# Oracle® Fusion Middleware

## Upgrading Oracle Identity Manager

12*c* (12.2.1.3.0)
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Oracle Fusion Middleware Upgrading Oracle Identity Manager, 12*c* (12.2.1.3.0)

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# Preface

This document describes how to upgrade an existing Oracle Identity Manager environment to 12*c* (12.2.1.3.0).



## Audience

Identify the target audience for your book and learn more about this document intended for.

This document is intended for system administrators who are responsible for installing, maintaining, and upgrading Oracle Identity Manager. It is assumed that readers have knowledge of the following:

- Oracle Fusion Middleware system administration and configuration.
- Configuration parameters and expected behavior of the system being upgraded.

## Documentation Accessibility

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## Related Documents

Refer to the Oracle Fusion Middleware Library for additional information.

- For installation information, see Fusion Middleware Installation Documentation.
- For upgrade information, see Fusion Middleware Upgrade Documentation.

- For administration-related information, see Fusion Middleware Administration Documentation.
- For release-related information, see Fusion Middleware Release Notes.

# Conventions

Learn about the conventions used in this document.

This document uses the following text conventions:

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

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# Introduction to Upgrading Oracle Identity Manager to 12*c* (12.2.1.3.0)

Before you begin, review all introductory information to understand the standard upgrade topologies and upgrade paths for Oracle Identity Manager 12*c* (12.2.1.3.0).

**Note:**

- The product Oracle Identity Manager is referred to as Oracle Identity Manager (OIM) and Oracle Identity Governance (OIG) interchangeably in the guide.
- Oracle recommends that you perform the upgrade as documented in this guide. If you require design/architectural changes (for example: changing the directory structure), complete them as separate steps during the post-upgrade validations.
- For general information about Fusion Middleware upgrade planning and other upgrade concepts and resources, see the following sections in *Planning an Upgrade of Oracle Fusion Middleware*:
  - Planning an Upgrade to Oracle Fusion Middleware 12*c* (12.2.1.3.0)
  - Understanding In-Place versus Out-of-Place Upgrades
  - Understanding the Basic Upgrade Tasks

The following topics describe the concepts related to upgrading Oracle Identity Manager:

- About the Starting Points for a Oracle Identity Manager Upgrade
  You can upgrade to Oracle Identity Manager 12*c* (12.2.1.3.0) from a supported 11*g* release.
- About the Oracle Identity Manager Upgrade Scenarios
  The steps to upgrade Oracle Identity Manager to 12*c* (12.2.1.3.0) depend on the existing 11*g* Release 2 (11.1.2.3.0) production topology.
- About the New Features for Oracle Identity Manager 12c
  Several changes have been made to Oracle Identity Manager between 11*g* and 12*c*.
- About Upgrade Restrictions
  If you are using two or more Oracle Fusion Middleware products of the same or different versions in a single, supported, Oracle Fusion Middleware configuration, you must consider the interoperability and compatibility factors before planning the upgrade.
- Terminology Used in this Guide
  For consistency the following terminology is used in this guide.
- How to Use This Guide
  This guide covers various upgrade scenarios.

# About the Starting Points for a Oracle Identity Manager Upgrade

You can upgrade to Oracle Identity Manager 12*c* (12.2.1.3.0) from a supported 11*g* release.

If you are not using the 11.1.2.3.0 version of Oracle Identity Manager, you must upgrade to 11.1.2.3.0 before you move to 12*c* (12.2.1.3.0).

For information about upgrading Oracle Identity Manager to 11*g* Release 2 (11.1.2.3.0), see Introduction to Oracle Identity and Access Management Upgrade in the *Upgrade Guide for Oracle Identity and Access Management* for 11*g* Release 2 (11.1.2.3.0).

The upgrade procedures in this guide explain how to upgrade an existing Oracle Identity Manager 11*g* domain to Oracle Identity Manager 12*c* (12.2.1.3.0). If your domain contains other components, you will have to upgrade those components as well.

# About the Oracle Identity Manager Upgrade Scenarios

The steps to upgrade Oracle Identity Manager to 12*c* (12.2.1.3.0) depend on the existing 11*g* Release 2 (11.1.2.3.0) production topology.

Oracle Identity Manager can be deployed in a number of different ways. This upgrade documentation provides instructions for the common deployment topologies, it can however be used as a guide for the less common deployment topologies.

Your actual topology may vary, but the topologies described here provide an example that can be used as a guide to upgrade other similar Oracle Identity Manager topologies.

> **Note:**
>
> For additional information about the upgrade process and planning resources to ensure your upgrade is successful, see Planning an Upgrade to Oracle Fusion Middleware 12c (12.2.1.3.0) in *Planning an Upgrade of Oracle Fusion Middleware*.

You can upgrade the following topologies or deployments using the procedure described in this guide:

- Single node environments
- Highly available (multinode) environments
- Oracle Identity Manager and Oracle Access Manager integrated environments that are set up manually in 11.1.2.3.0

> **Note:**
>
> If you are using Oracle Access Manager Mobile and Social, do NOT upgrade to 12*c* (12.2.1.3.0). Contact Oracle support for more details on the upgrade path for Mobile and Social.

# About the New Features for Oracle Identity Manager 12*c*

Several changes have been made to Oracle Identity Manager between 11*g* and 12*c*.

To understand what's new in general in Oracle Fusion Middleware 12*c*, see New and Changed Features in *Understanding Oracle Fusion Middleware*.

If your environment includes Oracle WebLogic Server with Oracle ADF, see Key Differences Between Application Developer 11*g* and Infrastructure 12*c*.

For more information about Oracle Identity Governance 12*c* (12.2.1.3.0), see the following topics in *Administering Oracle Identity Governance*:

- New and Changed Features for 12c (12.2.1.3.0)
- What is Oracle Identity Governance?
- Features Not Supported in Oracle Identity Governance 12c (12.2.1.3.0)
- What are the Different Modes of Oracle Identity Governance?
- Oracle Identity Governance Sizing Guide 12c (12.2.1.3.0)
- Oracle Fusion Middleware 12c (12.2.1.3.0) Certification Matrix

# About Upgrade Restrictions

If you are using two or more Oracle Fusion Middleware products of the same or different versions in a single, supported, Oracle Fusion Middleware configuration, you must consider the interoperability and compatibility factors before planning the upgrade.

**Interoperability**

In the context of Oracle Fusion Middleware products, Interoperability is defined as the ability of two Oracle Fusion Middleware products or components of the same version (or release) to work together (interoperate) in a supported Oracle Fusion Middleware configuration. Specifically, interoperability applies when the first 4 digits of the release or version number are the same. For example, Oracle Fusion Middleware 12*c* (12.2.1.0) components are generally interoperable with other 12*c* (12.2.1.0) components.

**Compatibility**

In the context of Oracle Fusion Middleware products, Compatibility is defined as the ability of two Oracle Fusion Middleware components of different versions (or releases) to interoperate.

For a list of products and features available in Oracle Fusion Middleware Release 12.2.1.3.0, see Products and Features Available in Oracle Fusion Middleware 12*c* (12.2.1.3.0) in *Understanding Interoperability and Compatibility*.

# Terminology Used in this Guide

For consistency the following terminology is used in this guide.

**Table 1-1 Terminology**

| Information | Example Value | Description |
|---|---|---|
| `JAVA_HOME` | `/home/Oracle/Java/jdk1.8.0_131` | Environment variable that points to the Java JDK home directory. |
| Database host | `examplehost.exampledomain` | Name and domain of the host where the database is running. |
| Database port | `1521` | Port number that the database listens on. The default Oracle database listen port is `1521`. |
| Database service name | `orcl.exampledomain` | Oracle databases require a unique service name. The default service name is `orcl`. |
| DBA username | `FMW` | Name of user with database administration privileges. The default DBA user on Oracle databases is `SYS`. |
| DBA password | *<dba_password>* | Password of the user with database administration privileges. |
| *ORACLE_HOME* | `/home/Oracle/`*product*`/ORACLE_HOME` | Directory in which you will install your software.<br>This directory will include Oracle Fusion Middleware Infrastructure and Oracle Identity Manager, as needed. |
| Console port | `7001` | Port for Oracle WebLogic Server and Oracle Identity Manager consoles. |
| *DOMAIN_HOME* | `/home/Oracle/config/domains/idm_domain` | Location in which your domain data is stored.<br>**Note:** This is the domain where the primary Administration server is configured. |
| *APPLICATION_HOME* | `/home/Oracle/config/applications/idm_domain` | Location in which your application data is stored. |
| Administrator user name for your WebLogic domain | `weblogic` | Name of the user with Oracle WebLogic Server administration privileges. The default administrator user is `weblogic`. |

**Table 1-1 (Cont.) Terminology**

| Information | Example Value | Description |
|---|---|---|
| Administrator user password | *<admin_password>* | Password of the user with Oracle WebLogic Server administration privileges. |
| RCU | *ORACLE_HOME*/oracle_common/bin | Path to the Repository Creation Utility (RCU). |
| RCU schema prefix | oim | Prefix for names of database schemas used by Oracle Identity Manager. |
| RCU schema password | *<rcu_password>* | Password for the database schemas used by Oracle Identity Manager. |
| Configuration utility | *ORACLE_HOME*/oracle_common/common/bin | Path to the Configuration Wizard for domain creation and configuration. |

# How to Use This Guide

This guide covers various upgrade scenarios.

Depending on your existing 11.1.2.3.0 deployment, refer to the respective topics for upgrading Oracle Identity Manager to 12*c* (12.2.1.3.0):

- **Single Node Environments**:

  For upgrading single node Oracle Identity Manager (OIM) setup, see Upgrading Oracle Identity Manager Single Node Environments.

- **Multi-node or Highly Available Environments**:

  For upgrading multi-node Oracle Identity Manager setup, see Upgrading Oracle Identity Manager Highly Available Environments.

- **OIM-OAM Integrated Highly Available Environments**:

  For upgrading OIM-OAM integrated highly available deployment, that was set up manually in 11*g*, see Upgrading OIM-OAM Integrated Environments Manually.

> **Note:**
>
> Before you begin the upgrade, ensure that you review the Pre-Upgrade Requirements and perform the necessary pre-upgrade tasks.

# 2
# Pre-Upgrade Requirements

Before you begin to upgrade Oracle Identity Manager 12*c* (12.2.1.3.0), you must perform pre-upgrade tasks such as backing up, cloning your current environment, and verifying that your system meets certified requirements.

- Oracle Fusion Middleware Pre-Upgrade Checklist
  Perform the tasks in this checklist before you begin any upgrade to ensure you have a successful upgrade and limited downtime.
- Creating a Complete Backup
  Before you start an upgrade, back up all system-critical files, including the Oracle home, Middleware home, and databases that host your Oracle Fusion Middleware schemas.
- Creating a Separate Business Intelligence Publisher Installation
  Oracle Identity Manager 11g includes an embedded Oracle BI Publisher implementation used for producing Oracle Identity Management Reports. In Oracle Identity and Access Management 12*c* (12.2.1.3.0), Oracle recommends you to use a dedicated Oracle Business Intelligence (BI) Publisher installation.
- Upgrading Oracle HTTP Server
  If your deployment of Oracle Identity and Access Management sits behind Oracle HTTP Server through which requests are sent to Oracle Identity Governance, then consider upgrading Oracle HTTP Server.
- Cloning Your Environment for Testing
  Create a copy of your actual environment, upgrade the cloned environment, verify that the upgraded components work as expected, and only then upgrade your environment.
- Verifying Certification and System Requirements
  Review the certification matrix and system requirements documents to verify that your environment meets the necessary requirements for installation.
- Updating Policy Files when Using Enhanced Encryption (AES 256)
  If you plan to use enhanced encryption, such as Advanced Encryption Standard (AES 256), in your upgraded environment, Oracle recommends that you apply the latest required policy files to the JDK before you upgrade.
- Purging Unused Data
  Purging unused data and maintaining a purging methodology before an upgrade can optimize the upgrade process.
- Creating a Non-SYSDBA User to Run the Upgrade Assistant
  Oracle recommends that you create a non-SYSDBA user called `FMW` to run the Upgrade Assistant. This user has the privileges required to modify schemas, but does not have full administrator privileges.
- Identifying Existing Schemas Available for Upgrade
  This optional task enables you to review the list of available schemas before you begin the upgrade by querying the schema version registry. The registry contains schema information such as version number, component name and ID, date of creation and modification, and custom prefix.

- Updating Database Parameters for Oracle Identity Manager
  You need to verify and update a few database parameters before upgrading the Oracle Identity Manager to 12*c* (12.2.1.3.0).
- Updating Connectors for Oracle Identity Manager
  Update the existing connectors if they are not supported for Oracle Identity Manager 12*c* (12.2.1.3.0).
- Shutting Down the Node Managers
  Ensure that you have shut down all the local and remote Node Managers before starting the upgrade process.
- Generating and Analyzing Pre-Upgrade Report for Oracle Identity Manager
  Run the pre-upgrade report utility before you begin the upgrade process for Oracle Identity Manager, and address all of the issues using the solution provided in the report.

# Oracle Fusion Middleware Pre-Upgrade Checklist

Perform the tasks in this checklist before you begin any upgrade to ensure you have a successful upgrade and limited downtime.

Upgrades are performed while the servers are down. This checklist identifies important and often time-consuming pre-upgrade tasks that you can perform before the upgrade to limit your downtime. The more preparation you do before you begin the upgrade process, the less time you will spend offline.

> **Note:**
>
> The pre-upgrade procedures you perform will depend on the configuration of your existing system, the components you are upgrading, and the environment you want to create at the end of the upgrade and configuration process. Complete only those tasks that apply to your configurations or use cases.
>
> Ensure that Oracle Identity Manager and Oracle Access Manager are in different domains. If they are in the same domain, then you need to separate them into multiple domains. For more information, see Separating Oracle Identity Management Applications Into Multiple Domains.

**Table 2-1 Tasks to Perform Before You Upgrade to Oracle Fusion Middleware 12*c***

| Task | Description |
|---|---|
| **Required**<br>Create a complete backup of your existing environment. | Back up all system-critical files, including the Oracle home, Middleware home, and databases that contain any schemas that are to be upgraded. If the upgrade fails, you must restore your pre-upgrade environment and begin the upgrade again.<br>See Creating a Complete Backup.<br>• Ensure that your backup includes the schema version registry table. See Backing Up the Schema Version Registry Table.<br>• If you modified any of the startup scripts in your existing domain, you will need to copy them to temporary directory location (outside of the existing domain) during the upgrade and redeploy them after the upgrade. See Maintaining Customized Domain and Environment Settings. |
| **Optional**<br>Clone your production environment to use as an upgrade testing platform. | In addition to creating a complete backup of your system files, Oracle strongly recommends that you clone your production environment. This environment can be used to test the upgrade.<br>See Cloning Your Environment for Testing. |
| **Required**<br>Verify that you are installing and upgrading your product on a supported hardware and software configuration.<br>**Caution:** Do not attempt an upgrade if you are unable to use the latest supported operating system. As with all supported configurations, failure to comply with these requirements may cause your upgrade to fail. | Verify that your hardware and software configurations (including operating systems) are supported by the latest certifications and requirements. Also make sure to use a supported JDK version before you install the 12*c* product distributions.<br>Oracle recommends that: you verify this information right before you start the upgrade as the certification requirements are frequently updated.<br>**Note:**<br>• Ensure that you have applied the latest patches to your components before you upgrade.<br>• Upgrade a component at a time, be it an Oracle Component or a dependent component. For example. Do not upgrade OUD, OIM, OAM, the operating system, the database, and the hardware all at the same time.<br>See Verifying Certification and System Requirements. |
| **Required for 32–bit Operating Systems Only**<br>Migrate to a 64-bit operating system before you upgrade. | This is required only if you are currently running an unsupported 32–bit operating system.<br>See Migrating from a 32-Bit to a 64-Bit Operating System. |
| **Optional**<br>Update security policy files if you are using enhanced encryption (AES 256). | Some of the security algorithms used in Fusion Middleware 12*c* require additional policy files for the JDK.<br>If you plan to use enhanced encryption, such as AES 256, Oracle recommends that you apply the latest required policy files to the JDK before you upgrade.<br>See Updating Policy Files when Using Enhanced Encryption (AES 256). |
| **Optional**<br>Purge any outdated or unused data before you upgrade. | To optimize performance, Oracle strongly recommends that you purge data and objects that will not be used in the upgraded environment.<br>See Purging Unused Data. |

**Table 2-1 (Cont.) Tasks to Perform Before You Upgrade to Oracle Fusion Middleware 12*c***

| Task | Description |
|---|---|
| **Optional**<br>Create a Non-SYSDBA user to run the Upgrade Assistant. | Oracle recommends that you create the FMW user to run Upgrade Assistant. User FMW can run the Upgrade Assistant without system administration privileges.<br>See Creating a Non-SYSDBA User to Run the Upgrade Assistant |
| **Optional**<br>Review the list of available schemas. | Query the schema version registry to view schema information.<br>See Identifying Existing Schemas Available for Upgrade. |
| **Required**<br>Update the database parameters. | See Updating Database Parameters for Oracle Identity Manager. |
| **Required**<br>Updating Connectors for Oracle Identity Manager. | See Updating Connectors for Oracle Identity Manager. |
| **Optional**<br>Shut down all the local and remote Node Managers before starting the upgrade process. | See Shutting Down the Node Managers. |
| **Required**<br>Run the pre-upgrade report utility. | See Generating and Analyzing Pre-Upgrade Report for Oracle Identity Manager |

# Creating a Complete Backup

Before you start an upgrade, back up all system-critical files, including the Oracle home, Middleware home, and databases that host your Oracle Fusion Middleware schemas.

The backup must include the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table so that you can restore the contents back to its pre-upgrade state if the upgrade fails.

> **Note:**
>
> The Upgrade Assistant Prerequisites screen prompts you to acknowledge that backups have been performed before you proceed with the actual upgrade. However, the Upgrade Assistant does not verify that a backup has been created.

See:

- Backing Up Your Environment in *Administering Oracle Fusion Middleware*
- Upgrading and Preparing Your Oracle Databases for 12*c* in *Planning an Upgrade of Oracle Fusion Middleware*
- Oracle Database Documentation for information about upgrading to Oracle Database 18c and 19c.
- Backing Up the Schema Version Registry Table
  Your system backup must include the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table or the `FMWREGISTRY.SCHEMA_VERSION_REGISTRY$` table.

- Maintaining Customized Domain and Environment Settings
  If you have modified any domain-generated, server startup scripts, or configuration files in your pre-upgrade environment, it is important to note that these changes are overwritten during the installation, domain upgrade, and reconfiguration operations. Save your customized files to a shared library location so that you can continue to use them after the upgrade.

## Backing Up the Schema Version Registry Table

Your system backup must include the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table or the `FMWREGISTRY.SCHEMA_VERSION_REGISTRY$` table.

Each Fusion Middleware schema has a row in the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table. If you run the Upgrade Assistant to update an existing schema and it does not succeed, you must restore the original schema before you can try again. Before you run the Upgrade Assistant, make sure you back up your existing database schemas and the schema version registry.

> **Note:**
>
> Before you upgrade a schema using the Upgrade Assistant, you must perform a complete database backup. During the upgrade, you are required to acknowledge that backups have been performed.

## Maintaining Customized Domain and Environment Settings

If you have modified any domain-generated, server startup scripts, or configuration files in your pre-upgrade environment, it is important to note that these changes are overwritten during the installation, domain upgrade, and reconfiguration operations. Save your customized files to a shared library location so that you can continue to use them after the upgrade.

Every domain installation includes dynamically-generated domain and server startup scripts, such as `setDomainEnv`. These files are replaced by newer versions during the installation and upgrade process. To maintain your custom domain-level environment settings, Oracle recommends that you create a separate file to store the custom domain information before you upgrade, instead of modifying the scripts directly.

For example, if you want to customize server startup parameters that apply to all servers in a domain, you can create a file called `setUserOverrides.cmd` (Windows) or `setUserOverrides.sh` (UNIX) and configure it to add custom libraries to the WebLogic Server classpath, specify additional command-line options for running the servers, or specify additional environment variables. When using the `pack` and `unpack` commands, any custom settings that you add to this file are preserved during the domain upgrade operation and are carried over to the remote servers.

The following example illustrates startup customizations in a `setUserOverrides` file:

```
# add custom libraries to the WebLogic Server system claspath
  if [ "${POST_CLASSPATH}" != "" ] ; then
    POST_CLASSPATH="${POST_CLASSPATH}${CLASSPATHSEP}${HOME}/foo/fooBar.jar"
    export POST_CLASSPATH
  else
```

```
    POST_CLASSPATH="${HOME}/foo/fooBar.jar"
    export POST_CLASSPATH
  fi

# specify additional java command-line options for servers
JAVA_OPTIONS="${JAVA_OPTIONS}  -Dcustom.property.key=custom.value"
```

If the `setUserOverrides` file exists during a server startup, the file is included in the startup sequence and any overrides contained within this file take effect. You must store the `setUserOverrides` file in the *`DOMAIN_HOME`*`/bin` directory.

> **Note:**
>
> If you are unable to create the `setUserOverrides` script before an upgrade, you need to reapply your settings as described in Re-apply Customizations to Startup Scripts in *Upgrading Oracle WebLogic Server*.

# Creating a Separate Business Intelligence Publisher Installation

Oracle Identity Manager 11g includes an embedded Oracle BI Publisher implementation used for producing Oracle Identity Management Reports. In Oracle Identity and Access Management 12*c* (12.2.1.3.0), Oracle recommends you to use a dedicated Oracle Business Intelligence (BI) Publisher installation.

When you upgrade to Oracle Identity and Access Management 12*c* (12.2.1.3.0), the embedded BI Publisher is removed. You will need to migrate your reports to a standalone Oracle BI Publisher.

For more information, see the following guides:

- Installing the Oracle Business Intelligence Software
- Enterprise Deployment Guide for Oracle Business Intelligence

# Upgrading Oracle HTTP Server

If your deployment of Oracle Identity and Access Management sits behind Oracle HTTP Server through which requests are sent to Oracle Identity Governance, then consider upgrading Oracle HTTP Server.

For instructions, see Upgrading Oracle HTTP Server.

# Cloning Your Environment for Testing

Create a copy of your actual environment, upgrade the cloned environment, verify that the upgraded components work as expected, and only then upgrade your environment.

Cloning your environment for testing is recommended, but not required.

Upgrades cannot be reversed. In most cases, if an error occurs, you must stop the upgrade and restore the entire environment from backup and begin the upgrade process from the beginning.

> **Note:**
>
> It is beyond the scope of this document to describe the cloning procedures for all components and operating systems. Cloning procedures are component and operating system-specific. At a high level, you install the pre-upgrade version of your component domain on a test machine, create the required schemas using the Repository Creation Utility (RCU), and perform the upgrade.

Additional benefits of running an upgrade in a cloned environment include the following:

- Uncover and correct any upgrade issues.
- Practice completing an end-to-end upgrade.
- Understand the upgrade performance and how purge scripts can help.
- Understand the time required to complete the upgrade.
- Understand the database resource usage (such as temporary tablespace; Program Global Area (PGA) , and so on).

> **Note:**
>
> You can run the pre-upgrade Readiness Check on the cloned environment to help identify potential upgrade issues with your data, but you must perform a complete test upgrade on a cloned environment to ensure a successful upgrade.

For instructions to perform a cloned upgrade, see Performing an Out-of-Place Cloned Upgrade of Oracle Identity Manager.

# Verifying Certification and System Requirements

Review the certification matrix and system requirements documents to verify that your environment meets the necessary requirements for installation.

> **Note:**
>
> When checking the certification, system requirements, and interoperability information, be sure to check specifically for any 32-bit or 64-bit system requirements. It is important for you to download software specifically designed for the 32-bit or 64-bit environment, explicitly.

- Verify Your Environment Meets Certification Requirements
  Oracle has tested and verified the performance of your product on all certified systems and environments. Make sure that you are installing your product on a supported hardware and software configuration.

- Verify System Requirements and Specifications
  It is important to verify that the system requirements such as disk space, available memory, specific platform packages and patches, and other operating system-specific items are met.
- Verify That the Database Hosting Oracle Fusion Middleware is Supported
  You must have a supported Oracle database configured with the required schemas before you run Oracle Fusion Middleware 12*c*.
- Verify That the JDK Is Certified for This Release of Oracle Fusion Middleware
  At the time this document was published, the certified JDK for 12*c* (12.2.1.3.0) was 1.8.0_131.

## Verify Your Environment Meets Certification Requirements

Oracle has tested and verified the performance of your product on all certified systems and environments. Make sure that you are installing your product on a supported hardware and software configuration.

Whenever new certifications occur, they are added to the appropriate certification document right away. New certifications can occur at any time, and for this reason the certification documents are kept outside of the documentation libraries and are available on Oracle Technical Resources. See the Certification Matrix for 12*c* (12.2.1.3.0).

## Verify System Requirements and Specifications

It is important to verify that the system requirements such as disk space, available memory, specific platform packages and patches, and other operating system-specific items are met.

Use the *Oracle Fusion Middleware System Requirements and Specifications* document to verify that the requirements of the certification are met. For example, if the Certification Matrix for 12*c* (12.2.1.3.0) indicates that your product is certified for installation on 64-Bit Oracle Linux 7, verify that your Oracle Linux 7 system has met the required minimum specifications such as disk space, available memory, specific platform packages and patches, and other operating system-specific items. This document is updated as needed and resides outside of the documentation libraries on the Oracle Technical Resources.

> **Note:**
>
> When you install the Oracle Fusion Middleware Release 12*c* software in preparation for upgrade, you should use the same user account that you used to install and configure the existing, pre-upgrade Oracle Fusion Middleware software. On UNIX operating systems, this ensures that the proper owner and group is applied to new Oracle Fusion Middleware 12*c* files and directories.

If you are running a 32–bit environment, you will need to perform an additional set of steps:

- Migrating from a 32-Bit to a 64-Bit Operating System
  If you have a 32–bit operating system, then you must migrate your 32-bit environment to a 64-bit software environment before you upgrade.

## Migrating from a 32-Bit to a 64-Bit Operating System

If you have a 32–bit operating system, then you must migrate your 32-bit environment to a 64-bit software environment before you upgrade.

Make sure to validate the migration to ensure all your Oracle Fusion Middleware 11*g* software is working properly on the 64-bit machine, and only then perform the upgrade to Oracle Fusion Middleware 12*c*.

In these tasks, *host* refers to the 32-bit source machine and *target* refers to the new 64-bit target machine.

> **Note:**
>
> These steps assume that your database is located on a separate host and will not be moved.

Upgrading an operating system typically involves the following:

> **Caution:**
>
> These steps are provided as an example of the operating system upgrade process and may or may not include all of the procedures you must perform to update your specific operating system. Consult your operating system's upgrade documentation for more information.

- Procure the Hardware That Supports the Upgrade's 64-bit Software Requirement
  Make sure that you have supported target hardware in place before you begin the upgrade process.
- Stop All Processes
  Before upgrading, you must stop all processes, including Managed Servers, the Administration Server, and Node Manager, if they are started on the host.
- Back Up All Files from the 32-bit Host Machine
  Make sure that you have created a complete backup of your entire 11*g* deployment before you begin the upgrade process. These files can be used if there is an issue during the migration and you have to restart the process.
- Set Up the Target 64-bit Machine with the 11g Host Name and IP Address
  The host name and IP address of the target machine must be made identical to the host. This requires you to change the IP address and name of the source machine or decommission the source machine to avoid conflicts in the network.
- Restore the 11g Backup from 32-bit Host to 64-bit Host
  Restore the files you backed from the 32-bit host using the same directory structure that was used in 11*g*. The directory structure on the target machine must be identical to the structure of the host machine.

- Install the 12c Product Distributions on the Target Machine
  Oracle recommends an out-of-place approach for upgrade. Therefore, you must install the 12*c* product distributions in a new Oracle home on the target machine.
- Upgrade the Target 64-bit Environment Using the Standard Upgrade Procedure
  After installing the product on the target machine, you must upgrade each product component individually using an Upgrade Utility specified in the component-specific upgrade guide and complete any post-upgrade tasks.

## Procure the Hardware That Supports the Upgrade's 64-bit Software Requirement

Make sure that you have supported target hardware in place before you begin the upgrade process.

## Stop All Processes

Before upgrading, you must stop all processes, including Managed Servers, the Administration Server, and Node Manager, if they are started on the host.

> **Note:**
>
> Ensure that the Database is up and running, during the upgrade.

### Step 1: Stop the Managed Servers

Depending on the method you followed to start the managed servers, follow one of the following methods to stop the WebLogic Managed Server:

**Method 1**: To stop a WebLogic Server Managed Server by using the Weblogic Console:

- Log into Weblogic console as a `weblogic` Admin.
- Go to **Servers** > **Control** tab.
- Select the required managed server.
- Click **Shutdown**.

**Method 2**: To stop a WebLogic Server Managed Server using node manager, run the following commands:

```
wls:/offline>nmConnect('nodemanager_username','nodemanager_password',
            'AdminServerHostName','5556','domain_name',
            'DOMAIN_HOME')

wls:/offline>nmKill('ManagedServerName')
```

### Step 2: Stop the Administration Server

When you stop the Administration Server, you also stop the processes running in the Administration Server, including the WebLogic Server Administration Console and Fusion Middleware Control.

To stop the Administration Server, use the `stopWebLogic` script:

- (UNIX) *DOMAIN_HOME*`/bin/stopWebLogic.sh`

- (Windows) *DOMAIN_HOME*\bin\stopWebLogic.cmd

When prompted, enter your user name, password, and the URL of the Administration Server.

**Step 3: Stop Node Manager**

To stop Node Manager, close the command shell in which it is running.

Alternatively, after having set the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for WebLogic Server*.

## Back Up All Files from the 32-bit Host Machine

Make sure that you have created a complete backup of your entire 11*g* deployment before you begin the upgrade process. These files can be used if there is an issue during the migration and you have to restart the process.

> **Note:**
>
> If the upgrade from 32-bit to 64-bit takes place on the same machine, there is a risk of corrupting the source environment if the upgrade fails.

See Backing Up Your Environment in *Oracle Fusion Middleware Administrator's Guide*.

During the upgrade you must have access to the contents of the following:

- *11g_DOMAIN_HOME*
- *11g*/nodemanager directory located in *11g_ORACLE_HOME*/wlserver/common/

Some of the backup and recovery procedures described in Backing Up Your Environment in *Oracle Fusion Middleware Administrator's Guide* are product-specific. Do not proceed with the upgrade until you have a complete backup.

## Set Up the Target 64-bit Machine with the 11*g* Host Name and IP Address

The host name and IP address of the target machine must be made identical to the host. This requires you to change the IP address and name of the source machine or decommission the source machine to avoid conflicts in the network.

The process of changing an IP address and host name vary by operating system. Consult your operating system's administration documentation for more information.

## Restore the 11*g* Backup from 32-bit Host to 64-bit Host

Restore the files you backed from the 32-bit host using the same directory structure that was used in 11*g*. The directory structure on the target machine must be identical to the structure of the host machine.

See Recovering Your Environment in *Oracle Fusion Middleware Administrator's Guide*.

### Install the 12*c* Product Distributions on the Target Machine

Oracle recommends an out-of-place approach for upgrade. Therefore, you must install the 12*c* product distributions in a new Oracle home on the target machine.

For instructions, see Performing an Out-of-Place Upgrade of Oracle Identity Manager.

### Upgrade the Target 64-bit Environment Using the Standard Upgrade Procedure

After installing the product on the target machine, you must upgrade each product component individually using an Upgrade Utility specified in the component-specific upgrade guide and complete any post-upgrade tasks.

For an in-place upgrade, see In-Place Upgrade of Oracle Identity Manager.

For an out-of-place upgrade, see Performing an Out-of-Place Upgrade of Oracle Identity Manager.

If you are upgrading additional components, see the component-specific upgrade guide.

> **Note:**
>
> The Node Manager upgrade procedure requires access to the original Node Manager files. Use the 11*g* Node Manger files that you backed up from the 32-bit source machine as part of Back Up All Files from the 32-bit Host Machine.

## Verify That the Database Hosting Oracle Fusion Middleware is Supported

You must have a supported Oracle database configured with the required schemas before you run Oracle Fusion Middleware 12*c*.

Review the Fusion Middleware database requirements before starting the upgrade to ensure that the database hosting Oracle Fusion Middleware is supported and has sufficient space to perform an upgrade. See the Certification Matrix for 12*c* (12.2.1.3.0).

> **Note:**
>
> If your database version is no longer supported, you must upgrade to a supported version before starting an upgrade. See Upgrading and Preparing Your Oracle Databases for 12c in *Planning an Upgrade of Oracle Fusion Middleware*.

## Verify That the JDK Is Certified for This Release of Oracle Fusion Middleware

At the time this document was published, the certified JDK for 12*c* (12.2.1.3.0) was 1.8.0_131.

Refer to the Oracle Fusion Middleware Supported System Configurations information on the Oracle Technical Resources to verify that the JDK you are using is supported.

If your JDK is not supported, or you do not have a JDK installed, you must download the required Java SE JDK, from the following website:

`http://www.oracle.com/technetwork/java/javase/downloads/index.html`

Make sure that the JDK is installed outside of the Oracle home. The Oracle Universal Installer validates that the designated Oracle home directory is empty, and the install does not progress until an empty directory is specified. If you install JDK under Oracle home, you may experience issues in future operations. Therefore, Oracle recommends that you use install the JDK in the following directory: `/home/oracle/products/jdk`.

# Updating Policy Files when Using Enhanced Encryption (AES 256)

If you plan to use enhanced encryption, such as Advanced Encryption Standard (AES 256), in your upgraded environment, Oracle recommends that you apply the latest required policy files to the JDK before you upgrade.

The Java platform defines a set of APIs spanning major security areas, including cryptography, public key infrastructure, authentication, secure communication, and access control. These APIs allow developers to easily integrate security mechanisms into their application code.

Some of the security algorithms used in Fusion Middleware 12*c* (12.2.1.3.0) require additional policy files for the JDK. See Java Cryptography Architecture Oracle Providers Documentation.

> **Note:**
>
> If you attempt to use enhanced encryption without applying these policy files to the JDK before you begin the upgrade, the upgrade can fail and you must restore the entire pre-upgrade environment and start the upgrade from the beginning.

# Purging Unused Data

Purging unused data and maintaining a purging methodology before an upgrade can optimize the upgrade process.

Some components have automated purge scripts. If you are using purge scripts, wait until the purge is complete before starting the upgrade process. The upgrade may fail if the purge scripts are running while using the Upgrade Assistant to upgrade your schemas.

For more information, see Using the Archival and Purge Utilities for Controlling Data Growth.

> **Note:**
>
> In large systems with plenty of data, archiving/purging may take a long time. Oracle strongly recommends not to run the archival/purge scripts in parallel to improve performance.

# Creating a Non-SYSDBA User to Run the Upgrade Assistant

Oracle recommends that you create a non-SYSDBA user called `FMW` to run the Upgrade Assistant. This user has the privileges required to modify schemas, but does not have full administrator privileges.

SYSDBA is an administrative privilege that is required to perform high-level administrative operations such as creating, starting up, shutting down, backing up, or recovering the database. The SYSDBA system privilege is for a fully empowered database administrator. When you connect with the SYSDBA privilege, you connect with a default schema and not with the schema that is generally associated with your user name. For SYSDBA, this schema is SYS. Access to a default schema can be a very powerful privilege. For example, when you connect as user SYS, you have unlimited privileges on data dictionary tables. Therefore, Oracle recommends that you create a non-SYSDBA user to upgrade the schemas. The privileges listed below must be granted to user FMW before starting the Upgrade Assistant.

> **Notes:**
>
> The non-SYSDBA user FMW is created solely for the purpose of running the Upgrade Assistant. After this step is complete, drop the FMW user. Note that privileges required for running the Upgrade Assistant may change from release to release.
> By default, the `v$xatrans$` table does not exist. You must run the `XAVIEW.SQL` script to create this table before creating the user. Moreover, the `grant select` privilege on the `v$xatrans$` table is required only by Oracle Identity Governance . If you do not require Oracle Identity Governance for configuration, or if you do not have the `v$xatrans$` table, then remove the following line from the script:
>
> ```
> grant select on v$xatrans$ to FMW with grant option;
> ```

In the example below, *<password>* is the password that you set for the FMW user. When granting privileges, make sure that you specify your actual password.

```
create user FMW identified by <password>;
grant dba to FMW;
```

```
grant execute on DBMS_LOB to FMW with grant option;
grant execute on DBMS_OUTPUT to FMW with grant option;
grant execute on DBMS_STATS to FMW with grant option;
grant execute on sys.dbms_aqadm to FMW with grant option;
grant execute on sys.dbms_aqin to FMW with grant option;
grant execute on sys.dbms_aqjms to FMW with grant option;
grant execute on sys.dbms_aq to FMW with grant option;
grant execute on utl_file to FMW with grant option;
grant execute on dbms_lock to FMW with grant option;
grant select on sys.V_$INSTANCE to FMW with grant option;
grant select on sys.GV_$INSTANCE to FMW with grant option;
grant select on sys.V_$SESSION to FMW with grant option;
grant select on sys.GV_$SESSION to FMW with grant option;
grant select on dba_scheduler_jobs to FMW with grant option;
grant select on dba_scheduler_job_run_details to FMW with grant option;
grant select on dba_scheduler_running_jobs to FMW with grant option;
grant select on dba_aq_agents to FMW with grant option;
grant execute on sys.DBMS_SHARED_POOL to FMW with grant option;
grant select on dba_2pc_pending to FMW with grant option;
grant select on dba_pending_transactions to FMW with grant option;
grant execute on DBMS_FLASHBACK to FMW with grant option;
grant execute on dbms_crypto to FMW with grant option;
grant execute on DBMS_REPUTIL to FMW with grant option;
grant execute on dbms_job to FMW with grant option;
grant select on pending_trans$ to FMW with grant option;
grant select on dba_scheduler_job_classes to fmw with grant option;
grant select on SYS.DBA_DATA_FILES to FMW with grant option;
grant select on SYS.V_$ASM_DISKGROUP to FMW with grant option;
grant select on v$xatrans$ to FMW with grant option;
grant execute on sys.dbms_system to FMW with grant option;
grant execute on DBMS_SCHEDULER to FMW with grant option;
grant select on dba_data_files to FMW with grant option;
grant execute on UTL_RAW to FMW with grant option;
grant execute on DBMS_XMLDOM to FMW with grant option;
grant execute on DBMS_APPLICATION_INFO to FMW with grant option;
grant execute on DBMS_UTILITY to FMW with grant option;
grant execute on DBMS_SESSION to FMW with grant option;
grant execute on DBMS_METADATA to FMW with grant option;
grant execute on DBMS_XMLGEN to FMW with grant option;
grant execute on DBMS_DATAPUMP to FMW with grant option;
grant execute on DBMS_MVIEW to FMW with grant option;
grant select on ALL_ENCRYPTED_COLUMNS to FMW with grant option;
grant select on dba_queue_subscribers to FMW with grant option;
grant execute on SYS.DBMS_ASSERT to FMW with grant option;
grant select on dba_subscr_registrations to FMW with grant option;
grant manage scheduler to FMW;
```

If you are upgrading Oracle Identity Manager (OIM) schema, ensure that the FMW user has the following additional privileges:

```
grant execute on SYS.DBMS_FLASHBACK to fmw with grant option;
grant execute on sys.DBMS_SHARED_POOL to fmw with grant option;
grant execute on SYS.DBMS_XMLGEN to FMW with grant option;
grant execute on SYS.DBMS_DB_VERSION to FMW with grant option;
```

```
grant execute on SYS.DBMS_SCHEDULER to FMW with grant option;
grant execute on SYS.DBMS_SQL to FMW with grant option;
grant execute on SYS.DBMS_UTILITY to FMW with grant option;
grant ctxapp to FMW with admin option;
grant execute on SYS.DBMS_FLASHBACK TO FMW with grant option;
grant create MATERIALIZED VIEW to FMW with admin option;
grant all on SCHEMA_VERSION_REGISTRY TO FMW with grant option;
grant create SYNONYM to FMW with admin option;
grant execute on CTXSYS.CTX_ADM to FMW with grant option;
grant execute on CTXSYS.CTX_CLS TO FMW with grant option;
grant execute on CTXSYS.CTX_DDL TO FMW with grant option;
grant execute on CTXSYS.CTX_DOC TO FMW with grant option;
grant execute on CTXSYS.CTX_OUTPUT TO FMW with grant option;
grant execute on CTXSYS.CTX_QUERY TO FMW with grant option;
grant execute on CTXSYS.CTX_REPORT TO FMW with grant option;
grant execute on CTXSYS.CTX_THES TO FMW with grant option;
grant execute on CTXSYS.CTX_ULEXER TO FMW with grant option;
grant create JOB to FMW with admin option;
```

# Identifying Existing Schemas Available for Upgrade

This optional task enables you to review the list of available schemas before you begin the upgrade by querying the schema version registry. The registry contains schema information such as version number, component name and ID, date of creation and modification, and custom prefix.

You can let the Upgrade Assistant upgrade all of the schemas in the domain, or you can select individual schemas to upgrade. To help decide, follow these steps to view a list of all the schemas that are available for an upgrade:

1. If you are using an Oracle database, connect to the database by using an acount that has Oracle DBA privileges, and run the following from SQL*Plus:

   ```
   SET LINE 120
   SET PAGESIZE 20
   COLUMN MRC_NAME FORMAT A14
   COLUMN COMP_ID FORMAT A20
   COLUMN VERSION FORMAT A12
   COLUMN STATUS FORMAT A9
   COLUMN UPGRADED FORMAT A8
   SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
   SCHEMA_VERSION_REGISTRY ORDER BY VERSION, MRC_NAME, COMP_ID;
   ```

2. Examine the report that is generated.

   If an upgrade is not needed for a schema, the `schema_version_registry` table retains the schema at its pre-upgrade version.

3. Note the schema prefix name that was used for your existing schemas. If you are using RCU for creating new 12c schemas, use the same prefix.

**Notes:**

- If you used an OID-based policy store in 11*g*, make sure to create a new OPSS schema before you perform the upgrade. After the upgrade, the OPSS schema remains an LDAP-based store.
- You can only upgrade schemas for products that are available for upgrade in Oracle Fusion Middleware release 12*c* (12.2.1.3.0). Do not attempt to upgrade a domain that includes components that are not yet available for upgrade to 12*c* (12.2.1.3.0).

# Updating Database Parameters for Oracle Identity Manager

You need to verify and update a few database parameters before upgrading the Oracle Identity Manager to 12*c* (12.2.1.3.0).

