listed in [Table 3–3](#). Obtain the required software versions from the listed vendors and ensure that the packages are installed on your Business Operations Center host according to third-party documentation before running the installer.

Table 3–3 Required Third-Party Software

Third-Party Software	Version	Vendor
Jersey Bundle	<ul style="list-style-type: none"> ■ Supported in 7.5 Patch Set 15: 2.19 ■ Supported from 7.5 Patch Set 17: 2.22.2 	http://jersey.java.net
Log4j2	<ul style="list-style-type: none"> ■ Supported from 7.5 Patch Set 15 through 7.5 Patch Set 19: 2.3 ■ Supported from 7.5 Patch Set 20 through 7.5 Patch Set 22: 2.8.2 ■ Supported from 7.5 Patch Set 23: 2.12.0 	http://logging.apache.org/log4j/2.x/
Jackson	<ul style="list-style-type: none"> ■ Supported in 7.5 Patch Set 15: jackson-core-2.6.0.jar jackson-core-asl-1.9.13.jar jackson-jaxrs-1.9.13.jar jackson-mapper-asl-1.9.13.jar ■ Supported from 7.5 Patch Set 17 through 7.5 Patch Set 20: jackson-core-2.8.3.jar jackson-databind-2.8.3.jar jackson-jaxrs-base-2.8.3.jar jackson-jaxrs-json-provider-2.8.3.jar 	https://github.com/FasterXML/jackson

Table 3–3 (Cont.) Required Third-Party Software

Third-Party Software	Version	Vendor
Jackson	<ul style="list-style-type: none"> <li data-bbox="435 260 742 579"> <p>■ Supported from 7.5 Patch Set 17 through 7.5 Patch Set 20: jackson-core-2.8.3.jar jackson-databind-2.8.3.jar jackson-jaxrs-base-2.8.3.jar jackson-jaxrs-json-provider-2.8.3.jar</p> <li data-bbox="435 590 742 947"> <p>■ Supported in 7.5 Patch Set 21: jackson-core-2.9.5.jar jackson-databind-2.9.5.jar jackson-jaxrs-base-2.9.5.jar jackson-jaxrs-json-provider-2.9.5.jar jackson-annotations-2.9.5.jar</p> <li data-bbox="435 957 742 1314"> <p>■ Supported in 7.5 Patch Set 22: jackson-core-2.9.7.jar jackson-databind-2.9.7.jar jackson-jaxrs-base-2.9.7.jar jackson-jaxrs-json-provider-2.9.7.jar jackson-annotations-2.9.7.jar</p> <li data-bbox="435 1325 742 1682"> <p>■ Supported from 7.5 Patch Set 23: jackson-core-2.9.9.jar jackson-databind-2.9.9.3.jar jackson-jaxrs-base-2.9.9.jar jackson-jaxrs-json-provider-2.9.9.jar jackson-annotations-2.9.9.jar</p> 	<p>https://github.com/FasterXML/jackson</p>

Table 3–3 (Cont.) Required Third-Party Software

Third-Party Software	Version	Vendor
Quartz Scheduler	<ul style="list-style-type: none"> ▪ Supported from 7.5 Patch Set 15 through 7.5 Patch Set 22: 2.2.2 ▪ Supported from 7.5 Patch Set 23: 2.3.1 	http://www.quartz-scheduler.org/

Hardware Requirements

The number and configuration of the hosts used for your Business Operations Center installation depend on your requirements. For example, large transaction volumes, multiple geographical locations, or fail-over requirements affect the amount of required hardware.

Table 3–4 lists the recommended hardware requirement for a single server production Business Operations Center installation containing all components. See "Preparing to Install" in *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management* for more information on IAM component hardware and sizing.

Table 3–4 Business Operations Center Single Server Minimum Hardware Requirements

Component	Requirement
Hard disk	200 GB of free disk space Note: A minimum of 1.5 GB should be free in the domain home.
Processor	Oracle recommends using 6 or more cores, each running at 1.5 GHz or greater.
Memory	A minimum of 35 GB physical memory and 16 GB swap. If you plan on installing the required database on the same server, see "Checking the Hardware Requirements" for more information about required memory. For more information on calculating required memory in your environment, see <i>Oracle Fusion Middleware System Requirements and Specifications for Oracle Identity and Access Management</i> at: http://docs.oracle.com/html/E38978_03/r2_im_requirements.htm

Table 3–5 lists the minimum hardware requirement for each OES Client domain host on which Business Operations Center is deployed.

Table 3–5 Business Operations Center OES Client Domain Server Minimum Hardware Requirements

Component	Requirement
Hard disk	30 GB of free disk space Note: A minimum of 1.5 GB should be free in the domain home.
Processor	Oracle recommends using twin cores, each running at 1.5 GHz or greater.

Table 3–5 (Cont.) Business Operations Center OES Client Domain Server Minimum Hardware Requirements

Component	Requirement
Memory	A minimum of 8 GB physical memory and 8 GB swap for the OES Client domain server. For more information on calculating required memory in your environment, see <i>Oracle Fusion Middleware System Requirements and Specifications for Oracle Identify and Access Management</i> at: http://docs.oracle.com/html/E38978_03/r2_im_requirements.htm

About IPv4 and IPv6 Support for Fusion Middleware Products

For information on network considerations, including support for IPv6 addresses, see "Configuring IPv4 and IPv6 for Fusion Middleware Products" in *Oracle Fusion Middleware System Requirements and Specifications* at:

http://docs.oracle.com/html/E18558_01/fusion_requirements.htm#BABICJGA

Business Operations Center Pre-Installation Tasks

This chapter describes the tasks that you must perform before running the Oracle Communications Billing and Revenue Management Business Operations Center installer. The procedures include links to relevant documentation in related product documentation.

Overview of Production Pre-Installation Tasks

In production installations, the Business Operations Center installer deploys Business Operations Center on a running Oracle Entitlements Server (OES) Client domain. The installer assumes that the following required software pre-installation tasks, including applying patches and workarounds, have already been completed successfully.

Note: A test installation without Oracle Identity and Access Management (IAM) can be performed on a basic WebLogic domain. Test installations do not require the following IAM pre-installation tasks. See ["Installing Business Operations Center for Testing"](#) for more information. Do not use a test installation in production.

Pre-installation tasks for Business Operations Center consist of the following steps:

1. [Connecting to Oracle BRM](#)
2. [Installing and Configuring Oracle Enterprise Database](#)
3. [Creating Database Schemas Using RCU](#)
4. [Installing and Configuring Oracle WebLogic Server](#)
5. [Creating Oracle Identity and Access Management Deployment Repository](#)
6. [Creating the Deployment Response File](#)
7. [Running the Deployment Response File](#)
8. [Configuring Oracle Unified Directory as Authentication Provider](#)
9. [Configuring the Oracle Access Manager Business Operations Center Application Domain](#)
10. [Installing and Configuring Oracle Entitlements Server Client](#)
11. [Creating a Secure Passwordless User on the BRM Server](#)

Connecting to Oracle BRM

Business Operations Center connects to Oracle Communications Billing and Revenue Management (BRM) when retrieving operational data and submitting job requests. The connected BRM instance must have Revenue Assurance Manager installed. The Business Operations Center installer connects to the BRM database and creates the required schema. [Table 4–7](#) lists the BRM connection details required for installing Business Operations Center.