Complete the following steps:

1. Connect to the database by using an account that has Oracle DBA privileges, and run the commands in this procedure from SQL*Plus.
2. To verify the value for the database parameter `max_string_size`, run the following command:

   ```
   SQL> SELECT value FROM v$parameter WHERE name='max_string_size';
   ```

3. If the value returned is:
   - **STANDARD**: Skip the rest of the steps in this procedure and go to the next procedure to continue with the upgrade.
   - **EXTENDED**: Continue with **step 4**.
4. Login as an OIM database user and then run the following command to find columns with size more than 4000 characters:

   ```
   SQL> SELECT table_name, column_name, data_length FROM user_tab_columns
   WHERE data_length>4000;
   ```

5. If any rows are listed, either trim the corresponding column data to 4000 characters or remove the rows.

   **Note:**

   If required, take backup of the listed rows in a new table.

6. Reset all the columns sizes found in step 4 to 4000 characters.
   As an OIM database user, run the following command:

   ```
   SQL> ALTER TABLE <table_name> MODIFY <column_name> VARCHAR2(4000);
   ```

7. On the columns whose length was modified to more than 4000 characters, drop any existing index.

8. As an OIM database user, run the following command to verify that there no more columns with size more than 4000:

```
SQL> SELECT table_name, column_name, data_length FROM
user_tab_columns WHERE data_length>4000;
```

9. If required, gather table and index stats for the identified columns.

For more information, see Monitoring Oracle Identity Governance Performance.

# Updating Connectors for Oracle Identity Manager

Update the existing connectors if they are not supported for Oracle Identity Manager 12*c* (12.2.1.3.0).

Complete the following steps:

1. Go to the Oracle Identity Manager Connectors Certification.
2. By using the certification information table, verify if the existing connectors are supported for 12*c* (12.2.1.3.0).
3. Are the existing connectors supported for 12*c* (12.2.1.3.0)?
   - **Yes:** Skip this procedure and proceed to the next upgrade procedure.
   - **No:** Update the required connectors. See Oracle Identity Governance 12c Connectors.

# Shutting Down the Node Managers

Ensure that you have shut down all the local and remote Node Managers before starting the upgrade process.

The Node Managers should remain shut down until you start the WebLogic Administration Server after completing the upgrade. When the WebLogic Administration Server is up and running, start the Node Managers, followed by the Managed Servers.

# Generating and Analyzing Pre-Upgrade Report for Oracle Identity Manager

Run the pre-upgrade report utility before you begin the upgrade process for Oracle Identity Manager, and address all of the issues using the solution provided in the report.

The pre-upgrade report utility analyzes your existing Oracle Identity Manager environment, and provides information about the mandatory prerequisites that you must complete before you begin the upgrade.

> **Note:**
>
> It is important to address all of the issues listed in the pre-upgrade report before you proceed with the upgrade, as the upgrade might fail if the issues are not resolved.
>
> Ensure that the Database and the 11.1.2.3.0 Oracle Identity Manager servers are up and running before you run the pre-upgrade report utility.

- Obtaining the Pre-Upgrade Report Utility
  Download the pre-upgrade report utility for Oracle Identity Manager from Oracle Technology Network (OTN).
- Generating the Pre-Upgrade Report
  Generate the pre-upgrade report before you start the upgrade process for Oracle Identity Manager and resolve any issues listed in the report.
- Analyzing the Pre-Upgrade Report
  After you generate the pre-upgrade report for Oracle Identity Manager, review each of the reports, and perform all of the tasks described in them. If you do not perform the mandatory tasks described in the report, the upgrade might fail.

## Obtaining the Pre-Upgrade Report Utility

Download the pre-upgrade report utility for Oracle Identity Manager from Oracle Technology Network (OTN).

The utility is available in a zip file named `PreUpgradeReport.zip` along with `ReadMe.doc` at the following location on My Oracle Support:
My Oracle Support document ID 2308933.1

The `ReadMe.doc` contains information about how to generate and analyze the pre-upgrade reports.

## Generating the Pre-Upgrade Report

Generate the pre-upgrade report before you start the upgrade process for Oracle Identity Manager and resolve any issues listed in the report.

To generate the pre-upgrade report for Oracle Identity Manager, complete the following steps on your Administration server host machine:

1. Create a directory at any location and extract the contents of `PreUpgradeReport.zip` in the new directory.
2. Create a directory in which to generate the pre-upgrade reports. For example, create a directory named `OIM_preupgrade_reports`.
3. Go to the directory where you extracted `PreUpgradeReport.zip` and open the `preupgrade_report_input.properties` file in a text editor. Update the properties file with the appropriate values for the parameters listed in Table 2-2

**Table 2-2 Parameters to be Specified in the preupgrade_report_input.properties File**

| Parameter | Description |
|---|---|
| `oim.mwhome` | Specify the absolute path to the Middleware home of the existing installation.<br>For example: `/Oracle/Middleware` |
| `oim.oimhome` | Specify the absolute path to the existing OIM home.<br>For example: `/Oracle/Middleware/Oracle_IDM1` |
| `oim.javahome` | Specify the absolute path to the Java home. Ensure that you point to JAVA 8. |
| `oim.wlshome` | Specify the absolute path to the WebLogic Server home.<br>For example: `/Oracle/Middleware/wlserver_10.3` |
| `oim.domain` | Specify the absolute path to the Oracle Identity Manager domain home.<br>For example: `/Oracle/Middleware/user_projects/domains/IAMGovernanceDomain` |
| `oim.oimhost` | Specify the hostname of Oracle Identity Manager.<br>For example: `oim.example.com` |
| `oim.oimport` | Specify the port of the Oracle Identity Manager server.<br>For example: `14000` |
| `oim.username` | Specify the Oracle Identity Manager Admin username.<br>For example: `xelsysadm` |
| `oim.targetVersion` | Specify the target version of the Oracle Identity Manager, that is, 12.2.1.3.0. |
| `oim.jdbcurl` | Specify the JDBC URL for Oracle Identity Manager in one of the following formats:<br>*`host`*`:`*`port`*`/`*`service_name`*<br>or<br>*`host`*`:`*`port`*`:`*`sid`* |
| `oim.oimschemaowner` | Specify the name of the OIM schema owner. |
| `oim.mdsjdbcurl` | Specify the MDS JDBC URL in the one of the following formats:<br>*`host`*`:`*`port`*`/`*`service_name`*<br>or<br>*`host`*`:`*`port`*`:`*`sid`* |
| `oim.mdsschemaowner` | Specify the name of the MDS schema owner. |
| `oim.databaseadminname` | Specify the user with DBA privilege. For example, FMW or `sys` as `sysdba`. |

**Table 2-2 (Cont.) Parameters to be Specified in the preupgrade_report_input.properties File**

| Parameter | Description |
|---|---|
| `oim.outputreportfolder` | Specify the absolute path to the directory where you want the reports to be generated (`OIM_preupgrade_reports`).Ensure that this directory has read and write permissions. |

4. Run the following command from the location where you extracted the contents of `PreUpgradeReport.zip`:
   - On UNIX:
     `sh generatePreUpgradeReport.sh`
   - On Windows:
     `generatePreUpgradeReport.bat`
5. Provide the details when the following are prompted:
   - **OIM Schema Password**: Enter the password of the Oracle Identity Manager (OIM) schema.
   - **MDS Schema Password**: Enter the password of the Metadata Services (MDS) schema.
   - **DBA Password**: Enter the password of the Database Administrator.
   - **OIM Admin Password**: Enter the password of the Oracle Identity Manager Administrator.
6. The reports are generated as HTML pages at the location you specified for the parameter `oim.outputreportfolder` in the `preupgrade_report_input.properties` file. The logs are stored in the log file `preUpgradeReport<time>.log` in the folder logs at the same location.

# Analyzing the Pre-Upgrade Report

After you generate the pre-upgrade report for Oracle Identity Manager, review each of the reports, and perform all of the tasks described in them. If you do not perform the mandatory tasks described in the report, the upgrade might fail.

**Table 2-3 Pre-Upgrade Reports Generated for Oracle Identity Manager**

| Report Name | Description and Action Item |
|---|---|
| `Status of OIM System Property – XL.AllowedBackURLs` | This report provides the status of the system property related to setting the back URLs in Oracle Identity Manager. |
| `Changes to SCIM-JWT in 12c` | This report lists the new SCIM URLs published during 12*c* (12.2.1.3.0).<br>You must use the new URLs instead of the old ones. |
| `Potential upgrade issues for User Defined Attributes` | This report lists the potential issues with the User Defined Field (UDF) defined in Oracle Identity Manager 11.1.2.3.0 during upgrade. |

**Table 2-3 (Cont.) Pre-Upgrade Reports Generated for Oracle Identity Manager**

| Report Name | Description and Action Item |
|---|---|
| Status of Mandatory Database Components | This report lists the installation status of the mandatory Database components which are required for upgrade. |
| Status of Mandatory deletion of OIM Authentication Jar(s) | This report lists the status of a few mandatory jars that need to be deleted before upgrade. |
| Full MDS Export of source environment | This report lists the details regarding the MDS backup taken prior to upgrade. |
| Customized Notification Templates status on source environment | This report lists customized out-of-the-box (OOTB) notification templates. These customizations will be overwritten with OOTB values during upgrade. |
| OIM-OMSS Integration Pre-Upgrade Report | This report gives the deprecation information about the Oracle Mobile Security Services (OMSS) with Oracle Identity Manager in 12*c* (12.2.1.3.0). |
| Status of Domain Configuration | This report lists the applications (if any) that are in stage mode. |
| Status of Mandatory DB Privilege | This report lists the missing mandatory database privileges that are required for upgrade. |
| Status of data associated with access policies | In 12*c*, access policies are associated with application instances instead of resource object. To handle the same, this report lists in-consistent data (if present) in the Oracle Identity Manager 11.1.2.3.0. |
| Authorization Policy backup of source environment | This report lists the details regarding the Oracle Identity Manager authorization policy backup taken prior to upgrade. |
| Information about Schedule Jobs against Schedule task named as OIM Data Purge Task on source environment | This report provides important information regarding one of the schedule tasks which will be available after upgrade. |
| Obsolete templates existence status on source environment | This report lists obsolete templates that are present in the source domain prior to upgrade. |
| Obsolete applications existence status on source environment | This report lists obsolete applications that are present in the source domain prior to upgrade. |
| soaOIMLookupDB data source status on source environment | This report lists non-transactional soaOIMLookupDB data sources in the source domain prior to upgrade. |
| Status of OIM default keystore in KSS on source environment | This report lists the OIM default keystore if it's present in the KSS of the source domain prior to upgrade. |

# Part I

# In-Place Upgrade of Oracle Identity Manager

You can perform an in-place upgrade of Oracle Identity Manager single node deployments and highly available environments by using the procedures described in this part.

This part contains the following topics:

- Upgrading Oracle Identity Manager Single Node Environments
  You can upgrade Oracle Identity Manager from Release 11*g* Release 2 (11.1.2.3.0) to Oracle Identity Governance 12*c* (12.2.1.3.0) .
- Upgrading Oracle Identity Manager Highly Available Environments
  Describes the process of upgrading an Oracle Identity Manager highly available environment from 11*g* Release 2 (11.1.2.3.0) to Oracle Identity Governance 12*c* (12.2.1.3.0).
- Upgrading OIM-OAM Integrated Environments Manually
  You can upgrade Oracle Identity Manager (OIM), Oracle Access Manager (OAM) integrated split domain highly available environments that are set up manually, from 11*g* Release 2 (11.1.2.3.0) to 12*c* (12.2.1.3.0) using the upgrade procedure described in this section.

3

# Upgrading Oracle Identity Manager Single Node Environments

You can upgrade Oracle Identity Manager from Release 11*g* Release 2 (11.1.2.3.0) to Oracle Identity Governance 12*c* (12.2.1.3.0) .

> **Note:**
>
> The product Oracle Identity Manager is referred to as Oracle Identity Manager (OIM) and Oracle Identity Governance (OIG) interchangeably in the guide.

Complete the steps in the following topics to perform the upgrade:

- About the Oracle Identity Manager Single Node Upgrade Process
  Review the roadmap for an overview of the upgrade process for Oracle Identity Manager single node deployments.
- Completing the Pre-Upgrade Tasks for Oracle Identity Manager
  Complete the pre-upgrade tasks described in this section before you upgrade Oracle Identity Manager.
- Installing Product Distributions
  Before beginning your upgrade, download Oracle Fusion Middleware Infrastructure, Oracle SOA Suite, and Oracle Identity Manager 12*c* (12.2.1.3.0) distributions on the target system and install them using Oracle Universal Installer.
- Installing the Latest Stack Patch Bundle
  After you install the product distributions, Oracle strongly recommends you to apply the latest IDM Stack Patch Bundle (SPB) 12.2.1.3.0 before proceeding with the upgrade process. You can apply the patch by using the Opatch tool. Applying the SPB helps eliminate most of the upgrade issues or workarounds.
- Running a Pre-Upgrade Readiness Check
  To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.
- Creating the Required 12c Schemas Using RCU
  When upgrading from 11g, you must create the required 12c schemas. If your setup is not SSL enabled, you can use the Upgrade Assistant to create schemas by using the default schema settings. In case of SSL enabled setup, you can use the Repository Creation Utility (RCU) to create customized schemas. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.
- Tuning Database Parameters for Oracle Identity Manager
  Before you upgrade the schemas, you must tune the Database parameters for Oracle Identity Manager.

- Stopping Servers and Processes
  Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server, Node manager, and any managed servers.
- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.
- About Reconfiguring the Domain
  Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).
- Upgrading Domain Component Configurations
  After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.
- Performing Post-Upgrade Tasks
  After upgrading from 11*g* to 12*c*, you need should complete the post upgrade tasks that include copying any custom configuration present in your 11*g* Middleware home to the 12*c* Oracle home and upgrading the SOA composites.
- Copying Folders to the 12c Oracle Home
  When upgrading to 12c, you must manually copy some folders to the 12c Oracle Home, if those folders are having file system dependent data.
- Starting the Servers
  After you upgrade Oracle Identity Manager, start the servers.
- Configuring Oracle HTTP Servers to Front End OIM, and SOA Managed Servers
- Upgrading Oracle Identity Manager Design Console
  Upgrade the Oracle Identity Manager Design Console after you upgrade the Oracle Identity Manager (OIM) domain component configurations.
- Completing the Post-Upgrade Tasks for SSL Enabled Setup
  If you are upgrading an Oracle Identity Manager SSL enabled setup, you must perform the required post-upgrade tasks to complete the upgrade process.
- Installing Standalone Oracle BI Publisher
  When you upgrade Oracle Identity Manager 11.1.2.3.0 to Oracle Identity Governance 12*c* (12.2.1.3.0), the embedded Oracle BI Publisher present in the 11.1.2.3.0 deployment, is removed. Therefore, you must install a new standalone Oracle BI Publisher 12*c* (12.2.1.3.0) post upgrade, for configuring the Oracle Identity Governance reports.
- Tuning Application Module for User Interface
  After you successfully upgrade the Oracle Identity Manager middle-tier, tune the Application Module (AM).
- Performing the Post-Patch Install Steps
  After completing the upgrade, you have to perform the post-patch installation steps.

# About the Oracle Identity Manager Single Node Upgrade Process

Review the roadmap for an overview of the upgrade process for Oracle Identity Manager single node deployments.

The steps you take to upgrade your existing domain will vary depending on how your domain is configured and which components are being upgraded. Follow only those steps that are applicable to your deployment.

**Table 3-1 Tasks for Upgrading Oracle Identity Manager Single Node Environments**

| Task | Description |
|---|---|
| **Required**<br>If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks. | See:<br>• Introduction to Upgrading Oracle Identity Manager to 12*c* (12.2.1.3.0)<br>• Pre-Upgrade Requirements |
| **Required**<br>Complete the necessary pre-upgrade tasks specific to Oracle Identity Manager. | See Completing the Pre-Upgrade Tasks for Oracle Identity Manager. |
| **Required**<br>Install Fusion Middleware Infrastructure 12*c* (12.2.1.3.0), Oracle SOA Suite12*c* (12.2.1.3.0) and Oracle Identity Manager12*c* (12.2.1.3.0) in a new Oracle home. | Install the following products in a *new* Oracle home on the same host as the 11*g* production deployment before you begin the upgrade.<br>• Fusion Middleware Infrastructure 12*c* (12.2.1.3.0)<br>• Oracle SOA Suite12*c* (12.2.1.3.0)<br>• Oracle Identity Manager12*c* (12.2.1.3.0)<br>It is recommended that you use the simplified installation process to install the products mentioned above, using the quick installer. The quick installer installs the Infrastructure, Oracle SOA Suite, and Oracle Identity Manager 12*c* (12.2.1.3.0) in one go. See Installing Oracle Identity Governance Using Quick Installer in the *Installing and Configuring Oracle Identity and Access Management*.<br>The other option is to install these products separately using their respective installers. See Installing Product Distributions. |
| **Required**<br>Apply the latest bundle patches. | See Installing the Latest Stack Patch Bundle. |
| **Optional**<br>Run a pre-upgrade readiness check. | See Running a Pre-Upgrade Readiness Check. |
| **Optional**<br>Start the Repository Creation Utility (RCU) to create the required 12*c* database schemas.<br>This step is not required for non-SSL setup, as the Upgrade Assistant creates the necessary 12*c* schemas during the upgrade process.<br>For SSL enabled setup, you must run the RCU to create the necessary 12*c* schemas. | The schemas you create will vary depending on your existing schema configuration.<br>See Creating the Required 12c Schemas with the RCU. |

**Table 3-1 (Cont.) Tasks for Upgrading Oracle Identity Manager Single Node Environments**

| Task | Description |
|---|---|
| **Required**<br>Tune the Database parameters for Oracle Identity Manager. | See Tuning Database Parameters for Oracle Identity Manager . |
| **Required**<br>Shut down the 11*g* servers. This includes the Administration Server, Managed Servers, Node Manager, and system components.<br>Ensure that the Database is up during the upgrade. | **WARNING**: Failure to shut down your servers during an upgrade may lead to data corruption.<br>See Stopping Servers and Processes. |
| **Required**<br>Start the Upgrade Assistant to upgrade the 11*g* database schemas and to migrate all active (in flight) instance data. | See Upgrading Product Schemas.<br>**NOTE:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 12*c* (12.2.1.3.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process. |
| **Required**<br>Start the Reconfiguration Wizard to reconfigure the domain. | During an upgrade, the Configuration Wizard is run in reconfiguration mode to update the existing domain to use the newly installed software.<br>See Reconfiguring the Domain Using the Reconfiguration Wizard. |
| **Required**<br>Start the Upgrade Assistant (again) to upgrade Oracle Identity Manager domain component configurations. | The Upgrade Assistant is used to update the reconfigured domain's component configurations.<br>See Upgrading Domain Component Configurations. |
| **Required**<br>Perform the following post-upgrade tasks. | See Performing Post-Upgrade Tasks. |
| **Required**<br>Copy the folders to the 12c Oracle home. | See Copying Folders to the 12c Oracle Home. |
| **Required**<br>Start the servers. | See Starting the Servers. |
| **Optional**<br>Configure Oracle HTTP Servers. | Configuring Oracle HTTP Servers to Front End OIM, and SOA Managed Servers |
| **Required**<br>Upgrade the Oracle Identity Manager Design Console to 12*c* (12.2.1.3.0). | See Upgrading Oracle Identity Manager Design Console. |
| **Optional**<br>Perform the post-upgrade tasks for SSL enabled setup. | See Completing the Post-Upgrade Tasks for SSL Enabled Setup. |
| **Optional**<br>When you upgrade to Oracle Identity Governance 12*c* (12.2.1.3.0), the embedded Oracle BI Publisher present in the 11.1.2.3.0 deployment is removed. Therefore, you must install a new standalone Oracle BI Publisher 12*c* (12.2.1.3.0) post upgrade, and integrate it with Oracle Identity Governance 12*c* (12.2.1.3.0) to configure the Oracle Identity Governance reports. | See, Installing Standalone Oracle BI Publisher. |

**Table 3-1 (Cont.) Tasks for Upgrading Oracle Identity Manager Single Node Environments**

| Task | Description |
|---|---|
| **Required**<br>Tune the application module for Oracle Identity Manager. | See Tuning Application Module for User Interface. |
| **Required**<br>Perform the post-patch install steps. | See Performing the Post-Patch Install Steps. |

# Completing the Pre-Upgrade Tasks for Oracle Identity Manager

Complete the pre-upgrade tasks described in this section before you upgrade Oracle Identity Manager.

- Upgrading SOA Composites
  If your starting point is Oracle Identity Manager 11.1.1.x.x, you must manually upgrade custom composites that you have built.
- Updating Server Wallets to Remove MD5 Algorithm
  OIM 12c (12.2.1.3.0) uses JDK 8, which does not support MD5 signing algorithm. If the existing keystore has a certificate which is invalid with JDK8 (that is, using disabled algorithm) used to install the 12*c* (12.2.1.3.0) binaries, you must generate the keystore and place it in the *DOMAIN_HOME*`/config/fmwconfig` directory.
- Updating DB Wallets to Remove MD5 Algorithm (For SSL Enabled Setup)
  If you have SSL enabled setup, update all of the DB wallets to remove any MD5 algorithms, as 12*c* (12.2.1.3.0) uses JDK 8 which does not support MD5 algorithm.
- Verifying the Memory Settings
  To avoid the memory issues for Oracle Identity Manager, ensure that the memory settings are updated as per the requirements.
- Opening the Non-SSL Ports for SSL Enabled Setup
  If you have an SSL enabled and non-SSL disabled setup, you must open the non-SSL ports for Servers and Database before you proceed with the Oracle Identity Manager upgrade.
- Backing Up the metadata.mar File Manually

## Upgrading SOA Composites

If your starting point is Oracle Identity Manager 11.1.1.x.x, you must manually upgrade custom composites that you have built.

Complete the following steps to upgrade SOA composites:

1. Open the SOA composite project in JDeveloper (Use Jdeveloper 11.1.1.9.0).
2. Open `ApprovalTask.task` file in designer mode.
3. Select **General**.
4. Change **Owner** to **Group**, **SYSTEM ADMINISTRATORS**, **STATIC**.
5. Select **Outcomes lookup**.
   An **Outcomes Dialog** opens.

6. Select **Outcomes Requiring Comment**.
7. Select **Reject** and click **OK**.
8. Click **OK** again.
9. Select **Notification**.
10. Click on the update icon under **Notification**.
    Update any old URLs in notification with the corresponding new URL in 11.1.2.3.0.

    Following is an example notification content:

```
A <%/task:task/task:payload/task:RequestModel%> request has been
assigned to you for approval. <BR><BR>
Request ID: <%/task:task/task:payload/task:RequestID%> <BR>
Request type: <%/task:task/task:payload/task:RequestModel%> <BR>
<BR>
Access this task in the
<A
style="text-decoration: none;" href=<%substring-before(/task:task/
task:payload/task:url, "/workflowservice/CallbackService")%>/
identity/faces/home?tf=approval_details
>
Identity Self Service
</A>
 application or take direct action using the links below. Approvers
are required to provide a justification when rejecting the request
```

11. Click **Advanced**.
12. Deselect **Show worklist/workspace URL in notifications**.
    Provide the URL to Pending Approvals in identity application as listed in the example in step 10.
13. Repeat step 1 to step12 for other human tasks, if any, in the composite, and then save your work.
14. Right click **Project** and select **Deploy** > **Deploy to Application Server**.
15. Provide revision ID.
    Select **Mark revision as default** and **Overwrite any existing composite with same revision ID**.

> **Note:**
>
> You can also deploy the composites with different revision ID. In that case, you have to modify all approval policies using this composite.

16. Select your application server connection, if it already exists, and click **Next**.
    Create an application server connection if it does not exist.
17. Click **Next**.
18. Click **Finish**.
19. Repeat the procedure for the remaining custom composites.

# Updating Server Wallets to Remove MD5 Algorithm

OIM 12c (12.2.1.3.0) uses JDK 8, which does not support MD5 signing algorithm. If the existing keystore has a certificate which is invalid with JDK8 (that is, using disabled algorithm) used to install the 12*c* (12.2.1.3.0) binaries, you must generate the keystore and place it in the *DOMAIN_HOME*/config/fmwconfig directory.

If the default keystore has MD5 algorithm, then the upgrade readiness check and the examine phase of OIM configuration upgrade will fail.

To verify the validity of the certificate, do the following:

1. Check for the jdk.certpath.disabledAlgorithms property in the *JAVA_HOME*/jre/lib/security/java.security file.

   For example:
   ```
   jdk.certpath.disabledAlgorithms=MD2, MD5, RSA keySize < 1024
   ```

2. Check for the certificate algorithm in the existing keystore by doing the following:

   a. For default keystore, *DOMAIN_HOME*/config/fmwconfig/default-keystore.jks, run the following command from the *JAVA_HOME*/jre/bin directory:

      ```
      ./keytool -list -v -keystore DOMAIN_HOME/config/fmwconfig/default-keystore.jks
      ```

      If you are using the custom keystores, that is, *DOMAIN_HOME*/config/fmwconfig/*name_of_custom_store*, run the following command from the *JAVA_HOME*/jre/bin directory:

      ```
      ./keytool -list -v -keystore DOMAIN_HOME/config/fmwconfig/custom_keystore.jks
      ```

      This command displays the keystore data. Enter the keystore password when prompted.

   b. Check for the Signature algorithm name field value in the output of the above command. If the value of Signature algorithm name field and the jdk.certpath.disabledAlgorithms property has MD5 algorithm, then the given keystore will not be valid after upgrade.

      If the keystore is not valid after upgrade, the following error in seen in the server logs while executing the request use cases after upgrade, and none of the request use cases will be successful:

      ```
      Caused by: java.security.cert.CertPathValidatorException: Algorithm constraints check failed: MD5withRSA
      ```

3. If required, replace the certificates in the keystore with new ones using a valid signing algorithm with the following steps. Replace the placeholder values as described.

**Table 3-2 List of Placeholder Values with Description**

| Placeholder Value | Description |
|---|---|
| *temporary_directory* | A directory with write access to store the temporary keystore and csr files. For example: `/tmp` |
| *cert_req_file_name* | A descriptive filename for the certificate signing request (CSR). For example: `xell.csr` |
| *certificate_name* | A descriptive filename for the certificate. For example: `xell.cert`. |
| *key_password* | A unique credential string. (Unknown if needs to match pre-existing Oracle defaults or not.) |
| *keystore_password* | A credential that matches the credential for the existing 11g keystore being updated. |
| *key_size* | A value of 2048 when using *-genkeypair*, and *-keyalg* is `RSA`. |
| *supported_algorithm_name* | A valid signing algorithm NOT on the `jdk.certpath.disabledAlgorithms` list. For example: `SHA256withRSA`. |
| *validity_period* | A validity period in days according to your organization's security requirements |
| *valid_name* | Quoted string; When provided, it is used as the subject of the generated certificate. Otherwise, the one from the certificate request is used. For example: "CN=IADGovernanceDomain, OU=CustomerOrg, O=Customer, L=City, ST=NY, C=US") |

a. Generate the keypair using `SHA256withRSA` signing algorithm.

```
./keytool -genkeypair -alias xell \
              -keypass key_password \
              -keystore /temporary_dir/temp_keystore_name.jks \
              -storepass keystore_password \
              -keyalg supported_algorithm_name \
              -keysize key_size \
              -sigalg supported_algorithm_name \
              -validity validity_period \
              -dname vaild_name
```

For example:

```
./keytool -genkeypair -alias xell \
              -keypass yourkeypassword \
              -keystore /tmp/default-keystore.jks \
              -storepass yourkeystorepassword \
              -keyalg RSA \
              -keysize 2048 \
              -sigalg SHA256withRSA \
```

```
                -validity 3600 \
                -dname "CN=IADGovernanceDomain, OU=CustomerOrg,
O=Customer, L=City, ST=NY, C=US"
```

b. Generate CSR to be used to replace the certificate used for both the *xell* and *xeltrusted* aliases in the updated keystore.

```
/keytool -certreq -alias xell \
                -keypass key_password \
                -keyalg RSA \
                -file /tmp/cert_req_file_name.csr \
                -keystore /temporary_dir/temp_keystore_name.jks \
                -storepass keystore_password \
                -storetype jks
```

For example:

```
./keytool -certreq -alias xell \
                -keypass yourkeypassword \
                -keyalg RSA \
                -file /tmp/xell.csr \
                -keystore /tmp/default-keystore.jks \
                -storepass yourkeystorepassword \
                -storetype jks
```

c. Export the Certificate for the *xell* alias.

```
./keytool -exportcert -alias xell \
                -file /temporary_dir/certificate_name.cer \
                -keystore new_keystore_location/temp_keystore_name.jks \
                -storepass keystore_password \
                -rfc
```

For example:

```
./keytool -exportcert -alias xell \
                -file /tmp/xell.cer \
                -keystore /tmp/default-keystore.jks \
                -storepass yourkeystorepassword \
                -rfc
```

d. Import the same certificate with a second alias as *xeltrusted*. Respond with "yes" when prompted to confirm adding the same certificate under a new alias.

```
./keytool -importcert -alias xeltrusted \
                -file /temporary_dir/certificate_name.cer \
                -keystore /temporary_dir/temp_keystore_name.jks \
                -storepass keystore_password
```

For example:

```
./keytool -importcert -alias xeltrusted \
                -file /tmp/xell.cer \
```

```
                    -keystore /tmp/default-keystore.jks \
                    -storepass yourkeystorepassword

   Certificate already exists in keystore under alias <xell>
   Do you still want to add it? [no]: yes
   Certificate was added to keystore
```

4. Import the newly generated keystore into the existing keystore *DOMAIN_HOME*/config/fmwconfig/default-keystore.jks by running the following command:

   ```
   ./keytool –importkeystore –srckeystore new_keystore_location/
   new_keystore_name.jks -destkeystore DOMAIN_HOME/config/fmwconfig/
   default-keystore.jks -srcstorepass source_keystore_password -
   deststorepass destination_keystore_password -noprompt
   ```

   For example:

   ```
   ./keytool -importkeystore -srckeystore /tmp/default-keystore.jks -
   destkeystore DOMAIN_HOME/config/fmwconfig/default-keystore.jks -
   srcstorepass password -deststorepass password -noprompt
   ```

5. Log in to Enterprise Manager console and update the `xell` named CSF key under `oim` map, with the password value which is used above to generate the new key in keystore. In the above example, the password used is *password*.

6. Move the `<export file>.cert` and the `<cert_req>.csr` to the *DOMAIN_HOME*/config/fmwconfig/ location.

   ```
   cp /tm/xell.csr  DOMAIN_HOME/config/fmwconfig/
   ```

   ```
   cp /tmp/xell.cert  DOMAIN_HOME/config/fmwconfig/
   ```

7. If in an HA/Enterprise Deployment Guide Reference Architecture topology with multiple *DOMAIN_HOME*, copy the updated files to the Managed Server *DOMAIN_HOMEs* on each host.

   For example:

   ```
   cd ASERVER_DOMAIN_HOME/config/fmwconfig/

   scp ./default-keystore.jks ./xell.csr .xlserver.cert
   OIMHOST1:MSERVER_DOMAIN_HOME/config/fmwconfig/.

   scp ./default-keystore.jks ./xell.csr .xlserver.cert
   OIMHOST2:MSERVER_DOMAIN_HOME/config/fmwconfig/.
   ```

**Note:**

- For more information about using the keytool command, see keytool in the *Java Platform, Standard Edition Tools Reference*.
- The procedure described in this section for regenerating the `default-keystore.jks` or custom keystore includes self-signed certificates. If CA signed certificate is required, follow the standard process for the same, that is, generate the CSR and import the signed certificates in the keystore.

  During bootstrap process in OIM, the `default-keystore.jks` keystore will be configured in Keystore Service (KSS) out-of-the-box. In case of custom keystore,upload the given custom keystore to KSS after completing the upgrade. After you upload the given custom keystore to KSS, restart the servers.

  For more information about the Keystore Service commands, see OPSS Keystore Service Commands in *WLST Command Reference for Infrastructure Security*.

# Updating DB Wallets to Remove MD5 Algorithm (For SSL Enabled Setup)

If you have SSL enabled setup, update all of the DB wallets to remove any MD5 algorithms, as 12*c* (12.2.1.3.0) uses JDK 8 which does not support MD5 algorithm.

**Note:**

All these steps in this procedure must performed on the Database server. That is, on the server where OIM database is installed.

To update the DB wallet, do the following:

1. Create an Oracle Wallet with default trusted certificate using the following command:

   ```
   ./orapki wallet create -wallet <trust_wallet_name> -pwd password
   ```

   For example:
   ```
   ./orapki wallet create -wallet trust_wallet.p12 -pwd password
   ```

2. Add a self-signed certificate in the wallet with the distinguished name (DN) as `CN=root_test,C=US` using the following command:

   ```
   ./orapki wallet add -wallet trust_wallet_name -dn 'dn_name'-keysize 2048 -
   sign_alg sha256  -self_signed -validity 3650 -pwd password_of_wallet
   ```

   For example:
   ```
   ./orapki wallet add -wallet trust_wallet.p12 -dn 'CN=root_test,C=US' -
   keysize 2048 -sign_alg sha256 -self_signed -validity 3650 -pwd password
   ```

3. Export the self-signed trust certificate from the Oracle wallet to use it to sign other certificates, using the following command:

   ```
   ./orapki wallet export -wallet trust_wallet_name -dn 'dn_name' -cert
   trust_cert_file_name -pwd password_of_wallet
   ```

For example:

```
./orapki wallet export -wallet trust_wallet.p12 -dn
'CN=root_test,C=US' -cert wallet_trusted.cert -pwd password
```

4. You already have an Oracle Wallet with User Certificate identified. The user wallet is, *DB_HOME*/bin/user_wallet.p12. The DN of this user certificate is CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US. Remove the existing user certificate from this wallet using the following command:

   Where, *DB_HOME* is the server where OIM database is installed.

   ```
   ./orapki wallet  remove -wallet user_wallet_name -pwd
   password_of_existing_wallet -dn 'DN_name' -user_cert
   ```

   For example:

   ```
   ./orapki wallet remove -wallet user_wallet.p12 -pwd password -dn '
   CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US ' -user_cert
   ```

5. You already have an Oracle Wallet with Requested Certificate identified. The user wallet is, *DB_HOME*/bin/user_wallet.p12. The DN of this requested certificate is CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US. Remove the existing requested certificate from this wallet using the following command:

   ```
   ./orapki wallet  remove -wallet user_wallet_name -dn 'DN_name' –
   cert_req -pwd password_of_existing_wallet
   ```

   For example:

   ```
   ./orapki wallet remove -wallet user_wallet.p12 -dn
   'CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US' -cert_req -pwd
   password
   ```

6. You already have an Oracle Wallet with Trust Certificate identified. The user wallet is, *DB_HOME*/bin/user_wallet.p12. The DN of this trust certificate is CN=root_test,C=US. Remove the existing trust certificate from this wallet using the following command:

   ```
   ./orapki  wallet  remove  -wallet user_wallet_name -pwd password-of-
   existing_wallet  -dn  'DN_name' -trusted_cert
   ```

   For example:

   ```
   ./orapki wallet remove ¿wallet user_wallet.p12 -pwd password -dn  '
   CN=root_test,C=US' -trusted_cert
   ```

7. Add a user certificate in the existing user wallet with a distinguished name as CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US using the following command:

   ```
   ./orapki wallet add -wallet user_wallet_name -dn 'dn_name' -keysize
   2048 -sign_alg sha256 -pwd password_of_existing_wallet
   ```

   For example:

   ```
   ./orapki wallet add –wallet user_wallet.p12 -dn
   'CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US' -keysize 2048 -
   sign_alg sha256 -pwd password
   ```

8. Export the user certificate request to a file using the following command:

   ```
   ./orapki wallet export -wallet user_wallet_name -dn 'dn_name' –request
   CSR_file_name -pwd password_of_existing_wallet
   ```

   For example:

```
./orapki wallet export -wallet user_wallet.p12 -dn
'CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US' -request
server_creq.csr -pwd password
```

9. Sign the user certificate request using the trusted wallet that was created above, using the following command:

   ```
   ./orapki cert create -wallet trusted_wallet_name-request CSR_file_name -cert
   user_cert_file_name sign_alg sha256 -pwd password_of_exiting_user_wallet
   ```

   For example:
   ```
   ./orapki cert create -wallet trust_wallet.p12 -request server_creq.csr -cert
   wallet_user.cert  -sign_alg sha256 - validity 3650  -pwd password
   ```

10. Add the trusted certificate `wallet_trusted.cert` that you created using the above procedure to the wallet, by running the following command:

    ```
    ./orapki wallet add -wallet user_wallet_name -trusted_cert -cert
    trust_cert_file_name  -pwd password_of_exiting_user_wallet
    ```

    For example:
    ```
    ./orapki wallet add -wallet user_wallet.p12 -trusted_cert -cert
    wallet_trusted.cert -pwd  password
    ```

11. Add the signed user certificate to the Oracle wallet using the following command:

    ```
    ./orapki wallet add -wallet user_wallet -user_cert -cert user_cert_file_name
    -pwd password_of_exiting_user_wallet
    ```

    ```
    ./orapki wallet add ¿wallet user_wallet.p12 -user_cert -cert
    wallet_user.cert -pwd password
    ```

12. Remove the DB trusted certificate from server keystore. In case of demo identity and demo trust, remove from `default-keystore.jks`, and in case of custom identity and custom trust, remove it from the custom trust keystore, using the following command:

    ```
    ./keytool -delete -alias alias_of_db_cert -keystore custom_trust_store -
    storepass password-of-existing-trust-keystore
    ```

    For example:
    ```
    ./keytool -delete -alias dbtrusted -keystore DOMAIN_HOME/config/fmwconfig/
    custom_trust_store.jks -storepass password
    ```

13. Import self signed DB certifiacte in trust wallet using the following command:

    ```
    keytool -import -trustcacerts -alias <alias_of_db_cert>  -noprompt -keystore
    custom_trust_store -file DB_Trust_cert_file –storepass
    password_of_existing_trust_keystore
    ```

    For example:
    ```
    keytool -import -trustcacerts -alias dbtrusted -noprompt -keystore
    DOMAIN_HOME/config/fmwconfig/custom_trust_store.jks -file /DB_HOME/bin/
    wallet_trusted.cert -storepass password
    ```

# Verifying the Memory Settings

To avoid the memory issues for Oracle Identity Manager, ensure that the memory settings are updated as per the requirements.

On Linux, as a `root` user, do the following:

1. Ensure that you set the following parameters in the `/etc/security/limits.conf` or `/etc/security/limits.d` file, to the specified values:

   ```
   FUSION_USER_ACCOUNT soft nofile 32767
   FUSION_USER_ACCOUNT hard nofile 327679
   ```

2. Ensure that you set `UsePAM` to `Yes` in the `/etc/ssh/sshd_config` file.
3. Restart `sshd`.
4. Check the `maxproc` limit and increase it to a minimum of 16384, if needed. Increasing the limit will ensure you do not run into memory issues.

   Use the following command to check the limit:

   ```
   ulimit -u
   ```

   If less than 16384, use following command to increase the limit of open files:

   ```
   ulimit -u 16384
   ```

   > **Note:**
   >
   > You can verify that the limit has been set correctly by reissuing the command `ulimit -u`.

   To ensure that the settings persist at reboot, add the following line to the `/etc/security/limits.conf` file or `/etc/security/limits.d` file:

   ```
   oracle hard nproc 16384
   ```

   Where, `oracle` is the install user.
5. Log out (or reboot) and log in to the system again.

# Opening the Non-SSL Ports for SSL Enabled Setup

If you have an SSL enabled and non-SSL disabled setup, you must open the non-SSL ports for Servers and Database before you proceed with the Oracle Identity Manager upgrade.

To enable non-SSL ports for servers, complete the following steps:

1. Log in to the WebLogic Server Administration Console.
2. Click **Environment** > **Servers** > and select the required admin server.
3. On the **Settings for Server** page, click the **Configuration** tab, and then click **General**.
4. Click **Lock & Edit**.
5. Select **Listen Port Enabled**. The default port is `14000`.
6. Repeat the step 1 through step 5 for each required server in the domain.

> **Note:**
>
> After you complete the upgrade, you can undo these changes as required.

For database: Ensure that database listener is listening on the same TCP port for database servers that you provided to upgrade assistant as parameters. For more information, see Enabling SSL for Oracle Identity Governance DB.

## Backing Up the `metadata.mar` File Manually

After you install the 12*c* (12.2.1.3.0) binaries in a new Oracle Home, take a backup of the 12*c* (12.2.1.3.0)_*ORACLE_HOME*>`/idm/server/apps/oim.ear/metadata.mar` file before the upgrade.

# Installing Product Distributions

Before beginning your upgrade, download Oracle Fusion Middleware Infrastructure, Oracle SOA Suite, and Oracle Identity Manager 12*c* (12.2.1.3.0) distributions on the target system and install them using Oracle Universal Installer.

> **Note:**
>
> The 12c binaries are installed in a different location from the previous 11g binaries. You can install 12c binaries before any planned downtime for upgrade.

It is recommended that you use the simplified installation process to install the products mentioned above, using the quick installer (`fmw_12.2.1.3.0_idmquickstart_generic.jar`). The quick installer installs the Infrastructure, Oracle SOA Suite, and Oracle Identity Manager 12*c* (12.2.1.3.0) in one go.

> **Note:**
>
> If you are using Redundant binary locations, ensure that you install the software into each of those redundant locations.

See Installing Oracle Identity Governance Using Quick Installer in the *Installing and Configuring Oracle Identity and Access Management*.

The other option is to install the required product distributions — Infrastructure, Oracle SOA Suite, and Oracle Identity Manager 12*c* (12.2.1.3.0) separately. To do this, complete the following steps:

1. Sign in to the target system.
2. Download the following from Oracle Technical Resources or Oracle Software Delivery Cloud to your target system:
   - Oracle Fusion Middleware Infrastructure (`fmw_12.2.1.3.0_infrastructure_generic.jar`)

- Oracle SOA Suite (`fmw_12.2.1.3.0_soa_generic.jar`)
- Oracle Identity Manager (`fmw_12.2.1.3.0_idm_generic.jar`)

3. Change to the directory where you downloaded the 12*c* (12.2.1.3.0) product distribution.
4. Start the installation program for Oracle Fusion Middleware Infrastructure:
   - (UNIX) *JAVA_HOME*`/bin/java -jar fmw_12.2.1.3.0_infrastructure_generic.jar`
   - (Windows) *JAVA_HOME*`\bin\java -jar fmw_12.2.1.3.0_infrastructure_generic.jar`
5. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

   > **Note:**
   >
   > The Installation Inventory Setup screen does not appear on Windows operating systems.

6. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
7. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

   Click **Next**.
8. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see About the Directories for Installation and Configuration in *Planning an Installation of Oracle Fusion Middleware*.
9. On the Installation Type screen, select the following:
   - For Infrastructure, select **Fusion Middleware Infrastructure**
   - For Oracle SOA Suite, select **Oracle SOA Suite**
   - For Oracle Identity Manager, select **Oracle Identity and Access Management**

   Click **Next**.

10. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).

11. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.

12. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.

13. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

14. After you have installed Oracle Fusion Middleware Infrastructure, enter the following command to start the installer for your product distribution and repeat the steps above to navigate through the installer screens:

    For installing Oracle SOA Suite 12*c* (12.2.1.3.0), run the following installer:

    - (UNIX) `JAVA_HOME/bin/java -jar fmw_12.2.1.3.0_soa_generic.jar`
    - (Windows) `JAVA_HOME\bin\java -jar fmw_12.2.1.3.0_soa_generic.jar`

    For installing Oracle Identity Manager 12*c* (12.2.1.3.0), run the following installer:

    - (UNIX) `JAVA_HOME/bin/java -jar fmw_12.2.1.3.0_idm_generic.jar`
    - (Windows) `JAVA_HOME\bin\java -jar fmw_12.2.1.3.0_idm_generic.jar`

For more information about installing Oracle Identity Manager 12*c* (12.2.1.3.0), see Installing the Oracle Identity and Access Management Software in the *Installing and Configuring Oracle Identity and Access Management*.

# Installing the Latest Stack Patch Bundle

After you install the product distributions, Oracle strongly recommends you to apply the latest IDM Stack Patch Bundle (SPB) 12.2.1.3.0 before proceeding with the upgrade process. You can apply the patch by using the Opatch tool. Applying the SPB helps eliminate most of the upgrade issues or workarounds.

Following are the high-level tasks you should complete to apply the Stack Patch Bundle:

- **Initial Preparation**: In this phase, you stage the software, read the `README.txt` file, and verify and/or update the Opatch tool to the appropriate versions.
- **Analysis Phase**: In this phase, you run the `prestop` command with the variables from the `README.txt` file to determine if the system is ready for patching.
- **Patching Phase**: In this phase, you backup *MW_HOME* and *DOMAIN_HOME*, run the downtime command for OIG with the variables from the `README.txt` file, and then clear any temporary files.

> **Note:**
>
> At this point, you will not restart the servers. There is currently no link between the schemas, the local configuration, and the new bits. The remainder of the patching process will happen after the bootstrap.

To avoid a false failure during the domain Reconfiguration Phase of the upgrade, after completing the Patching Phase, update the following entries in the `config.xml` for the `com.oracle.cie.comdev_7.8.2.0` and `com.oracle.cie.xmldh_3.4.2.0` libraries:

```
<name>com.oracle.cie.comdev#3.0.0.0@7.8.2.0</name>
com.oracle.cie.comdev_7.8.2.0.jar


<name>com.oracle.cie.xmldh#2.0.0.0@3.4.2.0</name>
com.oracle.cie.xmldh_3.4.2.0.jar
```

From:

```
<library>
<name>com.oracle.cie.comdev#3.0.0.0@7.8.2.0</name>
<target>oim_cluster</target>
<source-path><MW_HOME>/oracle_common/modules/
com.oracle.cie.comdev_7.8.2.0.jar
</source-path>
<deployment-order>511</deployment-order>
<security-dd-model>DDOnly</security-dd-model>
<staging-mode>nostage</staging-mode>
</library>

<library>
<name>com.oracle.cie.xmldh#2.0.0.0@3.4.2.0</name>
<target>oim_cluster</target>
<source-path><MW_HOME>/oracle_common/modules/
com.oracle.cie.xmldh_3.4.2.0.jar<
/source-path>
<deployment-order>511</deployment-order>
<security-dd-model>DDOnly</security-dd-model>
<staging-mode>nostage</staging-mode>
</library>
```

To this:

```
<library>
<name>com.oracle.cie.comdev#3.0.0.0@7.8.4.0</name>
<target>oim_cluster</target>
<source-path><MW_HOME>/oracle_common/modules/
com.oracle.cie.comdev_7.8.4.0.jar
</source-path>
<deployment-order>511</deployment-order>
<security-dd-model>DDOnly</security-dd-model>
<staging-mode>nostage</staging-mode>
```

```
</library>

<library>
<name>com.oracle.cie.xmldh#2.0.0.0@3.4.4.0</name>
<target>oim_cluster</target>
<source-path><MW_HOME>/oracle_common/modules/
com.oracle.cie.xmldh_3.4.4.0.jar<
/source-path>
<deployment-order>511</deployment-order>
<security-dd-model>DDOnly</security-dd-model>
<staging-mode>nostage</staging-mode>
</library>
```

This update to the `config.xml` file changes the name of the libraries and version of the jar file in each library to the one that will be used post the patching process. If it is a cluster, ensure that both nodes have these settings.

For more information on the patching process, see Doc ID 2657920.1.

> **Note:**
>
> If you are using Windows or Solaris OS, download the individual Bundle Patches (BPs) from Doc ID 2457034.1.

After completing the upgrade, you have to perform the post-patch install steps. See Performing the Post-Patch Install Steps.

# Running a Pre-Upgrade Readiness Check

To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.

- About Running a Pre-Upgrade Readiness Check
  You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.
- Starting the Upgrade Assistant in Readiness Mode
  Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.
- Performing a Readiness Check with the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.
- Understanding the Readiness Report
  After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

# About Running a Pre-Upgrade Readiness Check

You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.

The Upgrade Assistant readiness check performs a read-only, pre-upgrade review of your Fusion Middleware schemas and WebLogic domain configurations that are at a supported starting point. The review is a read-only operation.

The readiness check generates a formatted, time-stamped readiness report so you can address potential issues before you attempt the actual upgrade. If no issues are detected, you can begin the upgrade process. Oracle recommends that you read this report thoroughly before performing an upgrade.

You can run the readiness check while your existing Oracle Fusion Middleware domain is online (while other users are actively using it) or offline.

You can run the readiness check any number of times before performing any actual upgrade. However, do not run the readiness check after an upgrade has been performed, as the report results may differ from the result of pre-upgrade readiness checks.

> **Note:**
>
> To prevent performance from being affected, Oracle recommends that you run the readiness check during off-peak hours.

# Starting the Upgrade Assistant in Readiness Mode

Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.

To perform a readiness check on your pre-upgrade environment with the Upgrade Assistant:

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`

   Where, *ORACLE_HOME* is the 12c Oracle Home.
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

> **Note:**
>
> If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter the following error:
>
> ```
> Xlib: connection to ":1.0" refused by server
> Xlib: No protocol specified
> ```
>
> To resolve this issue you need to set the `DISPLAY` variable to the host and desktop where a valid `X` environment is working.
>
> For example, if you are running an `X` environment inside a VNC on the local host in desktop 6, then you would set `DISPLAY=:6`. If you are running `X` on a remote host on desktop 1 then you would set this to `DISPLAY=remoteHost:1`.

For information about other parameters that you can specify on the command line, see:

- Upgrade Assistant Parameters

## Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

**Table 3-3 Upgrade Assistant Command-Line Parameters**

| Parameter | Required or Optional | Description |
|---|---|---|
| `-readiness` | Required for readiness checks<br>**Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server). | Performs the upgrade readiness check without performing an actual upgrade.<br>Schemas and configurations are checked.<br>Do not use this parameter if you have specified the `-examine` parameter. |
| `-threads` | Optional | Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas.<br>The value must be a positive integer in the range 1 to 8. The default is 4. |
| `-response` | Required for silent upgrades or silent readiness checks | Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens). |

**Table 3-3 (Cont.) Upgrade Assistant Command-Line Parameters**

| Parameter | Required or Optional | Description |
|---|---|---|
| `-examine` | Optional | Performs the examine phase but does not perform an actual upgrade.<br>Do not specify this parameter if you have specified the `-readiness` parameter. |
| `-logLevel` *attribute* | Optional | Sets the logging level, specifying one of the following attributes:<br>• `TRACE`<br>• `NOTIFICATION`<br>• `WARNING`<br>• `ERROR`<br>• `INCIDENT_ERROR`<br>The default logging level is `NOTIFICATION`.<br>Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used. |
| `-logDir` *location* | Optional | Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files.<br>The default locations are:<br>(UNIX)<br>*ORACLE_HOME*`/oracle_common/upgrade/logs`<br>*ORACLE_HOME*`/oracle_common/upgrade/temp`<br>(Windows)<br>*ORACLE_HOME*`\oracle_common\upgrade\logs`<br>*ORACLE_HOME*`\oracle_common\upgrade\temp` |
| `-help` | Optional | Displays all of the command-line options. |

# Performing a Readiness Check with the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

Readiness checks are performed only on schemas or component configurations that are at a supported upgrade starting point.

To complete the readiness check:

1. On the Welcome screen, review information about the readiness check. Click **Next**.
2. On the Readiness Check Type screen, select the readiness check that you want to perform:
   - **Individually Selected Schemas** allows you to select individual schemas for review before upgrade. The readiness check reports whether a schema is supported for an upgrade or where an upgrade is needed.
     When you select this option, the screen name changes to Selected Schemas.
   - **Domain Based** allows the Upgrade Assistant to discover and select all upgrade-eligible schemas or component configurations in the domain specified in the **Domain Directory** field.
     When you select this option, the screen name changes to Schemas and Configuration.

     Leave the default selection if you want the Upgrade Assistant to check all schemas and component configurations at the same time, or select a specific option:
     - **Include checks for all schemas** to discover and review all components that have a schema available to upgrade.
     - **Include checks for all configurations** to review component configurations for a managed WebLogic Server domain.

   Click **Next**.
3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components that have a schema available to upgrade for which you want to perform a readiness check.

   If you selected **Domain Based**: On the Component List screen, review the list of components that are present in your domain for which you want to perform a readiness check.

   If you select a component that has dependent components, those components are automatically selected. For example, if you select Oracle Platform Security Services, Oracle Audit Services is automatically selected.

   Depending on the components you select, additional screens may display. For example, you may need to:
   - Specify the Administrator server domain directory.

     Ensure that you specify the 11.1.2.3.0 Administrator server domain directory.
   - Specify schema credentials to connect to the selected schema: **Database Type**, **DBA User Name**, and **DBA Password**. As part of the pre-upgrade requirements, you had created the required user, see Creating a Non-SYSDBA User to Run the Upgrade Assistant.

     Then click **Connect**.

> **Note:**
>
> Oracle database is the default database type. Make sure that you select the correct database type before you continue. If you discover that you selected the wrong database type, do not go back to this screen to change it to the correct type. Instead, close the Upgrade Assistant and restart the readiness check with the correct database type selected to ensure that the correct database type is applied to all schemas.

- Select the **Schema User Name** option and specify the **Schema Password**.

Click **Next** to start the readiness check.

4. On the Readiness Summary screen, review the summary of the readiness checks that will be performed based on your selections.

   If you want to save your selections to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   > **Note:**
   >
   > When performing a silent execution by specifying the response file on the Upgrade Advisor command line, some tests in the upgrade advisor may dynamically look-up the JDBC URL connection strings directly from the source domain, regardless of values stored in the response file. If the DB connection strings in the response file needs to be customized in any way, changes to the response file may not effect execution. If this occurs, the source domain datasource JDBC URLs may need to be edited directly.

   For a detailed report, click **View Log**.

   Click **Next**.

5. On the Readiness Check screen, review the status of the readiness check. The process can take several minutes.

   If you are checking multiple components, the progress of each component displays in its own progress bar in parallel.

   When the readiness check is complete, click **Continue**.

6. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):

   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.

- If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

## Understanding the Readiness Report

After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

The format of the readiness report file is:

`readiness_`*`timestamp`*`.txt`

where *`timestamp`* indicates the date and time of when the readiness check was run.

A readiness report contains the following information:

**Table 3-4 Readiness Report Elements**

| Report Information | Description | Required Action |
|---|---|---|
| Overall Readiness Status: SUCCESS or FAILURE | The top of the report indicates whether the readiness check passed or completed with one or more errors. | If the report completed with one or more errors, search for FAIL and correct the failing issues before attempting to upgrade. You can re-run the readiness check as many times as necessary before an upgrade. |
| Timestamp | The date and time that the report was generated. | No action required. |
| Log file location *`ORACLE_HOME`*`/oracle_common/upgrade/logs` | The directory location of the generated log file. | No action required. |
| Readiness report location *`ORACLE_HOME`*`/oracle_common/upgrade/logs` | The directory location of the generated readiness report. | No action required. |
| Names of components that were checked | The names and versions of the components included in the check and status. | If your domain includes components that cannot be upgraded to this release, such as SOA Core Extension, do not attempt an upgrade. |
| Names of schemas that were checked | The names and current versions of the schemas included in the check and status. | Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade. |
| Individual Object Test Status: FAIL | The readiness check test detected an issue with a specific object. | Do not upgrade until all failed issues have been resolved. |

**Table 3-4 (Cont.) Readiness Report Elements**

| Report Information | Description | Required Action |
|---|---|---|
| Individual Object Test Status: PASS | The readiness check test detected no issues for the specific object. | If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade. |
| Completed Readiness Check of <Object> Status: FAILURE | The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype. | Do not upgrade until all failed issues have been resolved. |
| Completed Readiness Check of <Object> Status: SUCCESS | The readiness check test detected no issues. | No action required. |

Here is a sample Readiness Report file. Your report may not include all of these checks.

> **Note:**
>
> If the following warning occurs, install Patch 27830741 and re-run the readiness check to ensure that this warning is eliminated before continuing.
>
> ```
> [oracle] [WARNING] []
> [com.oracle.cie.domain.template.catalog.impl.LocalTemplateCat] [tid:
> 13] [ecid: 7b6f129a-3761-461b-a64a-fb41fa79c822-00000002,0] Couldn't
> load [/u01/oracle/products/12c/identity/soa/common/templates/wls/
> oracle.bpm.jms.reconfig_template_12.2.1.3.0.jar].[[
> java.util.MissingResourceException: Not managing namespace: (config).
>       at
> com.oracle.cie.common.util.ResourceBundleManager.getPublishedMessage(Res
> ourceBundleManager.java:249
> ```

```
Upgrade readiness check completed with one or more errors.

This readiness check report was created on Tue May 30 11:15:52 EDT 2016
Log file is located at: ORACLE_HOME/oracle_common/upgrade/logs/
ua2016-05-30-11-14-06AM.log
Readiness Check Report File: ORACLE_HOME/oracle_common/upgrade/logs/
readiness2016-05-30-11-15-52AM.txt

Starting readiness check of components.

Oracle Metadata Services
   Starting readiness check of Oracle Metadata Services.
     Schema User Name: DEV11_MDS
     Database Type: Oracle Database
     Database Connect String: machinename@yourcompany.com
```

```
     VERSION Schema DEV11_MDS is currently at version 12.1.1.1.0.  Readiness
checks will now be performed.
   Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
   Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
   Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
     EXCEPTION     Schema is missing a required procedure:
GETREPOSITORYFEATURES
   Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the schema
contains all the required stored procedures +++ FAIL
   Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema contains
all the required database views
   Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_REQUIRED_INDEXES -->
Test that the table contains all the required indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_REQUIRED_INDEXES -->
Test that the table contains all the required indexes +++ PASS
   Starting index test for table MDS_COMPONENTS:  TEST_REQUIRED_INDEXES -->
Test that the table contains all the required indexes
   Completed index test for table MDS_TXN_LOCKS: TEST_REQUIRED_INDEXES -->
Test that the table contains all the required indexes +++ PASS
   Starting schema test:  TEST_REQUIRED_TRIGGERS  Test that the schema has
all the required triggers
   Completed schema test: TEST_REQUIRED_TRIGGERS --> Test that the schema
has all the required triggers +++ PASS
   Starting schema test:  TEST_MISSING_COLUMNS  Test that tables and views
are not missing any required columns
   Completed schema test: TEST_MISSING_COLUMNS --> Test that tables and
views are not missing any required columns +++ PASS
   Starting schema test:  TEST_UNEXPECTED_TABLES  Test that the schema does
not contain any unexpected tables
   Completed schema test: TEST_UNEXPECTED_TABLES --> Test that the schema
does not contain any unexpected tables +++ PASS
   Starting schema test:  TEST_UNEXPECTED_PROCEDURES  Test that the schema
does not contain any unexpected stored procedures
   Completed schema test: TEST_UNEXPECTED_PROCEDURES --> Test that the
schema does not contain any unexpected stored procedures +++ PASS
   Starting schema test:  TEST_UNEXPECTED_VIEWS  Test that the schema does
not contain any unexpected views
   Completed schema test: TEST_UNEXPECTED_VIEWS --> Test that the schema
does not contain any unexpected views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_UNEXPECTED_INDEXES --
> Test that the table does not contain any unexpected indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_UNEXPECTED_INDEXES --
> Test that the table does not contain any unexpected indexes +++ PASS
   Completed index test for table MDS_LABELS: TEST_UNEXPECTED_INDEXES -->
Test that the table does not contain any unexpected indexes +++ PASS
   Starting index test for table MDS_LARGE_ATTRIBUTES:
TEST_UNEXPECTED_INDEXES --> Test that the table does not contain any
unexpected indexes
   Starting schema test:  TEST_UNEXPECTED_TRIGGERS  Test that the schema
does not contain any unexpected triggers
```

```
   Completed schema test: TEST_UNEXPECTED_TRIGGERS --> Test that the
schema does not contain any unexpected triggers +++ PASS
   Starting schema test:  TEST_UNEXPECTED_COLUMNS  Test that tables
and views do not contain any unexpected columns
   Completed schema test: TEST_UNEXPECTED_COLUMNS --> Test that tables
and views do not contain any unexpected columns +++ PASS
   Starting datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the
proper datatypes
   Completed datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the
proper datatypes +++ PASS
   Starting datatype test for table MDS_COMPONENTS:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the
proper datatypes
   Starting permissions test:  TEST_DBA_TABLE_GRANTS  Test that DBA
user has privilege to view all user tables
   Completed permissions test: TEST_DBA_TABLE_GRANTS --> Test that DBA
user has privilege to view all user tables +++ PASS
   Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
   Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the
schema tablespaces automatically extend if full +++ PASS
   Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that
tablespace quota for this user is sufficient to perform the upgrade
   Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade ++
+ PASS
   Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
   Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
   Starting schema test:  TEST_DATABASE_VERSION  Test that the
database server version number is supported for upgrade
     INFO   Database product version: Oracle Database 11g Enterprise
Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing
options
   Completed schema test: TEST_DATABASE_VERSION --> Test that the
database server version number is supported for upgrade +++ PASS
   Finished readiness check of Oracle Metadata Services with status:
FAILURE.
```

Some errors may be related to the Oracle Fusion Middleware Infrastructure product components rather than Identity and Access Management product components. If errors occur, see Troubleshooting the Infrastructure Upgrade in the *Upgrading to the Oracle Fusion Middleware Infrastructure* Guide for potential workarounds.

If you are running the 12.1.3.0 version of Oracle Fusion Middleware IAU Schemas, and those schemas were upgraded from 11*g* (11.1.1.7 and later) or 12*c* (12.1.2.0), your readiness check may fail with the following error:

> **Note:**
>
> This is not applicable for Oracle Identity Manager.

```
Starting index test for table IAU_COMMON:  TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes
     INFO Audit schema index DYN_EVENT_CATEGORY_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_EVENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_TENANT_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_COMPONENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_TENANT_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
   Completed index test for table IAU_COMMON: TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes +++ FAIL
```

> **Note:**
>
> You can ignore the missing index error in the readiness report. This is a known issue. The corresponding missing index is added during the schema upgrade operation. This error does not occur if the schema to be upgraded was created in 12*c* using the RCU.

# Creating the Required 12*c* Schemas Using RCU

When upgrading from 11g, you must create the required 12c schemas. If your setup is not SSL enabled, you can use the Upgrade Assistant to create schemas by using the default schema settings. In case of SSL enabled setup, you can use the Repository Creation Utility (RCU) to create customized schemas. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.

> **Note:**
>
> This step is not required for non-SSL setup, as the Upgrade Assistant creates the necessary 12*c* schemas during the upgrade process.
>
> For SSL enabled setup, you must run the RCU to create the necessary 12*c* schemas.

> **Note:**
>
> If you are upgrading from a previous 12*c* release of Oracle Fusion Middleware, you do not need to re-create these schemas if they already exist. Refer to the steps below to identify the existing schemas in your domain.

The following schemas must exist before you upgrade to 12*c*. If you are upgrading from 11*g*, and you are not sure which schemas you currently have, refer to the steps below to identify the existing schemas in your domain. You do not need to re-create these schemas if they already exist.

- **Service Table** schema (*prefix*_STB). This schema is new in 12*c* and is required for domain-based upgrades. It stores basic schema configuration information (for example, schema prefixes and passwords) that can be accessed and used by other Oracle Fusion Middleware components during the domain creation. This schema is automatically created when you run the Repository Creation Utility (RCU), where you specify the existing schema owner prefix that you used for your other 11*g* schemas.

  > **Note:**
  >
  > If the Service Table schema does not exist, you may encounter the error message `UPGAST-00328 : The schema version registry table does not exist on this database. If that happens it is necessary to create the service table schema in order to run Upgrade Assistant`

- **Oracle Platform Security Services (OPSS)** schema (*prefix*_OPSS). This schema is required if you are using an OID-based security store in 11*g*. This schema is automatically created when you run the Repository Creation Utility (RCU). The only supported LDAP-based OPSS security store is Oracle Internet Directory (OID). An LDAP-based policy store is typically used in production environments. You do not need to reassociate an OID-based security store before upgrade. While the Upgrade Assistant is running, you can select the OPSS schema. The Upgrade Assistant upgrades the OID-based security store automatically.

  > **Note:**
  >
  > The 12*c* OPSS database schema is required so that you can reference the 12*c* schema during the reconfiguration of the domain. Your domain continues to use the OID-based security store after the upgrade is complete.

To create the 12*c* schemas with the RCU:

1. (Optional) If you are upgrading from 11*g*, and you wish to confirm the schemas which are present in your existing domain, then connect to the database as a user with DBA privileges, and run the following code from SQL*Plus:

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY ORDER BY MRC_NAME, COMP_ID ;
```

2. Verify that a certified JDK already exists on your system by running `java -version` from the command line. For 12*c* (12.2.1.3.0), the certified JDK is 1.8.0_131 and later.

   Ensure that the `JAVA_HOME` environment variable is set to the location of the certified JDK. For example:

   - (UNIX) `setenv JAVA_HOME=/home/Oracle/Java/jdk1.8.0_131`
   - (Windows) `set JAVA_HOME=C:\home\Oracle\Java\jdk1.8.0_131`

   Add `$JAVA_HOME/bin` to `$PATH`.

3. Go to the `oracle_common/bin` directory:

   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\bin`

4. Start the RCU:

   - (UNIX) `./rcu`
   - (Windows) `rcu.bat`

5. On the Welcome screen, click **Next**.

6. On the Create Repository screen, select **Create Repository** and then select **System Load and Product Load**.

   If you do not have DBA privileges, select **Prepare Scripts for System Load**. This will generate a SQL script containing all the same SQL statements and blocks that would have been called if the RCU were to execute the actions for the selected components. After the script is generated, a user with the necessary SYS or SYSDBA privileges can execute the script to complete the system load phase.
   Click **Next**.

7. On the Database Connection Details screen, select the **Database Type** and enter the connection information for the database that hosts the 11*g* schemas. See the table below:

> **Note:**
>
> If using a recent database version and you have validated your database version as recommended, you may ignore the following popup warning and proceed with RCU execution.
>
> The selected database is more recent than the supported list of certified databases for this version of Oracle Fusion Middleware. See Oracle Fusion Middleware Supported System Configurations on the Oracle Technical Resources for the most recent list of certified databases.

**Table 3-5 Connection Credentials for Oracle Databases and Oracle Databases with Edition-Based Redefinition**

| Option | Description and Example |
|---|---|
| Host Name | Specify the name of the server where your database is running in the following format:<br>`examplehost.exampledomain.com`<br>For Oracle RAC databases, specify the SCAN name or one of the node names in this field. |
| Port | Specify the port number for your database. The default port number for Oracle databases is `1521`. |
| Service Name | Specify the service name for the database. Typically, the service name is the same as the global database name.<br>For Oracle RAC databases, specify the service name of one of the nodes in this field. For example:<br>`examplehost.exampledomain.com` |
| Username | Specify the FMW user created for the upgrade process, or specify another SYSDBA user account for your database. The Oracle Database default SYSDBA account is `SYS`. |
| Password | Enter the password for your database user. |
| Role | Select the database user's role from the drop-down list:<br>**Normal** or **SYSDBA** |

8. On the Select Components screen, select **Select existing prefix** and select the prefix that was used to create the existing 11*g* schemas from the drop-down menu (for example, `DEV11G`). This prefix is used to logically group schemas together for use in this domain. Select the following schemas:
   - If you are upgrading an SSL enabled setup, select the following schemas:
     - `User Messaging Service (`*`prefix`*`_UMS)`
     - `Weblogic Services (`*`prefix`*`_WLS)`
     - `Audit services (`*`prefix`*`_IAU_APPEND and `*`prefix`*`_IAU_VIEWER)`

     > **Note:**
     >
     > The Common Infrastructure Services (`prefix_STB`) and Oracle Platform Security Services (`prefix_OPSS`) schemas are selected by default. IAU is greyed out if 11*g* is configured for Audit Data Store.

   - If you are upgrading a non-SSL enabled setup, select the following schemas:
     - `Weblogic Services (`*`prefix`*`_WLS)`
     - `Audit services (`*`prefix`*`_IAU_APPEND and `*`prefix`*`_IAU_VIEWER)`

> **Note:**
>
> The User Messaging Service (`prefix_UMS`) should be un-checked when upgrading a non-SSL enabled setup. The existing 11g `prefix_ORASDPM` schema will be upgraded in-place. The `prefix_UMS` schema would be orphaned by the upgrade process and is unnecessary.

> **Note:**
>
> All the required schemas will be created by the Upgrade Assistant (UA) at the time of upgrading the schemas, if they are not created in this step using RCU.

Make a note of the prefix and schema names for the components you are installing as you will need this information when you configure the installation. Click **Next**.

9. In the Checking Prerequisites dialog, verify that the prerequisites check is successful, then click **OK**.
10. On the Schema Passwords screen, specify the passwords for your schema owners.

    Make a note of the passwords you enter on this screen as you will need this information while configuring your product installation.
11. On the Map Tablespaces screen, configure the required tablespace mapping for the schemas to be created. Also, select the **Encrypt Tablespace** checkbox if it appears, and then click **Next**. Click **OK** in the confirmation dialog when it appears. Finally, click **OK** when the progress dialog shows that the tablespace creation is complete.

> **Note:**
>
> The **Encrypt Tablespace** checkbox will appear if your Oracle or Oracle EBR database has Transparent Data Encryption (TDE) enabled when you start the RCU.

12. Verify the information on the Summary screen and click **Create** to begin schema creation.

    This screen contains information about the log files that were created from this RCU operation. Click on the name of a particular log file to view the contents of that file.
13. Review the information on the Completion Summary screen to verify that the operation is completed successfully. Click **Close** to complete the schema creation.

# Tuning Database Parameters for Oracle Identity Manager

Before you upgrade the schemas, you must tune the Database parameters for Oracle Identity Manager.

See Performance Tuning Guidelines and Diagnostics Collection for Oracle Identity Manager (OIM) (Doc ID 1539554.1).

Additionally, connect to the OPSS schema and execute the following queries to improve the performance:

```
create index  IDX_ATTR_DNID1 on  JPS_ATTRS( JPS_DN_ENTRYID,  ATTRNAME,
ATTRVAL);
alter index  IDX_ATTR_DNID1 noparallel;
drop index IDX_ATTR_DNID;
alter index   IDX_ATTR_DNID1 rename to IDX_ATTR_DNID;
drop index IDX_ATTR_NAME;
create index IDX_ATTR_NAME on
JPS_ATTRS(ATTRNAME,JPS_DN_ENTRYID,ATTRVAL);
```

# Stopping Servers and Processes

Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server, Node manager, and any managed servers.

An Oracle Fusion Middleware environment can consist of an Oracle WebLogic Server domain, an Administration Server, multiple managed servers, Java components, system components such as Identity Management components, and a database used as a repository for metadata. The components may be dependent on each other, so they must be stopped in the correct order.

> **Note:**
>
> The procedures in this section describe how to stop the existing, pre-upgrade servers and processes using the WLST command-line utility or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager.

> **Note:**
>
> Stop all of the servers in your deployment, except for the Database. The Database must be up during the upgrade process.

To stop your pre-upgrade Fusion Middleware environment, navigate to the pre-upgrade domain and follow the steps below.

**Step 1: Stop System Components**

To stop 11g system components, such as Oracle HTTP Server, use the `opmnctl` script:

> **Note:**
>
> If the Oracle HTTP server is shared with other services, then you can choose *not* to stop the Oracle HTTP server.

- (UNIX) *OHS_INSTANCE_HOME*/bin/opmnctl stopall
- (Windows) *OHS_INSTANCE_HOME*\bin\opmnctl stopall

You can stop system components in any order.

### Step 2: Stop the Managed Servers

Depending on the method you followed to start the managed servers, follow one of the following methods to stop the WebLogic Managed Server:

**Method 1**: To stop a WebLogic Server Managed Server not managed by Node Manager:

- (UNIX) *DOMAIN_HOME*/bin/stopManagedWebLogic.sh *managed_server_name admin_url*
- (Windows) *DOMAIN_HOME*\bin\stopManagedWebLogic.cmd *managed_server_name admin_url*

When prompted, enter your user name and password.

**Method 2**: To stop a WebLogic Server Managed Server by using the Weblogic Console:

- Log into Weblogic console as a `weblogic` Admin.
- Go to **Servers** > **Control** tab.
- Select the required managed server.
- Click **Shutdown**.

**Method 3**: To stop a WebLogic Server Managed Server using node manager, run the following commands:

```
wls:/offline>nmConnect('nodemanager_username','nodemanager_password',
            'AdminServerHostName','5556','domain_name',
            'DOMAIN_HOME')

wls:/offline>nmKill('ManagedServerName')
```

### Step 3: Stop the Administration Server

When you stop the Administration Server, you also stop the processes running in the Administration Server, including the WebLogic Server Administration Console and Fusion Middleware Control.

Follow one of the following methods to stop the Administration Server:

**Method 1**: To stop the Administration Server not managed by Node Manager:

- (UNIX) *DOMAIN_HOME*/bin/stopWebLogic.sh
- (Windows) *DOMAIN_HOME*\bin\stopWebLogic.cmd

When prompted, enter your user name, password, and the URL of the Administration Server.

**Method 2**: To stop a Administration Server by using the Weblogic Console:

- Log into Weblogic console as a `weblogic` Admin.
- Go to **Servers** > **Control** tab.
- Select the required admin server.
- Click **Shutdown**.

**Method 3**: To stop a WebLogic Server Managed Server using node manager, run the following commands:

```
wls:/offline>nmConnect('nodemanager_username','nodemanager_password',
            'AdminServerHostName','5556','domain_name',
            'DOMAIN_HOME')

wls:/offline>nmKill('AdminServer')
```

**Step 4: Stop Node Manager**

To stop Node Manager, run the following command:

```
kill $(ps -ef | grep nodemanager | | awk '{print $2}')
```

# Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

> **Note:**
>
> High waits and performance degradation may be seen due to 'library cache lock' (cycle)<='library cache lock' for DataPump Worker (DW) processes in the 12.2 RAC environment. To resolve this issue, you should disable S-Optimization by using the following command:
>
> ```
> ALTER SYSTEM SET "_lm_share_lock_opt"=FALSE SCOPE=SPFILE
> SID='*';
> ```
>
> After running the above command, restart all the RAC instances. After the upgrade is complete, you can reset the parameter by using the following command:
>
> ```
> alter system reset "_lm_share_lock_opt" scope=spfile sid='*';
> ```

- Identifying Existing Schemas Available for Upgrade
  This optional task enables you to review the list of available schemas before you begin the upgrade by querying the schema version registry. The registry contains schema information such as version number, component name and ID, date of creation and modification, and custom prefix.
- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

- Upgrading Oracle Identity Manager Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

## Identifying Existing Schemas Available for Upgrade

This optional task enables you to review the list of available schemas before you begin the upgrade by querying the schema version registry. The registry contains schema information such as version number, component name and ID, date of creation and modification, and custom prefix.

You can let the Upgrade Assistant upgrade all of the schemas in the domain, or you can select individual schemas to upgrade. To help decide, follow these steps to view a list of all the schemas that are available for an upgrade:

1. If you are using an Oracle database, connect to the database by using an acount that has Oracle DBA privileges, and run the following from SQL*Plus:

```
SET LINE 120
SET PAGESIZE 20
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY ORDER BY VERSION, MRC_NAME, COMP_ID;
```

2. Examine the report that is generated.

   If an upgrade is not needed for a schema, the `schema_version_registry` table retains the schema at its pre-upgrade version.

3. Note the schema prefix name that was used for your existing schemas. If you are using RCU for creating new 12c schemas, use the same prefix.

**Notes:**

- If you used an OID-based policy store in 11*g*, make sure to create a new OPSS schema before you perform the upgrade. After the upgrade, the OPSS schema remains an LDAP-based store.
- You can only upgrade schemas for products that are available for upgrade in Oracle Fusion Middleware release 12*c* (12.2.1.3.0). Do not attempt to upgrade a domain that includes components that are not yet available for upgrade to 12*c* (12.2.1.3.0).

# Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.
>
> To ensure that UTF-8 is used by the JVM, use the JVM option `-Dfile.encoding=UTF-8`.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Set a parameter for the Upgrade Assistant to include the JVM encoding requirement:
   - (UNIX) `export UA_PROPERTIES="-Dfile.encoding=UTF-8"`
   - (Windows) `set UA_PROPERTIES="-Dfile.encoding=UTF-8"`
3. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

> **Note:**
>
> In the above command, *ORACLE_HOME* refers to the 12*c* (12.2.1.3.0) Oracle Home.

For information about other parameters that you can specify on the command line, such as logging parameters, see:

# Upgrading Oracle Identity Manager Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

**Note:**

- If the pre-upgrade environment has 11g Audit schema (IAU), you must first upgrade Audit schema only, using the **Individually Selected Schema** option on the Selected Schemas screen, and selecting **Oracle Audit Services** schema. Ensure that you select the appropriate IAU schema from the list of available IAU schemas. The upgrade assistant will not detect the corresponding IAU schema from the provided domain directory automatically. Hence, you must select it manually. Once the IAU schema is upgraded, run the Upgrade Assistant again to upgrade the remaining schemas using the **All Schema Used by a domain** option on the Selected Schemas screen.
- If there is no Audit schema (IAU) in your pre-upgrade environment, use the **All Schema Used by a Domain** option on the Selected Schemas screen and proceed.
- To check whether the pre-upgrade environment has the IAU schema and its version, run the following SQL command using a user with sysdba privileges:

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY WHERE COMP_ID LIKE '%IAU%' ORDER BY
VERSION, MRC_NAME, COMP_ID ;
```

  This command lists the IAU schemas available in your configured database, and their version.

**Note:**

For SSL enabled setup, it is mandatory to run the Repository Creation Utility (RCU) to upgrade the existing schemas. For more information, see Creating the Required 12c Schemas Using RCU (Optional). For non-SSL enabled setup, running RCU to upgrade schemas is optional.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select the schema upgrade operation that you want to perform:

   - **Individually Selected Schemas** if you want to select individual schemas for upgrade and you do not want to upgrade all of the schemas used by the domain.

     > **Caution:**
     >
     > Upgrade only those schemas that are used to support your 12*c* (12.2.1.3.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 12*c* (12.2.1.3.0).

   - **All Schemas Used by a Domain** to allow the Upgrade Assistant to discover and select all components that have a schema available to upgrade in the domain specified in the **Domain Directory** field. This is also known as a *domain assisted schema upgrade*. Additionally, the Upgrade Assistant pre-populates connection information on the schema input screens.

     > **Note:**
     >
     > Oracle recommends that you select **All Schemas Used by a Domain** for most upgrades to ensure all of the required schemas are included in the upgrade.

   > **Note:**
   >
   > If your OIM database has only the SSL port open, select **Individually Selected Schemas** option, and then select Oracle Identity Manager schema only. This automatically selects the dependant schemas. For upgrading SSL enabled setup, you must provide the non-SSL Database connection details on the Schema Credentials screen.

   Click **Next**.

3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components for which you want to upgrade schemas. When you select a component, the schemas and any dependencies are automatically selected.

> **Note:**
>
> For the individual schema option, the domain configuration is not accessed, and therefore password values are carried forward from the previous screen. If you encounter any connection failure, check the cause and fix it.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Schema Credentials screen(s), specify the database connection details for each schema you are upgrading (the screen name changes based on the schema selected):
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.

> **Note:**
>
> The component ID or schema name is changed for `UCSUMS` schema as of release 12.1.2, which means the Upgrade Assistant does not automatically recognize the possible schemas and display them in a drop-down list. You must manually enter the name in a text field. The name can be either *prefix*`_ORASDPM` or *prefix*`_UMS`, depending on the starting point for the upgrade.
> **11*g* to 12*c* Upgrades Only**: The `UCSUMS` schema is not auto-populated. Enter *prefix*`_ORASDPM` as the user. The upgrade environment uses `_ORASDPM` as the schema name, whereas in the 12*c* environment it is referred to as `_UMS`.

6. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

7. On the Upgrade Summary screen, review the summary of the options you have selected for schema upgrade.

   Verify that the correct Source and Target Versions are listed for each schema you intend to upgrade.

   If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   Click **Upgrade** to start the upgrade process.

8. On the Upgrade Progress screen, monitor the status of the upgrade.

   > **Caution:**
   >
   > Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

   If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

   > **Note:**
   >
   > The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

   Click **Next**.

9. After the upgrade completes successfully, the Upgrade Assistant provides the upgrade status and lists the next steps to take in the upgrade process. You should review the Upgrade Success screen of the Upgrade Assistant to determine the next steps based on the information provided. The wizard shows the following information:

```
Upgrade Succeeded.

Log File: /u01/oracle/products/12c/identity/oracle_common/upgrade/logs/
ua2020-09-15-18-27-29PM.txt
Post Upgrade Text file: /u01/oracle/products/12c/identity/oracle_common/upgrade/
logs/postupgrade2020-09-15-18-27-29PM.txt
Next Steps

Oracle SOA
1. The Upgrade Assistant has successfully upgraded all active instances. You can
now close the Upgrade Assistant.
2. The automated upgrade of closed instances will continue in the background after
the Upgrade Assistant is exited and until the SOA server is started,at which point
the upgrade will stop. You can schedule the upgrade of any remaining closed
instances for a time when the SOA server is less busy.
   Close the Upgrade Assistant and use the instance data administration scripts to
administer and monitor the overall progress of this automated upgrade. For more
information see "Administering and Monitoring the Upgrade of SOA Instance Data" in
Upgrading SOA Suite and Business Process Management.
```

Click **Close** to complete the upgrade and close the wizard.

If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *ORACLE_HOME*/oracle_common/upgrade/logs.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

## Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

If you are using an Oracle database, connect to the database as a user having Oracle DBA privileges, and run the following from SQL*Plus to get the current version numbers:

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY ORDER BY MRC_NAME, COMP_ID ;
```

In the query result:

- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 12.2.1.3.0.

  Here is a sample output:

```
MRC_NAME    COMP_ID           OWNER              VERSION     STATUS   UPGRADED
--------  -----------     ------------------    -----------  --------  ---------
```

```
 PREFIX    BIPLATFORM     PREFIX_BIPLATFORM     11.1.1.9.0     VALID       N
 PREFIX    OPSS           PREFIX_OPSS           12.2.1.0.0     VALID
Y
 PREFIX    UCSUMS         PREFIX_ORASDPM        12.2.1.0.0     VALID       Y
 PREFIX    WLS            PREFIX_WLS            12.2.1.0.0     VALID       N
 PREFIX    IAU            PREFIX_IAU            12.2.1.2.0     VALID
N
 PREFIX    IAU_APPEND     PREFIX_IAU_APPEND     12.2.1.2.0     VALID       N
 PREFIX    IAU_VIEWER     PREFIX_IAU_VIEWER     12.2.1.2.0     VALID
N
 PREFIX    MDS            PREFIX_MDS            12.2.1.3.0     VALID       Y
 PREFIX    OIM            PREFIX_OIM            12.2.1.3.0     VALID
Y
 PREFIX    SOAINFRA       PREFIX_SOAINFRA       12.2.1.3.0     VALID       Y
 PREFIX    STB            PREFIX_STB            12.2.1.3.0     VALID       N

11 rows selected.
```

> **Note:**
>
> Some schema versions may remain at the pre-upgrade version number and others may have various 12.2.1.x.y version numbers listed.
>
> ```
> BIPLATFORM - is not upgraded and remains 11.1.1.9.0
> Audit schemas (IAU*) may not upgrade if pre-exist in 11g,
> otherwise will be created at version 12.2.1.2.0.
> WLS schema will be created new at version 12.2.1.0.0
> STB schema will be created new at 12.2.1.3.0
> ```

- The `STATUS` field will be either `UPGRADING` or `UPGRADED` during the schema patching operation, and will become `VALID` when the operation is completed.
- If the status appears as `INVALID`, the schema update failed. You should examine the logs files to determine the reason for the failure.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` may appear as `INVALID`, but that does not indicate a failure. In the case where the IAU schemas are created rather than upgraded, they will show up as `VALID`.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

# About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).

**Note:**

- If custom applications are deployed in OIM 11g, the Reconfiguration Wizard will display a warning message along with the list of custom applications and libraries (if present). These applications/libraries will continue pointing to the 11g location even after upgrade to OIM 12c (12.2.1.3). You have to update them manually after the upgrade.
- After reconfiguration, the domain continues to remain in the same location (that is, the 11g *DOMAIN_HOME*). It will not be moved or copied to 12c `$ORACLE_HOME/user_projects/domains/`.

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

**Note:**

Before you begin the domain reconfiguration, note the following limitations:

- The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
- Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.

  The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.
- If the installation that you're upgrading does not use Oracle Access Manager (OAM), then you must edit two files to prevent the Reconfiguration Wizard from attempting to update the nonexistent OAM Infrastructure schema, which causes the upgrade to fail.

  Comment out the lines in your `$DOMAIN_HOME/init-info/domain-info.xml` that are similar to this example:

  Where, *DOMAIN_HOME* is the Administrator server domain home.