See *Oracle Communication Billing and Revenue Management Installation Guide* for information on installing BRM.

See "Installing Revenue Assurance Manager" in *Oracle Communications Billing and Revenue Management Collecting Revenue Assurance Data* for more information.

Installing and Configuring Oracle Enterprise Database

Oracle recommends that an experienced database administrator install and configure your database. To install and configure Oracle Database, see the Oracle Database installation documentation at:

<https://docs.oracle.com/en/database/>

Record your database details in [Table 4–8](#), "IAM Database Connection Information".

Creating Database Schemas Using RCU

Use the Oracle Fusion Middleware Repository Creation Utility (RCU) to create the required IAM database schema.

See "Creating Database Schema Using the Oracle Fusion Middleware Repository Creation Utility (RCU)" in *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management* for more information.

Installing and Configuring Oracle WebLogic Server

Installing and configuring IAM requires a pre-existing Oracle WebLogic Server middleware home directory. Download and install WebLogic Server before installing IAM.

See "Obtaining the Oracle Fusion Middleware Software" in *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management* for more information on downloading WebLogic Server.

See *Oracle Fusion Middleware Installation Guide for Oracle WebLogic Server* for information on installing WebLogic Server.

Creating Oracle Identity and Access Management Deployment Repository

Download the Oracle Identity and Access Management Deployment Repository for your operating system from Oracle Software Delivery Cloud at:

<http://edelivery.oracle.com>

After you have downloaded all required files, uncompress the archives to create your repository in a location on your IAM host.

Creating the Deployment Response File

Create a response file specifying the IAM components, including the OES Administration Server, required by Business Operations Center.

Note: If you are using a JDK version 1.7.0_40 or later, you must disable the certificates key length limitation to install OES. See "x.509 Certificates Key Length Limitation for JDL1.7.0_40 and Later" in *Oracle Fusion Middleware Identity Management Release Notes* for information on disabling the limitation.

See "Overview of Deployment Response File" in *Oracle Fusion Middleware Deployment Guide for Oracle Identity and Access Management 11g Release 2* for information on creating a response file.

Select the options listed in [Table 4–1](#) when creating your response file.

Table 4–1 Deployment Tool Response File Options for Business Operations Center

Screen	Selection
Suite Selection	OIM-OAM-OMSS Integrated with Directory
Directory Configuration	Configure New Directory, Oracle Unified Directory
OIM Database Configuration	Select Create Schema Using RCU and enter the information for the database you previously created (for Oracle Identity and Access Management Deployment Repository version 11gR2PS3).

Running the Deployment Response File

Deploy your response file using the Deployment Wizard. See "Performing Deployment Using the Oracle Identity and Access Management Deployment Wizard" in *Oracle Fusion Middleware Deployment Guide for Oracle Identity and Access Management 11g Release 2* for more information on deploying response files.

Record your OES Administration Server details in [Table 4–9](#), "OES Administration Server Domain Information".

Record your IAM details in [Table 4–12](#), "Oracle Identity and Access Management Console URLs".

Note: Deploying the response file may take a long time depending on your hardware. Monitor the console log for information on deployment progress.

Configuring Oracle Unified Directory as Authentication Provider

After deployment is complete, configure the OES Administration Server to use Oracle Unified Directory (OUD) as the authentication provider.

See "Configuring an Authentication Provider for Oracle Unified Directory" in *Oracle Fusion Middleware Securing Oracle WebLogic Server* for information on setting up OUD as your authentication provider.

See "Introduction to Oracle Unified Directory" in *Oracle Fusion Middleware Administering Oracle Unified Directory* for information on setting up OUD, including how to synchronize OUD with existing directories that you may already have.

Record your OUD details in [Table 4–11, "OES Unified Directory Information"](#).

Configuring the Oracle Access Manager Business Operations Center Application Domain

Create a Business Operations Center application domain in Oracle Access Manager (OAM) and configure an application domain policy that controls access to the Business Operations Center application.

To create your Business Operations Center application domain in OAM, complete the following steps:

1. [Creating the Business Operations Center Application Domain](#)
2. [Defining Business Operations Center Resources](#)
3. [Configuring Business Operations Center Authentication Modules](#)
4. [Creating a Business Operations Center Authentication Scheme](#)
5. [Creating the Business Operations Center Authentication Policy and Adding Resources](#)
6. [Creating the Business Operations Center Authorization Policy and Adding Resources](#)
7. [Configuring and Restarting the Oracle HTTP Server](#)

See "Introduction to Application Domain and Policy Creation" in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management* for more information on application domains and policies.

Creating the Business Operations Center Application Domain

To create the Business Operations Center application domain:

1. Log into your OAM web console at `http://Host:port/oamconsole` where *Host* and *port* are the server name or IP address and port for your OAM instance.
2. Click **Application Domains** in the **Access Manager** frame.
3. Click **Create Application Domain**.
4. In the **Name** field, enter a name for your application domain.
5. (Optional) Provide **Description**, **Session Idle Timeout (minutes)**, **Allow OAuth Token**, and **Allow Session Impersonation** values.
6. Click **Apply**.

The Business Operations Center application domain is created.

See "Creating a Fresh Application Domain Using the Console" in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management* for more information on creating an application domain in OAM console.

Defining Business Operations Center Resources

Define the `/opsdashboard**`, `/opsdashboard*`, and `/**` resources for your Business Operations Center application domain. Repeat steps 1 through 4 for each of these resources.

To define Business Operations Center resources in your Business Operations Center application domain:

1. Click **Application Domains** in the **Access Manager** frame.
2. Click the link for your Business Operations Center application domain.
The **Summary** tab for your Business Operations Center application domain is shown.
3. Click the **Resources** tab.
4. Enter or select the following values listed in [Table 4-2](#).

Table 4-2 Business Operations Center Protected Resource Creation Values

Field	Value
Type	HTTP
Description	(Optional) Enter text description
Host Identifier	IAMSuiteAgent
Protection Level	Protected
Authentication Policy	Protected Policy
Resource URL (String)	<code>/opsdashboard**</code> , <code>/opsdashboard*</code> , or <code>/**</code>

Define an excluded resource for `/fav.ico`.

To define the excluded resource, repeat steps 1 through 4 using the values listed in [Table 4-3](#).

Table 4-3 Business Operations Center Excluded Resource Creation Values

Field	Value
Type	HTTP
Description	(Optional) Enter text description
Host Identifier	IAMSuiteAgent
Protection Level	Excluded
Resource URL (String)	<code>/favicon.ico</code>

See "About Defining Resources in an Application Domain" in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management* for more information on creating resources in OAM console.