```
<!--extention-template-ref name="Oracle Identity Navigator"
  version="11.1.1.3.0"
  location="/u01/app/oracle/product/fmw/iam111130/common/
templates/applications/oracle.oinav_11.1.1.3.0_template.jar"
symbol=""/-->
<!--install-comp-ref name="oracle.idm.oinav"
version="11.1.1.3.0"

symbol="oracle.idm.oinav_11.1.1.3.0_iam111130_ORACLE_HOME"
  product_home="/u01/app/oracle/product/fmw/iam111130"/-->
```

  and similarly comment out the lines in `$DOMAIN_NAME/config/config.xml` that are similar to this example:

```
<!--app-deployment>
  <name>oinav#11.1.1.3.0</name>
  <target>AdminServer</target>
  <module-type>ear</module-type>

  <source-path>/u01/app/oracle/product/fmw/iam111130/oinav/
modules/oinav.ear_11.1.1.3.0/oinav.ear</source-path>
  <deployment-order>500</deployment-order>
  <security-dd-model>DDOnly</security-dd-model>
  <staging-mode>nostage</staging-mode>
</app-deployment-->
```

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.
- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Follow these instructions to reconfigure the existing domain using the Reconfiguration Wizard. See Reconfiguring WebLogic Domains in *Upgrading Oracle WebLogic Server*.

- Backing Up the Domain
- Starting the Reconfiguration Wizard
- Reconfiguring the Oracle Identity Manager Domain
  Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain.

## Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the Administration server domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy /Oracle/Middleware/user_projects/domains to /Oracle/Middleware/user_projects/domains_backup`.

   (UNIX) `cp -rf mydomain mydomain_backup`
2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

# Starting the Reconfiguration Wizard

> **Note:**
>
> - Shut down the administration server and all managed servers before starting the reconfiguration process. See Stopping Servers and Processes.
> - If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only, where, primary node is the Administration Server. Use the `Pack`/`Unpack` utility to apply the changes to other cluster members in the domain.

To start the Reconfiguration Wizard in graphical mode:

1. Open the command shell (on UNIX operating systems) or open a command prompt window (on Windows operating systems).
2. Set the following environment variables:
   - `WLS_ALTERNATIVE_TYPES_DIR` - Use the following command:
     **(Non-Bash)**: `setenv WLS_ALTERNATIVE_TYPES_DIR` *`ORACLE_HOME`*`/idm/server/loginmodule/wls`

     **(Bash):**`export WLS_ALTERNATIVE_TYPES_DIR=`*`ORACLE_HOME`*`/idm/server/loginmodule/wls`

     Where, *`ORACLE_HOME`* is the 12c Oracle Home.
   - `CONFIG_JVM_ARGS` - The `./reconfig.sh` command may display the following error to indicate that the default cache directory is not valid:

     ```
     *sys-package-mgr*: can't create package cache dir
     ```

     To avoid the error, change the cache directory by setting `CONFIG_JVM_ARGS`.

     For example: `CONFIG_JVM_ARGS=-Dpython.cachedir=`*`any_writable_directory`*.
3. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *`ORACLE_HOME`*`/oracle_common/common/bin`
   - (Windows) *`ORACLE_HOME`*`\oracle_common\commom\bin`

   Where, *`ORACLE_HOME`* is the 12c Oracle Home.
4. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=`*`log_file`*` -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=`*`log_file`*` -log_priority=ALL`

   Where, *`log_file`* is the absolute path of the log file you'd like to create for the domain reconfiguration session. This can be helpful if you need to troubleshoot the reconfiguration process.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

# Reconfiguring the Oracle Identity Manager Domain

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the *DOMAIN_HOME* directory used by the Administration Server for the OIG domain or click **Browse** to navigate and select the correct OIG domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
   - After the Setup Progress completes, check for any warning messages in the lower panel of the view.
     - If a specific error code is presented, search the log file for that error code and check Oracle Support. Some errors in the logs will directly include recommended solutions.
     - If a more generic `Custom Applications were left in the original MW home and must be fixed manually:...` warning message is presented, check the log for `CFGFWK-40951` messages.
       For example:

       ```
       2020-09-16 18:54:22,249 WARNING [42]
       com.oracle.cie.domain.progress.domain.reconfig.wlscore.ValidateDomainPhase
       - CFGFWK-40951: An application or library was not relocated to the new MW
       home.
       CFGFWK-40951: Custom Applications were left in the original MW home and
       must be fixed manually:
       spml-dsml

       CFGFWK-40951: Correct source path of the applications to refer to the new
       installation.
       ```
3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 12*c* (12.2.1.3.0) is 1.8.0_131 and later. Click **Next**.

> **Note:**
>
> You cannot change the **Domain Mode** at this stage.

For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.

4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (_STB) schema.

   Enter the database connection details using the RCU service table (_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically configure the data sources required for components in your domain.

   > **Note:**
   >
   > By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

   > **Note:**
   >
   > For any existing 11*g* datasource, the reconfiguration will preserve the existing values. For new datasources where the schema was created for 12*c* by the RCU, the default connection data will be retrieved from the _STB schema. If no connection data for a given schema is found in the _STB schema, then the default connection data is used.

   If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

   > **Note:**
   >
   > If you are upgrading from 11*g*, and your database has _OPSS or _IAU 11*g* database schemas, you must manually enter database connection details for those schemas. These schemas were not required in 11*g* and had to be created manually. Users could assign any name to these schemas, therefore the Reconfiguration Wizard does not recognize them. When providing connection information for _IAU, use the IAU_APPEND user information.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.

> **Note:**
>
> - For all of the schemas except for OPSS, the host, port, and service details will be auto-populated. You must enter the OPSS schema credentials manually.
> - If you are using a RAC database, then on the JDBC Component Schema screen, select all the datasources and select **Convert to Grid Link**.

6. On the Grid Link screen, provide the Service Name, Schema Password, ONS Host and Port, SCAN Hostname and Port, and check the FAN and SCAN checkboxes appropriately. Also, verify that the prefix for each schema owner reflects your environment. Perform this step for each RAC Component Schema.

   When complete, click **Next**.

> **Note:**
>
> The Grid Link screen will be displayed only if you select **Convert to Grid Link** in step 6.

7. On the JDBC Component Schema Test screen, the component schema connections are tested. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.

8. On the Node Manager screen, go for the default option or select **Create New Configuration** for configuring Node Manager per your requirement. In both the cases, specify the WebLogic Administration user credentials for Node Manager details.
9. On the Credentials screen, for `weblogicAdminnKey`, populate the Weblogic admin username and password used in 11g, and then click **Next**.
10. Leave the default selection and click **Next**.
11. On the Advanced Configuration screen, during an upgrade, it is recommended to simply leave all the options unselected and click **Next**. you can select all categories for which you want to perform advanced configuration. For each category you select, the appropriate configuration screen is displayed to allow you to perform advanced configuration.

> **Note:**
>
> If desired, you can select the options and review the configuration details. However, not all settings may represent the final state of the domain configuration at this time. Additional component configuration is completed in later steps by the Upgrade Assistant. Oracle recommends you to not review these details at this point, and not make any changes to the Advanced Configuration views during the upgrade process.

12. On the Configuration Summary screen, review the detailed configuration settings of the domain before continuing.

You can limit the items that are displayed in the right-most panel by selecting a filter option from the **View** drop-down list.

To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

> **Note:**
>
> The location of the domain does not change when you reconfigure it.

13. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

    During this process:

    - Domain information is extracted, saved, and updated.
    - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

    When the progress bar shows 100%, click **Next**.

14. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

# Upgrading Domain Component Configurations

After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Oracle Identity Manager Domain Component Configurations
  Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

## Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.
>
> To ensure that UTF-8 is used by the JVM, use the JVM option `-Dfile.encoding=UTF-8`.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Set a parameter for the Upgrade Assistant to include the JVM encoding requirement:
   - (UNIX) `export UA_PROPERTIES="-Dfile.encoding=UTF-8"`
   - (Windows) `set UA_PROPERTIES="-Dfile.encoding=UTF-8"`
3. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

> **Note:**
>
> In the above command, *ORACLE_HOME* refers to the 12*c* (12.2.1.3.0) Oracle Home.

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

## Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

**Table 3-6 Upgrade Assistant Command-Line Parameters**

| Parameter | Required or Optional | Description |
|---|---|---|
| `-readiness` | Required for readiness checks<br>**Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server). | Performs the upgrade readiness check without performing an actual upgrade.<br>Schemas and configurations are checked.<br>Do not use this parameter if you have specified the `-examine` parameter. |

**Table 3-6 (Cont.) Upgrade Assistant Command-Line Parameters**

| Parameter | Required or Optional | Description |
|---|---|---|
| `-threads` | Optional | Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas.<br>The value must be a positive integer in the range 1 to 8. The default is 4. |
| `-response` | Required for silent upgrades or silent readiness checks | Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens). |
| `-examine` | Optional | Performs the examine phase but does not perform an actual upgrade.<br>Do not specify this parameter if you have specified the `-readiness` parameter. |
| `-logLevel` *attribute* | Optional | Sets the logging level, specifying one of the following attributes:<br>• `TRACE`<br>• `NOTIFICATION`<br>• `WARNING`<br>• `ERROR`<br>• `INCIDENT_ERROR`<br>The default logging level is `NOTIFICATION`.<br>Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used. |

**Table 3-6 (Cont.) Upgrade Assistant Command-Line Parameters**

| Parameter | Required or Optional | Description |
|---|---|---|
| `-logDir` *location* | Optional | Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files.<br>The default locations are:<br>(UNIX)<br>*ORACLE_HOME*`/oracle_common/upgrade/logs`<br>*ORACLE_HOME*`/oracle_common/upgrade/temp`<br>(Windows)<br>*ORACLE_HOME*`\oracle_common\upgrade\logs`<br>*ORACLE_HOME*`\oracle_common\upgrade\temp` |
| `-help` | Optional | Displays all of the command-line options. |

# Upgrading Oracle Identity Manager Domain Component Configurations

Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

After running the Reconfiguration Wizard to reconfigure the WebLogic domain to 12*c* (12.2.1.3.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:
   - Select **All Configurations Used By a Domain**. The screen name changes to WebLogic Components.
   - In the **Domain Directory** field, enter the WebLogic domain directory path.

Where, **Domain Directory** is the Administration server domain directory.

Click **Next**.

3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

   > **Note:**
   >
   > The Upgrade Assistant does not verify whether the prerequisites have been met.

5. If there are remote managed servers hosting User Messaging Services (UMS) configuration files: On the UMS Configuration screen, provide the credentials to these servers so that the Upgrade Assistant can access the configuration files.

   > **Note:**
   >
   > You may need to manually copy the UMS configuration files if the Upgrade Assistant is unable to locate them. See Error while Copying User Messaging Service (UMS) Configuration Files.

6. On the Old (that is,11g) OIM Home Location screen, select **11g Source**, and specify the absolute path to the 11.1.2.3.0 OIM Oracle Home, which is *ORACLE_HOME*/Oracle_IDM.

   Click **Next**.

7. On the Examine screen, review the status of the Upgrade Assistant as it examines each component, verifying that the component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

8. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.

   Click **Upgrade** to start the upgrade process.

9. On the Upgrade Progress screen, monitor the status of the upgrade.

   > **Caution:**
   >
   > Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

   If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

   > **Note:**
   >
   > The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

   Click **Next**.

10. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

# Performing Post-Upgrade Tasks

After upgrading from 11*g* to 12*c*, you need should complete the post upgrade tasks that include copying any custom configuration present in your 11*g* Middleware home to the 12*c* Oracle home and upgrading the SOA composites.

- Copying Custom Configurations
- Increasing the Maximum Message Size for WebLogic Server Session Replication
- Changing the JMS and TLOG Persistence Store After the Upgrade

## Copying Custom Configurations

Consider the following points when copying custom configurations:

- If you have scheduled jobs with parameters referring to the 11*g* Middleware home, then you need to update them to the corresponding 12*c* Oracle home.
- To preserve customized configuration data (if present), copy the contents from standard directories such as `XLIntegrations` and `connectorResources` under the 11*g* Middleware home to the corresponding directories under the 12*c* Oracle home.

## Increasing the Maximum Message Size for WebLogic Server Session Replication

Oracle recommends you to modify the Maximum Message Size from the default vale of 10 MB to 100 MB. This value is used to replicate the session data across the nodes. You should perform this step for all the Managed servers and the Administration server.

1. Log in to the WebLogic Server Administration Console.
2. Navigate to **Servers**, select **Protocols**, and then click **General**.
3. Set the value of **Maximum Message Size** to `100 MB`.

## Changing the JMS and TLOG Persistence Store After the Upgrade

The JMS and TLOG persistent store remain the same after the upgrade to Oracle Identity Manager 12*c* (12.2.1.3.0). That is, if the persistence store is file-based prior to the upgrade, it will be file-based after the upgrade as well.

If you want to change the persistence stores from a file-based system to a database-based system, you have to perform the steps manually. See Using Persistent Stores for TLOGs and JMS in an Enterprise Deployment.

# Copying Folders to the 12c Oracle Home

When upgrading to 12c, you must manually copy some folders to the 12c Oracle Home, if those folders are having file system dependent data.

For example: `plugins`, `ScheduleTask`, `XLIntegrations`, `JavaTasks`, `connectorResources`, and so on.

Run the following command:

```
cp -r 11g_MW_HOME/<product_idm>/server/plugins/* ORACLE_HOME/<product_idm>/
server/plugins/
```

Where, *ORACLE_HOME* is the 12c Oracle Home.

# Starting the Servers

After you upgrade Oracle Identity Manager, start the servers.

You must start the servers in the following order:

1. Start the Administration Server.

   If Node manger is configured, do not start the Node Manager.

   > **Note:**
   >
   > Typically, the name of the Administration Server is always 'AdminServer'. If the name of your Administration Server is different from the default name 'AdminServer', you should modify the name in the *<domainname>*`/config/config.xml` file, accordingly, prior to starting the server.
   >
   > To change the name:
   >
   > a. Open the *<domainname>*`/config/config.xml` file and locate the following library entry:
   >
   > ```
   > <library>
   >    <name>oracle.idm.ipf</name>
   >   <target>AdminServer</target>
   >    <module-type>jar</module-type>
   > .....
   > .....
   >  </library>
   > ```
   >
   > b. Note the name of the Administration Server. If the name is other than 'AdminServer', change the following entry accordingly:
   >
   > ```
   > <target><name_of_your_admin_server></target>
   > ```

2. From the terminal, start the Oracle SOA Suite managed server with the Administration Server URL, and the BPM property set to `TRUE`.

   For example:

```
./startManagedWebLogic.sh <SOA_Managed_server> t3://
weblogic_admin_host:weblogic_admin_port –Dbpm.enabled=true
```

> **Note:**
>
> - For first boot, Oracle SOA Suite managed server must be started manually by using the command in the above example.
> - In SSL environment, when starting managed servers for the first time for bootstrap, provide the non-SSL port number of the Administration Server.
> - After SOA comes to a running state, and before starting the OIM server, confirm that all the composites have deployed successfully using the Oracle Enterprise Manager Console. A timing issue can occur with the deployment of the SOA composites, and if they have not deployed successfully, the OIM bootstrap will fail in the composite deployment phase. For instructions on checking the composites and fixing any composites that may have failed to deploy, see Doc ID 2417785.1.

3. Once the SOA server is in running state, from the terminal, start the Oracle Identity Manager Managed Server with the Administration Server URL.

   This time, OIM bootstrap process will be executed, and after successful bootstrap, OIM Managed Server will be shut down automatically.
   For example:

   ```
   ./startManagedWebLogic.sh <OIM_Managed_server> t3://
   weblogic_admin_host:weblogic_admin_port
   ```

   > **Note:**
   >
   > As in the previous step, provide the non-SSL port number of the Administration Server.

4. Shut down the SOA Managed Server and the Administration Server. For information about stopping the servers and processes, see Stopping Servers and Processes.

- Starting Servers and Processes
  After a successful upgrade, start all processes and servers, including the Administration Server and any Managed Servers.

# Starting Servers and Processes

After a successful upgrade, start all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and process using the WLST command line or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager in *Administering Oracle Fusion Middleware.*

To start your Fusion Middleware environment, follow the steps below.

**Step 1: Start Node Manager**

Start the Node Manager from the Administration Server `<DOMAIN_HOME>/bin` location:

- (UNIX) `nohup ./startNodeManager.sh > <DOMAIN_HOME>/nodemanager/nodemanager.out 2>&1 &`
- (Windows) `nohup .\startNodeManager.sh > <DOMAIN_HOME>\nodemanager\nodemanager.out 2>&1 &`

Where, *<DOMAIN_HOME>* is the Administration server domain home.

**Step 2: Start the Administration Server**

When you start the Administration Server, you also start the processes running in the Administration Server, including the WebLogic Server Administration Console and Fusion Middleware Control.

If you are not using nodemanager to start Administration Server, use the `startWebLogic` script:

- (UNIX) *DOMAIN_HOME*`/bin/startWebLogic.sh`
- (Windows) *DOMAIN_HOME*`\bin\startWebLogic.cmd`

When prompted, enter your user name, password, and the URL of the Administration Server.

**Step 3: Start the Managed Servers**

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *DOMAIN_HOME*`/bin/startManagedWebLogic.sh` *managed_server_name admin_url*
- (Windows) *DOMAIN_HOME*`\bin\startManagedWebLogic.cmd` *managed_server_name admin_url*

When prompted, enter your user name and password.

> **Note:**
>
> - The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.
> - The Mobile Security Manager (MSM) servers are not supported in 12c. After restarting the servers, the 11*g* configurations of MSM servers, like `omsm_server1` or `WLS_MSM1`, might remain. Ignore these configurations and do not restart the MSM servers.

**Step 4: Start System Components**

If required, start system components, such as Oracle HTTP Server by using the `startComponent` script:

- (UNIX) *`OHS_INSTANCE_HOME`*`/bin/startComponent.sh ohs1`
- (Windows) *`OHS_INSTANCE_HOME`*`\bin\startComponent.sh ohs1`

You can start system components in any order.

# Configuring Oracle HTTP Servers to Front End OIM, and SOA Managed Servers

If you have confured Oracle HTTP Server in your environment to route requests to your Oracle Identity Governance domain, you need to update the configuration to ensure that the following OHS directives are present. Any additonal directives can be removed.

Complete the following steps:

1. On the web servers, locate the Oracle HTTP Server configuration files for OIG in *`OHS_DOMAIN_HOME`*`/config/fmwconfig/components/OHS/instances/OHS_INSTANCE_NAME/moduleconf`.

   > **Note:**
   >
   > You may have called the file `mod_wls_ohs.conf` in the *`OHS_DOMAIN_HOME`*`/config/fmwconfig/components/OHS/instances/OHS_INSTANCE_NAME` directory.

   Ensure that you have configured the following OHS directives:

```
# oim admin console(idmshell based)
   # oim admin console(idmshell based)
   <Location /admin>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
```

```
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
   </Location>

# oim self and advanced admin webapp consoles(canonic webapp)

  <Location /oim>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

  <Location /identity>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

  <Location /sysadmin>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

  <Location /admin>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

# SOA Callback webservice for SOD - Provide the SOA Managed Server Ports
  <Location /sodcheck>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

# OIM, role-sod profile
  <Location /role-sod>
    WLSRequest ON
```

```
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

# Callback webservice for SOA. SOA calls this when a request is
approved/rejected
# Provide the OIM Managed Server Port
  <Location /workflowservice>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

# xlWebApp - Legacy 9.x webapp (struts based)
   <Location /xlWebApp>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

# Nexaweb WebApp - used for workflow designer and DM
  <Location /Nexaweb>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

# used for FA Callback service.
  <Location /callbackResponseService>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

# spml xsd profile
  <Location /spml-xsd>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
```

```
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

  <Location /HTTPClnt>
    SetHandler weblogic-handler
    WLCookieName    oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

  <Location /reqsvc>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

# SOA Infra
  <Location /soa-infra>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/OHS/component/
oim_component.log"
  </Location>

  <Location /integration>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
  </Location>

  <Location /sdpmessaging/userprefs-ui>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
soa_component.log"
  </Location>

  <Location /ws_utc>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
```

```
  </Location>

  <Location /provisioning-callback>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

  <Location /CertificationCallbackService>
    SetHandler weblogic-handler
    WLCookieName JSESSIONID
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

  <Location /IdentityAuditCallbackService>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

# SOA Callback webservice for SOD - Provide the SOA Managed Server
Ports
  <Location /soa/composer>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
soa_component.log"
  </Location>

  # UMS Email Support
  <Location /ucs>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/OHS/component/
oim_component.log"
  </Location>

  <Location /FacadeWebApp>
   SetHandler weblogic-handler
   WLCookieName oimjsessionid
   WebLogicHost oimserver.example.com
   WebLogicPort 14000
```

```
   WLLogFile /tmp/web_log.log
  </Location>

# Scheduler webservice URL
  <Location /SchedulerService-web>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicHost oimserver.example.com
    WebLogicPort 14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/
oim_component.log"
  </Location>

  <Location /iam/governance/configmgmt>
   SetHandler weblogic-handler
   WLCookieName oimjsessionid
   WebLogicHost oimserver.example.com
   WebLogicPort 14000
   WLLogFile /tmp/web_log.log
  </Location>

  <Location /iam/governance/scim/v1>
   SetHandler weblogic-handler
   WLCookieName oimjsessionid
   WebLogicHost oimserver.example.com
   WebLogicPort 14000
   WLLogFile /tmp/web_log.log
  </Location>

  <Location /iam/governance/token/api/v1>
   SetHandler weblogic-handler
   WLCookieName oimjsessionid
   WebLogicHost oimserver.example.com
   WebLogicPort 14000
   WLLogFile /tmp/web_log.log
  </Location>

  <Location /OIGUI>
   SetHandler weblogic-handler
   WLCookieName oimjsessionid
   WebLogicHost oimserver.example.com
   WebLogicPort 14000
   WLLogFile /tmp/web_log.log
  </Location>

  <Location /iam/governance/applicationmanagement>
   SetHandler weblogic-handler
   WLCookieName oimjsessionid
   WebLogicHost oimserver.example.com
   WebLogicPort 14000
   WLLogFile /tmp/web_log.log
  </Location>

  <Location /iam/governance/adminservice/api/v1>
   SetHandler weblogic-handler
```

```
 WLCookieName oimjsessionid
 WebLogicHost oimserver.example.com
 WebLogicPort 14000
 WLLogFile /tmp/web_log.log
</Location>

<Location /iam/governance/selfservice/api/v1>
 SetHandler weblogic-handler
 WLCookieName oimjsessionid
 WebLogicHost oimserver.example.com
 WebLogicPort 14000
 WLLogFile /tmp/web_log.log
</Location>
```

2. Save the file on both `WEBHOST1` and `WEBHOST2`.
3. Stop and start the Oracle HTTP Server instances on both `WEBHOST1` and `WEBHOST2`.
4. Start system components, such as Oracle HTTP Server by using the `startComponent` script:
   - (UNIX) *`OHS_INSTANCE_HOME`*`/bin/startComponent.sh ohs1`
   - (Windows) *`OHS_INSTANCE_HOME`*`\bin\startComponent.sh ohs1`

   You can start system components in any order.

# Upgrading Oracle Identity Manager Design Console

Upgrade the Oracle Identity Manager Design Console after you upgrade the Oracle Identity Manager (OIM) domain component configurations.

To upgrade the Oracle Identity Manager Design Console, replace the 12*c* (12.2.1.3.0) *`ORACLE_HOME`*`/idm/designconsole/config/xlconfig.xml` file with the 11.1.2.3.0 *`ORACLE_HOME`*`/Oracle_IDM1/designconsole/config/xlconfig.xml` file.

# Completing the Post-Upgrade Tasks for SSL Enabled Setup

If you are upgrading an Oracle Identity Manager SSL enabled setup, you must perform the required post-upgrade tasks to complete the upgrade process.

Complete the following tasks if you have upgraded an SSL enabled setup:

1. Changes done for SSL settings in `setDomainEnv.sh`, `startWeblogic.sh`, `startManagedWeblogic.sh`, and datasources are lost after upgrade. Re-do all of the changes.
2. Start the WebLogic Administration Server. To start the Administration Server, use the `startWebLogic` script:
   - (UNIX) *`DOMAIN_HOME`*`/bin/startWebLogic.sh`
   - (Windows) *`DOMAIN_HOME`*`\bin\startWebLogic.cmd`

   Where, *`DOMAIN_HOME`* is the Administration domain.

   When prompted, enter your user name, password, and the URL of the Administration Server.

3. Make necessary changes to the following newly created datasources, for SSL settings:
   - `LocalSvcTblDataSource`
   - `opss-audit-DBDS`
   - `opss-audit-viewDS`
   - `opss-data-source`
   - `WLSSchemaDataSource`

   For information about updating the newly created datasources, see Updating Datasource oimOperationsDB Configuration in *Administering Oracle Identity Governance*
4. In case of Customer Identity and Java Standard Trust, import your identity trust certificate to the new JDK home. The 12*c* (12.2.1.3.0) uses jdk1.8.0_131. To import the identity trust certificate to the new JDK home, use the following command:

   ```
   ./keytool -importcert -alias startssl -keystore JAVA_HOME/jre/lib/security/
   cacerts -storepass <password> -file supportcert.pem
   ```
5. Verify that all of the SSL configuration changes including the SSL port related changes done in 11*g* (pre upgrade), are present post upgrade. If the changes are lost, you must redo them post upgrade. Some of the SSL configuration changes include:
   - `OimFrontEndURL`
   - `backOfficeURL`
   - `SOA Server URL`
   - `ForeignJNDIProvider-SOA`

   For more information about configuring SSL for Oracle Identity Goverenance, see Updating Oracle Identity Governance in *Administering Oracle Identity Governance*.

# Installing Standalone Oracle BI Publisher

When you upgrade Oracle Identity Manager 11.1.2.3.0 to Oracle Identity Governance 12*c* (12.2.1.3.0), the embedded Oracle BI Publisher present in the 11.1.2.3.0 deployment, is removed. Therefore, you must install a new standalone Oracle BI Publisher 12*c* (12.2.1.3.0) post upgrade, for configuring the Oracle Identity Governance reports.

For information about installing and configuring Oracle BI Publisher 12*c* (12.2.1.3.0), see Installing and Configuring Oracle BI Publisher in *Developing and Customizing Applications for Oracle Identity Governance*.

For information about integrating standalone Oracle BI Publisher with Oracle Identity Governance 12*c* (12.2.1.3.0), see Integrating Standalone BI Publisher with Oracle Identity Governance in *Developing and Customizing Applications for Oracle Identity Governance*.

# Tuning Application Module for User Interface

After you successfully upgrade the Oracle Identity Manager middle-tier, tune the Application Module (AM).

See Tuning Application Module (AM) for User Interface in *Oracle Fusion Middleware Tuning Performance*.

# Performing the Post-Patch Install Steps

After completing the upgrade, you have to perform the post-patch installation steps.

The post-patch installation steps comprises the following:

- Running the Poststart Command to Confirm Successful Binary Patching
- Filling in the patch_oim_wls.profile File
- Patching the Oracle Identity Governance Managed Servers (patch_oim_wls Stage)
- Performing a Clean Restart of the Servers
- Increasing the Maximum Message Size for WebLogic Server Session Replication

## Running the Poststart Command to Confirm Successful Binary Patching

Use the variables and the instructions in the Stack Patch Bundle README.txt file to run the `poststart` command for your product, as shown below:

```
$ ./spbat.sh -type oig -phase poststart -mw_home /
<INSTALLATION_DIRECTORY>/IAM12c -spb_download_dir /<DOWNLOAD_LOCATION>/
IDM_SPB_12.2.1.4.200714 -log_dir /<DOWNLOAD_LOCATION>/OIGlogs
```

For details, see Doc ID 2657920.1.

## Filling in the patch_oim_wls.profile File

Using a text editor, edit the file `patch_oim_wls.profile` located in the *`ORACLE_HOME`*`/idm/server/bin/` directory and change the values in the file to match your environment. The `patch_oim_wls.profile` file contains sample values.

Table 4-7 lists the information to be entered for the `patch_oim_wls.profile` file. This file is used in the next stage of the bundle patch process.

**Table 3-7 Parameters of the patch_oim_wls.profile File**

| Parameter | Description | Sample Value |
|---|---|---|
| `ant_home` | Location of the ANT installation. It is usually under *MW_HOME*. | For Linux: `$MW_HOME/oracle_common/modules/thirdparty/org.apache.ant/1.10.5.0.0/apache-ant-1.10.5/`<br>For Windows: `%MW_HOME%/oracle_common/modules/thirdparty/org.apache.ant/1.10.5.0.0/apache-ant-1.10.5/` |
| `java_home` | Location of the JDK/JRE installation that is being used to run the Oracle Identity Governance domain. | For Linux: <*JAVA_HOME_PATH*> consumed by *$MW_HOME*<br>For Windows: <*JAVA_HOME_PATH*> consumed by %*MW_HOME*% |
| `mw_home` | Location of the middleware home location on which Oracle Identity Governance is installed. | For Linux: `/u01/Oracle/Middleware`<br>For Windows: `C:\Oracle\`*`MW_HOME`*`\` |
| `oim_oracle_home` | Location of the Oracle Identity Governance installation. | For Linux: `$MW_HOME/idm`<br>For Windows: `%MW_HOME%\idm` |
| `soa_home` | Location of the SOA installation. | For Linux: `$MW_HOME/soa`<br>For Windows: `%MW_HOME%\soa` |
| `weblogic.server.dir` | Directory on which WebLogic server is installed. | For Linux: `$MW_HOME/wlserver`<br>For Windows: `%MW_HOME%\wlserver` |
| `domain_home` | Location of the domain home on which Oracle Identity Governance is installed. | `$MW_HOME/user_projects/domains/base_domain` |
| `weblogic_user` | Domain administrator user name. Normally it is `weblogic`, but could be different as well. | `weblogic` |
| `weblogic_password` | Domain admin user's password. If this line is commented out, then password will be prompted. | NA |

**Table 3-7 (Cont.) Parameters of the patch_oim_wls.profile File**

| Parameter | Description | Sample Value |
|---|---|---|
| soa_host | Listen address of the SOA Managed Server, or the hostname on which the SOA Managed Server is listening.<br>**Note**: If the SOA Managed Server is configured to use a virtual IP address, then the virtual host name must be supplied. | oimhost.example.com |
| soa_port | Listen port of the SOA Managed Server, or SOA Managed Server port number. | 8001<br>Only Non-SSL Listen port must be provided. |
| operationsDB.user | Oracle Identity Governance database schema user. | DEV_OIM |
| OIM.DBPassword | Oracle Identity Governance database schema password. If this line is commented out, then the password will be prompted when the script is executed. | NA |
| operationsDB.host | Host name of the Oracle Identity Governance database. | oimdbhost.example.com |
| operationsDB.serviceName | Database service name of the Oracle Identity Governance schema/database. This is not the hostname and it can be a different value as well. | oimdb.example.com |
| operationsDB.port | Database listener port number for the Oracle Identity Governance database. | 1521 |
| mdsDB.user | MDS schema user | DEV_MDS |
| mdsDB.password | MDS schema password. If this line is commented out, then password will be prompted. | NA |
| mdsDB.host | MDS database host name | oimdbhost.example.com |
| mdsDB.port | MDS database/Listen port | 1521 |
| mdsDB.serviceName | MDS database service name | oimdb.example.com |
| oim_username | Oracle Identity Governance username. | System administrator username |
| oim_password | Oracle Identity Governance password. This is optional. If this is commented out, then you will be prompted for the password when the script is executed. | NA |
| oim_serverurl | URL to navigate to Oracle Identity Governance. | t3://oimhost.example.com:14000 |
| wls_serverurl | URL to navigate to WLS Console | t3://wlshost.example.com:7001 |

**Table 3-7 (Cont.) Parameters of the patch_oim_wls.profile File**

| Parameter | Description | Sample Value |
|---|---|---|
| `opss_customizations_present=false` | Enables customizations related to authorization or custom task flow. Set this value to true to enable customization. | true |

> **Note:**
>
> Update the parameter value as per the setup used, and then execute the `patch_oim_wls.sh` file.

# Patching the Oracle Identity Governance Managed Servers (patch_oim_wls Stage)

Patching the Oracle Identity Governance Managed Servers is the process of copying the staged files to the correct locations, running SQL scripts, importing event handlers, and deploying SOA composite. For making MBean calls, the script automatically starts the Oracle Identity Governance Managed Server and SOA Managed Server specified in the `patch_oim_wls.profile` file.

This step is performed by running `patch_oim_wls.sh` (on UNIX) and `patch_oim_wls.bat` (on Microsoft Windows) script by using the inputs provided in the `patch_oim_wls.profile` file. As prerequisites, the WebLogic Admin Server, SOA Managed Servers, and Oracle Identity Governance Managed Server must be running.

To patch Oracle Identity Governance Managed Servers on WebLogic:

1. Ensure that the WebLogic Administration Server, SOA Managed Servers, and Oracle Identity Governance Managed Server are running.
2. Set the following environment variables:

   For LINUX or Solaris, set the JAVA_HOME environment variable:

   ```
   export JAVA_HOME=<JAVA_HOME_PATH>
   export PATH=$JAVA_HOME/bin:$PATH
   ```

   For Microsoft Windows:

   ```
   set JAVA_HOME=<JAVA_HOME_PATH>
   set ANT_HOME=\PATH_TO_ANT_DIRECTORY\ant
   set ORACLE_HOME=%MW_HOME%\idm
   ```

> **Note:**
>
> Ensure that you set the reference to JDK binaries in your PATH before running the `patch_oim_wls.sh` (on UNIX) or `patch_oim_wls.bat` (on Microsoft Windows) script. This *JAVA_HOME* must be of the same version that is being used to run the WebLogic servers. The *JAVA_HOME* version from `/usr/bin/` or the default is usually old and must be avoided. You can verify the version by running the following command:

```
java -version
```

3. Execute `patch_oim_wls.sh` (on UNIX) or `patch_oim_wls.bat` (on Microsoft Windows) to apply the configuration changes to the Oracle Identity Governance server. On Linux systems, you must run the script in a shell environment using the following command:

   ```
   sh patch_oim_wls.sh
   ```

   > **Note:**
   >
   > For EDG implementations, this script must be run against the mserver domain directory rather than the server domain directory.

4. Delete the following directory from OIG domain home:

   ```
   $DOMAIN_HOME/servers/oim_server1/tmp/_WL_user/
   oracle.iam.console.identity.self-service.ear_V2.0
   ```

   Here, `oim_server1` is the WebLogic Managed Server used for OIG.

5. To verify that the `patch_oim_wls` script has completed successfully, check the *ORACLE_HOME*`/idm/server/bin/patch_oim_wls.log` log file.

   > **Note:**
   >
   > On running the `patch_oim_wls` script, the `$DOMAIN_HOME/servers/MANAGED_SERVER/security/boot.properties` file might be deleted. If you use a script to start the Managed Server and use the `boot.properties` file to eliminate the need of entering the password in the script, then create a new `boot.properties` file.
   >
   > In an EDG environment, the `boot.properties` file is in *MSERVER_HOME*`/servers/MANAGED_SERVER/security`.

6. Stop and start the WebLogic Administration Server, SOA Server, and Oracle Identity Governance Server.

   - Shutting down Oracle Identity Governance Server might take a long time if it is done with `force=false` option. It is recommended that you force shutdown Oracle Identity Governance Server.

- The `patch_oim_wls` script is re-entrant and can be run again if a failure occurs.

## Performing a Clean Restart of the Servers

Restart all the servers including the Administration Server and any Managed Servers. See Starting Servers and Processes .

## Increasing the Maximum Message Size for WebLogic Server Session Replication

Oracle recommends you to modify the Maximum Message Size from the default vale of 10 MB to 100 MB. This value is used to replicate the session data across the nodes. You should perform this step for all the Managed servers and the Administration server.

1. Log in to the WebLogic Server Administration Console.
2. Navigate to **Servers**, select **Protocols**, and then click **General**.
3. Set the value of **Maximum Message Size** to `100 MB`.

4

# Upgrading Oracle Identity Manager Highly Available Environments

Describes the process of upgrading an Oracle Identity Manager highly available environment from 11*g* Release 2 (11.1.2.3.0) to Oracle Identity Governance 12*c* (12.2.1.3.0).

> **Note:**
>
> The product Oracle Identity Manager is referred to as Oracle Identity Manager (OIM) and Oracle Identity Governance (OIG) interchangeably in the guide.

**Topics**

- About the Oracle Identity Manager Multinode Upgrade Process
  Review the topology and the roadmap for an overview of the upgrade process for Oracle Identity Manager highly available environments.
- Completing the Pre-Upgrade Tasks for Oracle Identity Manager
  Complete the pre-upgrade tasks described in this section before you upgrade Oracle Identity Manager.
- Creating 12c Oracle Home Folder on OIMHOST1 and OIMHOST2
  Create a folder for 12*c* Oracle Home on both OIMHOST1 and OIMHOST2.
- Installing Product Distributions on OIMHOST1 and OIMHOST2
  Install the 12c binaries onto OIMHOST1 and OIMHOST2 or onto shared storage accessible by both. If you are using redundant binaries ensure you install into each of the redundant locations
- Installing the Latest Stack Patch Bundle
  After you install the product distributions, Oracle strongly recommends you to apply the latest IDM Stack Patch Bundle (SPB) 12.2.1.3.0 before proceeding with the upgrade process. You can apply the patch by using the Opatch tool. Applying the SPB helps eliminate most of the upgrade issues or workarounds.
- Running a Pre-Upgrade Readiness Check
  To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.
- Creating the Required 12c Schemas Using RCU
  When upgrading from 11g, you must create the required 12c schemas. If your setup is not SSL enabled, you can use the Upgrade Assistant to create schemas by using the default schema settings. In case of SSL enabled setup, you can use the Repository Creation Utility (RCU) to create customized schemas. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.

- Stopping Servers and Processes
  Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server, Node manager, and any managed servers.
- Upgrading Schemas on OIMHOST1
  Upgrade all of the necessary schemas for Oracle Identity Manager, on OIMHOST1 by using the Upgrade Assistant.
- Reconfiguring the Domain on OIMHOST1
  Run the Reconfiguration Wizard on OIMHOST1 to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).
- Upgrading Domain Component Configurations on OIMHOST1
  Use the Upgrade Assistant to upgrade the domain component's configurations inside the domain to match the updated domain configuration.
- Replicating the Domain Configurations on each OIMHOST
  Replicate the domain configurations on OIMHOST2. This involves packing the upgraded domain on OIMHOST1 and unpacking it on OIMHOST2.
- Starting the Servers for Initial Post-Upgrade Bootstrap Processing
  After you upgrade Oracle Identity Manager, start the servers to bootstrap the domain configuration.
- Fully Deploy the oracle.iam.ui.custom-dev-starter-pack.war
  Validate that the Upgrade Assistant has automatically copied the `oracle.iam.ui.custom-dev-starter-pack.war` file from the 11g *MW_HOME* to the 12c *ORACLE_HOME* on the AdminServer host.
- Starting the Servers on OIMHOST1 and OIMHOST2
  After you upgrade Oracle Identity Manager on both OIMHOST1 and OIMHOST2, start the servers.
- Upgrading Oracle Identity Manager Design Console
  Upgrade the Oracle Identity Manager Design Console after you upgrade the Oracle Identity Manager (OIM) domain component configurations.
- Performing the Post-Patch Install Steps
  After completing the upgrade, you have to perform the post-patch installation steps.
- Completing the Post-Upgrade Tasks for SSL Enabled Setup
  If you are upgrading an Oracle Identity Manager SSL enabled setup, you must perform the required post-upgrade tasks to complete the upgrade process.
- Increasing the Maximum Message Size for WebLogic Server Session Replication
- Changing the JMS and TLOG Persistence Store After the Upgrade
- Installing Standalone Oracle BI Publisher
  When you upgrade Oracle Identity Manager 11.1.2.3.0 to Oracle Identity Governance 12*c* (12.2.1.3.0), the embedded Oracle BI Publisher present in the 11.1.2.3.0 deployment, is removed. Therefore, you must install a new standalone Oracle BI Publisher 12*c* (12.2.1.3.0) post upgrade, for configuring the Oracle Identity Governance reports.

# About the Oracle Identity Manager Multinode Upgrade Process

Review the topology and the roadmap for an overview of the upgrade process for Oracle Identity Manager highly available environments.

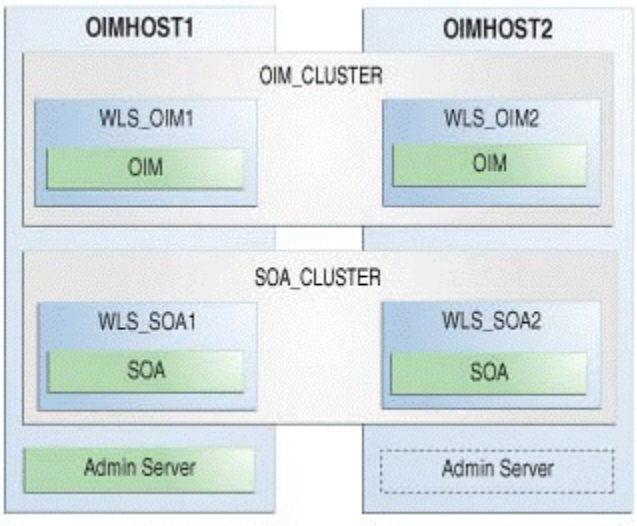
The steps you take to upgrade your existing domain will vary depending on how your domain is configured and which components are being upgraded. Follow only those steps that are applicable to your deployment.

### Upgrade Topology

The following topology shows the Oracle Identity Manager cluster set up that can be upgraded to 12*c* (12.2.1.3.0) by following the procedure described in this chapter.

> **Note:**
>
> As required, you can upgrade OHS independently of this OIM upgrade process.

**Figure 4-1 Oracle Identity Manager High Availability Upgrade Topology**




On OIMHOST1, the following installations have been performed:

- An Oracle Identity Manager instance has been installed in the WLS_OIM1 Managed Server and a SOA instance has been installed in the WLS_SOA1 Managed Server.
- A WebLogic Server Administration Server has been installed. Under normal operations, this is the active Administration Server.

On OIMHOST2, the following installations have been performed:

- An Oracle Identity Manager instance has been installed in the WLS_OIM2 Managed Server and a SOA instance has been installed in the WLS_SOA2 Managed Server.

- A WebLogic Server Administration Server has been installed. Under normal operations, this is the passive Administration Server. You make this Administration Server active if the Administration Server on OIMHOST1 becomes unavailable.

The instances in the WLS_OIM1 and WLS_OIM2 Managed Servers on OIMHOST1 and OIMHOST2 are configured as the OIM_CLUSTER cluster.

The instances in the WLS_SOA1 and WLS_SOA2 Managed Servers on OIMHOST1 and OIMHOST2 are configured as the SOA_CLUSTER cluster.

**Table 4-1 Tasks for Upgrading Oracle Identity Manager Highly Available Environments**

| Task | Description |
|---|---|
| **Required**<br>If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks. | See:<br>• Introduction to Upgrading Oracle Identity Manager to 12*c* (12.2.1.3.0)<br>• Pre-Upgrade Requirements |
| **Required**<br>Complete the necessary pre-upgrade tasks specific to Oracle Identity Manager. | See Completing the Pre-Upgrade Tasks for Oracle Identity Manager. |
| **Required**<br>Create the 12*c* Middleware Home Folder on both OIMHOST1 and OIMHOST2, so that you can use the location for installing the product distributions. | See Creating 12c Middleware Home Folder on OIMHOST1 and OIMHOST2. |
| **Required**<br>Install Oracle SOA Suite12*c* (12.2.1.3.0) and Oracle Identity Manager12*c* (12.2.1.3.0) in the new Oracle home. | See Installing Product Distributions on OIMHOST1 and OIMHOST2. |
| **Required**<br>Apply the latest bundle patches | See Installing the Latest Stack Patch Bundle. |
| **Required**<br>Run a pre-upgrade readiness check. | See Running a Pre-Upgrade Readiness Check. |
| **Required**<br>Start the Repository Creation Utility (RCU) to create the required 12*c* database schemas.<br>**Note:** This step is not required for non-SSL setup, as the Upgrade Assistant creates the necessary 12*c* schemas during the upgrade process.<br>For SSL enabled setup, you must run the RCU to create the necessary 12*c* schemas. | The schemas you create will vary depending on your existing schema configuration.<br>See Creating the Required 12c Schemas with the RCU. |
| **Required**<br>Shut down the 11g servers. This includes the Administration Server, Managed Servers, Node Manager, and system components like Oracle HTTP Server.<br>Ensure that the Database is up during the upgrade. | See Stopping Servers and Processes. |
| **Required**<br>Upgrade the necessary schemas on OIMHOST1. | See Upgrading Schemas on OIMHOST1. |
| **Required**<br>Reconfigure the Oracle Identity Manager domain on OIMHOST1. | See Reconfiguring the Domain on OIMHOST1. |

**Table 4-1 (Cont.) Tasks for Upgrading Oracle Identity Manager Highly Available Environments**

| Task | Description |
|---|---|
| **Required**<br>Upgrade the Oracle Identity Manager configurations on both OIMHOST1, using the Upgrade Assistant. | The Upgrade Assistant is used to update the reconfigured domain's component configurations.<br>See Upgrading Domain Component Configurations on OIMHOST1 and OIMHOST2. |
| **Required**<br>Replicate the domain configurations on OIMHOST2. | This includes packing the domain on OIMHOST1 and unpacking it on OIMHOST2.<br>See Replicating the Domain Configurations on OIMHOST2. |
| **Required**<br>Start the servers. | See Starting the Servers for Initial Post-Upgrade Bootstrap Processing. |
| **Required**<br>Deploy the `oracle.iam.ui.custom-dev-starter-pack.war` from 11*g* Middleware Home to 12*c* Middleware Home. | See Fully Deploy the `oracle.iam.ui.custom-dev-starter-pack.war`. |
| **Required**<br>Start the servers on OIMHOST1 and OIMHOST2. | See Starting the Servers on OIMHOST1 and OIMHOST2. |
| **Required**<br>Upgrade the Oracle Identity Manager Design Console to 12*c* (12.2.1.3.0). | See Upgrading Oracle Identity Manager Design Console. |
| **Required**<br>Complete the post-patch install steps. | See Performing the Post-Patch Install Steps. |
| **Required**<br>Perform the post-upgrade tasks for SSL enabled setup.<br>**Note:** This step is not required for non-SSL setup. | See Completing the Post-Upgrade Tasks for SSL Enabled Setup. |
| **Required**<br>To replicate the session data across the nodes, increase the Maximum Message Size for WebLogic Server. | See Increasing the Maximum Message Size for WebLogic Server Session Replication. |
| **Optional**<br>Change the JMS and TLOG persistence stores from files-based to database-based. | See Changing the JMS and TLOG Persistence Store After the Upgrade |
| **Optional**<br>When you upgrade to Oracle Identity Governance 12*c* (12.2.1.3.0), the embedded Oracle BI Publisher present in the 11.1.2.3.0 deployment is removed. Therefore, you must install a new standalone Oracle BI Publisher 12*c* (12.2.1.3.0) on OIMHOST1 and OIMHOST2, post upgrade. After you install, integrate it with Oracle Identity Governance 12*c* (12.2.1.3.0) to configure the Oracle Identity Governance reports. | See Installing Standalone Oracle BI Publisher. |

# Completing the Pre-Upgrade Tasks for Oracle Identity Manager

Complete the pre-upgrade tasks described in this section before you upgrade Oracle Identity Manager.

- Upgrading SOA Composites
  If your starting point is Oracle Identity Manager 11.1.1.x.x, you must manually upgrade custom composites that you have built.
- Updating Server Wallets to Remove MD5 Algorithm
  OIM 12c (12.2.1.3.0) uses JDK 8, which does not support MD5 signing algorithm. If the existing keystore has a certificate which is invalid with JDK8 (that is, using disabled algorithm) used to install the 12*c* (12.2.1.3.0) binaries, you must generate the keystore and place it in the *DOMAIN_HOME*/config/fmwconfig directory.
- Updating DB Wallets to Remove MD5 Algorithm (For SSL Enabled Setup)
  If you have SSL enabled setup, update all of the DB wallets to remove any MD5 algorithms, as 12*c* (12.2.1.3.0) uses JDK 8 which does not support MD5 algorithm.
- Verifying the Memory Settings
  To avoid the memory issues for Oracle Identity Manager, ensure that the memory settings are updated as per the requirements.
- Opening the Non-SSL Ports for SSL Enabled Setup
  If you have an SSL enabled and non-SSL disabled setup, you must open the non-SSL ports for Servers and Database before you proceed with the Oracle Identity Manager upgrade.
- Backing Up the metadata.mar File Manually

# Upgrading SOA Composites

If your starting point is Oracle Identity Manager 11.1.1.x.x, you must manually upgrade custom composites that you have built.

Complete the following steps to upgrade SOA composites:

1. Open the SOA composite project in JDeveloper (Use Jdeveloper 11.1.1.9.0).
2. Open `ApprovalTask.task` file in designer mode.
3. Select **General**.
4. Change **Owner** to **Group**, **SYSTEM ADMINISTRATORS**, **STATIC**.
5. Select **Outcomes lookup**.
   An **Outcomes Dialog** opens.
6. Select **Outcomes Requiring Comment**.
7. Select **Reject** and click **OK**.
8. Click **OK** again.
9. Select **Notification**.
10. Click on the update icon under **Notification**.
    Update any old URLs in notification with the corresponding new URL in 11.1.2.3.0.

    Following is an example notification content:

```
A <%/task:task/task:payload/task:RequestModel%> request has been
assigned to you for approval. <BR><BR>
Request ID: <%/task:task/task:payload/task:RequestID%> <BR>
Request type: <%/task:task/task:payload/task:RequestModel%> <BR>
<BR>
Access this task in the
<A
```

```
style="text-decoration: none;" href=<%substring-before(/task:task/
task:payload/task:url, "/workflowservice/CallbackService")%>/identity/
faces/home?tf=approval_details
>
Identity Self Service
</A>
 application or take direct action using the links below. Approvers are
required to provide a justification when rejecting the request
```

11. Click **Advanced**.
12. Deselect **Show worklist/workspace URL in notifications**.
    Provide the URL to Pending Approvals in identity application as listed in the example in step 10.
13. Repeat step 1 to step12 for other human tasks, if any, in the composite, and then save your work.
14. Right click **Project** and select **Deploy** > **Deploy to Application Server**.
15. Provide revision ID.
    Select **Mark revision as default** and **Overwrite any existing composite with same revision ID**.

> **Note:**
>
> You can also deploy the composites with different revision ID. In that case, you have to modify all approval policies using this composite.

16. Select your application server connection, if it already exists, and click **Next**.
    Create an application server connection if it does not exist.
17. Click **Next**.
18. Click **Finish**.
19. Repeat the procedure for the remaining custom composites.

# Updating Server Wallets to Remove MD5 Algorithm

OIM 12c (12.2.1.3.0) uses JDK 8, which does not support MD5 signing algorithm. If the existing keystore has a certificate which is invalid with JDK8 (that is, using disabled algorithm) used to install the 12*c* (12.2.1.3.0) binaries, you must generate the keystore and place it in the *DOMAIN_HOME*`/config/fmwconfig` directory.

If the default keystore has MD5 algorithm, then the upgrade readiness check and the examine phase of OIM configuration upgrade will fail.

To verify the validity of the certificate, do the following:

1. Check for the `jdk.certpath.disabledAlgorithms` property in the *JAVA_HOME*`/jre/lib/security/java.security` file.

   For example:
   `jdk.certpath.disabledAlgorithms=MD2, MD5, RSA keySize < 1024`
2. Check for the certificate algorithm in the existing keystore by doing the following:

a. For default keystore, *DOMAIN_HOME*/config/fmwconfig/default-keystore.jks, run the following command from the *JAVA_HOME*/jre/bin directory:

```
./keytool -list -v -keystore DOMAIN_HOME/config/fmwconfig/
default-keystore.jks
```

If you are using the custom keystores, that is, *DOMAIN_HOME*/config/fmwconfig/*name_of_custom_store*, run the following command from the *JAVA_HOME*/jre/bin directory:

```
./keytool -list -v -keystore DOMAIN_HOME/config/fmwconfig/
custom_keystore.jks
```

This command displays the keystore data. Enter the keystore password when prompted.

b. Check for the `Signature algorithm name` field value in the output of the above command. If the value of `Signature algorithm name` field and the `jdk.certpath.disabledAlgorithms` property has MD5 algorithm, then the given keystore will not be valid after upgrade.

If the keystore is not valid after upgrade, the following error in seen in the server logs while executing the request use cases after upgrade, and none of the request use cases will be successful:

```
Caused by: java.security.cert.CertPathValidatorException:
Algorithm
constraints check failed: MD5withRSA
```

3. If required, replace the certificates in the keystore with new ones using a valid signing algorithm with the following steps. Replace the placeholder values as described.

**Table 4-2 List of Placeholder Values with Description**

| Placeholder Value | Description |
|---|---|
| *temporary_directory* | A directory with write access to store the temporary keystore and csr files. For example: `/tmp` |
| *cert_req_file_name* | A descriptive filename for the certificate signing request (CSR). For example: `xell.csr` |
| *certificate_name* | A descriptive filename for the certificate. For example: `xell.cert`. |
| *key_password* | A unique credential string. (Unknown if needs to match pre-existing Oracle defaults or not.) |
| *keystore_password* | A credential that matches the credential for the existing 11g keystore being updated. |
| *key_size* | A value of 2048 when using *-genkeypair*, and *-keyalg* is `RSA`. |

**Table 4-2 (Cont.) List of Placeholder Values with Description**

| Placeholder Value | Description |
|---|---|
| *supported_algorithm_name* | A valid signing algorithm NOT on the `jdk.certpath.disabledAlgorithms` list. For example: `SHA256withRSA`. |
| *validity_period* | A validity period in days according to your organization's security requirements |
| *valid_name* | Quoted string; When provided, it is used as the subject of the generated certificate. Otherwise, the one from the certificate request is used. For example: "CN=IADGovernanceDomain, OU=CustomerOrg, O=Customer, L=City, ST=NY, C=US") |

a. Generate the keypair using `SHA256withRSA` signing algorithm.

```
./keytool -genkeypair -alias xell \
              -keypass key_password \
              -keystore /temporary_dir/temp_keystore_name.jks \
              -storepass keystore_password \
              -keyalg supported_algorithm_name \
              -keysize key_size \
              -sigalg supported_algorithm_name \
              -validity validity_period \
              -dname vaild_name
```

For example:

```
./keytool -genkeypair -alias xell \
              -keypass yourkeypassword \
              -keystore /tmp/default-keystore.jks \
              -storepass yourkeystorepassword \
              -keyalg RSA \
              -keysize 2048 \
              -sigalg SHA256withRSA \
              -validity 3600 \
              -dname "CN=IADGovernanceDomain, OU=CustomerOrg,
O=Customer, L=City, ST=NY, C=US"
```

b. Generate CSR to be used to replace the certificate used for both the *xell* and *xeltrusted* aliases in the updated keystore.

```
/keytool -certreq -alias xell \
              -keypass key_password \
              -keyalg RSA \
              -file /tmp/cert_req_file_name.csr \
              -keystore /temporary_dir/temp_keystore_name.jks \
              -storepass keystore_password \
              -storetype jks
```

For example:

```
./keytool -certreq -alias xell \
              -keypass yourkeypassword \
              -keyalg RSA \
              -file /tmp/xell.csr \
              -keystore /tmp/default-keystore.jks \
              -storepass yourkeystorepassword \
              -storetype jks
```

c. Export the Certificate for the *xell* alias.

```
./keytool -exportcert -alias xell \
              -file /temporary_dir/certificate_name.cer \
              -keystore new_keystore_location/
temp_keystore_name.jks \
              -storepass keystore_password \
              -rfc
```

For example:

```
./keytool -exportcert -alias xell \
              -file /tmp/xell.cer \
              -keystore /tmp/default-keystore.jks \
              -storepass yourkeystorepassword \
              -rfc
```

d. Import the same certificate with a second alias as *xeltrusted*. Respond with "yes" when prompted to confirm adding the same certificate under a new alias.

```
./keytool -importcert -alias xeltrusted \
              -file /temporary_dir/certificate_name.cer \
              -keystore /temporary_dir/temp_keystore_name.jks \
              -storepass keystore_password
```

For example:

```
./keytool -importcert -alias xeltrusted \
              -file /tmp/xell.cer \
              -keystore /tmp/default-keystore.jks \
              -storepass yourkeystorepassword

Certificate already exists in keystore under alias <xell>
Do you still want to add it? [no]: yes
Certificate was added to keystore
```

4. Import the newly generated keystore into the existing keystore *DOMAIN_HOME*/config/fmwconfig/default-keystore.jks by running the following command:

```
./keytool –importkeystore –srckeystore new_keystore_location/
new_keystore_name.jks -destkeystore DOMAIN_HOME/config/fmwconfig/
```

```
default-keystore.jks -srcstorepass source_keystore_password -
deststorepass destination_keystore_password -noprompt
```

For example:

```
./keytool -importkeystore -srckeystore /tmp/default-keystore.jks -
destkeystore DOMAIN_HOME/config/fmwconfig/default-keystore.jks -
srcstorepass password -deststorepass password -noprompt
```

5. Log in to Enterprise Manager console and update the `xell` named CSF key under `oim` map, with the password value which is used above to generate the new key in keystore. In the above example, the password used is *password*.
6. Move the `<export file>.cert` and the `<cert_req>.csr` to the *DOMAIN_HOME*`/config/fmwconfig/` location.

   ```
   cp /tm/xell.csr  DOMAIN_HOME/config/fmwconfig/
   ```

   ```
   cp /tmp/xell.cert  DOMAIN_HOME/config/fmwconfig/
   ```

7. If in an HA/Enterprise Deployment Guide Reference Architecture topology with multiple *DOMAIN_HOME*, copy the updated files to the Managed Server *DOMAIN_HOMEs* on each host.

   For example:

   ```
   cd ASERVER_DOMAIN_HOME/config/fmwconfig/

   scp ./default-keystore.jks ./xell.csr .xlserver.cert
   OIMHOST1:MSERVER_DOMAIN_HOME/config/fmwconfig/.

   scp ./default-keystore.jks ./xell.csr .xlserver.cert
   OIMHOST2:MSERVER_DOMAIN_HOME/config/fmwconfig/.
   ```

**Note:**

- For more information about using the keytool command, see keytool in the *Java Platform, Standard Edition Tools Reference*.
- The procedure described in this section for regenerating the `default-keystore.jks` or custom keystore includes self-signed certificates. If CA signed certificate is required, follow the standard process for the same, that is, generate the CSR and import the signed certificates in the keystore.

  During bootstrap process in OIM, the `default-keystore.jks` keystore will be configured in Keystore Service (KSS) out-of-the-box. In case of custom keystore,upload the given custom keystore to KSS after completing the upgrade. After you upload the given custom keystore to KSS, restart the servers.

  For more information about the Keystore Service commands, see OPSS Keystore Service Commands in *WLST Command Reference for Infrastructure Security*.

# Updating DB Wallets to Remove MD5 Algorithm (For SSL Enabled Setup)

If you have SSL enabled setup, update all of the DB wallets to remove any MD5 algorithms, as 12*c* (12.2.1.3.0) uses JDK 8 which does not support MD5 algorithm.

> **Note:**
>
> All these steps in this procedure must performed on the Database server. That is, on the server where OIM database is installed.

To update the DB wallet, do the following:

1. Create an Oracle Wallet with default trusted certificate using the following command:

   ```
   ./orapki wallet create -wallet <trust_wallet_name> -pwd password
   ```

   For example:
   ```
   ./orapki wallet create -wallet trust_wallet.p12 -pwd password
   ```

2. Add a self-signed certificate in the wallet with the distinguished name (DN) as `CN=root_test,C=US` using the following command:

   ```
   ./orapki wallet add -wallet trust_wallet_name -dn 'dn_name'-keysize
   2048 -sign_alg sha256  -self_signed -validity 3650 -pwd
   password_of_wallet
   ```

   For example:
   ```
   ./orapki wallet add -wallet trust_wallet.p12 -dn 'CN=root_test,C=US' -
   keysize 2048 -sign_alg sha256 -self_signed -validity 3650 -pwd
   password
   ```

3. Export the self-signed trust certificate from the Oracle wallet to use it to sign other certificates, using the following command:

   ```
   ./orapki wallet export -wallet trust_wallet_name -dn 'dn_name' -cert
   trust_cert_file_name -pwd password_of_wallet
   ```

   For example:
   ```
   ./orapki wallet export -wallet trust_wallet.p12 -dn
   'CN=root_test,C=US' -cert wallet_trusted.cert -pwd password
   ```

4. You already have an Oracle Wallet with User Certificate identified. The user wallet is, *DB_HOME*`/bin/user_wallet.p12`. The DN of this user certificate is `CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US`. Remove the existing user certificate from this wallet using the following command:

   Where, *DB_HOME* is the server where OIM database is installed.

   ```
   ./orapki wallet  remove -wallet user_wallet_name -pwd
   password_of_existing_wallet -dn 'DN_name' -user_cert
   ```

   For example:
   ```
   ./orapki wallet remove -wallet user_wallet.p12 -pwd password -dn '
   CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US ' -user_cert
   ```

5. You already have an Oracle Wallet with Requested Certificate identified. The user wallet is, *DB_HOME*/bin/user_wallet.p12. The DN of this requested certificate is CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US. Remove the existing requested certificate from this wallet using the following command:

   ```
   ./orapki wallet  remove -wallet user_wallet_name -dn 'DN_name' –cert_req -pwd password_of_existing_wallet
   ```

   For example:

   ```
   ./orapki wallet remove -wallet user_wallet.p12 -dn 'CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US' -cert_req -pwd password
   ```

6. You already have an Oracle Wallet with Trust Certificate identified. The user wallet is, *DB_HOME*/bin/user_wallet.p12. The DN of this trust certificate is CN=root_test,C=US. Remove the existing trust certificate from this wallet using the following command:

   ```
   ./orapki  wallet  remove  -wallet user_wallet_name -pwd password-of-existing_wallet  -dn  'DN_name' -trusted_cert
   ```

   For example:

   ```
   ./orapki wallet remove ¿wallet user_wallet.p12 -pwd password -dn  ' CN=root_test,C=US' -trusted_cert
   ```

7. Add a user certificate in the existing user wallet with a distinguished name as CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US using the following command:

   ```
   ./orapki wallet add -wallet user_wallet_name -dn 'dn_name' -keysize 2048 -sign_alg sha256 -pwd password_of_existing_wallet
   ```

   For example:

   ```
   ./orapki wallet add –wallet user_wallet.p12 -dn 'CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US' -keysize 2048 -sign_alg sha256 -pwd password
   ```

8. Export the user certificate request to a file using the following command:

   ```
   ./orapki wallet export -wallet user_wallet_name -dn 'dn_name' –request CSR_file_name -pwd password_of_existing_wallet
   ```

   For example:

   ```
   ./orapki wallet export -wallet user_wallet.p12 -dn 'CN=Customer,OU=Customer,O=Customer,L=City,ST=NY,C=US' -request server_creq.csr -pwd password
   ```

9. Sign the user certificate request using the trusted wallet that was created above, using the following command:

   ```
   ./orapki cert create -wallet trusted_wallet_name-request CSR_file_name -cert user_cert_file_name sign_alg sha256 -pwd password_of_exiting_user_wallet
   ```

   For example:

   ```
   ./orapki cert create -wallet trust_wallet.p12 -request server_creq.csr -cert wallet_user.cert  -sign_alg sha256 - validity 3650  -pwd password
   ```

10. Add the trusted certificate wallet_trusted.cert that you created using the above procedure to the wallet, by running the following command:

    ```
    ./orapki wallet add -wallet user_wallet_name -trusted_cert -cert trust_cert_file_name  -pwd password_of_exiting_user_wallet
    ```

    For example:

```
./orapki wallet add -wallet user_wallet.p12 -trusted_cert -cert
wallet_trusted.cert -pwd  password
```

11. Add the signed user certificate to the Oracle wallet using the following command:

    ```
    ./orapki wallet add -wallet user_wallet -user_cert -cert
    user_cert_file_name -pwd password_of_exiting_user_wallet
    ```

    ```
    ./orapki wallet add ¿wallet user_wallet.p12 -user_cert -cert
    wallet_user.cert -pwd password
    ```

12. Remove the DB trusted certificate from server keystore. In case of demo identity and demo trust, remove from `default-keystore.jks`, and in case of custom identity and custom trust, remove it from the custom trust keystore, using the following command:

    ```
    ./keytool -delete -alias alias_of_db_cert -keystore custom_trust_store
    -storepass password-of-existing-trust-keystore
    ```

    For example:

    ```
    ./keytool -delete -alias dbtrusted -keystore DOMAIN_HOME/config/
    fmwconfig/custom_trust_store.jks -storepass password
    ```

13. Import self signed DB certifiacte in trust wallet using the following command:

    ```
    keytool -import -trustcacerts -alias <alias_of_db_cert>  -noprompt -
    keystore custom_trust_store -file DB_Trust_cert_file –storepass
    password_of_existing_trust_keystore
    ```

    For example:

    ```
    keytool -import -trustcacerts -alias dbtrusted -noprompt -keystore
    DOMAIN_HOME/config/fmwconfig/custom_trust_store.jks -file /
    DB_HOME/bin/wallet_trusted.cert -storepass password
    ```

## Verifying the Memory Settings

To avoid the memory issues for Oracle Identity Manager, ensure that the memory settings are updated as per the requirements.

On Linux, as a `root` user, do the following:

1. Ensure that you set the following parameters in the `/etc/security/limits.conf` or `/etc/security/limits.d` file, to the specified values:

   ```
   FUSION_USER_ACCOUNT soft nofile 32767
   FUSION_USER_ACCOUNT hard nofile 327679
   ```

2. Ensure that you set `UsePAM` to `Yes` in the `/etc/ssh/sshd_config` file.
3. Restart `sshd`.
4. Check the `maxproc` limit and increase it to a minimum of 16384, if needed. Increasing the limit will ensure you do not run into memory issues.

   Use the following command to check the limit:

   ```
   ulimit -u
   ```

   If less than 16384, use following command to increase the limit of open files:

   ```
   ulimit -u 16384
   ```

> **Note:**
>
> You can verify that the limit has been set correctly by reissuing the command `ulimit -u`.

To ensure that the settings persist at reboot, add the following line to the `/etc/security/limits.conf` file or `/etc/security/limits.d` file:

```
oracle hard nproc 16384
```

Where, `oracle` is the install user.

5. Log out (or reboot) and log in to the system again.

## Opening the Non-SSL Ports for SSL Enabled Setup

If you have an SSL enabled and non-SSL disabled setup, you must open the non-SSL ports for Servers and Database before you proceed with the Oracle Identity Manager upgrade.

To enable non-SSL ports for servers, complete the following steps:

1. Log in to the WebLogic Server Administration Console.
2. Click **Environment** > **Servers** > and select the required admin server.
3. On the **Settings for Server** page, click the **Configuration** tab, and then click **General**.
4. Click **Lock & Edit**.
5. Select **Listen Port Enabled**. The default port is `14000`.
6. Repeat the step 1 through step 5 for each required server in the domain.

> **Note:**
>
> After you complete the upgrade, you can undo these changes as required.

For database: Ensure that database listener is listening on the same TCP port for database servers that you provided to upgrade assistant as parameters. For more information, see Enabling SSL for Oracle Identity Governance DB.

## Backing Up the `metadata.mar` File Manually

After you install the 12*c* (12.2.1.3.0) binaries in a new Oracle Home, take a backup of the 12*c* (12.2.1.3.0)_*ORACLE_HOME*`>/idm/server/apps/oim.ear/metadata.mar` file before the upgrade.

# Creating 12c Oracle Home Folder on OIMHOST1 and OIMHOST2

Create a folder for 12*c* Oracle Home on both OIMHOST1 and OIMHOST2.

It is recommended that you have the identical directory structure on OIMHOST1 and OIMHOST2.
For example:

`/home/Oracle/product/ORACLE_HOME`

# Installing Product Distributions on OIMHOST1 and OIMHOST2

Install the 12c binaries onto OIMHOST1 and OIMHOST2 or onto shared storage accessible by both. If you are using redundant binaries ensure you install into each of the redundant locations

Install the following products on both OIMHOST1 and OIMHOST2:

- Oracle Fusion Middleware Infrastructure 12*c* (12.2.1.3.0)
- Oracle SOA Suite 12*c* (12.2.1.3.0)
- Oracle Identity Manager 12*c* (12.2.1.3.0)

> **Note:**
>
> If you have redundant *`Oracle_Home`* installations, then install the binaries into each of the redundant locations.

- Installing Product Distributions
  Before beginning your upgrade, download Oracle Fusion Middleware Infrastructure, Oracle SOA Suite, and Oracle Identity Manager 12*c* (12.2.1.3.0) distributions on the target system and install them using Oracle Universal Installer.

## Installing Product Distributions

Before beginning your upgrade, download Oracle Fusion Middleware Infrastructure, Oracle SOA Suite, and Oracle Identity Manager 12*c* (12.2.1.3.0) distributions on the target system and install them using Oracle Universal Installer.

> **Note:**
>
> The 12c binaries are installed in a different location from the previous 11g binaries. You can install 12c binaries before any planned downtime for upgrade.

It is recommended that you use the simplified installation process to install the products mentioned above, using the quick installer (`fmw_12.2.1.3.0_idmquickstart_generic.jar`). The quick installer installs the Infrastructure, Oracle SOA Suite, and Oracle Identity Manager 12*c* (12.2.1.3.0) in one go.

> **Note:**
>
> If you are using Redundant binary locations, ensure that you install the software into each of those redundant locations.

See Installing Oracle Identity Governance Using Quick Installer in the *Installing and Configuring Oracle Identity and Access Management*.

The other option is to install the required product distributions — Infrastructure, Oracle SOA Suite, and Oracle Identity Manager 12*c* (12.2.1.3.0) separately. To do this, complete the following steps:

1. Sign in to the target system.
2. Download the following from Oracle Technical Resources or Oracle Software Delivery Cloud to your target system:
   - Oracle Fusion Middleware Infrastructure (`fmw_12.2.1.3.0_infrastructure_generic.jar`)
   - Oracle SOA Suite (`fmw_12.2.1.3.0_soa_generic.jar`)
   - Oracle Identity Manager (`fmw_12.2.1.3.0_idm_generic.jar`)
3. Change to the directory where you downloaded the 12*c* (12.2.1.3.0) product distribution.
4. Start the installation program for Oracle Fusion Middleware Infrastructure:
   - (UNIX) *JAVA_HOME*`/bin/java -jar fmw_12.2.1.3.0_infrastructure_generic.jar`
   - (Windows) *JAVA_HOME*`\bin\java -jar fmw_12.2.1.3.0_infrastructure_generic.jar`
5. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

   > **Note:**
   >
   > The Installation Inventory Setup screen does not appear on Windows operating systems.
6. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
7. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.

- **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
- **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

Click **Next**.

8. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see About the Directories for Installation and Configuration in *Planning an Installation of Oracle Fusion Middleware*.

9. On the Installation Type screen, select the following:

   - For Infrastructure, select **Fusion Middleware Infrastructure**
   - For Oracle SOA Suite, select **Oracle SOA Suite**
   - For Oracle Identity Manager, select **Oracle Identity and Access Management**

   Click **Next**.

10. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).

11. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.

12. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.

13. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

14. After you have installed Oracle Fusion Middleware Infrastructure, enter the following command to start the installer for your product distribution and repeat the steps above to navigate through the installer screens:

    For installing Oracle SOA Suite 12*c* (12.2.1.3.0), run the following installer:

    - (UNIX) `JAVA_HOME/bin/java -jar fmw_12.2.1.3.0_soa_generic.jar`
    - (Windows) `JAVA_HOME\bin\java -jar fmw_12.2.1.3.0_soa_generic.jar`

    For installing Oracle Identity Manager 12*c* (12.2.1.3.0), run the following installer:

- (UNIX) *JAVA_HOME*/bin/java -jar fmw_12.2.1.3.0_idm_generic.jar
- (Windows) *JAVA_HOME*\bin\java -jar fmw_12.2.1.3.0_idm_generic.jar

For more information about installing Oracle Identity Manager 12*c* (12.2.1.3.0), see Installing the Oracle Identity and Access Management Software in the *Installing and Configuring Oracle Identity and Access Management*.

# Installing the Latest Stack Patch Bundle

After you install the product distributions, Oracle strongly recommends you to apply the latest IDM Stack Patch Bundle (SPB) 12.2.1.3.0 before proceeding with the upgrade process. You can apply the patch by using the Opatch tool. Applying the SPB helps eliminate most of the upgrade issues or workarounds.

Following are the high-level tasks you should complete to apply the Stack Patch Bundle:

- **Initial Preparation**: In this phase, you stage the software, read the `README.txt` file, and verify and/or update the Opatch tool to the appropriate versions.
- **Analysis Phase**: In this phase, you run the `prestop` command with the variables from the `README.txt` file to determine if the system is ready for patching.
- **Patching Phase**: In this phase, you backup *MW_HOME* and *DOMAIN_HOME*, run the downtime command for OIG with the variables from the `README.txt` file, and then clear any temporary files.

> **Note:**
>
> At this point, you will not restart the servers. There is currently no link between the schemas, the local configuration, and the new bits. The remainder of the patching process will happen after the bootstrap.

To avoid a false failure during the domain Reconfiguration Phase of the upgrade, after completing the Patching Phase, update the following entries in the `config.xml` for the `com.oracle.cie.comdev_7.8.2.0` and `com.oracle.cie.xmldh_3.4.2.0` libraries:

```
<name>com.oracle.cie.comdev#3.0.0.0@7.8.2.0</name>
com.oracle.cie.comdev_7.8.2.0.jar


<name>com.oracle.cie.xmldh#2.0.0.0@3.4.2.0</name>
com.oracle.cie.xmldh_3.4.2.0.jar
```

From:

```
<library>
<name>com.oracle.cie.comdev#3.0.0.0@7.8.2.0</name>
<target>oim_cluster</target>
<source-path><MW_HOME>/oracle_common/modules/
com.oracle.cie.comdev_7.8.2.0.jar
</source-path>
<deployment-order>511</deployment-order>
<security-dd-model>DDOnly</security-dd-model>
```

```
<staging-mode>nostage</staging-mode>
</library>

<library>
<name>com.oracle.cie.xmldh#2.0.0.0@3.4.2.0</name>
<target>oim_cluster</target>
<source-path><MW_HOME>/oracle_common/modules/
com.oracle.cie.xmldh_3.4.2.0.jar<
/source-path>
<deployment-order>511</deployment-order>
<security-dd-model>DDOnly</security-dd-model>
<staging-mode>nostage</staging-mode>
</library>
```

To this:

```
<library>
<name>com.oracle.cie.comdev#3.0.0.0@7.8.4.0</name>
<target>oim_cluster</target>
<source-path><MW_HOME>/oracle_common/modules/
com.oracle.cie.comdev_7.8.4.0.jar
</source-path>
<deployment-order>511</deployment-order>
<security-dd-model>DDOnly</security-dd-model>
<staging-mode>nostage</staging-mode>
</library>

<library>
<name>com.oracle.cie.xmldh#2.0.0.0@3.4.4.0</name>
<target>oim_cluster</target>
<source-path><MW_HOME>/oracle_common/modules/
com.oracle.cie.xmldh_3.4.4.0.jar<
/source-path>
<deployment-order>511</deployment-order>
<security-dd-model>DDOnly</security-dd-model>
<staging-mode>nostage</staging-mode>
</library>
```

This update to the `config.xml` file changes the name of the libraries and version of the jar file in each library to the one that will be used post the patching process. Ensure that both nodes have the same settings.

For more information on the patching process, see Doc ID 2657920.1.

> **Note:**
>
> If you are using Windows or Solaris OS, download the individual Bundle Patches (BPs) from Doc ID 2457034.1.

After completing the upgrade, you have to perform the post-patch install steps. See Performing the Post-Patch Install Steps.

# Running a Pre-Upgrade Readiness Check

To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.

- About Running a Pre-Upgrade Readiness Check
  You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.
- Starting the Upgrade Assistant in Readiness Mode
  Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.
- Performing a Readiness Check with the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.
- Understanding the Readiness Report
  After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

## About Running a Pre-Upgrade Readiness Check

You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.

The Upgrade Assistant readiness check performs a read-only, pre-upgrade review of your Fusion Middleware schemas and WebLogic domain configurations that are at a supported starting point. The review is a read-only operation.

The readiness check generates a formatted, time-stamped readiness report so you can address potential issues before you attempt the actual upgrade. If no issues are detected, you can begin the upgrade process. Oracle recommends that you read this report thoroughly before performing an upgrade.

You can run the readiness check while your existing Oracle Fusion Middleware domain is online (while other users are actively using it) or offline.

You can run the readiness check any number of times before performing any actual upgrade. However, do not run the readiness check after an upgrade has been performed, as the report results may differ from the result of pre-upgrade readiness checks.

> **Note:**
>
> To prevent performance from being affected, Oracle recommends that you run the readiness check during off-peak hours.

# Starting the Upgrade Assistant in Readiness Mode

Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.

To perform a readiness check on your pre-upgrade environment with the Upgrade Assistant:

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`

   Where, *ORACLE_HOME* is the 12c Oracle Home.
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

> **Note:**
>
> If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter the following error:
>
> ```
> Xlib: connection to ":1.0" refused by server
> Xlib: No protocol specified
> ```
>
> To resolve this issue you need to set the `DISPLAY` variable to the host and desktop where a valid `X` environment is working.
>
> For example, if you are running an `X` environment inside a VNC on the local host in desktop 6, then you would set `DISPLAY=:6`. If you are running `X` on a remote host on desktop 1 then you would set this to `DISPLAY=remoteHost:1`.

For information about other parameters that you can specify on the command line, see:

- Upgrade Assistant Parameters

# Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

**Table 4-3 Upgrade Assistant Command-Line Parameters**

| Parameter | Required or Optional | Description |
|---|---|---|
| `-readiness` | Required for readiness checks<br>**Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server). | Performs the upgrade readiness check without performing an actual upgrade.<br>Schemas and configurations are checked.<br>Do not use this parameter if you have specified the `-examine` parameter. |
| `-threads` | Optional | Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas.<br>The value must be a positive integer in the range 1 to 8. The default is 4. |
| `-response` | Required for silent upgrades or silent readiness checks | Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens). |
| `-examine` | Optional | Performs the examine phase but does not perform an actual upgrade.<br>Do not specify this parameter if you have specified the `-readiness` parameter. |
| `-logLevel` *attribute* | Optional | Sets the logging level, specifying one of the following attributes:<br>• `TRACE`<br>• `NOTIFICATION`<br>• `WARNING`<br>• `ERROR`<br>• `INCIDENT_ERROR`<br>The default logging level is `NOTIFICATION`.<br>Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used. |

**Table 4-3 (Cont.) Upgrade Assistant Command-Line Parameters**

| Parameter | Required or Optional | Description |
|---|---|---|
| `-logDir` *location* | Optional | Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files.<br>The default locations are:<br>(UNIX)<br>*ORACLE_HOME*`/oracle_common/upgrade/logs`<br>*ORACLE_HOME*`/oracle_common/upgrade/temp`<br>(Windows)<br>*ORACLE_HOME*`\oracle_common\upgrade\logs`<br>*ORACLE_HOME*`\oracle_common\upgrade\temp` |
| `-help` | Optional | Displays all of the command-line options. |

# Performing a Readiness Check with the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

Readiness checks are performed only on schemas or component configurations that are at a supported upgrade starting point.

To complete the readiness check:

1. On the Welcome screen, review information about the readiness check. Click **Next**.
2. On the Readiness Check Type screen, select the readiness check that you want to perform:
   - **Individually Selected Schemas** allows you to select individual schemas for review before upgrade. The readiness check reports whether a schema is supported for an upgrade or where an upgrade is needed.
     When you select this option, the screen name changes to Selected Schemas.
   - **Domain Based** allows the Upgrade Assistant to discover and select all upgrade-eligible schemas or component configurations in the domain specified in the **Domain Directory** field.
     When you select this option, the screen name changes to Schemas and Configuration.

Leave the default selection if you want the Upgrade Assistant to check all schemas and component configurations at the same time, or select a specific option:

- **Include checks for all schemas** to discover and review all components that have a schema available to upgrade.
- **Include checks for all configurations** to review component configurations for a managed WebLogic Server domain.

Click **Next**.

3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components that have a schema available to upgrade for which you want to perform a readiness check.

   If you selected **Domain Based**: On the Component List screen, review the list of components that are present in your domain for which you want to perform a readiness check.

   If you select a component that has dependent components, those components are automatically selected. For example, if you select Oracle Platform Security Services, Oracle Audit Services is automatically selected.

   Depending on the components you select, additional screens may display. For example, you may need to:

   - Specify the Administrator server domain directory.

     Ensure that you specify the 11.1.2.3.0 Administrator server domain directory.

   - Specify schema credentials to connect to the selected schema: **Database Type**, **DBA User Name**, and **DBA Password**. As part of the pre-upgrade requirements, you had created the required user, see Creating a Non-SYSDBA User to Run the Upgrade Assistant.

     Then click **Connect**.

     > **Note:**
     >
     > Oracle database is the default database type. Make sure that you select the correct database type before you continue. If you discover that you selected the wrong database type, do not go back to this screen to change it to the correct type. Instead, close the Upgrade Assistant and restart the readiness check with the correct database type selected to ensure that the correct database type is applied to all schemas.

   - Select the **Schema User Name** option and specify the **Schema Password**.

   Click **Next** to start the readiness check.

4. On the Readiness Summary screen, review the summary of the readiness checks that will be performed based on your selections.

   If you want to save your selections to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

> **Note:**
>
> When performing a silent execution by specifying the response file on the Upgrade Advisor command line, some tests in the upgrade advisor may dynamically look-up the JDBC URL connection strings directly from the source domain, regardless of values stored in the response file. If the DB connection strings in the response file needs to be customized in any way, changes to the response file may not effect execution. If this occurs, the source domain datasource JDBC URLs may need to be edited directly.

For a detailed report, click **View Log**.

Click **Next**.

5. On the Readiness Check screen, review the status of the readiness check. The process can take several minutes.

   If you are checking multiple components, the progress of each component displays in its own progress bar in parallel.

   When the readiness check is complete, click **Continue**.

6. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):

   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.
   - If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

## Understanding the Readiness Report

After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

The format of the readiness report file is:

`readiness_`*`timestamp`*`.txt`

where *`timestamp`* indicates the date and time of when the readiness check was run.

A readiness report contains the following information:

**Table 4-4 Readiness Report Elements**

| Report Information | Description | Required Action |
|---|---|---|
| Overall Readiness Status: SUCCESS or FAILURE | The top of the report indicates whether the readiness check passed or completed with one or more errors. | If the report completed with one or more errors, search for FAIL and correct the failing issues before attempting to upgrade. You can re-run the readiness check as many times as necessary before an upgrade. |
| Timestamp | The date and time that the report was generated. | No action required. |
| Log file location<br>*ORACLE_HOME*/oracle_common/upgrade/logs | The directory location of the generated log file. | No action required. |
| Readiness report location<br>*ORACLE_HOME*/oracle_common/upgrade/logs | The directory location of the generated readiness report. | No action required. |
| Names of components that were checked | The names and versions of the components included in the check and status. | If your domain includes components that cannot be upgraded to this release, such as SOA Core Extension, do not attempt an upgrade. |
| Names of schemas that were checked | The names and current versions of the schemas included in the check and status. | Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade. |
| Individual Object Test Status: FAIL | The readiness check test detected an issue with a specific object. | Do not upgrade until all failed issues have been resolved. |
| Individual Object Test Status: PASS | The readiness check test detected no issues for the specific object. | If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade. |
| Completed Readiness Check of <Object> Status: FAILURE | The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype. | Do not upgrade until all failed issues have been resolved. |
| Completed Readiness Check of <Object> Status: SUCCESS | The readiness check test detected no issues. | No action required. |

Here is a sample Readiness Report file. Your report may not include all of these checks.

> **Note:**
>
> If the following warning occurs, install Patch 27830741 and re-run the readiness check to ensure that this warning is eliminated before continuing.
>
> ```
> [oracle] [WARNING] []
> [com.oracle.cie.domain.template.catalog.impl.LocalTemplateCat] [tid:
> 13] [ecid: 7b6f129a-3761-461b-a64a-fb41fa79c822-00000002,0] Couldn't
> load [/u01/oracle/products/12c/identity/soa/common/templates/wls/
> oracle.bpm.jms.reconfig_template_12.2.1.3.0.jar].[[
> java.util.MissingResourceException: Not managing namespace: (config).
>       at
> com.oracle.cie.common.util.ResourceBundleManager.getPublishedMessage(Res
> ourceBundleManager.java:249
> ```

```
Upgrade readiness check completed with one or more errors.