Configuring Business Operations Center Authentication Modules

Create an **OIMIDStore** authentication model in OAM for authenticating Business Operations Center users.

To create the required authentication model in OAM:

1. Click **Authentication Modules** in the **Access Manager** frame.

The **Authentication Modules** node is shown.

2. Click the **Create Authentication Module** pull-down menu and select **Create LDAP Authentication Module**.
3. In the **Name** field, provide a name for your authentication module.
4. In **User Identity Store**, select **OIMIDStore**.
5. Click **Apply**.

See "Creating a New Authentication Module of an Existing Type" in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Manager with Oracle Security Token Service* for more information on creating an authentication module in OAM console.

Creating a Business Operations Center Authentication Scheme

The authentication module you previously created must be added to a authentication scheme in your Business Operations Center application domain.

To create an authentication scheme and add the authentication module to it:

1. Click **Authentication Schemes** in the **Access Manager** frame.

The **Authentication Schemes** node is shown.

2. Click **Create Authentication Scheme**.
3. Enter or select the following values listed in [Table 4-4](#).

Table 4-4 Business Operations Center Authentication Scheme Creation Values

Field	Value
Name	Business Operations Center LDAP Scheme name
Description	(Optional) Enter text description.
Authentication Level	2
Challenge Method	FORM
Challenge Redirect URL	/oam/server
Authentication Module	Select the authentication module created in the previous step.
Challenge URL	/pages/login.jsp
Context Type	default
Context Value	/oam

4. Click **Apply**.

See "Creating an Authentication Scheme" in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Manager with Oracle Security Token Service* for more information on creating an authentication scheme in OAM console.

Creating the Business Operations Center Authentication Policy and Adding Resources

Create an authentication policy that the Business Operations Center application domain uses to manage the resources, authentication module, and authentication scheme previously created.

To create an authentication policy:

1. Click **Application Domains** in the **Access Manager** frame.
The **Application Domain** tab is shown.
2. In the **Search** field, enter the name of your Business Operations Center application domain and press **Enter**.
3. In **Search Results**, click the name of your Business Operations Center application domain.
4. Click on the **Authentication Policies** tab.
The **Authentication Policy** node is shown.
5. Click **Create Authentication Policy**.
6. Enter or select the following values listed in [Table 4–5](#).

Table 4–5 Business Operations Center Authentication Policy Creation Values

Field	Value
Name	Business Operations Center authentication policy name
Description	(Optional) Enter text description
Authentication Scheme	Select the authentication scheme created in the previous step

7. Click **Apply**.
To add your Business Operations Center resources to your authentication policy:
 1. In the **Authentication Policy** node for your previously created policy, click the **Resources** tab.
 2. Click **Add**.
 3. Select all of the Business Operations Center resources created in "[Defining Business Operations Center Resources](#)".
 4. Click **Apply**.

See "Adding an Authentication Policy and Resources" in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Manager with Oracle Security Token Service* for more information on creating an authentication policy and adding resources in OAM console.

Creating the Business Operations Center Authorization Policy and Adding Resources

Create an authorization policy and add resources to this policy for the Business Operations Center application domain.

To create the Business Operations Center application domain authorization policy:

1. Click **Application Domains** in the **Access Manager** frame.
The **Application Domain** tab is shown.
2. In the **Search** field, enter the name of your Business Operations Center application domain and press **Enter**.
3. In **Search Results**, click the name of your Business Operations Center application domain.
4. Click the **Authorization Policies** tab.

- Enter or select the following values listed in [Table 4–6](#).

Table 4–6 Business Operations Center Authorization Policy Creation Values

Field	Value
Name	Business Operations Center authorization policy name
Description	(Optional) Enter text description
Success URL	The redirect URL to be used upon successful authorization
Failure URL	The redirect URL to be used upon failed authorization

- Click **Apply**.
- Click the **Resources** tab.
- Click **Add**.
- Select all of the Business Operations Center resources created in "[Defining Business Operations Center Resources](#)".
- Click **Apply**.

See "Creating an Authorization Policy and Specific Resources" in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Manager* for more information on creating an authorization policy and adding resources in OAM console.

Configuring and Restarting the Oracle HTTP Server

After configuring the required Business Operations Center OAM components, edit the Oracle HTTP Server (OHS) **idm.conf** file in your OAM instance to specify the handler, host, and port for the **/opsdashboard** resource. Restart your OHS instance after editing this file.

To configure the **/opsdashboard** resource in the OHS **idm.conf** file:

- Open a secure shell or terminal window to your OAM host as a user with administrative permissions.
- Change to the `Middleware_home/config/OHS/OHS_Instance/moduleconf` directory where `Middleware_home` is the middleware home directory of the OAM WebLogic Server instance and `OHS_Instance` is the OHS instance where OAM is hosted.
- Append the following entry into the **idm.conf** file before the `</VirtualHost>` closing tag:

```
<Location /opsdashboard>
    SetHandler weblogic-handler
    WebLogicHost host name or IP address of your OES Administration Server
    WeblogicPort port number the WebLogic host is listening on
</Location>
```

- Save the file.
- Change to the `OHS_home/bin` directory where `OHS_home` is the Oracle home directory of your OHS installation.
- Restart OHS with the following commands:

```
./opmnctl status
```

```
./opmnctl stopall
```

```
./opmnctl startall
```

See "The idm.conf File" in *Oracle Fusion Middleware Integration Guide for Oracle Identity Management Suite* for more information on the OHS **idm.conf** file.

Installing and Configuring Oracle Entitlements Server Client

Install OES Client on each managed server on which you plan to deploy Business Operations Center on. A WebLogic Server installation is required before installing the OES Client.

See "Installing Oracle Entitlements Server Client" in *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management* for information on downloading and installing OES Client.

Record your OES Client domain details in [Table 4-10, "OES Client Domain Information"](#).

Configuring the Business Operations Center Domain with OES Client Security Modules

OES Client includes the WebLogic Security Module (SM) used by Business Operations Center to connect to the OES Administration Server. Configure the OES Client WebLogic Server SM to connect to the OES Administration Server by specifying the OES Administration Server host name and port number in the **smconfig.wls.controlled.prp** file found in *Oracle_home/oesm/SMConfigTool* where *Oracle_home* is the directory where you installed the OES Client package.

Run the **config.sh** script located in *Oracle_home/oesm/bin* to set up the WebLogic Server Security Module and create the OES Client domain on which you will deploy Business Operations Center. The OES client domain is created by the Fusion Middleware Configuration Wizard when you run the **config.sh** script.

See "Configuring Oracle WebLogic Server Security Module in a Controlled Push Mode" in *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management* for information on configuring the WebLogic Server SM for use with Business Operations Center.

Creating a Secure Passwordless User on the BRM Server

Business Operations Center communicates securely with the BRM server using a passwordless SSH user. Create this user on your BRM server host. The installer requires the user name.

Passwordless SSH user configuration varies on the host operating system. Consult your operating system documentation for information on configuring passwordless SSH. See "Configuring SSH Manually on All Cluster Nodes" in *Oracle Grid Infrastructure Installation Guide for Linux* for an example.

Information Requirements

This section describes the information that you will be required to provide during and after the Business Operations Center installation procedure. You define some of these configuration values when you complete the previous steps. After you have completed all of the pre-installation steps, see "[Installing Business Operations Center](#)" for information on running the Business Operations Center installer to install Business Operations Center.

Note: Oracle recommends that you print the tables and record the values for when you run the Business Operations Center installer.

Oracle BRM Connection Information

Table 4-7 lists the BRM details that are required during response file configuration. Use the **Value** column to record your environment's details.

Table 4-7 Oracle BRM Connection Information

Field	Description	Value
Database Host Name	The IP address or the host name of the computer on which the BRM database is configured.	-
Database Listener Port Number	The port number assigned to the database service.	-
Database Service Name	The BRM database service name.	-
Database Administrative User Name	The database user name. This user should have the following capabilities on the database: create user, grant any role, grant any privileges, and select any table for Enterprise edition.	-
Database Administrative User Password	The database user's password.	-

IAM Database Connection Information

Table 4-8 lists the database details that are required during response file configuration. Use the **Value** column to record your environment's details.

Table 4-8 IAM Database Connection Information

Field	Description	Value
Host Name	The IP address or the host name of the computer on which the database is configured.	-
Port Number	The port number assigned to the database service.	-
User Name	The database user name. This user should have the following capabilities on the database: create user, grant any role, grant any privileges, and select any table for Enterprise edition.	-
Password	The database user password.	-
Service Name	The name of the database service.	-

OES Administration Server Domain Information

Table 4-9 lists the details for the OES Administration Server domain that are required during Business Operations Center installation. Use the **Value** column to record your environment's details.

Table 4–9 OES Administration Server Domain Information

Field	Description	Value
Host Name	The IP address or the host name of the computer on which the OES Administration Server domain is configured.	-
Port Number	The port number assigned to the OES Administration Server domain server.	-
User Name	The OES Administration Server domain administrator user name.	-
Password	The password for the OES Administration Server administrator user.	-
WebLogic Home	The path of the directory in which the WebLogic Server software is installed on the OES Administration Server host.	-

OES Client Domain Information

[Table 4–10](#) lists the details for the OES Client domain that are required during Business Operations Center installation. Use the **Value** column to record your environment's details.

Table 4–10 OES Client Domain Information

Field	Description	Value
Host Name	The IP address or the host name of the computer on which the OES Client domain is configured.	-
Port Number	The port number assigned to the OES Client domain administration server.	-
User Name	The OES Client domain administrator user name.	-
Password	The password for the OES Client domain administrator user.	-
WebLogic Home	The path of the directory in which the WebLogic Server software is installed on the OES Client domain server.	-

Oracle Unified Directory Information

[Table 4–11](#) lists the details for the Oracle Unified Directory (OUD) authentication provider that are required during Business Operations Center installation. Use the **Value** column to record your environment's details.

Table 4–11 OES Unified Directory Information

Field	Description	Value
Provider Name	Name of OUD Authentication provider.	-
Host Name	The host name or IP address of the LDAP server.	-
Port Number	The port number on which the LDAP server is listening.	-

Table 4–11 (Cont.) OES Unified Directory Information

Field	Description	Value
Admin User Name	The Distinguished Name (DN) of the LDAP user that WebLogic Server should use to connect to the LDAP server.	-
Admin Password	The credential (usually a password) used to connect to the LDAP server.	-
User Base DN	The base distinguished name (DN) of the tree in the LDAP directory that contains use.	-
Group Base DN	The base distinguished name (DN) of the tree in the LDAP directory that contains group.	-
Asserter Name	The name of the OAM Identity Asserter.	-

Oracle Identity and Access Management Console URLs

Table 4–12 lists the Oracle Identity and Access Management Console URLs which are required to complete Business Operations Center pre-installation and configuration. The *Host* is the server name or IP address of your OES Administration Server. Default values are provided for the ports. Use the **Value** column to record your environment's details.

Table 4–12 Oracle Identity and Access Management Console URLs

Web Application URL	Description	Value
http://Host:7778/identity	Oracle Identity Management console	-
http://Host:7777/oamconsole	Oracle Access Management console	-
http://Host:7001/console	Oracle WebLogic Administration Console	-

Business Operations Center Connection Information

Table 4–13 lists the BRM connection manager (CM) and, if used, Oracle Business Intelligence Publisher (BIP) details that are required after Business Operations Center installation. Use this information to configure your **Infranet.properties** file, to specify the BRM connection manager and BIP instance to which Business Operations Center connects to.

See "[Encrypting and Adding BIP Connection Information in Infranet.properties File](#)" for more information on how to configure the Business Operations Center to BRM and BIP connections in the each OES Client domain on which Business Operations Center is deployed. Use the **Value** column to record your environment's details.

Table 4–13 Business Operations Center Connection Information for Infranet.properties

Field	Description	Value
__USER__	BRM system user with connection manager access	-
__PASSWORD__	Encrypted BRM system user's password	-
__HOST__	BRM host where connection manager is running	-
__PORT__	Port number for connection manager	-
__SSL_ENABLED__	Boolean indicating if SSL connection to BRM CM is enabled	-

Table 4–13 (Cont.) Business Operations Center Connection Information for

Field	Description	Value
__WALLET_DIR__	Directory where the BRM Oracle wallet file is stored	-
__WALLET_FILE__	Name of the Oracle wallet file	-
__BIP_USERID__	BIP user with web access	-
__BIP_PASSWORD__	Encrypted BIP user's password	-
__BIP_URL__	URL address to access BIP instance	-

Installing Business Operations Center

This chapter describes how to install Oracle Communications Billing and Revenue Management Business Operations Center. Before installing Business Operations Center, read the following chapters:

- [Business Operations Center Installation Overview](#)
- [Planning Your Business Operations Center Installation](#)
- [Business Operations Center Requirements](#)
- [Business Operations Center Pre-Installation Tasks](#)

Business Operations Center supports test and productions installations. See "[Installing Business Operations Center for Testing](#)" for information on test installations and "[Installing Business Operations Center for Production](#)" for information on production installations.

Downloading Business Operations Center

To download the Business Operations Center installer:

1. Create a temporary directory (*temp_dir*).
2. Go to the Oracle Software Delivery Cloud:
<https://edelivery.oracle.com>
3. Sign in with your user name and password.
4. In the Search by field, enter **Oracle Communications Billing and Revenue Management 7.5.0.0.0**.
5. From the **Select Platform** list, select the required platform.
6. Click **Continue**.
The Download Queue list appears.
7. Click **Continue**.
The license agreements appear.
8. Review and accept the terms and click **Continue**.
The File Download box appears.
9. Download the **Oracle Communications Billing and Revenue Management Server** package for your platform and language.
10. Unzip the zip file.

The server zip archive includes the `BusinessOperationsCenter_generic.jar` installer.