This readiness check report was created on Tue May 30 11:15:52 EDT 2016
Log file is located at: ORACLE_HOME/oracle_common/upgrade/logs/
ua2016-05-30-11-14-06AM.log
Readiness Check Report File: ORACLE_HOME/oracle_common/upgrade/logs/
readiness2016-05-30-11-15-52AM.txt

Starting readiness check of components.

Oracle Metadata Services
   Starting readiness check of Oracle Metadata Services.
     Schema User Name: DEV11_MDS
     Database Type: Oracle Database
     Database Connect String: machinename@yourcompany.com
     VERSION Schema DEV11_MDS is currently at version 12.1.1.1.0.
Readiness checks will now be performed.
   Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
   Completed schema test: TEST_REQUIRED_TABLES --> Test that the
schema contains all the required tables +++ PASS
   Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the
schema contains all the required stored procedures
     EXCEPTION     Schema is missing a required procedure:
GETREPOSITORYFEATURES
   Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the
schema contains all the required stored procedures +++ FAIL
   Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema
contains all the required database views
   Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:
TEST_REQUIRED_INDEXES --> Test that the table contains all the
required indexes
   Completed index test for table MDS_ATTRIBUTES:
TEST_REQUIRED_INDEXES --> Test that the table contains all the
required indexes +++ PASS
   Starting index test for table MDS_COMPONENTS:
```

```
TEST_REQUIRED_INDEXES --> Test that the table contains all the required
indexes
   Completed index test for table MDS_TXN_LOCKS: TEST_REQUIRED_INDEXES -->
Test that the table contains all the required indexes +++ PASS
   Starting schema test:  TEST_REQUIRED_TRIGGERS  Test that the schema has
all the required triggers
   Completed schema test: TEST_REQUIRED_TRIGGERS --> Test that the schema
has all the required triggers +++ PASS
   Starting schema test:  TEST_MISSING_COLUMNS  Test that tables and views
are not missing any required columns
   Completed schema test: TEST_MISSING_COLUMNS --> Test that tables and
views are not missing any required columns +++ PASS
   Starting schema test:  TEST_UNEXPECTED_TABLES  Test that the schema does
not contain any unexpected tables
   Completed schema test: TEST_UNEXPECTED_TABLES --> Test that the schema
does not contain any unexpected tables +++ PASS
   Starting schema test:  TEST_UNEXPECTED_PROCEDURES  Test that the schema
does not contain any unexpected stored procedures
   Completed schema test: TEST_UNEXPECTED_PROCEDURES --> Test that the
schema does not contain any unexpected stored procedures +++ PASS
   Starting schema test:  TEST_UNEXPECTED_VIEWS  Test that the schema does
not contain any unexpected views
   Completed schema test: TEST_UNEXPECTED_VIEWS --> Test that the schema
does not contain any unexpected views +++ PASS
   Starting index test for table MDS_ATTRIBUTES:  TEST_UNEXPECTED_INDEXES --
> Test that the table does not contain any unexpected indexes
   Completed index test for table MDS_ATTRIBUTES: TEST_UNEXPECTED_INDEXES --
> Test that the table does not contain any unexpected indexes +++ PASS
   Completed index test for table MDS_LABELS: TEST_UNEXPECTED_INDEXES -->
Test that the table does not contain any unexpected indexes +++ PASS
   Starting index test for table MDS_LARGE_ATTRIBUTES:
TEST_UNEXPECTED_INDEXES --> Test that the table does not contain any
unexpected indexes
   Starting schema test:  TEST_UNEXPECTED_TRIGGERS  Test that the schema
does not contain any unexpected triggers
   Completed schema test: TEST_UNEXPECTED_TRIGGERS --> Test that the schema
does not contain any unexpected triggers +++ PASS
   Starting schema test:  TEST_UNEXPECTED_COLUMNS  Test that tables and
views do not contain any unexpected columns
   Completed schema test: TEST_UNEXPECTED_COLUMNS --> Test that tables and
views do not contain any unexpected columns +++ PASS
   Starting datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Completed datatype test for table MDS_ATTRIBUTES:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes +++ PASS
   Starting datatype test for table MDS_COMPONENTS:
TEST_COLUMN_DATATYPES_V2 --> Test that all table columns have the proper
datatypes
   Starting permissions test:  TEST_DBA_TABLE_GRANTS  Test that DBA user has
privilege to view all user tables
   Completed permissions test: TEST_DBA_TABLE_GRANTS --> Test that DBA user
has privilege to view all user tables +++ PASS
   Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
```

```
tablespaces automatically extend if full
   Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the
schema tablespaces automatically extend if full +++ PASS
   Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that
tablespace quota for this user is sufficient to perform the upgrade
   Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade ++
+ PASS
   Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
   Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
   Starting schema test:  TEST_DATABASE_VERSION  Test that the
database server version number is supported for upgrade
     INFO   Database product version: Oracle Database 11g Enterprise
Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing
options
   Completed schema test: TEST_DATABASE_VERSION --> Test that the
database server version number is supported for upgrade +++ PASS
   Finished readiness check of Oracle Metadata Services with status:
FAILURE.
```

Some errors may be related to the Oracle Fusion Middleware Infrastructure product components rather than Identity and Access Management product components. If errors occur, see Troubleshooting the Infrastructure Upgrade in the *Upgrading to the Oracle Fusion Middleware Infrastructure* Guide for potential workarounds.

If you are running the 12.1.3.0 version of Oracle Fusion Middleware IAU Schemas, and those schemas were upgraded from 11*g* (11.1.1.7 and later) or 12*c* (12.1.2.0), your readiness check may fail with the following error:

> **Note:**
>
> This is not applicable for Oracle Identity Manager.

```
Starting index test for table IAU_COMMON:  TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes
     INFO Audit schema index DYN_EVENT_CATEGORY_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_EVENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_TENANT_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_INDEX in table IAU_COMMON is missing
the required columns or index itself is missing. This maybe caused by a known
issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_COMPONENT_TYPE_INDEX in table IAU_COMMON is
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
     INFO Audit schema index DYN_USER_TENANT_INDEX in table IAU_COMMON is
```

```
missing the required columns or index itself is missing. This maybe caused by
a known issue, anyway, this missing index will be added in 12.2.2 upgrade.
   Completed index test for table IAU_COMMON: TEST_REQUIRED_INDEXES --> Test
that the table contains all the required indexes +++ FAIL
```

> **Note:**
>
> You can ignore the missing index error in the readiness report. This is a known issue. The corresponding missing index is added during the schema upgrade operation. This error does not occur if the schema to be upgraded was created in 12*c* using the RCU.

# Creating the Required 12*c* Schemas Using RCU

When upgrading from 11g, you must create the required 12c schemas. If your setup is not SSL enabled, you can use the Upgrade Assistant to create schemas by using the default schema settings. In case of SSL enabled setup, you can use the Repository Creation Utility (RCU) to create customized schemas. This procedure describes how to create schemas using the RCU. Information about using the Upgrade Assistant to create schemas is covered in the upgrade procedures.

> **Note:**
>
> This step is not required for non-SSL setup, as the Upgrade Assistant creates the necessary 12*c* schemas during the upgrade process.
>
> For SSL enabled setup, you must run the RCU to create the necessary 12*c* schemas.

> **Note:**
>
> If you are upgrading from a previous 12*c* release of Oracle Fusion Middleware, you do not need to re-create these schemas if they already exist. Refer to the steps below to identify the existing schemas in your domain.

The following schemas must exist before you upgrade to 12*c*. If you are upgrading from 11*g*, and you are not sure which schemas you currently have, refer to the steps below to identify the existing schemas in your domain. You do not need to re-create these schemas if they already exist.

- **Service Table** schema (*prefix*_STB). This schema is new in 12*c* and is required for domain-based upgrades. It stores basic schema configuration information (for example, schema prefixes and passwords) that can be accessed and used by other Oracle Fusion Middleware components during the domain creation. This schema is automatically created when you run the Repository Creation Utility (RCU), where you specify the existing schema owner prefix that you used for your other 11*g* schemas.

> **Note:**
>
> If the Service Table schema does not exist, you may encounter the error message `UPGAST-00328 : The schema version registry table does not exist on this database. If that happens it is necessary to create the service table schema in order to run Upgrade Assistant`

- **Oracle Platform Security Services (OPSS)** schema (*prefix*`_OPSS`). This schema is required if you are using an OID-based security store in 11*g*. This schema is automatically created when you run the Repository Creation Utility (RCU). The only supported LDAP-based OPSS security store is Oracle Internet Directory (OID). An LDAP-based policy store is typically used in production environments. You do not need to reassociate an OID-based security store before upgrade. While the Upgrade Assistant is running, you can select the OPSS schema. The Upgrade Assistant upgrades the OID-based security store automatically.

> **Note:**
>
> The 12*c* OPSS database schema is required so that you can reference the 12*c* schema during the reconfiguration of the domain. Your domain continues to use the OID-based security store after the upgrade is complete.

To create the 12*c* schemas with the RCU:

1. (Optional) If you are upgrading from 11*g*, and you wish to confirm the schemas which are present in your existing domain, then connect to the database as a user with DBA privileges, and run the following code from SQL*Plus:

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY ORDER BY MRC_NAME, COMP_ID ;
```

2. Verify that a certified JDK already exists on your system by running `java -version` from the command line. For 12*c* (12.2.1.3.0), the certified JDK is 1.8.0_131 and later.

   Ensure that the `JAVA_HOME` environment variable is set to the location of the certified JDK. For example:

   - (UNIX) `setenv JAVA_HOME=/home/Oracle/Java/jdk1.8.0_131`
   - (Windows) `set JAVA_HOME=C:\home\Oracle\Java\jdk1.8.0_131`

   Add `$JAVA_HOME/bin` to `$PATH`.

3. Go to the `oracle_common/bin` directory:

   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/bin`

- (Windows) *NEW_ORACLE_HOME*\oracle_common\bin

4. Start the RCU:
   - (UNIX) ./rcu
   - (Windows) rcu.bat
5. On the Welcome screen, click **Next**.
6. On the Create Repository screen, select **Create Repository** and then select **System Load and Product Load**.

   If you do not have DBA privileges, select **Prepare Scripts for System Load**. This will generate a SQL script containing all the same SQL statements and blocks that would have been called if the RCU were to execute the actions for the selected components. After the script is generated, a user with the necessary SYS or SYSDBA privileges can execute the script to complete the system load phase.
   Click **Next**.
7. On the Database Connection Details screen, select the **Database Type** and enter the connection information for the database that hosts the 11*g* schemas. See the table below:

> **Note:**
>
> If using a recent database version and you have validated your database version as recommended, you may ignore the following popup warning and proceed with RCU execution.
>
> The selected database is more recent than the supported list of certified databases for this version of Oracle Fusion Middleware. See Oracle Fusion Middleware Supported System Configurations on the Oracle Technical Resources for the most recent list of certified databases.

**Table 4-5 Connection Credentials for Oracle Databases and Oracle Databases with Edition-Based Redefinition**

| Option | Description and Example |
|---|---|
| Host Name | Specify the name of the server where your database is running in the following format:<br>examplehost.exampledomain.com<br>For Oracle RAC databases, specify the SCAN name or one of the node names in this field. |
| Port | Specify the port number for your database. The default port number for Oracle databases is 1521. |
| Service Name | Specify the service name for the database. Typically, the service name is the same as the global database name.<br>For Oracle RAC databases, specify the service name of one of the nodes in this field. For example:<br>examplehost.exampledomain.com |

**Table 4-5 (Cont.) Connection Credentials for Oracle Databases and Oracle Databases with Edition-Based Redefinition**

| Option | Description and Example |
|---|---|
| Username | Specify the FMW user created for the upgrade process, or specify another SYSDBA user account for your database. The Oracle Database default SYSDBA account is `SYS`. |
| Password | Enter the password for your database user. |
| Role | Select the database user's role from the drop-down list: **Normal** or **SYSDBA** |

8. On the Select Components screen, select **Select existing prefix** and select the prefix that was used to create the existing 11*g* schemas from the drop-down menu (for example, `DEV11G`). This prefix is used to logically group schemas together for use in this domain. Select the following schemas:
   - If you are upgrading an SSL enabled setup, select the following schemas:
     - `User Messaging Service (prefix_UMS)`
     - `Weblogic Services (prefix_WLS)`
     - `Audit services (prefix_IAU_APPEND and prefix_IAU_VIEWER)`

     > **Note:**
     >
     > The Common Infrastructure Services `(prefix_STB)` and Oracle Platform Security Services (`prefix_OPSS`) schemas are selected by default. IAU is greyed out if 11*g* is configured for Audit Data Store.

   - If you are upgrading a non-SSL enabled setup, select the following schemas:
     - `Weblogic Services (prefix_WLS)`
     - `Audit services (prefix_IAU_APPEND and prefix_IAU_VIEWER)`

     > **Note:**
     >
     > The User Messaging Service (`prefix_UMS`) should be un-checked when upgrading a non-SSL enabled setup. The existing 11g `prefix_ORASDPM` schema will be upgraded in-place. The `prefix_UMS` schema would be orphaned by the upgrade process and is unnecessary.

   > **Note:**
   >
   > All the required schemas will be created by the Upgrade Assistant (UA) at the time of upgrading the schemas, if they are not created in this step using RCU.

Make a note of the prefix and schema names for the components you are installing as you will need this information when you configure the installation. Click **Next**.

9. In the Checking Prerequisites dialog, verify that the prerequisites check is successful, then click **OK**.
10. On the Schema Passwords screen, specify the passwords for your schema owners.

    Make a note of the passwords you enter on this screen as you will need this information while configuring your product installation.
11. On the Map Tablespaces screen, configure the required tablespace mapping for the schemas to be created. Also, select the **Encrypt Tablespace** checkbox if it appears, and then click **Next**. Click **OK** in the confirmation dialog when it appears. Finally, click **OK** when the progress dialog shows that the tablespace creation is complete.

> **Note:**
>
> The **Encrypt Tablespace** checkbox will appear if your Oracle or Oracle EBR database has Transparent Data Encryption (TDE) enabled when you start the RCU.

12. Verify the information on the Summary screen and click **Create** to begin schema creation.

    This screen contains information about the log files that were created from this RCU operation. Click on the name of a particular log file to view the contents of that file.
13. Review the information on the Completion Summary screen to verify that the operation is completed successfully. Click **Close** to complete the schema creation.

# Stopping Servers and Processes

Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server, Node manager, and any managed servers.

An Oracle Fusion Middleware environment can consist of an Oracle WebLogic Server domain, an Administration Server, multiple managed servers, Java components, system components such as Identity Management components, and a database used as a repository for metadata. The components may be dependent on each other, so they must be stopped in the correct order.

> **Note:**
>
> The procedures in this section describe how to stop the existing, pre-upgrade servers and processes using the WLST command-line utility or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager.

> **Note:**
>
> Stop all of the servers in your deployment, except for the Database. The Database must be up during the upgrade process.

To stop your pre-upgrade Fusion Middleware environment, navigate to the pre-upgrade domain and follow the steps below.

**Step 1: Stop System Components**

To stop 11g system components, such as Oracle HTTP Server, use the `opmnctl` script:

> **Note:**
>
> If the Oracle HTTP server is shared with other services, then you can choose *not* to stop the Oracle HTTP server.

- (UNIX) *OHS_INSTANCE_HOME*`/bin/opmnctl stopall`
- (Windows) *OHS_INSTANCE_HOME*`\bin\opmnctl stopall`

You can stop system components in any order.

**Step 2: Stop the Managed Servers**

Depending on the method you followed to start the managed servers, follow one of the following methods to stop the WebLogic Managed Server:

When prompted, enter your user name and password.

**Method 1**: To stop a WebLogic Server Managed Server by using the Weblogic Console:

- Log into Weblogic console as a `weblogic` Admin.
- Go to **Servers** > **Control** tab.
- Select the required managed server.
- Click **Shutdown**.

**Method 2**: To stop a WebLogic Server Managed Server using node manager, run the following commands:

```
wls:/offline>nmConnect('nodemanager_username','nodemanager_password',
            'AdminServerHostName','5556','domain_name',
            'DOMAIN_HOME')

wls:/offline>nmKill('ManagedServerName')
```

**Step 3: Stop the Administration Server**

When you stop the Administration Server, you also stop the processes running in the Administration Server, including the WebLogic Server Administration Console and Fusion Middleware Control.

Follow one of the following methods to stop the Administration Server:

When prompted, enter your user name, password, and the URL of the Administration Server.

**Method 1**: To stop a Administration Server by using the Weblogic Console:

- Log into Weblogic console as a `weblogic` Admin.
- Go to **Servers** > **Control** tab.
- Select the required admin server.
- Click **Shutdown**.

**Method 2**: To stop a WebLogic Server Managed Server using node manager, run the following commands:

```
wls:/offline>nmConnect('nodemanager_username','nodemanager_password',
            'AdminServerHostName','5556','domain_name',
            'DOMAIN_HOME')

wls:/offline>nmKill('AdminServer')
```

**Step 4: Stop Node Manager**

To stop Node Manager, run the following command:

```
kill $(ps -ef | grep nodemanager | | awk '{print $2}')
```

# Upgrading Schemas on OIMHOST1

Upgrade all of the necessary schemas for Oracle Identity Manager, on OIMHOST1 by using the Upgrade Assistant.

> **Note:**
>
> For SSL enabled setup, it is mandatory to run the Repository Creation Utility (RCU) to create the necessary 12c schemas. See Creating the Required 12c Schemas Using RCU (Optional) For a non-SSL enabled setup, running the RCU to create the 12c schemas is optional.

- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

## Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade supported product schemas to the current release of Oracle Fusion Middleware.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

**Note:**

High waits and performance degradation may be seen due to 'library cache lock' (cycle)<='library cache lock' for DataPump Worker (DW) processes in the 12.2 RAC environment. To resolve this issue, you should disable S-Optimization by using the following command:

```
ALTER SYSTEM SET "_lm_share_lock_opt"=FALSE SCOPE=SPFILE
SID='*';
```

After running the above command, restart all the RAC instances. After the upgrade is complete, you can reset the parameter by using the following command:

```
alter system reset "_lm_share_lock_opt" scope=spfile sid='*';
```

- Identifying Existing Schemas Available for Upgrade
  This optional task enables you to review the list of available schemas before you begin the upgrade by querying the schema version registry. The registry contains schema information such as version number, component name and ID, date of creation and modification, and custom prefix.
- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Oracle Identity Manager Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

## Identifying Existing Schemas Available for Upgrade

This optional task enables you to review the list of available schemas before you begin the upgrade by querying the schema version registry. The registry contains schema information such as version number, component name and ID, date of creation and modification, and custom prefix.

You can let the Upgrade Assistant upgrade all of the schemas in the domain, or you can select individual schemas to upgrade. To help decide, follow these steps to view a list of all the schemas that are available for an upgrade:

1. If you are using an Oracle database, connect to the database by using an acount that has Oracle DBA privileges, and run the following from SQL*Plus:

```
SET LINE 120
SET PAGESIZE 20
```

```
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY ORDER BY VERSION, MRC_NAME, COMP_ID;
```

2. Examine the report that is generated.

   If an upgrade is not needed for a schema, the `schema_version_registry` table retains the schema at its pre-upgrade version.

3. Note the schema prefix name that was used for your existing schemas. If you are using RCU for creating new 12c schemas, use the same prefix.

> **Notes:**
>
> - If you used an OID-based policy store in 11*g*, make sure to create a new OPSS schema before you perform the upgrade. After the upgrade, the OPSS schema remains an LDAP-based store.
> - You can only upgrade schemas for products that are available for upgrade in Oracle Fusion Middleware release 12*c* (12.2.1.3.0). Do not attempt to upgrade a domain that includes components that are not yet available for upgrade to 12*c* (12.2.1.3.0).

## Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.
>
> To ensure that UTF-8 is used by the JVM, use the JVM option `-Dfile.encoding=UTF-8`.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Set a parameter for the Upgrade Assistant to include the JVM encoding requirement:

- (UNIX) `export UA_PROPERTIES="-Dfile.encoding=UTF-8"`
- (Windows) `set UA_PROPERTIES="-Dfile.encoding=UTF-8"`

3. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

> **Note:**
>
> In the above command, *ORACLE_HOME* refers to the 12*c* (12.2.1.3.0) Oracle Home.

For information about other parameters that you can specify on the command line, such as logging parameters, see:

# Upgrading Oracle Identity Manager Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

**Note:**

- If the pre-upgrade environment has 11g Audit schema (IAU), you must first upgrade Audit schema only, using the **Individually Selected Schema** option on the Selected Schemas screen, and selecting **Oracle Audit Services** schema. Ensure that you select the appropriate IAU schema from the list of available IAU schemas. The upgrade assistant will not detect the corresponding IAU schema from the provided domain directory automatically. Hence, you must select it manually. Once the IAU schema is upgraded, run the Upgrade Assistant again to upgrade the remaining schemas using the **All Schema Used by a domain** option on the Selected Schemas screen.
- If there is no Audit schema (IAU) in your pre-upgrade environment, use the **All Schema Used by a Domain** option on the Selected Schemas screen and proceed.
- To check whether the pre-upgrade environment has the IAU schema and its version, run the following SQL command using a user with sysdba privileges:

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY WHERE COMP_ID LIKE '%IAU%' ORDER BY
VERSION, MRC_NAME, COMP_ID ;
```

  This command lists the IAU schemas available in your configured database, and their version.

**Note:**

For SSL enabled setup, it is mandatory to run the Repository Creation Utility (RCU) to upgrade the existing schemas. For more information, see Creating the Required 12c Schemas Using RCU (Optional). For non-SSL enabled setup, running RCU to upgrade schemas is optional.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select the schema upgrade operation that you want to perform:

   - **Individually Selected Schemas** if you want to select individual schemas for upgrade and you do not want to upgrade all of the schemas used by the domain.

     > **Caution:**
     >
     > Upgrade only those schemas that are used to support your 12*c* (12.2.1.3.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 12*c* (12.2.1.3.0).

   - **All Schemas Used by a Domain** to allow the Upgrade Assistant to discover and select all components that have a schema available to upgrade in the domain specified in the **Domain Directory** field. This is also known as a *domain assisted schema upgrade*. Additionally, the Upgrade Assistant pre-populates connection information on the schema input screens.

     > **Note:**
     >
     > Oracle recommends that you select **All Schemas Used by a Domain** for most upgrades to ensure all of the required schemas are included in the upgrade.

   > **Note:**
   >
   > If your OIM database has only the SSL port open, select **Individually Selected Schemas** option, and then select Oracle Identity Manager schema only. This automatically selects the dependant schemas. For upgrading SSL enabled setup, you must provide the non-SSL Database connection details on the Schema Credentials screen.

   Click **Next**.

3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components for which you want to upgrade schemas. When you select a component, the schemas and any dependencies are automatically selected.

> **Note:**
>
> For the individual schema option, the domain configuration is not accessed, and therefore password values are carried forward from the previous screen. If you encounter any connection failure, check the cause and fix it.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Schema Credentials screen(s), specify the database connection details for each schema you are upgrading (the screen name changes based on the schema selected):
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.

> **Note:**
>
> The component ID or schema name is changed for `UCSUMS` schema as of release 12.1.2, which means the Upgrade Assistant does not automatically recognize the possible schemas and display them in a drop-down list. You must manually enter the name in a text field. The name can be either *`prefix`*`_ORASDPM` or *`prefix`*`_UMS`, depending on the starting point for the upgrade.
> **11*g* to 12*c* Upgrades Only**: The `UCSUMS` schema is not auto-populated. Enter *`prefix`*`_ORASDPM` as the user. The upgrade environment uses `_ORASDPM` as the schema name, whereas in the 12*c* environment it is referred to as `_UMS`.

6. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

7. On the Upgrade Summary screen, review the summary of the options you have selected for schema upgrade.

   Verify that the correct Source and Target Versions are listed for each schema you intend to upgrade.

   If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   Click **Upgrade** to start the upgrade process.

8. On the Upgrade Progress screen, monitor the status of the upgrade.

   > **Caution:**
   >
   > Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

   If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

   > **Note:**
   >
   > The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

   Click **Next**.

9. After the upgrade completes successfully, the Upgrade Assistant provides the upgrade status and lists the next steps to take in the upgrade process. You should review the Upgrade Success screen of the Upgrade Assistant to determine the next steps based on the information provided. The wizard shows the following information:

```
Upgrade Succeeded.

Log File: /u01/oracle/products/12c/identity/oracle_common/upgrade/logs/
ua2020-09-15-18-27-29PM.txt
Post Upgrade Text file: /u01/oracle/products/12c/identity/oracle_common/upgrade/
logs/postupgrade2020-09-15-18-27-29PM.txt
Next Steps

Oracle SOA
1. The Upgrade Assistant has successfully upgraded all active instances. You can
now close the Upgrade Assistant.
2. The automated upgrade of closed instances will continue in the background after
the Upgrade Assistant is exited and until the SOA server is started,at which point
the upgrade will stop. You can schedule the upgrade of any remaining closed
instances for a time when the SOA server is less busy.
   Close the Upgrade Assistant and use the instance data administration scripts to
administer and monitor the overall progress of this automated upgrade. For more
information see "Administering and Monitoring the Upgrade of SOA Instance Data" in
Upgrading SOA Suite and Business Process Management.
```

Click **Close** to complete the upgrade and close the wizard.

If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *ORACLE_HOME*/oracle_common/upgrade/logs.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

## Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

If you are using an Oracle database, connect to the database as a user having Oracle DBA privileges, and run the following from SQL*Plus to get the current version numbers:

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY ORDER BY MRC_NAME, COMP_ID ;
```

In the query result:

- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 12.2.1.3.0.

  Here is a sample output:

```
MRC_NAME    COMP_ID           OWNER              VERSION     STATUS   UPGRADED
--------  -----------     ------------------    -----------  --------  ---------
```

```
 PREFIX    BIPLATFORM     PREFIX_BIPLATFORM     11.1.1.9.0     VALID       N
 PREFIX    OPSS           PREFIX_OPSS           12.2.1.0.0     VALID
Y
 PREFIX    UCSUMS         PREFIX_ORASDPM        12.2.1.0.0     VALID       Y
 PREFIX    WLS            PREFIX_WLS            12.2.1.0.0     VALID       N
 PREFIX    IAU            PREFIX_IAU            12.2.1.2.0     VALID
N
 PREFIX    IAU_APPEND     PREFIX_IAU_APPEND     12.2.1.2.0     VALID       N
 PREFIX    IAU_VIEWER     PREFIX_IAU_VIEWER     12.2.1.2.0     VALID
N
 PREFIX    MDS            PREFIX_MDS            12.2.1.3.0     VALID       Y
 PREFIX    OIM            PREFIX_OIM            12.2.1.3.0     VALID
Y
 PREFIX    SOAINFRA       PREFIX_SOAINFRA       12.2.1.3.0     VALID       Y
 PREFIX    STB            PREFIX_STB            12.2.1.3.0     VALID       N

11 rows selected.
```

**Note:**

Some schema versions may remain at the pre-upgrade version number and others may have various 12.2.1.x.y version numbers listed.

```
BIPLATFORM - is not upgraded and remains 11.1.1.9.0
Audit schemas (IAU*) may not upgrade if pre-exist in 11g,
otherwise will be created at version 12.2.1.2.0.
WLS schema will be created new at version 12.2.1.0.0
STB schema will be created new at 12.2.1.3.0
```

- The `STATUS` field will be either `UPGRADING` or `UPGRADED` during the schema patching operation, and will become `VALID` when the operation is completed.
- If the status appears as `INVALID`, the schema update failed. You should examine the logs files to determine the reason for the failure.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` may appear as `INVALID`, but that does not indicate a failure. In the case where the IAU schemas are created rather than upgraded, they will show up as `VALID`.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

# Reconfiguring the Domain on OIMHOST1

Run the Reconfiguration Wizard on OIMHOST1 to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).

- About Reconfiguring the Domain
  Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).

# About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 12*c* (12.2.1.3.0).

> **Note:**
>
> - If custom applications are deployed in OIM 11g, the Reconfiguration Wizard will display a warning message along with the list of custom applications and libraries (if present). These applications/libraries will continue pointing to the 11g location even after upgrade to OIM 12c (12.2.1.3). You have to update them manually after the upgrade.
> - After reconfiguration, the domain continues to remain in the same location (that is, the 11g *DOMAIN_HOME*). It will not be moved or copied to 12c `$ORACLE_HOME/user_projects/domains/`.

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

**Note:**

Before you begin the domain reconfiguration, note the following limitations:

- The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
- Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.

  The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.
- If the installation that you're upgrading does not use Oracle Access Manager (OAM), then you must edit two files to prevent the Reconfiguration Wizard from attempting to update the nonexistent OAM Infrastructure schema, which causes the upgrade to fail.

  Comment out the lines in your `$DOMAIN_HOME/init-info/domain-info.xml` that are similar to this example:

  Where, *DOMAIN_HOME* is the Administrator server domain home.

```
<!--extention-template-ref name="Oracle Identity Navigator"
  version="11.1.1.3.0"
  location="/u01/app/oracle/product/fmw/iam111130/common/
templates/applications/oracle.oinav_11.1.1.3.0_template.jar"
symbol=""/-->
<!--install-comp-ref name="oracle.idm.oinav"
version="11.1.1.3.0"

symbol="oracle.idm.oinav_11.1.1.3.0_iam111130_ORACLE_HOME"
  product_home="/u01/app/oracle/product/fmw/iam111130"/-->
```

  and similarly comment out the lines in `$DOMAIN_NAME/config/config.xml` that are similar to this example:

```
<!--app-deployment>
  <name>oinav#11.1.1.3.0</name>
  <target>AdminServer</target>
  <module-type>ear</module-type>

  <source-path>/u01/app/oracle/product/fmw/iam111130/oinav/
modules/oinav.ear_11.1.1.3.0/oinav.ear</source-path>
  <deployment-order>500</deployment-order>
  <security-dd-model>DDOnly</security-dd-model>
  <staging-mode>nostage</staging-mode>
</app-deployment-->
```

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.
- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Follow these instructions to reconfigure the existing domain using the Reconfiguration Wizard. See Reconfiguring WebLogic Domains in *Upgrading Oracle WebLogic Server*.

- Backing Up the Domain
- Starting the Reconfiguration Wizard
- Reconfiguring the Oracle Identity Manager Domain
  Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain.

## Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the Administration server domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy /Oracle/Middleware/user_projects/domains to /Oracle/Middleware/user_projects/domains_backup`.

   (UNIX) `cp -rf mydomain mydomain_backup`
2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

## Starting the Reconfiguration Wizard

> **Note:**
>
> - Shut down the administration server and all managed servers before starting the reconfiguration process. See Stopping Servers and Processes.
> - If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only, where, primary node is the Administration Server. Use the `Pack`/`Unpack` utility to apply the changes to other cluster members in the domain.

To start the Reconfiguration Wizard in graphical mode:

1. Open the command shell (on UNIX operating systems) or open a command prompt window (on Windows operating systems).
2. Set the following environment variables:
   - `WLS_ALTERNATIVE_TYPES_DIR` - Use the following command:
     **(Non-Bash)**: `setenv WLS_ALTERNATIVE_TYPES_DIR` *`ORACLE_HOME`*`/idm/server/loginmodule/wls`

     **(Bash):**`export WLS_ALTERNATIVE_TYPES_DIR=`*`ORACLE_HOME`*`/idm/server/loginmodule/wls`

     Where, *`ORACLE_HOME`* is the 12c Oracle Home.
   - `CONFIG_JVM_ARGS` - The `./reconfig.sh` command may display the following error to indicate that the default cache directory is not valid:

     ```
     *sys-package-mgr*: can't create package cache dir
     ```

     To avoid the error, change the cache directory by setting `CONFIG_JVM_ARGS`.

     For example: `CONFIG_JVM_ARGS=-Dpython.cachedir=`*`any_writable_directory`*.
3. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *`ORACLE_HOME`*`/oracle_common/common/bin`
   - (Windows) *`ORACLE_HOME`*`\oracle_common\commom\bin`

   Where, *`ORACLE_HOME`* is the 12c Oracle Home.
4. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=`*`log_file`*` -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=`*`log_file`*` -log_priority=ALL`

   Where, *`log_file`* is the absolute path of the log file you'd like to create for the domain reconfiguration session. This can be helpful if you need to troubleshoot the reconfiguration process.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

## Reconfiguring the Oracle Identity Manager Domain

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the *DOMAIN_HOME* directory used by the Administration Server for the OIG domain or click **Browse** to navigate and select the correct OIG domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
   - After the Setup Progress completes, check for any warning messages in the lower panel of the view.
     - If a specific error code is presented, search the log file for that error code and check Oracle Support. Some errors in the logs will directly include recommended solutions.
     - If a more generic `Custom Applications were left in the original MW home and must be fixed manually:...` warning message is presented, check the log for `CFGFWK-40951` messages.
       For example:

       ```
       2020-09-16 18:54:22,249 WARNING [42]
       com.oracle.cie.domain.progress.domain.reconfig.wlscore.ValidateDomainPhase
       - CFGFWK-40951: An application or library was not relocated to the new MW
       home.
       CFGFWK-40951: Custom Applications were left in the original MW home and
       must be fixed manually:
       spml-dsml

       CFGFWK-40951: Correct source path of the applications to refer to the new
       installation.
       ```

3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 12*c* (12.2.1.3.0) is 1.8.0_131 and later. Click **Next**.

> **Note:**
>
> You cannot change the **Domain Mode** at this stage.

For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.

4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (_STB) schema.

   Enter the database connection details using the RCU service table (_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically configure the data sources required for components in your domain.

   > **Note:**
   >
   > By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

   > **Note:**
   >
   > For any existing 11*g* datasource, the reconfiguration will preserve the existing values. For new datasources where the schema was created for 12*c* by the RCU, the default connection data will be retrieved from the _STB schema. If no connection data for a given schema is found in the _STB schema, then the default connection data is used.

   If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

   > **Note:**
   >
   > If you are upgrading from 11*g*, and your database has _OPSS or _IAU 11*g* database schemas, you must manually enter database connection details for those schemas. These schemas were not required in 11*g* and had to be created manually. Users could assign any name to these schemas, therefore the Reconfiguration Wizard does not recognize them. When providing connection information for _IAU, use the IAU_APPEND user information.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.

> **Note:**
>
> - For all of the schemas except for OPSS, the host, port, and service details will be auto-populated. You must enter the OPSS schema credentials manually.
> - If you are using a RAC database, then on the JDBC Component Schema screen, select all the datasources and select **Convert to Grid Link**.

6. On the Grid Link screen, provide the Service Name, Schema Password, ONS Host and Port, SCAN Hostname and Port, and check the FAN and SCAN checkboxes appropriately. Also, verify that the prefix for each schema owner reflects your environment. Perform this step for each RAC Component Schema.

   When complete, click **Next**.

> **Note:**
>
> The Grid Link screen will be displayed only if you select **Convert to Grid Link** in step 6.

7. On the JDBC Component Schema Test screen, the component schema connections are tested. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.

8. On the Node Manager screen, go for the default option or select **Create New Configuration** for configuring Node Manager per your requirement. In both the cases, specify the WebLogic Administration user credentials for Node Manager details.
9. On the Credentials screen, for `weblogicAdminnKey`, populate the Weblogic admin username and password used in 11g, and then click **Next**.
10. Leave the default selection and click **Next**.
11. On the Advanced Configuration screen, during an upgrade, it is recommended to simply leave all the options unselected and click **Next**. you can select all categories for which you want to perform advanced configuration. For each category you select, the appropriate configuration screen is displayed to allow you to perform advanced configuration.

> **Note:**
>
> If desired, you can select the options and review the configuration details. However, not all settings may represent the final state of the domain configuration at this time. Additional component configuration is completed in later steps by the Upgrade Assistant. Oracle recommends you to not review these details at this point, and not make any changes to the Advanced Configuration views during the upgrade process.

12. On the Configuration Summary screen, review the detailed configuration settings of the domain before continuing.

You can limit the items that are displayed in the right-most panel by selecting a filter option from the **View** drop-down list.

To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

> **Note:**
>
> The location of the domain does not change when you reconfigure it.

13. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

    During this process:

    - Domain information is extracted, saved, and updated.
    - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

    When the progress bar shows 100%, click **Next**.

14. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

# Upgrading Domain Component Configurations on OIMHOST1

Use the Upgrade Assistant to upgrade the domain component's configurations inside the domain to match the updated domain configuration.

> **Note:**
>
> Perform this procedure OIMHOST1 only.

- Upgrading Domain Component Configurations
  After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.

# Upgrading Domain Component Configurations

After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.

- Starting the Upgrade Assistant
  Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.
- Upgrading Oracle Identity Manager Domain Component Configurations
  Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

## Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 12*c* (12.2.1.3.0). Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail.
>
> To ensure that UTF-8 is used by the JVM, use the JVM option `-Dfile.encoding=UTF-8`.

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Set a parameter for the Upgrade Assistant to include the JVM encoding requirement:
   - (UNIX) `export UA_PROPERTIES="-Dfile.encoding=UTF-8"`
   - (Windows) `set UA_PROPERTIES="-Dfile.encoding=UTF-8"`
3. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

> **Note:**
>
> In the above command, *ORACLE_HOME* refers to the 12*c* (12.2.1.3.0) Oracle Home.

For information about other parameters that you can specify on the command line, such as logging parameters, see:

- Upgrade Assistant Parameters

## Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

**Table 4-6 Upgrade Assistant Command-Line Parameters**

| Parameter | Required or Optional | Description |
|---|---|---|
| `-readiness` | Required for readiness checks<br>**Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server). | Performs the upgrade readiness check without performing an actual upgrade.<br>Schemas and configurations are checked.<br>Do not use this parameter if you have specified the `-examine` parameter. |
| `-threads` | Optional | Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas.<br>The value must be a positive integer in the range 1 to 8. The default is 4. |
| `-response` | Required for silent upgrades or silent readiness checks | Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens). |
| `-examine` | Optional | Performs the examine phase but does not perform an actual upgrade.<br>Do not specify this parameter if you have specified the `-readiness` parameter. |

**Table 4-6 (Cont.) Upgrade Assistant Command-Line Parameters**

| Parameter | Required or Optional | Description |
|---|---|---|
| `-logLevel` *attribute* | Optional | Sets the logging level, specifying one of the following attributes:<br>• `TRACE`<br>• `NOTIFICATION`<br>• `WARNING`<br>• `ERROR`<br>• `INCIDENT_ERROR`<br>The default logging level is `NOTIFICATION`.<br>Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used. |
| `-logDir` *location* | Optional | Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files.<br>The default locations are:<br>(UNIX)<br>*ORACLE_HOME*`/oracle_common/upgrade/logs`<br>*ORACLE_HOME*`/oracle_common/upgrade/temp`<br>(Windows)<br>*ORACLE_HOME*`\oracle_common\upgrade\logs`<br>*ORACLE_HOME*`\oracle_common\upgrade\temp` |
| `-help` | Optional | Displays all of the command-line options. |

## Upgrading Oracle Identity Manager Domain Component Configurations

Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

After running the Reconfiguration Wizard to reconfigure the WebLogic domain to 12*c* (12.2.1.3.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:
   - Select **All Configurations Used By a Domain**. The screen name changes to WebLogic Components.
   - In the **Domain Directory** field, enter the WebLogic domain directory path.

     Where, **Domain Directory** is the Administration server domain directory.

   Click **Next**.

3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

   > **Note:**
   >
   > The Upgrade Assistant does not verify whether the prerequisites have been met.

5. If there are remote managed servers hosting User Messaging Services (UMS) configuration files: On the UMS Configuration screen, provide the credentials to these servers so that the Upgrade Assistant can access the configuration files.

   > **Note:**
   >
   > You may need to manually copy the UMS configuration files if the Upgrade Assistant is unable to locate them. See Error while Copying User Messaging Service (UMS) Configuration Files.

6. On the Old (that is,11g) OIM Home Location screen, select **11g Source**, and specify the absolute path to the 11.1.2.3.0 OIM Oracle Home, which is *ORACLE_HOME*/Oracle_IDM.

   Click **Next**.

7. On the Examine screen, review the status of the Upgrade Assistant as it examines each component, verifying that the component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused

the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

8. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.

   Click **Upgrade** to start the upgrade process.

9. On the Upgrade Progress screen, monitor the status of the upgrade.

   > **Caution:**
   >
   > Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

   If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

   > **Note:**
   >
   > The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

   Click **Next**.

10. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

# Replicating the Domain Configurations on each OIMHOST

Replicate the domain configurations on OIMHOST2. This involves packing the upgraded domain on OIMHOST1 and unpacking it on OIMHOST2.

To do this, complete the following steps:

1. On OIMHOST1, run the following command from the location `$ORACLE_HOME/oracle_common/common/bin` to pack the upgraded domain:
   - On UNIX:
     ```
     sh pack.sh -domain=<Location_of_OIM_domain> -
     template=<Location_where_domain_configuration_jar_to_be_created> -
     template_name="OIM Domain" -managed=true
     ```
   - On Windows:
     ```
     pack.cmd -domain=<Location_of_OIM_domain> -
     template=<Location_where_domain_configuration_jar_to_be_created> -
     template_name="OIM Domain" -managed=true
     ```

   > **Note:**
   >
   > If the `Pack` command fails with errors about missing JAR files, see Doc ID 2427364.1 for the recommended solution. The article discusses an issue at startup rather than with `Pack`, though the solution is the same.

2. Copy the domain configuration jar file created by the pack command on OIMHOST1 to any accessible location on OIMHOST2.
3. On OIMHOST2, run the following command from the location `$ORACLE_HOME/oracle_common/common/bin` to unpack the domain:
   - On UNIX:
     ```
     sh unpack.sh -domain=<Location_of_OIM_domain> -
     template=<Location_where_domain_configuration_jar_to_be_created> -
     overwrite_domain=true
     ```
   - On Windows:
     ```
     unpack.cmd -domain=<Location_of_OIM_domain> -
     template=<Location_where_domain_configuration_jar_to_be_created> -
     overwrite_domain=true
     ```
4. If you have other OIMHOSTs, repeat step 2 and step 3 on those hosts.

> **Note:**
>
> If you are following the EDG methodology you also need to pack and unpack the domain in the OIM managed server location on OIMHOST1.

# Starting the Servers for Initial Post-Upgrade Bootstrap Processing

After you upgrade Oracle Identity Manager, start the servers to bootstrap the domain configuration.

Before starting the servers, if you are using multiple *DOMAIN_HOMES* on OIMHOST1 in an Enterprise Deployment topology, perform the `pack`/`unpack` operations to replicate the domain configuration from *ASERVER_HOME* to *MSERVER_HOME* on OIMHOST1 so that the SOA and OIM Managed Server can be bootstrapped properly with the upgraded domain configuration.

> **Note:**
>
> The `pack`/`unpack` operations will be repeated in the next step after the bootstrap process is complete, to replicate the final domain configuration to all OIMHOSTn hosts.

1. If using multiple *DOMAIN_HOMES* in an Enterprise Deployment topology, `pack`/`unpack` the domain configuration from *ASERVER_HOME* to *MSERVER_HOME* on OIMHOST1.
   a. On OIMHOST1, run the following command from the location `$ORACLE_HOME/oracle_common/common/bin` to pack the upgraded pre-bootstrap domain:

      On UNIX:

      ```
      sh pack.sh -domain=<Location_of_OIM_domain> -
      template=<Location_where_domain_configuration_jar_to_be_created> -
      template_name="OIM Domain" -managed=true
      ```

      On Windows:

      ```
      pack.cmd -domain=<Location_of_OIM_domain> -
      template=<Location_where_domain_configuration_jar_to_be_created> -
      template_name="OIM Domain" -managed=true
      ```

      For example:

      ```
      $ ./pack.sh -managed=true \
                -domain=/u01/oracle/config/domains/IAMGovernanceDomain \
                -template=/u01/oracle/config/backup/
      IAMGovernanceDomain_upg12213prebootstrap.jar \
                -template_name=IAMGovernanceDomain \
                -log_priority=DEBUG \
                -log=/u01/oracle/config/backup/
      pack_oig_upg12213prebootstrap.log
      ```

   b. On OIMHOST1, run the following command from the location `$ORACLE_HOME/oracle_common/common/bin` to unpack the domain into the *MSERVER_HOME* directory:

On UNIX:

```
sh unpack.sh -domain=<Location_of_OIM_domain> -
template=<Location_where_domain_configuration_jar_to_be_created>
-overwrite_domain=true
```

On Windows:

```
unpack.cmd -domain=<Location_of_OIM_domain> -
template=<Location_where_domain_configuration_jar_to_be_created>
-overwrite_domain=true
```

For example:

```
$ ./unpack.sh -domain=/u02/private/oracle/config/domains/
IAMGovernanceDomain \
            -overwrite_domain=true \
            -template=/u01/oracle/config/backup/
IAMGovernanceDomain_upg12213preboot.jar \
            -log_priority=DEBUG \
            -log=/u01/oracle/config/backup/
unpack_oig_upg12213prebootstrap_oimhost1.log \
            -app_dir=/u02/private/oracle/config/domains/
IAMGovernanceDomain/applications
```

2. At the command prompt, start the Administration Server from the *DOMAIN_HOME*/bin folder for the Administration Server. If Node Manager is configured, do not start NodeManager.

   For example:

   ```
   /u01/oracle/config/domains/IAMGovernanceDomain/bin/startWebLogic.sh
   ```

3. At the command prompt, start the SOA Suite Managed Server from the *DOMAIN_HOME*/bin folder for the Managed Server. If Node Manager is configured, do not start the NodeManager. Specify the T3 protocol Administration Server URL and set the JAVA property to enable BPM for SOA Server.

   On UNIX:

   ```
   ./startManagedWebLogic.sh <SOA_Managed_server> t3://
   weblogic_admin_host:weblogic_admin_port -Dbpm.enabled=true
   ```

   On Windows:

   ```
   startManagedWebLogic.cmd <SOA_Managed_server> t3://
   weblogic_admin_host:weblogic_admin_port -Dbpm.enabled=true
   ```

For example:

```
/u02/private/oracle/config/domains/IAMGovernanceDomain/bin/
startManagedWebLogic.sh WLS_SOA1 t3://IGDADMINVHN:7001 -Dbpm.enabled=true
```

4. Wait for the SOA Managed server to come completely to a RUNNING state before continuing.
5. At the command prompt, start the OIM Managed Server from the *DOMAIN_HOME*/bin folder for the Managed Server. If Node Manager is configured, do not start NodeManager. Specify the T3 protocol Administration Server URL. The OIM server will automatically shut down after the bootstrap process is successful. Monitor the standard out messages to the terminal carefully.

   On UNIX:

   ```
   ./startManagedWebLogic.sh <OIM_Managed_server> t3://
   weblogic_admin_host:weblogic_admin_port
   ```

   On Windows:

   ```
   startManagedWebLogic.cmd <OIM_Managed_server> t3://
   weblogic_admin_host:weblogic_admin_port
   ```

   For example:

   ```
   /u02/private/oracle/config/domains/IAMGovernanceDomain/bin/
   startManagedWebLogic.sh WLS_SOA1 t3://IGDADMINVHN:7001 -Dbpm.enabled=true
   ```

6. After the OIM Managed Server terminates, stop the SOA and AdminServer processes from the command line shells by pressing <CTRL-C> and waiting for each to terminate before executing the next. Terminate the processes in the following order: SOA, AdminServer.

# Fully Deploy the oracle.iam.ui.custom-dev-starter-pack.war

Validate that the Upgrade Assistant has automatically copied the oracle.iam.ui.custom-dev-starter-pack.war file from the 11g *MW_HOME* to the 12c *ORACLE_HOME* on the AdminServer host.

If you have an Enterprise Reference topology or use multiple shared volumes for your *ORACLE_HOME* binaries, then also replicate this file manually to each OIMHOSTn where a distinct separate binary volume is mounted.

1. Check the 11g *MW_HOME* for the war file, validate it is no longer present.

   ```
   ls /u01/oracle/products/identity/iam/server/apps/oracle.iam.ui.custom-dev-
   starter-pack.war
   ```

2. Check the 12c *ORACLE_HOME* for the war file, validate it has been placed in the correct location.

```
ls /u01/oracle/products/12c/identity/idm/server/apps/
oracle.iam.ui.custom-dev-starter-pack.war
```

3. Copy the war file from the binary volume on OIMHOST1 to any other hosts with a separate binaries volume.
For example:

```
cd /u01/oracle/products/12c/identity/idm/server/apps/
scp oracle.iam.ui.custom-dev-starter-pack.war \
iamoracle@OIMHOST2:/u01/oracle/products/12c/identity/idm/server/
apps/.
```

# Starting the Servers on OIMHOST1 and OIMHOST2

After you upgrade Oracle Identity Manager on both OIMHOST1 and OIMHOST2, start the servers.

You must start the servers in the following order:

1. Start the Node Manager on both OIMHOST1 and OIMHOST2.
2. Start the Administration Server on OIMHOST1.
3. Start the Oracle SOA Suite Managed Server (without BPM property) and Oracle Identity Manager Managed Servers on OIMHOST1.
4. Start the Oracle SOA Suite Managed Server (without BPM property) and Oracle Identity Manager Managed Servers on OIMHOST2.

- Starting Servers and Processes
  After a successful upgrade, start all processes and servers, including the Administration Server and any Managed Servers.
- Verifying the Domain-Specific-Component Configurations Upgrade
  To verify that the domain-specific-component configurations upgrade was successful, sign in to the Administration console and the Oracle Enterprise Manager Fusion Middleware Control and verify that the version numbers for each component is 12.2.1.3.0.
- Configuring Oracle HTTP Servers to Front End OIM, and SOA Managed Servers

## Starting Servers and Processes

After a successful upgrade, start all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and process using the WLST command line or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Administration Console. See Starting and Stopping Administration and Managed Servers and Node Manager in *Administering Oracle Fusion Middleware.*

To start your Fusion Middleware environment, follow the steps below.

**Step 1: Start Node Manager**

Start the Node Manager in the Administration Server `<DOMAIN_HOME>/bin` location by running the following command.

- (UNIX) `nohup ./startNodeManager.sh > <DOMAIN_HOME>/nodemanager/nodemanager.out 2>&1 &`
- (Windows) `nohup .\startNodeManager.sh > <DOMAIN_HOME>\nodemanager\nodemanager.out 2>&1 &`

Where, *<DOMAIN_HOME>* is the Administration server domain home.

**Step 2: Start the Administration Server**

When you start the Administration Server, you also start the processes running in the Administration Server, including the WebLogic Server Administration Console and Fusion Middleware Control.

> **Note:**
>
> Typically, the name of the Administration Server is always 'AdminServer'. If the name of your Administration Server is different from the default name 'AdminServer', you should modify the name in the `<domainname>/config/config.xml` file, accordingly, prior to starting the server.
>
> To change the name:
>
> 1. Open the `<domainname>/config/config.xml` file and locate the following library entry:
>
> ```
> <library>
>    <name>oracle.idm.ipf</name>
>   <target>AdminServer</target>
>    <module-type>jar</module-type>
> .....
> .....
>  </library>
> ```
>
> 2. Note the name of the Administration Server. If the name is other than 'AdminServer', change the following entry accordingly:
>
> ```
> <target><name_of_your_admin_server></target>
> ```

**Method 1:** To start a Administration Server, run the following command:

```
nohup DOMAIN_HOME/bin/startWeblogic.sh &
```

**Method 2:** To start a Administration Server by using node manager, run the following commands:

```
cd ORACLE_COMMON_HOME/common/bin
./wlst.sh
wls:/offline> nmConnect('nodemanager_username','nodemanager_password',
                    'ADMINVHN','5556','domain_name',
                   'DOMAIN_HOME')
nmStart('AdminServer')
```

**Step 3 (Option 1): Start the Managed Servers**

> **Note:**
>
> In an HA environment, it is preferred to use the console or node manager to start servers.

Start a WebLogic Server Managed Server by using the Weblogic Console:

- Log into Weblogic console as a `weblogic` Admin.

- Go to **Servers** > **Control** tab.
- Select the required managed server.
- Click **Start**.

**Step 3 (Option 2): Start the SOA and OIM Clusters**

Continue in the WLST session from step 2 to start the clusters and verify their final state as follows:

```
<code block>
connect('weblogic','weblogic_passsword','t3://ADMINVHN:7001')
start('cluster_soa', 'Cluster', block='true')
start('cluster_oim', 'Cluster', block='true')
state('cluster_soa', 'Cluster')
state('cluster_oim', 'Cluster')
exit()
</code block>
```

# Verifying the Domain-Specific-Component Configurations Upgrade

To verify that the domain-specific-component configurations upgrade was successful, sign in to the Administration console and the Oracle Enterprise Manager Fusion Middleware Control and verify that the version numbers for each component is 12.2.1.3.0.

To sign in to the Administration Console, go to: `http://`*`administration_server_host`*`:`*`administration_server_port`*`/console`

To sign in to the Administration Console in an EDG deployment, see Validating the Virtual Server Configuration and Access to the Consoles.

To sign in to Oracle Enterprise Manager Fusion Middleware Control Console, go to: `http://`*`administration_server_host`*`:`*`administration_server_port`*`/em`

**Note:**

- After upgrade, ensure you run the administration tools from the new 12*c* Oracle home directory and not from the previous Oracle home directory.
- During the upgrade process, some OWSM documents, including policy sets and predefined documents such as policies and assertion templates, may need to be upgraded. If a policy set or a predefined document is upgraded, its version number is incremented by 1.
- In the site-specific configuration, the WebLogic and EM consoles must be accessible with the URLs either directly or through proxy URLs.

# Configuring Oracle HTTP Servers to Front End OIM, and SOA Managed Servers

If your installation is fronted by Oracle HTTP Server, you need to ensure that your OHS directives are as given below. Note that you may have one configuration file or several of these files will have the extention `.conf` and reside in:

```
OHS_DOMAIN_HOME/config/fmwconfig/components/OHS/instances/
OHS_INSTANCE_NAME/modultconf
```

To configure the Oracle HTTP Server instances in the Web tier so they route requests correctly to the Oracle SOA Suite cluster, use the following procedure to create an additional Oracle HTTP Server configuration file that creates and defines the parameters of the `https://igdinternal.example.com:7777` virtual server.

To validate the virtual host configuration file so requests are routed properly to the Oracle Identity Governance clusters:

1. Log in to WEBHOST1 and change directory to the configuration directory for the first Oracle HTTP Server instance (OHS_1):

   ```
   cd WEB_DOMAIN_HOME/config/fmwconfig/components/OHS/ohs1/moduleconf/
   ```

2. Edit the file `prov_vh.conf` and add the following directives inside the `<VirtualHost>` tags:

> **Note:**
>
> - The URL entry for `/workflow` is optional. It is for workflow tasks associated with Oracle ADF task forms. The `/workflow` URL itself can be a different value, depending on the form.
> - Configure the port numbers appropriately, as assigned for your static or dynamic cluster. Dynamic clusters with the Calculate Listen Port option selected will have incremental port numbers for each dynamic managed server that you create.
>
>   The WebLogicCluster directive needs only a sufficient number of redundant *server:port* combinations to guarantee an initial contact in case of a partial outage. The actual total list of cluster members is retrieved automatically on the first contact with any given node. Any entries other than those listed below can be removed.

```
<Location /identity>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
    WLProxySSL ON
    WLProxySSLPassThrough ON
</Location>

# xlWebApp - Legacy 9.x webapp (struts based)
<Location /xlWebApp>
```

```
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
    WLProxySSL ON
    WLProxySSLPassThrough ON
</Location>

<Location /HTTPClnt>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
    WLProxySSL ON
    WLProxySSLPassThrough ON
</Location>

# Requests webservice URL
<Location /reqsvc>
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLProxySSL ON
    WLProxySSLPassThrough ON
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /FacadeWebApp>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
    WLProxySSL ON
    WLProxySSLPassThrough ON
</Location>

<Location /iam>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
    WLProxySSL ON
    WLProxySSLPassThrough ON
</Location>

<Location /OIGUI>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
    WLProxySSL ON
    WLProxySSLPassThrough ON
</Location>
```

The `prov_vh.conf` file will appear as it does in Step 2.

3. In the `igdadmin_vh.conf` file, ensure that you have the following OHS directives. Any entries other than those listed below can be removed.

```
## Entries Required by Oracle Identity Governance
<Location /oim>
    WLSRequest ON
```

```
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /iam>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /sysadmin>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /admin>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster oimhost1.example.com:14000,oimhost2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

# xlWebApp - Legacy 9.x webapp (struts based)
<Location /xlWebApp>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

# OIM self service console
<Location /identity>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /OIGUI>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

# Nexaweb WebApp - used for workflow designer and DM
<Location /Nexaweb>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /FacadeWebApp>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicCluster oimhost1.example.com:14000,oimhost2.example.com:14000
```

```
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

# Scheduler webservice URL
<Location /SchedulerService-web>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>
```

4. In the `igdinternal_vh.conf` file, ensure that you have the following OHS directives. Any entries other than those listed below can be removed.

```
## Entries Required by Oracle Identity Governance
#SOA Callback webservice for SOD - Provide the SOA Managed Server Ports

<Location /sodcheck>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:8001,OIMHOST2.example.com:8001
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/soa_component.log"
</Location>

# OIM, role-sod profile
<Location /role-sod>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

# Callback webservice for SOA. SOA calls this when a request is approved/rejected
# Provide the SOA Managed Server Port
<Location /workflowservice>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/soa_component.log"
</Location>

# used for FA Callback service.
<Location /callbackResponseService>
    WLSRequest ON
    WLCookieName    oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

# spml xsd profile
<Location /spml-xsd>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

# OIM, spml dsml profile
<Location /spmlws>
    WLSRequest ON
    PathTrim /weblogic
```

```
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /reqsvc>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/soa_component.log"
</Location>

# SOA Infra
<Location /soa-infra>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:8001,OIMHOST2.example.com:8001
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/OHS/component/
oim_component.log"
</Location>

# UMS Email Support
<Location /ucs>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:8001,OIMHOST2.example.com:8001
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/OHS/component/
oim_component.log"
</Location>

<Location /provisioning-callback>
    WLSRequest ON
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /CertificationCallbackService>
   WLSRequest ON
   WLCookieName oimjsessionid
   WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
   WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /IdentityAuditCallbackService>
   WLSRequest ON
   WLCookieName oimjsessionid
   WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
   WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

# SOA Callback webservice for SOD - Provide the SOA Managed Server Ports
  <Location /soa/composer>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:8001,OIMHOST2.example.com:8001
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/soa_component.log"
  </Location>

  <Location /integration>
    SetHandler weblogic-handler
```

```
    WebLogicCluster OIMHOST1.example.com:8001,OIMHOST2.example.com:8001
    WLCookieName oimjsessionid
  </Location>

  <Location /sdpmessaging/userprefs-ui>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:8001,OIMHOST2.example.com:8001
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/soa_component.log"
  </Location>

<Location /iam>
    SetHandler weblogic-handler
    WLCookieName oimjsessionid
    WebLogicCluster OIMHOST1.example.com:14000,OIMHOST2.example.com:14000
    WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>

<Location /ws_utc>
SetHandler weblogic-handler
  WLCookieName oimjsessionid
  WebLogicCluster OIMHOST1:8001,OIMHOST2:8001
  WLLogFile "${ORACLE_INSTANCE}/diagnostics/logs/mod_wl/oim_component.log"
</Location>
```

5. Copy the `igdadmin_vh.conf`, `igdinternal_vh.conf`, and `prov_vh.conf` files to the configuration directory for the second Oracle HTTP Server instance (ohs2):

   *WEB_DOMAIN_HOME*`/config/fmwconfig/components/OHS/`**ohs2**`/moduleconf/`

6. Edit the `igdadmin_vh.conf`, `prov_vh.conf`, and `igdinternal_vh.conf` files and change any references to WEBHOST1 to WEBHOST2 in the `<VirtualHost>` directives.

7. Restart the Oracle HTTP servers on WEBHOST1 and WEBHOST2 using the following commands:

   a. Restart the ohs1 instance by doing the following:

      i. Change directory to the following location:

      ```
      cd WEB_DOMAIN_HOME/bin
      ```

      ii. Enter the following commands to stop and start the instance:

      ```
      ./stopComponent.sh ohs1
      ./startComponent.sh ohs1
      ```

   b. Restart the ohs2 instance by doing the following:

      i. Change directory to the following location:

      ```
      cd WEB_DOMAIN_HOME/bin
      ```

      ii. Enter the following commands to stop and start the instance:

      ```
      ./stopComponent.sh ohs2
      ./startComponent.sh ohs2
      ```

> **Note:**
>
> If internal invocations are going to be used in the system, add the appropriate locations to the soainternal virtual host.

# Upgrading Oracle Identity Manager Design Console

Upgrade the Oracle Identity Manager Design Console after you upgrade the Oracle Identity Manager (OIM) domain component configurations.

To upgrade the Oracle Identity Manager Design Console, replace the 12*c* (12.2.1.3.0) *ORACLE_HOME*/idm/designconsole/config/xlconfig.xml file with the 11.1.2.3.0 *ORACLE_HOME*/*Oracle_IDM1*/designconsole/config/xlconfig.xml file.

After copying the file to the 12c *ORACLE_HOME* location on OIMHOST1, copy the file to any remote OIMHOSTn that use a different copy of the *ORACLE_HOME* binaries volume.

# Performing the Post-Patch Install Steps

After completing the upgrade, you have to perform the post-patch installation steps.

The post-patch installation steps comprises the following:

- Running the Poststart Command to Confirm Successful Binary Patching
- Filling in the patch_oim_wls.profile File
- Patching the Oracle Identity Governance Managed Servers (patch_oim_wls Stage)
- Performing a Clean Restart of the Servers

## Running the Poststart Command to Confirm Successful Binary Patching

Use the variables and the instructions in the Stack Patch Bundle README.txt file to run the poststart command for your product, as shown below:

```
$ ./spbat.sh -type oig -phase poststart -mw_home /
<INSTALLATION_DIRECTORY>/IAM12c -spb_download_dir /<DOWNLOAD_LOCATION>/
IDM_SPB_12.2.1.4.200714 -log_dir /<DOWNLOAD_LOCATION>/OIGlogs
```

For details, see Doc ID 2657920.1.

## Filling in the patch_oim_wls.profile File

Using a text editor, edit the file patch_oim_wls.profile located in the *ORACLE_HOME*/idm/server/bin/ directory and change the values in the file to match your environment. The patch_oim_wls.profile file contains sample values.

Table 4-7 lists the information to be entered for the `patch_oim_wls.profile` file. This file is used in the next stage of the bundle patch process.

**Table 4-7 Parameters of the patch_oim_wls.profile File**

| Parameter | Description | Sample Value |
|---|---|---|
| `ant_home` | Location of the ANT installation. It is usually under *MW_HOME*. | For Linux: `$MW_HOME/oracle_common/modules/thirdparty/org.apache.ant/1.10.5.0.0/apache-ant-1.10.5/`<br>For Windows: `%MW_HOME%/oracle_common/modules/thirdparty/org.apache.ant/1.10.5.0.0/apache-ant-1.10.5/` |
| `java_home` | Location of the JDK/JRE installation that is being used to run the Oracle Identity Governance domain. | For Linux: *<JAVA_HOME_PATH>* consumed by *$MW_HOME*<br>For Windows: *<JAVA_HOME_PATH>* consumed by *%MW_HOME%* |
| `mw_home` | Location of the middleware home location on which Oracle Identity Governance is installed. | For Linux: `/u01/Oracle/Middleware`<br>For Windows: `C:\Oracle\`*`MW_HOME`*`\` |
| `oim_oracle_home` | Location of the Oracle Identity Governance installation. | For Linux: `$MW_HOME/idm`<br>For Windows: `%MW_HOME%\idm` |
| `soa_home` | Location of the SOA installation. | For Linux: `$MW_HOME/soa`<br>For Windows: `%MW_HOME%\soa` |
| `weblogic.server.dir` | Directory on which WebLogic server is installed. | For Linux: `$MW_HOME/wlserver`<br>For Windows: `%MW_HOME%\wlserver` |
| `domain_home` | Location of the domain home on which Oracle Identity Governance is installed. | `$MW_HOME/user_projects/domains/base_domain` |
| `weblogic_user` | Domain administrator user name. Normally it is `weblogic`, but could be different as well. | `weblogic` |
| `weblogic_password` | Domain admin user's password. If this line is commented out, then password will be prompted. | NA |

**Table 4-7 (Cont.) Parameters of the patch_oim_wls.profile File**

| Parameter | Description | Sample Value |
|---|---|---|
| soa_host | Listen address of the SOA Managed Server, or the hostname on which the SOA Managed Server is listening.<br>**Note**: If the SOA Managed Server is configured to use a virtual IP address, then the virtual host name must be supplied. | oimhost.example.com |
| soa_port | Listen port of the SOA Managed Server, or SOA Managed Server port number. | 8001<br>Only Non-SSL Listen port must be provided. |
| operationsDB.user | Oracle Identity Governance database schema user. | DEV_OIM |
| OIM.DBPassword | Oracle Identity Governance database schema password. If this line is commented out, then the password will be prompted when the script is executed. | NA |
| operationsDB.host | Host name of the Oracle Identity Governance database. | oimdbhost.example.com |
| operationsDB.serviceName | Database service name of the Oracle Identity Governance schema/database. This is not the hostname and it can be a different value as well. | oimdb.example.com |
| operationsDB.port | Database listener port number for the Oracle Identity Governance database. | 1521 |
| mdsDB.user | MDS schema user | DEV_MDS |
| mdsDB.password | MDS schema password. If this line is commented out, then password will be prompted. | NA |
| mdsDB.host | MDS database host name | oimdbhost.example.com |
| mdsDB.port | MDS database/Listen port | 1521 |
| mdsDB.serviceName | MDS database service name | oimdb.example.com |
| oim_username | Oracle Identity Governance username. | System administrator username |
| oim_password | Oracle Identity Governance password. This is optional. If this is commented out, then you will be prompted for the password when the script is executed. | NA |
| oim_serverurl | URL to navigate to Oracle Identity Governance. | t3://oimhost.example.com:14000 |
| wls_serverurl | URL to navigate to WLS Console | t3://wlshost.example.com:7001 |

**Table 4-7 (Cont.) Parameters of the patch_oim_wls.profile File**

| Parameter | Description | Sample Value |
|---|---|---|
| `opss_customizations_present=false` | Enables customizations related to authorization or custom task flow. Set this value to true to enable customization. | true |

> **Note:**
>
> Update the parameter value as per the setup used, and then execute the `patch_oim_wls.sh` file.

# Patching the Oracle Identity Governance Managed Servers (patch_oim_wls Stage)

Patching the Oracle Identity Governance Managed Servers is the process of copying the staged files to the correct locations, running SQL scripts, importing event handlers, and deploying SOA composite. For making MBean calls, the script automatically starts the Oracle Identity Governance Managed Server and SOA Managed Server specified in the `patch_oim_wls.profile` file.

This step is performed by running `patch_oim_wls.sh` (on UNIX) and `patch_oim_wls.bat` (on Microsoft Windows) script by using the inputs provided in the `patch_oim_wls.profile` file. As prerequisites, the WebLogic Admin Server, SOA Managed Servers, and Oracle Identity Governance Managed Server must be running.

To patch Oracle Identity Governance Managed Servers on WebLogic:

1. Ensure that the WebLogic Administration Server, SOA Managed Servers, and Oracle Identity Governance Managed Server are running.
2. Set the following environment variables:

   For LINUX or Solaris, set the JAVA_HOME environment variable:

   ```
   export JAVA_HOME=<JAVA_HOME_PATH>
   export PATH=$JAVA_HOME/bin:$PATH
   ```

   For Microsoft Windows:

   ```
   set JAVA_HOME=<JAVA_HOME_PATH>
   set ANT_HOME=\PATH_TO_ANT_DIRECTORY\ant
   set ORACLE_HOME=%MW_HOME%\idm
   ```

> **Note:**
>
> Ensure that you set the reference to JDK binaries in your PATH before running the `patch_oim_wls.sh` (on UNIX) or `patch_oim_wls.bat` (on Microsoft Windows) script. This *JAVA_HOME* must be of the same version that is being used to run the WebLogic servers. The *JAVA_HOME* version from `/usr/bin/` or the default is usually old and must be avoided. You can verify the version by running the following command:

```
java -version
```

3. Execute `patch_oim_wls.sh` (on UNIX) or `patch_oim_wls.bat` (on Microsoft Windows) to apply the configuration changes to the Oracle Identity Governance server. On Linux systems, you must run the script in a shell environment using the following command:

   ```
   sh patch_oim_wls.sh
   ```

   > **Note:**
   >
   > For EDG implementations, this script must be run against the mserver domain directory rather than the server domain directory.

4. Delete the following directory from OIG domain home:

   ```
   $DOMAIN_HOME/servers/oim_server1/tmp/_WL_user/
   oracle.iam.console.identity.self-service.ear_V2.0
   ```

   Here, `oim_server1` is the WebLogic Managed Server used for OIG.

5. To verify that the `patch_oim_wls` script has completed successfully, check the *ORACLE_HOME*`/idm/server/bin/patch_oim_wls.log` log file.

   > **Note:**
   >
   > On running the `patch_oim_wls` script, the `$DOMAIN_HOME/servers/MANAGED_SERVER/security/boot.properties` file might be deleted. If you use a script to start the Managed Server and use the `boot.properties` file to eliminate the need of entering the password in the script, then create a new `boot.properties` file.
   >
   > In an EDG environment, the `boot.properties` file is in *MSERVER_HOME*`/servers/MANAGED_SERVER/security`.

6. Stop and start the WebLogic Administration Server, SOA Server, and Oracle Identity Governance Server.

   - Shutting down Oracle Identity Governance Server might take a long time if it is done with `force=false` option. It is recommended that you force shutdown Oracle Identity Governance Server.

- The `patch_oim_wls` script is re-entrant and can be run again if a failure occurs.

## Performing a Clean Restart of the Servers

Restart all the servers including the Administration Server and any Managed Servers. See Starting Servers and Processes .

# Completing the Post-Upgrade Tasks for SSL Enabled Setup

If you are upgrading an Oracle Identity Manager SSL enabled setup, you must perform the required post-upgrade tasks to complete the upgrade process.

Complete the following tasks if you have upgraded an SSL enabled setup:

1. Changes done for SSL settings in `setDomainEnv.sh`, `startWeblogic.sh`, `startManagedWeblogic.sh`, and datasources are lost after upgrade. Re-do all of the changes.
2. Start the WebLogic Administration Server. To start the Administration Server, use the `startWebLogic` script:
   - (UNIX) *`DOMAIN_HOME`*`/bin/startWebLogic.sh`
   - (Windows) *`DOMAIN_HOME`*`\bin\startWebLogic.cmd`

   Where, *`DOMAIN_HOME`* is the Administration domain.

   When prompted, enter your user name, password, and the URL of the Administration Server.
3. Make necessary changes to the following newly created datasources, for SSL settings:
   - `LocalSvcTblDataSource`
   - `opss-audit-DBDS`
   - `opss-audit-viewDS`
   - `opss-data-source`
   - `WLSSchemaDataSource`

   For information about updating the newly created datasources, see Updating Datasource oimOperationsDB Configuration in *Administering Oracle Identity Governance*
4. In case of Customer Identity and Java Standard Trust, import your identity trust certificate to the new JDK home. The 12*c* (12.2.1.3.0) uses jdk1.8.0_131. To import the identity trust certificate to the new JDK home, use the following command:

   ```
   ./keytool -importcert -alias startssl -keystore JAVA_HOME/jre/lib/security/
   cacerts -storepass <password> -file supportcert.pem
   ```
5. Verify that all of the SSL configuration changes including the SSL port related changes done in 11*g* (pre upgrade), are present post upgrade. If the changes are lost, you must redo them post upgrade. Some of the SSL configuration changes include:
   - `OimFrontEndURL`
   - `backOfficeURL`
   - `SOA Server URL`
   - `ForeignJNDIProvider-SOA`

For more information about configuring SSL for Oracle Identity Goverenance, see Updating Oracle Identity Governance in *Administering Oracle Identity Governance*.

# Increasing the Maximum Message Size for WebLogic Server Session Replication

Oracle recommends you to modify the Maximum Message Size from the default vale of 10 MB to 100 MB. This value is used to replicate the session data across the nodes. You should perform this step for all the Managed servers and the Administration server.

1. Log in to the WebLogic Server Administration Console.
2. Navigate to **Servers**, select **Protocols**, and then click **General**.
3. Set the value of **Maximum Message Size** to `100 MB`.

# Changing the JMS and TLOG Persistence Store After the Upgrade

The JMS and TLOG persistent store remain the same after the upgrade to Oracle Identity Manager 12*c* (12.2.1.3.0). That is, if the persistence store is file-based prior to the upgrade, it will be file-based after the upgrade as well.

If you want to change the persistence stores from a file-based system to a database-based system, you have to perform the steps manually. See Using Persistent Stores for TLOGs and JMS in an Enterprise Deployment.

# Installing Standalone Oracle BI Publisher

When you upgrade Oracle Identity Manager 11.1.2.3.0 to Oracle Identity Governance 12*c* (12.2.1.3.0), the embedded Oracle BI Publisher present in the 11.1.2.3.0 deployment, is removed. Therefore, you must install a new standalone Oracle BI Publisher 12*c* (12.2.1.3.0) post upgrade, for configuring the Oracle Identity Governance reports.

For information about installing and configuring Oracle BI Publisher 12*c* (12.2.1.3.0), see Installing and Configuring Oracle BI Publisher in *Developing and Customizing Applications for Oracle Identity Governance*.

For information about integrating standalone Oracle BI Publisher with Oracle Identity Governance 12*c* (12.2.1.3.0), see Integrating Standalone BI Publisher with Oracle Identity Governance in *Developing and Customizing Applications for Oracle Identity Governance*.

5

# Upgrading OIM-OAM Integrated Environments Manually

You can upgrade Oracle Identity Manager (OIM), Oracle Access Manager (OAM) integrated split domain highly available environments that are set up manually, from 11*g* Release 2 (11.1.2.3.0) to 12*c* (12.2.1.3.0) using the upgrade procedure described in this section.

> **Note:**
>
> The product Oracle Identity Manager is referred to as Oracle Identity Manager (OIM) and Oracle Identity Governance (OIG) interchangeably in the guide.

**Topics**

- About the OIM-OAM Integrated HA Topology Set Up Manually
  The sample topology is based on the split domain four node topology described in the *Enterprise Deployment Guide for Oracle Identity and Access Management* 11*g* Release 2 (11.1.2.3.0), that is deployed manually.
- Supported Starting Points for Integrated HA Upgrade
  Review the supported starting points for each of the components in your integrated environment in order to upgrade to 12*c* (12.2.1.3.0). If the components are in earlier versions, upgrade them to the version that is supported for 12*c* upgrade.
- Roadmap for Upgrading OIM-OAM Integrated Highly Available Environments Set Up Manually
  Refer the roadmap for upgrading Oracle Identity Manager and Oracle Access Manager integrated highly available 11.1.2.3.0 environments that was set up manually, to 12*c* (12.2.1.3.0).

## About the OIM-OAM Integrated HA Topology Set Up Manually

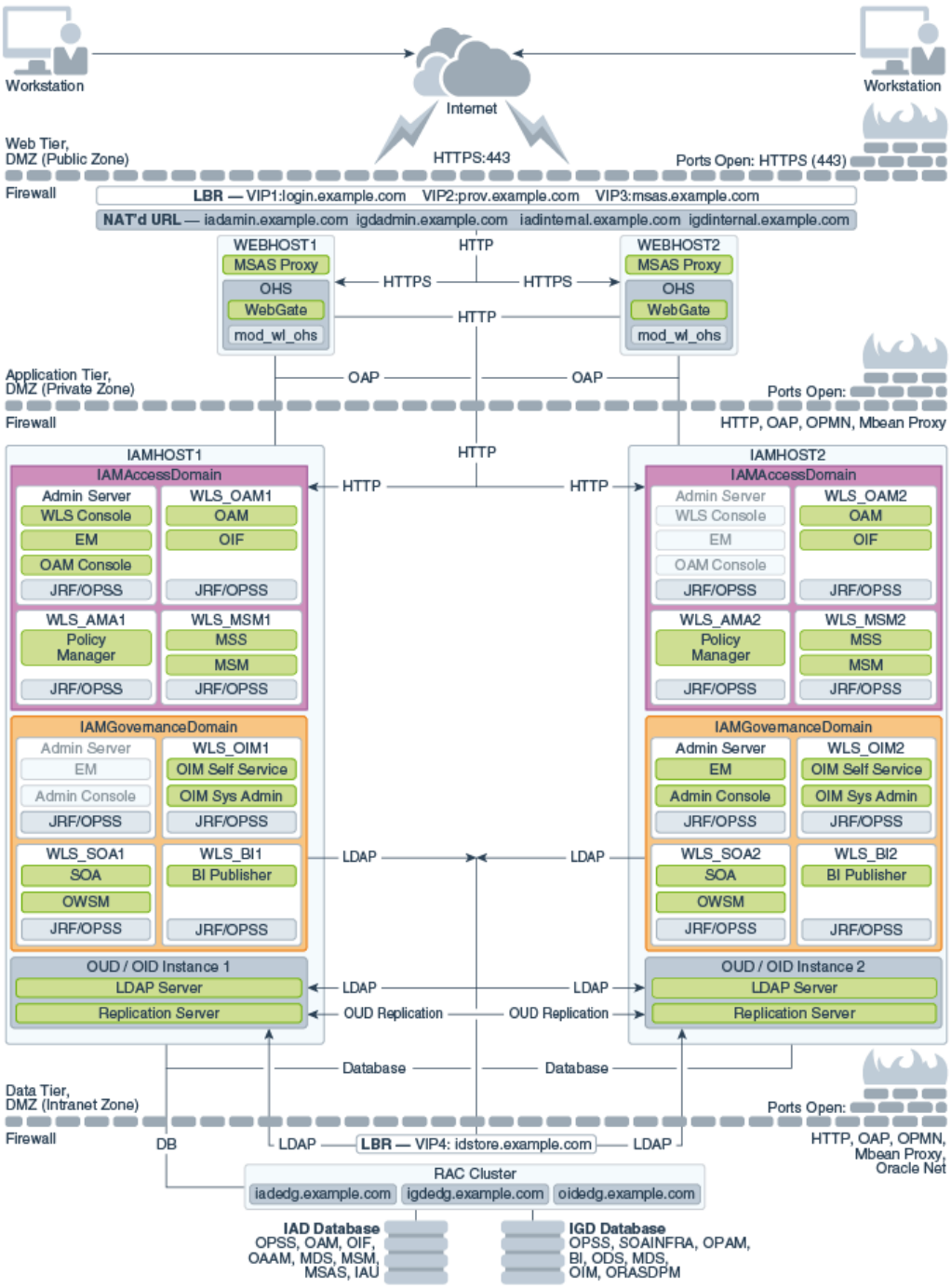
The sample topology is based on the split domain four node topology described in the *Enterprise Deployment Guide for Oracle Identity and Access Management* 11*g* Release 2 (11.1.2.3.0), that is deployed manually.

See Enterprise Deployment Guide for Oracle Identity and Access Management.

This topology and the accompanying procedures in this chapter are provided to serve as an example for upgrading a highly available, integrated Oracle Identity and Access Management environment. Your specific Oracle Identity and Access Management installation will vary, but this topology and upgrade procedure demonstrates the key elements of the upgrade process, which can be applied to your specific environment.

For a complete description of the topology diagram, refer to the Enterprise Deployment Guide for Oracle Identity and Access Management in the 11*g* Release 2 (11.1.2.3.0) Documentation Library.

**Figure 5-1 OIM-OAM Integrated Topology Set Up Manually**




# Supported Starting Points for Integrated HA Upgrade

Review the supported starting points for each of the components in your integrated environment in order to upgrade to 12*c* (12.2.1.3.0). If the components are in earlier versions, upgrade them to the version that is supported for 12*c* upgrade.

The following table lists the versions that are supported for upgrade of an integrated highly available environments.

**Table 5-1 Supported Starting Point for Integrated HA Upgrade**

| Component | Supported Starting Point |
|---|---|
| Oracle Identity Manager | 11*g* Release 2 (11.1.2.3.0) |
| Oracle Access Manager | 11*g* Release 2 (11.1.2.3.0) |
| Oracle Adaptive Access Manager | 11*g* Release 2 (11.1.2.3.0) |
| Oracle SOA Suite | 11*g* Release 1 (11.1.1.9.0) |
| Oracle WebLogic Server | 10.3.6 |

Oracle Adaptive Access Manager is not part of the Oracle Identity and Access Management suite for 12*c* (12.2.1.3.0), and hence will not be upgraded to 12*c*. Oracle Adaptive Access Manager 11.1.2.3.0 is compatible with Oracle Access Manager 12*c* (12.2.1.3.0).

# Roadmap for Upgrading OIM-OAM Integrated Highly Available Environments Set Up Manually

Refer the roadmap for upgrading Oracle Identity Manager and Oracle Access Manager integrated highly available 11.1.2.3.0 environments that was set up manually, to 12*c* (12.2.1.3.0).

The following table describes the tasks that you must perform to upgrade an OIM-OAM integrated topology described in About the OIM-OAM Integrated HA Topology Set Up Manually.

**Table 5-2 Tasks for Upgrading Integrated Environments Set Up Manually**

| Task | Documentation |
|---|---|
| Review the OIM-OAM integrated topology. | See About the OIM-OAM Integrated HA Topology Set Up Manually. |
| Review the supported starting points for integrated environment upgrade. | See, Supported Starting Points for Integrated HA Upgrade. |
| Ensure that the LDAP server and the Oracle Access Manager have the same lockout value configured before you start the upgrade. That is, the lockout threshold of libOVD, OAM, and LDAP should be the same, else the lock and unlock use cases fail after upgrade.<br>This is applicable for a OIM-OAM integrated single node setup as well. | See Setting the LockoutThreshold in Active Directory in the *Oracle Fusion Middleware Deployment Guide for Oracle Identity and Access Management* for 11*g* Release 2 (11.1.2.3.0). |
| If you have configured Node Manager, ensure that the Node Manager is stopped before you proceed with the upgrade. | See Stopping Servers and Processes. |

**Table 5-2 (Cont.) Tasks for Upgrading Integrated Environments Set Up Manually**

| Task | Documentation |
|---|---|
| Check if Oracle Access Manager (OAM) is integrated with Oracle Identity Manager (OIM) in a single domain<br>If Oracle Access Manager is integrated with Oracle Identity Manager (OIM), and if both the products are in a same domain, a separate OAM domain needs to be cloned that works with OIM in the source domain. It is the cloned OAM domain that needs to be upgraded to 12c. | See Checking if OAM and OAAM is in the Same Domain in an OAM-OAAM-OIM Integrated Setup. |
| Upgrade Oracle Access Manager to 12*c* (12.2.1.3.0).<br>In an integrated environment, you should always upgrade OAM first. | See Upgrading Oracle Access Manager Highly Available Environments. |
| Upgrade Oracle Identity Manager to 12*c* (12.2.1.3.0). | See Upgrading Oracle Identity Manager Highly Available Environments. |

**Note:**

If you encounter any issues during the upgrade, see Troubleshooting the Oracle Identity Manager Upgrade.

# Part II

# Out-of-Place Upgrade of Oracle Identity Manager

In an out-of-place upgrade, you will create a new system and migrate the data from your existing system to the new system. You can perform an out-of-place upgrade of Oracle Identity Manager 12c (12.2.1.3) environment to 12c (12.2.1.4) by using the procedure described in this part.

This part contains the following topic:

- Performing an Out-of-Place Upgrade of Oracle Identity Manager
  The procedure discussed in this guide explains how to upgrade an existing Oracle Identity Manager 11g (11.1.2.3) to Oracle Identity Manager 12*c* (12.2.1.3.0).

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# Performing an Out-of-Place Upgrade of Oracle Identity Manager

The procedure discussed in this guide explains how to upgrade an existing Oracle Identity Manager 11g (11.1.2.3) to Oracle Identity Manager 12*c* (12.2.1.3.0).

To prepare for the upgrad of Oracle Identity Manager, verify that your system meets the basic requirements discussed in Pre-Upgrade Assessments.

This chapter includes the following topics:

- Pre-Upgrade Assessments
  Before starting the out-of-place upgrade of Oracle Identity Manager, you must carefully check the cross-product interoperability and compatibility, system requirements, and certification requirements.
- Migrating Entities from 11g to 12c
  After you have installed the OIG 12c environment as per your requirements, migrate the following entities from 11g to 12c environment:
- Tuning Considerations
- Increasing the Maximum Message Size for WebLogic Server Session Replication

## Pre-Upgrade Assessments

Before starting the out-of-place upgrade of Oracle Identity Manager, you must carefully check the cross-product interoperability and compatibility, system requirements, and certification requirements.