Installing Business Operations Center for Testing

Business Operations Center test installations do not use Oracle Identity and Access Management (IAM) security. The installer deploys the application to a basic Oracle WebLogic domain with Business Operations Center authorization disabled. Use test installations for internal development and testing only.

To install a Business Operations Center test installation in a basic domain:

1. Verify your Java Development Kit is installed correctly, including setting your `JAVA_HOME` environment variable and that the `JAVA_HOME/bin` directory is in your path.
2. Start the Oracle WebLogic Server basic domain administration server or the managed server on which you want to deploy Business Operations Center.
3. Download the Business Operations Center installer. See "[Downloading Business Operations Center](#)" for more information on how to download the installer
4. Run the following command, which launches the Business Operations Center installer:

```
java -jar BusinessOperationCenter_generic.jar
```

Note: Specify the `-invPtrLoc` flag and an Oracle Inventory path location in the java command for launching the Business Operations Center installer if you are using an existing or custom Oracle inventory location for maintaining your installed Oracle products and installation logs.

Note: Business Operations Center requires post-installation configuration of an Oracle WebLogic Server data source. By default, the installer uses the value `bocdb` for this data source's name. To use a custom data source name, specify the name by passing the following flag when launching the installer:

```
DS_NAME="new_value"
```

For example:

```
java -jar BusinessOperationCenter_generic.jar DS_NAME="name"
```

where *name* is the name of the WebLogic Server data source.

See "[Creating the Business Operations Center WebLogic Server Data Source](#)" for more information on configuring the WebLogic data source after installation completes.

The Welcome screen appears.

5. Click **Next**.

The Installation Inventory screen appears. Select an **Inventory Directory** and **Operating System Group**.

6. Click Next.

The Installation Location screen appears. Enter your Oracle Home directory path in **Oracle Home** or click **Browse** to select a directory.

7. Click Next.

The Features Sets Selection screen appears.

This screen displays the installable Business Operations Center components. Select **Business Operation Center Components**.

8. Click Next.

The WebLogic Server Details screen appears.

9. Enter the details listed in Table 5–1 for the WebLogic Server domain in which you want to deploy Business Operations Center:**Table 5–1 WebLogic Server Details**

Field	Description
Host Name	IP address or the host name of the computer on which the WebLogic Server domain is configured
Port Number	Port number assigned to the WebLogic Server domain administration server
User Name	WebLogic Server domain administrator user name
Password	Password for the WebLogic Server domain administrator user
WebLogic Home	Path of the directory in which the WebLogic Server software is installed
Use SSL?	Whether to use SSL (Unselect for test installations)

Note: The Business Operations Center installer will not proceed until it verifies that the information you entered is valid. The domain must be in a **RUNNING** state.

10. Click Next.

The Target Server screen appears.

11. Select the server on which to deploy Business Operations Center. The target server list includes the AdminServer and any managed servers managed by the AdminServer.

Note: Oracle recommends that you deploy Business Operations Center on a WebLogic Server managed server. If you select a WebLogic Server managed server, ensure that the WebLogic Server managed server and the node manager are running.

12. Click Next.

A warning appears confirming that the domain is not configured as an OES Client Domain.

13. Click OK.

The Target Server screen appears.

14. Select your target server.**15. Click Next.**

The Authentication and Asserter screen appears.

16. Select **Skip Authenticator and Asserter.****17. Click Next.**

A warning appears confirming that the Authenticator and Asserter will not be configured.

18. Click OK.

The Database Connection Details screen appears.

19. Enter the database connection details for your BRM database listed in [Table 5-2](#).**Table 5-2 BRM Database Connection Details**

Field	Description
Service Name	The database service name
User Name	The user name of a database administrator
Password	The database administrator's password

20. Click Next.

The Business Operation Center User Details screen appears.

21. Enter the user details for your Business Operations Center administrative user listed in [Table 5-3](#).**Table 5-3 Business Operations Center User Details**

Field	Description
User Name	The user name of your Business Operations Center administrative user
Password	The Business Operations Center administrative user's password
Default Tablespace	The default tablespace for the administrative user
Temp Tablespace	The temp tablespace for the administrative user

22. Click Next.

The Business Operation Center User Interface Details screen appears.

23. Enter the user details for your Business Operations Center user interface listed in [Table 5-4](#).**Table 5-4 Business Operations Center User Interface Details**

Field	Description
Billing Care URL	URL of the Oracle Communications Billing Care instance configured for use with your BRM Server if installed. Leave blank if Billing Care is not installed in your environment.

Table 5–4 (Cont.) Business Operations Center User Interface Details

Field	Description
Logout URL	Redirect URL where Business Operations Center sends a user after logout and session termination.
Help URL	URL location of the Business Operations Center Online Help Guide located on the Oracle Help Center.
Timeout Warning Duration	Number of session idle seconds before Business Operations Center displays a timeout warning to a user (default value is 90 seconds).

24. Click Next.

The Business Operation Center Web Service Details screen appears.

25. Enter the web service details listed in [Table 5–5](#).**Table 5–5 Business Operations Center Web Service Details**

Field	Description
Passwordless SSH User Name	User name of passwordless SSH user configured for secure communications between the Business Operations Center host and the BRM Server host. See " Creating a Secure Passwordless User on the BRM Server " for more information.
BRM Server Timezone	Time Zone (TZ) value of the server operating system on which the BRM is running.

26. Click Next.

The Auto Updates screen appears.

27. Select an auto update option, then click Next.

The Installation Summary screen appears.

28. Confirm your installation selections, then click Install.

The installation proceeds and executes post install scripts to complete the Business Operations Center installation.

Installing Business Operations Center for Production

For production installations, run the Business Operations Center installer from the computer hosting the Oracle Entitlements Server (OES) Client domain on which you deploy Business Operations Center. The installation must be performed by a user who has permissions to write to the **oraInventory** directory and the *Middleware_home/user_projects/domains* directory, where *Middleware_home* is the directory in which you installed the Oracle Middleware components.

To install Business Operations Center on your OES Client domain:

1. Verify your Java Development Kit is installed correctly, including setting your **JAVA_HOME** environment variable and that the *JAVA_HOME/bin* directory is in your path.
2. Start the Oracle WebLogic Server basic domain administration server or the managed server on which you want to deploy Business Operations Center.
3. Download the Business Operations Center installer. See "[Downloading Business Operations Center](#)" for more information on how to download the installer

- Run the following command, which launches the Business Operations Center installer:

```
java -jar BusinessOperationCenter_generic.jar
```

Note: Specify the **-invPtrLoc** flag and an Oracle Inventory path location in the java command for launching the Business Operations Center installer if you are using an existing or custom Oracle inventory location for maintaining your installed Oracle products and installation logs.

The Welcome screen appears.

- Click **Next**.

The Installation Inventory screen appears. Select an **Inventory Directory** and **Operating System Group**.

- Click **Next**.

The Installation Location screen appears. Enter your Oracle Home directory path in **Oracle Home** or click **Browse** to select a directory.

- Click **Next**.

The Features Sets Selection screen appears.

This screen displays the installable Business Operations Center components. Select **Business Operation Center Components**.

- Click **Next**.

The WebLogic Server Details screen appears.

- Enter the details listed in [Table 5-6](#) for the WebLogic Server domain in which you want to deploy Business Operations Center:

Table 5-6 WebLogic Server Details

Field	Description
Host Name	IP address or the host name of the computer on which the WebLogic Server domain is configured
Port Number	Port number assigned to the WebLogic Server domain administration server
User Name	WebLogic Server domain administrator user name
Password	Password for the WebLogic Server domain administrator user
WebLogic Home	Path of the directory in which the WebLogic Server software is installed
Use SSL?	Whether to use SSL (select for production installations)

Note: The Business Operations Center installer will not proceed until it verifies that the information you entered is valid. The domain must be in a **RUNNING** state.

10. Enter the required SSL information.

Business Operations Center requires JSSE-Based SSL enabled in your OES Client domain. See "Using the JSSE-Based SSL Implementation" in *Oracle Fusion Middleware Securing Oracle WebLogic Server* for more information on using JSSE-Based SSL.

If you have configured SSL in your OES Client domain, leave the **Use SSL?** check box selected, and, in the **KeyStore Location** field, enter the path of the client-side keystore file generated from the exported public certificate using the **keytool** utility.

For information on generating a keypair and root certificate for your encrypted password, and storing the certificate, using the Java **keytool** utility, see:

<https://docs.oracle.com/javase/8/docs/technotes/tools/unix/keytool.html>

See "Configuring SSL" in *Oracle Fusion Middleware Securing Oracle WebLogic Server* for more information on using SSL in your domain.

11. Click Next.

The Target Server screen appears.

12. Select the server on which to deploy Business Operations Center. The target server list includes the AdminServer and any managed servers managed by the AdminServer.

Note: Oracle recommends that you deploy Business Operations Center on a WebLogic Server managed server. If you select a WebLogic Server managed server, ensure that the WebLogic Server managed server and the node manager are running.

13. Click Next.

The Authentication and Asserter screen appears.

14. Enter the information listed in Table 5-7 required to connect to the OES OUD authenticator, see Table 4-11, "OES Unified Directory Information" for more information:

Table 5-7 Authentication and Asserter Details

Field	Description
Provider Name	OUD Authentication provider you configured in your OES Administration Server.
Host Name	Host name or IP address of the LDAP server.
Port Number	Port number on which the LDAP server is listening.
Admin User Name	Distinguished Name (DN) of the LDAP user that WebLogic Server should use to connect to the LDAP server.
Admin Password	Credential (usually a password) used to connect to the LDAP server.

Table 5-7 (Cont.) Authentication and Asserter Details

Field	Description
User Base DN	Base distinguished name (DN) of the tree in the LDAP directory that contains users. For example: cn=Users,dc=example,dc=com
Group Base DN	Base distinguished name (DN) of the tree in the LDAP directory that contains groups. For example: cn=Groups,dc=example,dc=com
Asserter Name	Name to use during Business Operations Center deployment. A new asserter is created if a OAMIdentityAsserter type does not exist in your OES Client domain already.

15. Click Next.

The Database Connection Details screen appears.

16. Enter the database connection details for your BRM database listed in [Table 5-8](#).**Table 5-8 BRM Database Connection Details**

Field	Description
Service Name	The database service name
User Name	The user name of a database administrator
Password	The database administrator's password

17. Click Next.

The Business Operation Center User Details screen appears.

18. Enter the user details for your Business Operations Center administrative user listed in [Table 5-9](#).**Table 5-9 Business Operations Center User Details**

Field	Description
User Name	The user name of your Business Operations Center administrative user
Password	The Business Operations Center administrative user's password
Default Tablespace	The default tablespace for the administrative user
Temp Tablespace	The temp tablespace for the administrative user

19. Click Next.

The Business Operation Center User Interface Details screen appears.

20. Enter the user details for your Business Operations Center user interface listed in [Table 5-10](#).

Table 5–10 Business Operations Center User Interface Details

Field	Description
Billing Care URL	URL of the Oracle Communications Billing Care instance configured for use with your BRM Server if installed. Leave blank if Billing Care is not installed in your environment.
Logout URL	Redirect URL where Business Operations Center sends a user after logout and session termination.
Help URL	URL location of the Business Operations Center Online Help Guide located on the Oracle Help Center.
Timeout Warning Duration	Number of session idle seconds before Business Operations Center displays a timeout warning to a user (default value is 90 seconds).

21. Click Next.

The Business Operation Center Web Service Details screen appears.

22. Enter the web service details listed in [Table 5–11](#).**Table 5–11 Business Operations Center Web Service Details**

Field	Description
Passwordless SSH User Name	User name of passwordless SSH user configured for secure communications between the Business Operations Center host and the BRM Server host. See " Creating a Secure Passwordless User on the BRM Server " for more information.
BRM Server Timezone	Time Zone (TZ) value of the server operating system on which the BRM is running.

23. Click Next.

The Auto Updates screen appears.

24. Select an auto update option, then click Next.

The Installation Summary screen appears.

25. Confirm your installation selections, then click **Install.**

The installation proceeds and executes post install scripts to complete the Business Operations Center installation.

See "[Business Operations Center Post-Installation Tasks](#)" for required tasks to complete after the Business Operations Center installer exits.

See "[Verifying the Business Operations Center Installation](#)" for information on verifying the successful installation of Business Operations Center.

See "[About Installation Logs](#)" for information on the Business Operations Center installer logs.

About Installation Logs

The installation logs are used for debugging purposes. You can check the log files in the `oraInventory/logs` directory. The default location of the `oraInventory` directory is in the `/etc/oraInst.loc` file.

You use the following log files to monitor installation and post-installations:

- **installActionTimeStamp.log**
- **oraInstallTimeStamp.err**
- **oraInstallTimeStamp.out**
- **dbScriptsgTimeStamp.log** (for the scripts executed using SQL*Plus and JDBC)
- **silentInstallTimeStamp.log** (for silent mode installation)

where *TimeStamp* is the date and time the log file was created.

Business Operations Center Post-Installation Tasks

This chapter provides instructions for Oracle Communications Billing and Revenue Management Business Operations Center post-installation tasks.

Post-Installation Tasks

After installing Business Operations Center test or production installations, do the following on each domain host where Business Operations Center is deployed:

- Copy the Business Operations Center **Infranet.properties** configuration file created during installation to the domain administrative user's home directory on each domain server where Business Operations Center is deployed. See ["Copying Configuration File to the Domain Administrative User's Home Directory"](#) for more information.
- Add the Oracle Communications Billing and Revenue Management (BRM) connection manager credentials in the **Infranet.properties** file previously copied to the domain administrative user's home directory. See ["Encrypting and Adding BRM Connection Information in Infranet.properties File"](#) for more information.
- Adjust your BRM connection pool settings and enable logging in the **Infranet.properties** file for your Business Operations Center environment. See ["Configuring Additional Settings in Infranet.properties"](#) for more information.
- If using Internet Explorer, configure the browser cache refresh setting to retrieve new data on each page visit. See ["Configuring Internet Explorer for Business Operations Center"](#) for more information.
- Create an Oracle WebLogic Server data source for use with Business Operations Center. See ["Creating the Business Operations Center WebLogic Server Data Source"](#) for more information.
- Run the **boc_view.sql** script. See ["Running SQL Scripts"](#).

For production installations:

- Import the Business Operations Center OES Administration Server policy configuration. See ["Importing the Business Operations Center Security Policies into OES"](#) for more information.

About Encryption

Encrypting your BRM and BIP passwords and using SSL increases the security of your Business Operations Center deployment. See *Oracle Communications Billing and Revenue*

Management Security Guide for more information about securing your Business Operations Center environment.

Copying Configuration File to the Domain Administrative User's Home Directory

You must copy the Business Operations Center **Infranet.properties** configuration file provided in the Business Operations Center installation to the domain administrative user's home directory. The **Infranet.properties** file contains BRM and BIP connection information, and logging settings described in the following sections.

To copy the Business Operations Center **Infranet.properties** configuration file to the domain administrative user's home directory:

1. Log in to your domain server using a secure shell or console terminal session as the administrative user for the domain host.
2. Copy *Middleware_home/setup/Infranet.properties*, where *Middleware_home* is your WebLogic home directory, to the home directory of the domain administrative user.

Encrypting and Adding BRM Connection Information in Infranet.properties File

You must configure the **Infranet.properties** file in each domain server hosting a Business Operations Center deployment with the connection details for your BRM server.

To encrypt your BRM connection manager password and add connection credentials to the **Infranet.properties** file on each Business Operations Center domain server:

1. Log in to your BRM server host using a secure shell or console terminal session.
2. Use the BRM **pin_crypt_app** utility to encrypt your BRM user's password.

See "About Encrypting Passwords" in *Oracle Communications Billing and Revenue Management Developer's Guide* for information on encrypting BRM passwords.

3. Edit the *User_home/Infranet.properties* file, where *User_home* is the domain administrative user's home directory, by adding the following information listed in [Table 6-1](#). Remove the preceding and trailing underscore characters for your values.

For more information on establishing a SSL connection to BRM, see "Enabling SSL in Connection Managers" in *Oracle Communications BRM System Administrator's Guide*.

Table 6-1 Business Operations Center Connection Information for Infranet.properties

Field	Description
USER	BRM system user with connection manager access
PASSWORD	Encrypted BRM system user's password
HOST	BRM host where connection manager is running
PORT	Port number for connection manager

For example:

```
infranet.connection=pcp://brm123:0D5E11BFDD97D2769D9B0DBFBD1BBF7EE03F16
42861DFA57502C7FB85A654267@example.com:8888/service/admin_client 1
```

4. Save the **Infranet.properties** file.

5. For production installations, if not already done, enable SSL for the OES Client domain where Business Operations Center is deployed.
6. Restart the domain on which Business Operations Center is deployed.

Encrypting and Adding BIP Connection Information in Infranet.properties File

You must configure the **Infranet.properties** file in each domain server hosting a Business Operations Center deployment with the connection details for your BIP server, if used in your environment.

To encrypt your BIP password and add connection credentials to the Infranet.properties file on each Business Operations Center domain server:

1. Log in to your domain server using a secure shell or console terminal session.
2. Use the WebLogic Server **encrypt** Java utility to encrypt your BIP user's password.
See "encrypt" in *Oracle Fusion Middleware Command Reference for Oracle WebLogic Server* for information on encrypting passwords.
3. Edit the *User_home/Infranet.properties* file, where *User_home* is the home directory of the domain administrative user, by adding the following information listed in [Table 6–2](#). Remove the preceding and trailing underscore characters for your values.

Table 6–2 Business Operations Center Connection Information for Infranet.properties

Field	Description
BIP_USERID	BIP user with web access
BIP_PASSWORD	Encrypted BIP user's password
BIP_URL	URL address to access BIP instance

4. Save the **Infranet.properties** file.
5. For production installations, if not already done, enable SSL for the OES Client domain where Business Operations Center is deployed.
6. Restart the domain where Business Operations Center is deployed.

Configuring Additional Settings in Infranet.properties

Business Operations Center uses the default connection pool settings for your BRM instance. You can customize the Business Operations Center connection pool settings by adding additional entries into the **Infranet.properties** file. You can also enable logging by adding optional entries in the **Infranet.properties** file.

See "Configuring the Connection Pool" in *Oracle Communications Billing and Revenue Management System Administrator's Guide* for more information on customizing the default connection pool.

See "Optional Entries in the Infranet.properties File" in *Oracle Communications Billing and Revenue Management Developer's Guide* for more information on enabling logging for Business Operations Center connections to BRM.

Creating the Business Operations Center WebLogic Server Data Source

Configure a JDBC data source in the Business Operations Center WebLogic Server domain. The deployed Business Operations Center application uses this data source to connect to the database schema created by the installer.

By default, Business Operations Center uses a value of **bocdb** for the WebLogic Server data source. If you did not specify a custom name for your Business Operations Center database when launching the installer, create a data source named **bocdb** using the WebLogic Server Administration Console. See "Configuring JDBC Data Sources" in *Oracle Fusion Middleware Configuring and Managing JDBC Data Sources for Oracle WebLogic Server* for information on creating the required data source for Business Operations Center.

If you specified a custom name for your Business Operations Center database schema during installation, create the WebLogic Server data source using this name. Additionally, you must edit the **quartz.properties** file with your data source's name.

To edit the **quartz.properties** file data source name:

1. Open the *Domain_home/lib/quartz.properties* file where *Domain_home* is the WebLogic Server domain home directory of the domain in which Business Operations Center is deployed.
2. In the **DS_NAME** parameter, change the value to your custom data source name.
3. Save the file.
4. Restart the domain.

Importing the Business Operations Center Security Policies into OES

Business Operations Center includes the **system-jazn-data.xml** file containing default OES policies, resource-types, resource, and actions. You must import this file into your OES Administration Server to set up the initial Business Operations Center OES configuration. This procedure only needs to be complete once for each OES Administration Server.

The **system-jazn-data.xml** file is located in the following directory:

Domain_home/lib/oes_config

where *Domain_home* is the WebLogic domain home directory location of the OES Client domain in which Business Operations Center is deployed.

To import the Business Operations Center security policies into your OES Administration Server:

1. Open a secure shell or terminal session on the server where you installed Business Operations Center.
2. Change to the *Domain_home/lib/oes_config* directory.
3. Open the **jps-config.xml** file and modify the following parameters:
 - **sourceContext**. Specify the location of the **system-jazn-data.xml** file, which contains the policies to be migrated to the database. The **system-jazn-data.xml** file is in the same location as the **jps-config.xml** file.

```
<serviceInstance name="src.xml" provider="policystore.xml.provider"
location="location of the system-jazn-data.xml file">
  <description>File Based Policy Store Service Instance</description>
</serviceInstance>
```


- **destinationContext.** Specify the location of your OES schema.

```
<serviceInstance name="policystore.db.destination"
provider="policystore.provider">
  <description>DB Based Policy Store Service Instance</description>
  <property name="policystore.type" value="DB_ORACLE"/>
  <property name="jdbc.url" value="jdbc:oracle:thin:@host:1521:mydb"/>
  <property name="jdbc.driver" value="oracle.jdbc.driver.OracleDriver"/>
  <property name="security.principal" value="OES_OPSS"/>
  <property name="security.credential" value="sys"/>
  <property name="oracle.security.jps.ldap.root.name" value="cn=jpsroot"/>
  <property name="oracle.security.jps.farm.name" value="cn=oesAdmin"/>
</serviceInstance>
```

- **jpsContext.** Specify the source context and the destination context.

```
<jpsContext name="sourceContext">
  <serviceInstanceRef ref="src.xml"/>
</jpsContext>
<jpsContext name="destinationContext">
  <serviceInstanceRef ref="policystore.db.destination"/>
</jpsContext>
```

4. Save the file.
5. Run the **migrateSecurityStore** utility to import the Business Operations Center policy into your OES Administration Server.

See "Migrating From XML to Database" in *Oracle Fusion Middleware Administrator's Guide for Oracle Entitlements Server* for detailed information on how to import the Business Operations Center **system-jazn-data.xml** file into your OES Administration Server.

Configuring Internet Explorer for Business Operations Center

Internet Explorer browser users must change the default cache configuration for Business Operations Center to properly refresh Business Operations Center data.

To configure Internet Explorer to refresh Business Operations Center data on each page visit in Internet Explorer, on each client where Internet Explorer is installed:

1. Open Internet Explorer.
2. Click the gear options menu.
3. Click **Internet Options**.
The **Internet Options** window opens.
4. In the **General** tab, under **Browsing History**, click **Settings**.
The **Website Data Settings** window opens.
5. In the **Temporary Internet Files** tab, select **Every time I visit the webpage** for the **Check for newer versions of stored pages** option.
6. Click **OK**.
The **Website Data Settings** window closes.
7. Click **OK** to close the **Internet Options** window.

Running SQL Scripts

You run some SQL scripts to create JOB_INSTANCE_DETAIL_VIEW in the Business Operations Center database.

To run the SQL scripts:

1. Connect to the Oracle database with SQL*Plus:

```
% sqlplus BRM_Username/BRM_Password@DatabaseAlias
```

where:

- *BRM_Username* is the Oracle database user name.
 - *BRM_Password* is the Oracle database user password.
 - *DatabaseAlias* is the Oracle database alias.
2. Run the following scripts:

Note: Before you run the scripts, do the following:

- Update the `__BOC_USERNAME__` parameter with the corresponding Business Operations Center database username.
 - Update the `__BOC_PASSWORD__` parameter with the corresponding Business Operations Center database password.
 - Update the `__BRM_USERNAME__` parameter with the BRM database username.
-
-

```
GRANT SELECT ON JOB_BOC_T TO __BOC_USERNAME__ ;
```

```
GRANT SELECT ON JOB_TEMPLATE_T TO __BOC_USERNAME__ ;
```

```
GRANT SELECT ON JOB_T TO __BOC_USERNAME__ ;
```

```
CONNECT __BOC_USERNAME__ / __BOC_PASSWORD__ ;
```

```
CREATE VIEW JOB_INSTANCE_DETAIL_VIEW AS
SELECT JOB_TEMPLATE_T.POID_ID0 TEMPLATE_ID, JOB_TEMPLATE_T.NAME JOB_NAME, JOB_
TEMPLATE_T.CAT_TYPE CATEGORY_CODE, JOB_TEMPLATE_T.CREATED_BY CREATED_BY,
JOB_TEMPLATE_T.USER_TAG TAGS, JOB_TEMPLATE_T.JOB_TYPE JOB_FREQ , JOB_BOC_T.OBJ_
ID0 JOB_ID, JOB_BOC_T.STATUS JOB_STATUS,
JOB_T.TRACKING_ID TRACKING_ID, JOB_T.PROCESS_START_T START_TIME, JOB_T.PROCESS_
END_T END_TIME
FROM __BRM_USERNAME__.JOB_TEMPLATE_T JOIN __BRM_USERNAME__.JOB_BOC_T ON JOB_
TEMPLATE_T.POID_ID0 = JOB_BOC_T.TEMPLATE_OBJ_ID0 JOIN __BRM_USERNAME__.JOB_T ON
JOB_T.POID_ID0 = JOB_BOC_T.OBJ_ID0
UNION ALL
SELECT JOB_TEMPLATE_T.POID_ID0 TEMPLATE_ID, JOB_TEMPLATE_T.NAME JOB_NAME,
JOB_TEMPLATE_T.CAT_TYPE CATEGORY_CODE, JOB_TEMPLATE_T.CREATED_BY CREATED_BY,
JOB_TEMPLATE_T.USER_TAG TAGS, JOB_TEMPLATE_T.JOB_TYPE JOB_FREQ , JOB_INSTANCE_
DETAIL_T.job_instance_id JOB_ID, JOB_INSTANCE_DETAIL_T.job_status JOB_STATUS,
NULL TRACKING_ID ,JOB_INSTANCE_DETAIL_T.start_time START_TIME, NULL END_TIME
FROM __BRM_USERNAME__.JOB_TEMPLATE_T JOIN JOB_INSTANCE_DETAIL_T ON JOB_
TEMPLATE_T.POID_ID0 = JOB_INSTANCE_DETAIL_T.job_template_id;
```

Enabling Logging

Business Operations Center writes log messages using the Java Logging API. See "Java Logging" in *Oracle Fusion Middleware Configuring Log Files and Filtering Log Messages for Oracle WebLogic Server* for more information on enabling Business Operations Center logging.

Verifying the Business Operations Center Installation

You can verify that Oracle Communications Billing and Revenue Management Business Operations Center is installed by checking the state of all installed components or by logging in to Business Operations Center.

To check the state of all installed components:

1. Log in to the Administration Server managing your Business Operations Center OES Client domain servers.
2. In the **Domain Structure** section, click **Deployments**.
The Summary of Deployments screen appears.
3. Ensure that all of the managed servers are running.
4. If Business Operations Center is installed successfully, the following deployment appears in **Active** state:
 - Business Operations Center

To log in to Business Operations Center:

1. Open a browser window.
2. Enter the URL provided by the Business Operations Center installer at the end of the installation.
3. Click **Go**.
The Business Operations Center login page appears.
4. Do the following:
 - a. In the **User Name** field, enter the user name of a valid user that exists in your Oracle Unified Directory server.
 - b. In the **Password** field, enter the password.

The Business Operations Center home page appears, verifying that Business Operations Center is installed successfully.