Install the 12*c* (12.2.1.3.0) version of Oracle Identity Governance as per your requirements (large, medium, or small deployment) on new hardware.

For more information, see Installing and Configuring the Oracle Identity Governance Software. You must configure the new system by integrating components, as necessary.

The pre-upgrade check includes reviewing your current OIM 11g (11.1.2.3) environment before starting the upgrade to OIM 12*c* (12.2.1.3.0), and then creating a list of features or components currently being used, such as OIM workflows, connectors, provisioning, targets, workflow policies, and admin roles/capabilities.

For more information, see Pre-Upgrade Requirements.

## Migrating Entities from 11g to 12c

After you have installed the OIG 12c environment as per your requirements, migrate the following entities from 11g to 12c environment:

- Organizations
- Connectors

- Accounts
- Roles (Role, Role Membership, and Categories)
- User Records
- User Customizations
- Others

## Organizations

Following options are available to migrate Organization records from the current OIM 11g (11.1.2.3) environment to 12c:

**Option 1- Organization Bulk Load Utility**

This option involves creating a source database table or a CSV file that contains the data you want to migrate.

For more information on using CSV files or creating database tables, see Creating the Input Source for the Bulk Load Operation in *Developing and Customizing Applications for Oracle Identity Governance*.

**Option 2- Export And Import Feature In Sysadmin Console**

After you have created your source data, you need to import the source data into the new 12c target system. For more information, see Migrating Incrementally Using the Deployment Manager.

## Connectors

You should review the latest version of the connector available for 12c and use Application on Boarding (AoB) to create such connectors.

A new installation enables you to upgrade your targets to newer versions that are certified with 12c connectors.

If 12c connectors are not available, you can export or import existing user data as long as those connectors are supported in the 12c OIM server.

For more information, see Oracle Identity Governance 12c Connectors documentation.

For downloading connectors, see the Oracle Identity Governance Connector Downloads page.

For certification information for Oracle Identity Manager Connectors, see Oracle Identity Governance Connectors Certification.

> **Note:**
>
> If the connectors installed on 11g (11.1.2.3) have no 12c version, you must check the certification, and then upgrade the existing connector to make it compatible with OIG 12c.

## Accounts

After you set up the connectors as applications, you should start loading the account data from the target systems.

> **Note:**
>
> Target systems are applications such as database, LDAP, and so on, which OIM connects to using the OIM connectors.

Following options are available to load your accounts:

- **Option 1**: If the target system has account data, you can bulk load the account details (or data) by using the Bulk Load Utility. See Loading Account Data in *Developing and Customizing Applications for Oracle Identity Governance* guide.
- **Option 2**: You can load the target system account data into the new environment by using connector the reconciliation jobs.

## Roles (Role, Role Membership, and Categories)

You can use the OIM Bulk Load Utility to import roles, role membership, and categories from a table or a CSV file. Export the relevant data files from the source OIM database.

For information on how to export and import this data, see Loading Role, Role Hierarchy, Role Membership, and Role Category Data in *Developing and Customizing Applications for Oracle Identity Governance*.

## User Records

Following options are available to migrate user records from current OIM 11g (11.1.2.3) environment to 12c:

**Option 1 - User Bulk Load Utility**

This option includes exporting the user records to a table or a CSV file that will act as a source. See Loading OIM User Data in *Developing and Customizing Applications for Oracle Identity Governance* guide.

**Option 2- Trusted Recon of Users from 11g to 12c**

This option includes using the Database User Management (DBUM) connector or a flat file connector to migrate the user records.

> **Note:**
>
> You cannot migrate user passwords by using the above options. You can set up SSO or LDAP as an authentication provider.

## User Customizations

If you have added the custom User Defined Fields (UDF) in OIM 11g (11.1.2.3), you must create those UDFs in 12c as well.

> **WARNING:**
>
> Oracle does not support UDF migration (Deployment Manager and ADF Sandboxes).

> **Note:**
>
> To check if import or export from 11g (11.1.2.3) to 12c works, export the user metadata from the 11g (11.1.2.3) environment and import it to 12c, get the corresponding ADF sandbox, and then import it to 12c.

## Others

You can also migrate the following items from your 11g (11.1.2.3) environmen to 12c environment by using the Export/Import option in the sysadmin console:

- Access policies
- Admin roles
- Application instances
- Approval policies
- Catalog UDFs
- Certification configurations
- Certification definitions
- Custom resource bundles
- E-mail definitions
- Error codes
- Event handlers
- Identity Audit configuration
- Identity Audit rules
- Identity Audit scan definitions
- IT resource definition
- IT resources
- JAR files
- Lookup definitions

- Notification templates
- Organization metadata
- Organizations
- Password policies
- Policies
- Plug-ins
- Prepopulation adapters
- Process definitions
- Process forms
- Provisioning workflows and process task adapters
- Request datasets
- Resource objects
- Risk configuration
- Role metadata
- Roles
- Scheduled jobs
- Scheduled tasks
- System properties
- User metadata

For more information, see Migrating Incrementally Using the Deployment Manager and Moving From Test to Production in the *Administering Oracle Identity Manager* guide.

# Tuning Considerations

As a post-upgrade step, you must follow the performance tuning guidelines provided in the tuning documentation. See Oracle Identity Governance Performance Tuning.

Also, you should check the existing 11g (11.1.2.3) system for custom indexes and create them in the 12c system.

# Increasing the Maximum Message Size for WebLogic Server Session Replication

As part of the post-upgrade tasks, Oracle recommends you to modify the Maximum Message Size from the default vale of 10 MB to 100 MB. This value is used to replicate the session data across the nodes. You should perform this step for all the Managed servers and the Administration server.

1. Log in to the WebLogic Server Administration Console.
2. Navigate to **Servers**, select **Protocols**, and then click **General**.
3. Set the value of **Maximum Message Size** to `100 MB`.

# Part III

# Out-of-Place Cloned Upgrade of Oracle Identity Manager

In an out-of-place cloned upgrade, you will create a copy of your existing system on new hardware, and then perform an in-place upgrade on the clone. You can perform an out-of-place cloned upgrade of Oracle Identity Manager by using the procedure described in this part.

This part contains the following chapter:

- Performing an Out-of-Place Cloned Upgrade of Oracle Identity Manager
  The out-of-place upgrade procedure discussed in this guide explains how to perform a cloned upgrade of Oracle Identity Manager 11g (11.1.2.3) to Oracle Identity Manager 12*c* (12.2.1.3.0).

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# Performing an Out-of-Place Cloned Upgrade of Oracle Identity Manager

The out-of-place upgrade procedure discussed in this guide explains how to perform a cloned upgrade of Oracle Identity Manager 11g (11.1.2.3) to Oracle Identity Manager 12*c* (12.2.1.3.0).

This chapter includes the following topics:

- Pre-Upgrade Assessments
  The pre-upgrade check includes reviewing your current OIM 11.1.2.3 environment before starting the cloned upgrade to OIM 12*c* (12.2.1.3.0).
- Performing an Out-of-Place Cloned Upgrade
- Increasing the Maximum Message Size for WebLogic Server Session Replication

## Pre-Upgrade Assessments

The pre-upgrade check includes reviewing your current OIM 11.1.2.3 environment before starting the cloned upgrade to OIM 12*c* (12.2.1.3.0).

For more information, see the following topics:

- Checking the Supported Versions
- Checking the Potential Integrations with OAM and/or OAAM
- Source Environment Validation for Use of Host Names
- Purging Unused Data
  Purging unused data and maintaining a purging methodology before an upgrade can optimize the upgrade process.

### Checking the Supported Versions

You can upgrade the Oracle Identity Manager 11g to 12*c* (12.2.1.3.0). You must make sure that OIM is fully patched with the latest bundle and required patches.

If you are running an older version of OIM, you must first upgrade it to OIM 11.1.2.3, and then to 12c.

### Checking the Potential Integrations with OAM and/or OAAM

Oracle 12c requires that OIM resides in a separate isolated domain. The schema set for Access and Governance are distinct and they cannot share the same database prefix. Hence, they cannot share schemas. If your current deployment has OIM co-existing with other Oracle Identity and Access Management products such as Oracle Access Manager (OAM) and/or Oracle Adaptive Access Manager (OAAM), you must first separate the domains.

For details on how to separate OIM and OAM, see Separating Oracle Identity Management Applications Into Multiple Domains.

# Source Environment Validation for Use of Host Names

The cloning solution provided in this chapter relies on the use of host names and not IP addresses in all configuration properties. Validate the various domain and application configuration parameters in the source environment to ensure that there are no IP addresses directly configured. If IP addresses are found to be in use, Oracle recommends you to update the source environment prior to beginning the cloning process.

This section includes the following topics:

- Auditing the WebLogic Server Domain Configuration
- Auditing the Application Configuration Data Stored in the Metadata Service (MDS)

## Auditing the WebLogic Server Domain Configuration

Verify that the domain is not configured with IP addresses for the various listener, nodemanager, datasource host/SCAN/ONS parameters, and so on. As customer configurations vary in scope and the number of parameters are too many to enumerate specifically, only a basic audit process is provided here. A simple search of the domain configuration files for each known hostname, or by domain name, IP address list, or network range will provide a quick report.

The source environment might have host records such as:

```
# On-Prem Host Entries
10.99.5.42   srchost27.example.com srcHost27   webhost1
10.99.5.43   srchost28.example.com srcHost28   webhost2
10.99.5.44   srchost20.example.com srcHost20  ldaphost1
10.99.5.45   srchost21.example.com srcHost21  ldaphost2
10.99.5.46   srchost23.example.com srcHost23   oamhost1
10.99.5.47   srchost24.example.com srcHost24   oamhost2
10.99.5.48   srchost25.example.com srcHost25   oimhost1
10.99.5.49   srchost26.example.com srcHost26   oimhost2
# Compute VNIC Secondary IP for AdminServer floating VIPs
10.99.5.61 srcVIPiad.example.com srcVIPiad
10.99.5.62 srcVIPigd.example.com srcVIPigd
# Database Systems with on-prem override aliases
10.99.5.20 src-DB-SCAN.example.com src-DB-SCAN
# Load Balancer IP
10.99.5.6  prov.example.com  login.example.com  idstore.example.com
iadadmin.example.com  igdadmin.example.com  iadinternal.example.com
igdinternal.example.com
```

Values to check for can be written to a file for easy command-line use. Include the corporate network range, partial domain names, and partial strings from any corporate host naming convention that might be relevant, and then execute a search of all XML configuration files from the *DOMAIN_HOME*/config folder.

```
cat << EOF > /tmp/domainHostNameSearchList.txt
10.99.
```

```
.example.com
srcHost
webhohst
ldaphost
oamhost
oimhost
EOF

cd DOMAIN_HOME/config
find .-name "*.xml" -exec grep -H -f /tmp/domainHostNameSearchList.txt {} \;
```

This will result in a list of configuration *file paths/names*, and the line in which the text is found. The resulting list should include machine and listen-address entries, JDBC URLs, ONS Node list entries (if using Gridlink JDBC Drivers), and so on.

```
./config.xml:    <machine>OIMHOST1</machine>
./config.xml:    <listen-address>OIMHOST1</listen-address>
./config.xml:      <arguments>-Dtangosol.coherence.wka1=OIMHOST1 -
Dtangosol.coherence.wka2=OIMHOST2 -Dtangosol.coherence.localhost=OIMHOST1 -
Dtangosol.coherence.wka1.port=8089 -Dtangosol.coherence.wka2.port=8089 -
Dtangosol.coherence.localport=8089</arguments>
./config.xml:    <machine>OIMHOST1</machine>
./config.xml:    <listen-address>10.99.5.48</listen-address>
./config.xml:    <machine>OIMHOST1</machine>
./config.xml:    <listen-address>OIMHOST1</listen-address>
./config.xml:    <name>OIMHOST2</name>
./config.xml:      <name>OIMHOST2</name>
./config.xml:      <listen-address>srcHost26</listen-address>
./jdbc/mds-soa-jdbc.xml:
<url>jdbc:oracle:thin:@(DESCRIPTION=(ENABLE=BROKEN)
(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=src-DB-SCAN.example.com)
(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=igdupgdb.example)))</url>
./jdbc/mds-soa-jdbc.xml:    <ons-node-list>src-DB-SCAN.example.com:6200</ons-
node-list>
```

Verify that all entries are using hostnames, either short or fully-qualified. These are the values that must be confirmed in the target host files.

> **Note:**
>
> Any configurations specifying IP addresses should be corrected in the source system prior to cloning.

## Auditing the Application Configuration Data Stored in the Metadata Service (MDS)

Oracle Identity Governance stores configuration details in a Fusion Middleware Metadata Store (MDS) database schema. These configuration details include endpoint URI and JDBC connection strings that you should review and validate prior to cloning the environment. The hosts referenced in these URI and connection strings must be configured as hostnames or fully-qualified domain names (FQDN) rather than IP addresses. If IP addresses are used, they cannot be overridden in the target environment and you would have to change them during the cloning process.

Oracle recommends you to correct the source environment and replace any hard-coded IP addresses with appropriate host names prior to the cloning maintenance.

To audit the stored metadata configuration for OIM via WLST:

1. Log in to an OIM host in the source environment as the OS user with privileges to the *ORACLE_HOME* directory.
2. Create a temporary working directory.

   ```
   mkdir -p /tmp/mds/oim/
   ```

3. Connect to the AdminServer via WLST.

   ```
   $ ORACLE_HOME/common/bin/wlst.sh
   wls:/offline> connect()
   Please enter your username :weblogic
   Please enter your password :
   Please enter your server URL [t3://localhost:7001] :t3://
   ADMINHOST:7001
   Connecting to t3://ADMINHOST:7001 with userid weblogic ...
   Successfully connected to Admin Server 'AdminServer' that belongs
   to domain 'IAMGovernanceDomain'.
   wls:/IAMGovernanceDomain/serverConfig>
   ```

4. Export the OIM configuration XML data from the FMW Metadata Store and exit from WLST.
   - Application=*OIMMetadata*
   - server=*WLS_OIM1* (your server name may vary)
   - toLocation=`/tmp/mds/oim`
   - docs= `/db/oim-config.xml`

   For example:

   ```
   wls:/IAMGovernanceDomain/serverConfig>
   exportMetadata(application='OIMMetadata', server='WLS_OIM1',
   toLocation='/tmp/mds/oim', docs='/db/oim-config.xml')

   Executing operation: exportMetadata.

   Operation "exportMetadata" completed. Summary of "exportMetadata"
   operation is:
   1 documents successfully transferred.
   List of documents successfully transferred:

   /db/oim-config.xml

   wls:/IAMGovernanceDomain/serverConfig> exit()
   ```

5. Create a file of search terms to be used to filter for the relevant data from the OIM configuration. There are a lot of configuration elements in the exported XML file. Create a short list to use for filtering.

For example:

```
$ cat << EOF > /tmp/mds/oim/grepHostValidationTerms.txt
<directDBConfigParams
bIPublisherURL
oimFrontEndURL
oimExternalFrontEndURL
oimJNDIURL
backOfficeURL
accessServerHost
tapEndpointUrl
soapurl
rmiurl
host
serviceURL
EOF
```

6. Search the OIM configuration data using the search terms.

   For example:

```
$ grep -f /tmp/mds_oim/grepHostValidationTerms.txt /tmp/mds/oim/db/oim-
config.xml

<directDBConfigParams checkoutTimeout="1200"
connectionFactoryClassName="oracle.jdbc.pool.OracleDataSource"
connectionPoolName="OIM_JDBC_UCP" driver="oracle.jdbc.OracleDriver"
idleTimeout="360" maxCheckout="1000" maxConnections="5"
minConnections="2" passwordKey="OIMSchemaPassword" sslEnabled="false"
url="jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=src-DB-
SCAN.example.com )(PORT=1521)) (CONNECT_DATA=
(SERVICE_NAME=igdupgdb.example)))" username="IGDUPG_OIM"
validateConnectionOnBorrow="true">
<bIPublisherURL>http://OIMHOST2:9704,OIMHOST1:9704</bIPublisherURL>
<oimFrontEndURL>http://igdinternal.example.com</oimFrontEndURL>
<oimExternalFrontEndURL>https://prov.example.com:443</
oimExternalFrontEndURL>
<oimJNDIURL>@oimJNDIURL</oimJNDIURL>
<backOfficeURL/>
<accessServerHost>srcHost23</accessServerHost>
<tapEndpointUrl>https://login.example.com:443/oam/server/dap/cred_submit</
tapEndpointUrl>
<soapurl>http://OIMHOST2:8001</soapurl>
<rmiurl>cluster:t3://cluster_soa</rmiurl>
<host>@oaacghost</host>
<serviceURL>@oaacgserviceurl</serviceURL>
```

7. Review the search results, verify all the configuration properties, and use appropriate hostnames or fully-qualified domain names.

> **Note:**
>
> - Some properties may have placeholder values (for example: *@oaacghost* or *@oaacgserviceurl*). These are acceptable.
> - The <rmiurl> URI specified is typically a WLS t3 protocol URI addressed to a WLS server name or cluster name, and does not use a hostname. This is also acceptable.

## Purging Unused Data

Purging unused data and maintaining a purging methodology before an upgrade can optimize the upgrade process.

Some components have automated purge scripts. If you are using purge scripts, wait until the purge is complete before starting the upgrade process. The upgrade may fail if the purge scripts are running while using the Upgrade Assistant to upgrade your schemas.

For more information, see Using the Archival and Purge Utilities for Controlling Data Growth.

> **Note:**
>
> In large systems with plenty of data, archiving/purging may take a long time. Oracle strongly recommends not to run the archival/purge scripts in parallel to improve performance.

# Performing an Out-of-Place Cloned Upgrade

Complete the following steps for an out-of-place upgrade from OIM 11.1.2.3 to 12*c* (12.2.1.3.0):

- Preparing the Host Files
- Cloning the Database
- Cloning the Oracle Binaries
- Cloning the Configuration
- Upgrading In-place Cloned Environment to 12c

## Preparing the Host Files

In a cloned environment, the referenced host names in the target environment are the same as the host names in your source system. If you have followed the recommendations in the Enterprise Deployment Guide and used virtual host names for all configurations, this is simply a matter of aliasing these entries to the real target host names. For example:

```
10.0.2.17   oimhost1.idm.tenant.oraclevcn.com   oimhost1
```

If you are using physical host names in your source WebLogic configuration, you must alias these names to the real target host names. For example:

```
10.0.2.17   oimhost1.idm.tenant.oraclevcn.com   oimhost1
srchost25.example.com srcHost25
```

In addition, if the source environment has additional floating VIPs and FQDN for the AdminServer's Machine listen address and Node Manager host declaration, then the target Secondary IP addresses should be configured on the VNICs for the appropriate target compute instances and added to the hosts file. These secondary IP address entries should also include the source environment FQDNs and hostnames to override DNS when connecting to the AdminServer.

```
10.0.2.21 igdadminvhn.idm.tenant.oraclevcn.com igdadminvhn
srcVIPigd.example.com srcVIPigd
```

An example `/etc/hosts` file:

```
127.0.0.1   localhost localhost.localdomain localhost4
localhost4.localdomain4
::1         localhost localhost.localdomain localhost6
localhost6.localdomain6

# Compute with on-prem override aliases
10.0.2.11   webhost1.idm.tenant.oraclevcn.com   webhost1
srchost27.example.com srcHost27
10.0.2.12   webhost2.idm.tenant.oraclevcn.com   webhost2
srchost28.example.com srcHost28
10.0.2.13  ldaphost1.idm.tenant.oraclevcn.com  ldaphost1
srchost20.example.com srcHost20
10.0.2.14  ldaphost2.idm.tenant.oraclevcn.com  ldaphost2
srchost21.example.com srcHost21
10.0.2.15   oamhost1.idm.tenant.oraclevcn.com   oamhost1
srchost23.example.com srcHost23
10.0.2.16   oamhost2.idm.tenant.oraclevcn.com   oamhost2
srchost24.example.com srcHost24
10.0.2.17   oimhost1.idm.tenant.oraclevcn.com   oimhost1
srchost25.example.com srcHost25
10.0.2.18   oimhost2.idm.tenant.oraclevcn.com   oimhost2
srchost26.example.com srcHost26

# Compute VNIC Secondary IP for AdminServer floating VIPs
10.0.2.20 iadadminvhn.idm.tenant.oraclevcn.com iadadminvhn
srcVIPiad.example.com srcVIPiad
10.0.2.21 igdadminvhn.idm.tenant.oraclevcn.com igdadminvhn
srcVIPigd.example.com srcVIPigd

# Database Systems with on-prem override aliases
10.0.2.19  iamdbhost.idm.tenancy.oraclevcn.com  iamdbhost   src-DB-
SCAN.example.com src-DB-SCAN

# Load Balancer IP
10.0.1.10  prov.example.com  login.example.com  idstore.example.com
```

```
iadadmin.example.com  igdadmin.example.com  iadinternal.example.com
igdinternal.example.com
```

> **Note:**
>
> Ensure that the entries for each of the target compute instances and DB Host/SCAN addresses are present in the host file for all the hosts in the topology.

# Cloning the Database

You can take a copy of your existing environment and then upgrade that copy. If you encounter issues during the upgrade, you will have the existing environment as a fallback.

For more information, see Performing an Upgrade via a Cloned Environment.

- Methods for Cloning Databases
- Cloning the Database Using the Export/Import Method
- Cloning the Database Using RMAN
- Cloning the Database Using Data Guard

## Methods for Cloning Databases

There are different methods of cloning a database and each method has its own merits.

> **Note:**
>
> Oracle Identity and Access Management 12c does not support Oracle Access Manager and Oracle Identity Manager configured to use the same database schema prefix. Before you upgrade, if both products co-exist and share the same database schemas, you must first split the database into two different prefixes and schema sets.

You can use the following options to clone the database:

**Option 1 – Database Export Import**

- Suitable for smaller sized databases.
- Allows movement between versions. For example, 12.1.0.3 to 19c.
- Allows movement into Container Databases/Private Databases.
- Is a complete copy; redoing the exercise requires data to be deleted from the target each time.
- No ongoing synchronization.
- During cut-over the source system will need to be frozen for updates.

**Option 2 – Duplicate Database Using RMAN**

- Suitable for databases of any size.
- Takes a back up of an entire database.
- The database version and patch level should be the same on both the source and destination.
- Database upgrades will need to be performed as a separate task.
- CDP/PDB migration will have to be done as a separate exercise.
- No ongoing synchronization.
- During cut-over, you should freeze the source system for updates.

**Option 3 – Dataguard Database**

- Suitable for databases of any size.
- Takes a back up of an entire database.
- Database upgrades will need to be performed as a separate task.
- CDP/PDB migration will have to be done as a separate exercise.
- Ongoing synchronisation; Database can be opened to test the upgrade and closed again to keep data synchronized with the source system.

> **Note:**
>
> You should choose the solution based on your requirements.

## Cloning the Database Using the Export/Import Method

On your 11g environment, export the data from your database to an export file.

**On the source environment**:

1. Create and set the directory details for the export process on the source DB hosts.
   a. Make a directory on the source DB hosts in a location with sufficient space.

      ```
      mkdir -p /u01/installers/database
      ```

   b. On the source database, create a database directory object pointing to this location:

      ```
      SQL> CREATE DIRECTORY orcl_full AS '/u01/installers/database';
      ```

2. Shutdown WebLogic Server Managed Servers or Clusters for OIM, SOA, and BIP.

   > **Note:**
   >
   > If executing in parallel with the domain backup, coordinate the shut down of the entire domain including AdminServer and NodeManagers.

3. Stop the SOA DBMS queues in the source database.

a. Connect as the SOAINFRA schema user and query for the user queues.

```
$ sqlplus <PREFIX>_SOAINFRA@<sourceDB>
SQL> COLUMN name FORMAT A32
SQL> SELECT name,enqueue_enabled,dequeue_enabled
FROM USER_QUEUES where queue_type = 'NORMAL_QUEUE' order by name;
NAME                             ENQUEUE DEQUEUE
-------------------------------- ------- -------
B2B_BAM_QUEUE                     YES        YES
EDN_EVENT_QUEUE                   YES        YES
EDN_OAOO_QUEUE                    YES        YES
IP_IN_QUEUE                       YES        YES
IP_OUT_QUEUE                      YES        YES
TASK_NOTIFICATION_Q               YES        YES

6 rows selected.
```

b. Stop each queue.

```
SQL> BEGIN

DBMS_AQADM.STOP_QUEUE ('B2B_BAM_QUEUE');

DBMS_AQADM.STOP_QUEUE ('EDN_OAOO_QUEUE');

DBMS_AQADM.STOP_QUEUE ('EDN_EVENT_QUEUE');

DBMS_AQADM.STOP_QUEUE ('IP_IN_QUEUE');

DBMS_AQADM.STOP_QUEUE ('IP_OUT_QUEUE');

DBMS_AQADM.STOP_QUEUE ('TASK_NOTIFICATION_Q');

END;

/
exit
```

4. As the OIM schema user, query for and stop any running `DBMS_SCHEDULER` jobs in the source database.

```
$ sqlplus <PREFIX>_OIM@<sourceDB>

SQL> SELECT job_name,session_id,running_instance,elapsed_time
FROM user_scheduler_running_jobs ORDER BY job_name;

no rows selected
```

> **Note:**
>
> In case of any running jobs, either wait till the job is complete or stop the job 'gracefully' using:
>
> ```
> SQL> BEGIN
>
> DBMS_SCHEDULER.stop_job('REBUILD_OPTIMIZE_CAT_TAGS');
>
> END;
>
> /
> SQL> exit
> ```

5. Grant system policies to avoid errors during export datapump jobs.

```
$ sqlplus SYS as SYSDBA
SQL> GRANT EXEMPT ACCESS POLICY TO SYSTEM;
SQL> exit
```

6. Export the system and application schemas from the source database, setting the directory property appropriately.

   a. Export the `system.schema_version_registry` table and view:

```
$ expdp \"sys/<password>@<sourcedb> as sysdba \" \
     DIRECTORY=orcl_full \
     DUMPFILE=oim_system.dmp \
     LOGFILE=oim_system_exp.log \
     SCHEMAS=SYSTEM \
     INCLUDE= VIEW:"IN('SCHEMA_VERSION_REGISTRY')"
TABLE:"IN('SCHEMA_VERSION_REGISTRY$')"\
     JOB_NAME=MigrationExportSys
```

   b. Export all of the schemas used by the datasources in the source WebLogicServer domain.

```
$ expdp \"sys/<password>@<sourcedb> as sysdba \" \
     DIRECTORY=orcl_full \
     DUMPFILE=oim.dmp \
     LOGFILE=oim_exp.log \

SCHEMAS=<PREFIX>_OIM,<PREFIX>_SOAINFRA,<PREFIX>_BIPLATFORM,<PREFIX>_MD
S,<PREFIX>_ORASDPM,<PREFIX>_OPSS,IGDJMS,IGDTLOGS \
     JOB_NAME=MigrationExport \
     EXCLUDE=STATISTICS
```

7. Extract the source database DDL for the tablespaces, schema users, and grants.

   This step allows the efficient creation of the correct tablespaces on the target database and retains the schema user passwords. Therefore, domain reconfiguration is not necessary. System and Object grants for objects outside the exported schemas are also accounted for to reduce the risk of invalid objects and recompilation difficulties.

An example script is provided to create the complete SQL DDL output all at once. The example will need to be modified if not using a CDB/PDB.

a. In SQLPLUS, execute the example SQL script to extract the DDL to a `ddl.sql` file in the same directory as the datapump exported dumps. Enter the source environment and the target PDB. Output will be copied to both the screen and in the file named `ddl.sql`.

```
$ cd /u01/installers/database
$ sqlplus SYS as SYSDBA
SQL> @extract_ddl.sql
Enter RCU Prefix: <PREFIX>
Enter PDB: targetPDB
```

**Example SQL Script**:

> **Note:**
>
> Lines in bold are applicable only if your target database is a PDB. This SQL assumes that all the objects are created using the RCU prefix. If you have created objects without the prefix (for example tablespaces/users for JMS or TLogs, add these manually).

```
$ cat << EOF > extract_ddl.sql
set pages 0
set feedback off
set heading off
set long 5000
set longchunksize 5000
set lines 200
set verify off
exec dbms_metadata.set_transform_param
(dbms_metadata.session_transform, 'SQLTERMINATOR', true);
exec dbms_metadata.set_transform_param
(dbms_metadata.session_transform, 'PRETTY', true);
accept PREFIX char prompt 'Enter RCU Prefix:'
accept PDBNAME char prompt 'Enter PDB:'

spool ddl.sql

select 'alter session set container=&&PDBNAME;'
from dual
/
SELECT DBMS_METADATA.GET_DDL('TABLESPACE',Tablespace_name)
from  dba_tablespaces
where tablespace_name like '&&PREFIX%'
/
set lines 600
SELECT DBMS_METADATA.GET_DDL('USER',USERNAME)
from DBA_USERS
where USERNAME like '&&PREFIX%'
/
```

```
set lines 200
SELECT DBMS_METADATA.GET_GRANTED_DDL ('SYSTEM_GRANT',USERNAME)
from DBA_USERS
where USERNAME like '&&PREFIX%'
and USERNAME NOT LIKE '%_IAU_APPEND'
and USERNAME NOT LIKE '%_IAU_VIEWER'
/

SELECT DBMS_METADATA.GET_GRANTED_DDL ('OBJECT_GRANT',USERNAME)
from DBA_USERS
where USERNAME like '&&PREFIX%'
and USERNAME NOT LIKE '%TLOGS'
and USERNAME NOT LIKE '%JMS'
/

spool off
EOF
```

b. Delete any object grants for system `QT*_BUFFER` views in the output `ddl.sql`.The buffer views will not exist in the target database and cause errors.

```
$ sed -i.bak -e '/QT.*_BUFFER/d' /u01/installers/database/ddl.sql
```

8. Re-start the SOA DBMS queues. Connect as the SOAINFRA schema user and restart each queue that was stopped earlier.

```
$ sqlplus <PREFIX>_SOAINFRA@sourceDB
SQL> BEGIN

DBMS_AQADM.START_QUEUE ('B2B_BAM_QUEUE');

DBMS_AQADM.START_QUEUE ('EDN_OAOO_QUEUE');

DBMS_AQADM.START_QUEUE ('EDN_EVENT_QUEUE');

DBMS_AQADM.START_QUEUE ('IP_IN_QUEUE');

DBMS_AQADM.START_QUEUE ('IP_OUT_QUEUE');

DBMS_AQADM.START_QUEUE ('TASK_NOTIFICATION_Q');

END;

/
SQL> COLUMN name FORMAT A32
SQL> SELECT name,enqueue_enabled,dequeue_enabled
FROM USER_QUEUES where queue_type = 'NORMAL_QUEUE' order by name;

NAME                             ENQUEUE DEQUEUE
-------------------------------- ------- -------
B2B_BAM_QUEUE                     YES        YES
EDN_EVENT_QUEUE                   YES        YES
EDN_OAOO_QUEUE                    YES        YES
IP_IN_QUEUE                       YES        YES
IP_OUT_QUEUE                      YES        YES
```

```
TASK_NOTIFICATION_Q                YES        YES

6 rows selected.
SQL> exit
```

9. Re-start the WebLogic Server Managed Servers or clusters for OIM, SOA, and BIP.
10. Replicate the DDL SQL and the datapump dump files to the target database host.
    - `oim.dmp`
    - `oim_system.dmp`
    - `ddl.sql`

**On the target environment**:

1. Install/configure the target database sufficiently in accordance with FMW requirements. Install a version of the Oracle database you want to use on the target environment. This database can be a single instance database, a real applications cluster (RAC) database, a standard database, or a Container Database with OIG in a separate pluggable database (PDB).
2. Validate that the target database is configured to meet all the criteria of Oracle Identity Manager as defined in Installing and Configuring the Oracle Identity Governance Software in the *Installing and Configuring Oracle Identity and Access Management*.
3. Create the TNS entry for the Pluggable Database in the target system, if necessary. For example:

```
IGDPDB =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)
                 (HOST = iamdbhost.idm.tenancy.oraclevcn.com)
                 (PORT = 1521)
      )
      (CONNECT_DATA =
          (SERVER = DEDICATED)
          (SERVICE_NAME = igdpdb.idm.tenancy.oraclevcn.com)
      )
     )
```

4. Create and set the directory details for the export process on the source DB hosts.
    a. Make a directory on the target DB hosts in a location with sufficient space.

    ```
    $ mkdir -p /u01/installers/database
    ```

    b. Create a database directory object pointing to this location on the source and destination databases.

    ```
    SQL> CREATE DIRECTORY orcl_full AS '/u01/installers/database';
    ```

5. Create a database restore point in case there is a need to roll back the transaction.

6. Create and start a database service for the new database with the same service name as the source environment.
For example:

```
$ srvctl add service -db iamcdb -pdb igdpdb -service onpremservice -
rlbgoal SERVICE_TIME -clbgoal SHORT
$ srvctl start service -db iamcdb -service onpremservice
$ srvctl status service -db iamcdb -service onpremservice
```

7. Confirm that the exported datapump dump files and SQL files are available on the target database host in the correct directory, and the DBA directory name and path in the database match.

```
$ ls -al /u01/installers/database
$ sqlplus / as sysdba
SQL> ALTER SESSION SET CONTAINER = igdpdb;
SQL> CREATE DIRECTORY orcl_full AS '/u01/installers/database';
```

To verify:

```
$ sqlplus / as sysdba
SQL> ALTER SESSION SET CONTAINER = igdpdb;

SQL> COLUMN directory_name FORMAT A32
SQL> COLUMN directory_path FORMAT A64
SQL> set linesize  128
SQL> SELECT directory_name,directory_path FROM dba_directories ORDER BY
directory_name;
```

8. Confirm that the required `DBMS_SHARED_POOL` and `XATRANS` database objects exist and create them if they do not. Check for a count of '2' for each of the following SQLs on the target database where the OIM schema export dump is to be restored.

```
SQL> SELECT COUNT(*) FROM dba_objects
WHERE owner = 'SYS' AND object_name = 'DBMS_SHARED_POOL'
AND object_type IN ('PACKAGE','PACKAGE BODY');

  COUNT(*)
----------
         2

SQL> SELECT COUNT(*) FROM dba_objects
WHERE owner = 'SYS' AND object_name like '%XATRANS%';

  COUNT(*)
----------
         0
```

   a. If `DBMS_SHARED_POOL` count is < 2, run the appropriate SQL to re-configure:

```
SQL> @/u01/app/oracle/product/19.0.0.0/dbhome_1/rdbms/admin/
dbmspool.sql
```

```
SQL> @/u01/app/oracle/product/19.0.0.0/dbhome_1/rdbms/admin/
prvtpool.plb
```

b. If `XATRANS` count is < 2, run the appropriate SQL to reconfigure:

```
SQL> @/u01/app/oracle/product/19.0.0.0/dbhome_1/rdbms/admin/
xaview.sql
```

9. Import the source database system dump from the correct folder to create the `schema_version_registry` table and view, then create the required public synonym manually via SQL.

```
$ cd /u01/installers/database
$ impdp \"SYS/<password>@<targetdb> AS SYSDBA\" \
    PARALLEL=4
    DIRECTORY=orcl_full \
    DUMPFILE=oim_system.dmp \
    LOGFILE=oim_system_imp.log \
    FULL=YES;

$ sqlplus / as sysdba

SQL> alter session set container=igdpdb;
SQL> CREATE PUBLIC SYNONYM schema_version_registry FOR
system.schema_version_registry;
SQL> exit
```

10. Verify that the `schema_version_registry` table data matches your source environment. It is important to check that the following query returns rows that are consistent with your deployment. This table should have been imported as part of the above steps. If it fails to do so you must populate the table with values from your source system.

```
$ sqlplus / as sysdba
SQL> alter session set container=igdpdb;SQL> set linesize 100
SQL> col comp_id for a10
SQL> col comp_name for a50
SQL> col version for a10
SQL> select comp_id, comp_name, version, status, upgraded
from system.schema_version_registry;

Output will look something like:

COMP_ID    COMP_NAME
VERSION    STATUS      U
---------- --------------------------------------------------
---------- ----------- -
BIPLATFORM OracleBI and EPM
11.1.1.9.0 VALID       N
MDS        Metadata Services
11.1.1.9.0 VALID       N
OIM        Oracle Identity Manager
11.1.2.3.0 VALID       N
OPSS       Oracle Platform Security Services
```

```
11.1.1.9.0 VALID       N
ORASDPM    SDP Messaging                                    11.1.1.9.0
VALID       N
SOAINFRA   SOA Infrastructure Services                      11.1.1.9.0
VALID       N
```

11. Execute the DDL SQL from the source database to create the required tablespaces, schema users with the same passwords, system grants, and object grants. If using a PDB, ensure that you set the container correctly.

```
$ sqlplus / as sysdba
SQL> alter session set container=igdpdb;
SQL> @'/u01/installers/database/ddl.sql'
SQL> exit
```

12. Import the application schemas.

> **Note:**
>
> There will be ORA-31684 errors due to pre-created the users. Ignore the following types of errors:
>
> - Procedure/Package/Function/Trigger compilation warnings
> - DBMS_AQ errors
> - ORA-31684: Object type USER:"" already exists

For example:

```
$ cd /u01/installers/database
$ impdp \"SYS/<password>@<targetdb> AS SYSDBA\" \
    PARALLEL=4 \
    DIRECTORY=orcl_full \
    DUMPFILE=oim.dmp \
    LOGFILE=oim_imp.log
    FULL=YES;
```

13. Query for any invalid objects for the imported schemas and execute a recompile for each schema with invalid objects.
For example:

```
$ sqlplus / as sysdba
SQL> alter session set container=igdpdb;
SQL> COLUMN owner       FORMAT A24
SQL> COLUMN object_type FORMAT A12
SQL> COLUMN object_name FORMAT A32
SQL> SET LINESIZE 128
SQL> SET PAGESIZE 50

SQL> SELECT owner,object_type,object_name, status
FROM   dba_objects
WHERE  status = 'INVALID'
AND owner like '<PREFIX>'
```

```
ORDER BY owner, object_type, object_name;

OWNER                     OBJECT_TYPE
OBJECT_NAME                       STATUS
------------------------- ------------
------------------------------- -------
IGDUPG_OIM                SYNONYM
ALTERNATE_ADF_LOOKUPS             INVALID
IGDUPG_OIM                SYNONYM
ALTERNATE_ADF_LOOKUP_TYPES        INVALID
IGDUPG_OIM                SYNONYM
FND_LOOKUPS                       INVALID
IGDUPG_OIM                SYNONYM
FND_STANDARD_LOOKUP_TYPES         INVALID

SQL> EXECUTE UTL_RECOMP.RECOMP_SERIAL('IGDUPG_OIM');

SQL> SELECT owner,object_type,object_name, status
FROM   dba_objects
WHERE  status = 'INVALID'
AND owner like '<PREFIX>'
ORDER BY owner, object_type, object_name;

no rows selected
```

14. Start the SOA DBMS queues.

    a. Connect as the SOAINFRA schema user and query for the user queues.

    ```
    $ sqlplus <PREFIX>_SOAINFRA@<sourceDB>
    SQL> COLUMN name FORMAT A32
    SQL> SELECT name,enqueue_enabled,dequeue_enabled  FROM
    USER_QUEUES where queue_type = 'NORMAL_QUEUE' order by name;

    NAME                              ENQUEUE DEQUEUE
    -------------------------------- ------- -------
    B2B_BAM_QUEUE                      YES        YES
    EDN_EVENT_QUEUE                    YES        YES
    EDN_OAOO_QUEUE                     YES        YES
    IP_IN_QUEUE                        YES        YES
    IP_OUT_QUEUE                       YES        YES
    TASK_NOTIFICATION_Q                YES        YES

    6 rows selected.
    ```

    b. Start each queue.

    ```
    SQL> BEGIN

    DBMS_AQADM.START_QUEUE ('B2B_BAM_QUEUE');

    DBMS_AQADM.START_QUEUE ('EDN_OAOO_QUEUE');

    DBMS_AQADM.START_QUEUE ('EDN_EVENT_QUEUE');
    ```

```
DBMS_AQADM.START_QUEUE ('IP_IN_QUEUE');

DBMS_AQADM.START_QUEUE ('IP_OUT_QUEUE');

DBMS_AQADM.START_QUEUE ('TASK_NOTIFICATION_Q');

END;

/
exit
```

## Cloning the Database Using RMAN

Clone the database from the source environment to the target environment by using RMAN. See Transferring Data with RMAN.

## Cloning the Database Using Data Guard

You can manually create a physical standby database using Data Guard. See Creating a Physical Standby Database in *Oracle Data Guard Concepts and Administration*.

# Cloning the Oracle Binaries

Following options are available for cloning the Oracle binaries:

- Using your preferred backup/restore tools to archive and transfer the MW_HOME binaries and OraInventory directories.
- Using the Oracle FMW T2P process.

This section includes the following topics:

- Using Backup/Restore Tools to Clone the Oracle Identity Manager Domain
- Cloning the Oracle Binaries Using T2P

## Using Backup/Restore Tools to Clone the Oracle Identity Manager Domain

> **Note:**
>
> For this exercise, you can use any backup and restore tool you are familiar with. The example below uses the tar tool. But any command that can back up and restore directories and sub-directories can be used. You can take a back up with the domain and NodeManagers online or offline. However, Oracle recommends to execute the backup with all FMW processes shutdown.

**Take a backup:**

Complete the following steps to take a backup of your source environment binaries and Oracle Inventory:

1. Using your preferred backup tool, take a backup of the following directories in the source environment:

- `oraInventory`
- `MW_HOME`

For example, a command on `OAMHOST1` may appear as follows:

```
tar cfzP /u01/oracle/backups/oamhost1_binaries.tar.gz /u01/oracle/
oraInventory MW_HOME
```

2. Repeat the command on any supplementary nodes using the separate product binary volumes.

> **Note:**
>
> When using the shared filesystem volumes for the Oracle products `MW_HOME` locations, you should **take** only the binary backups from one host per volume.

For example, a command on `OAMHOST2` may appear as follows:

```
tar cfzP /u01/oracle/backups/oamhost2_binaries.tar.gz /u01/oracle/
oraInventory MW_HOME
```

3. Copy the resulting backup files to their appropriate target environment hosts.

**Restore the backup**

Using your preferred extraction tool, extract the backup to your target environment nodes.

> **Note:**
>
> When using the shared filesystem volumes for the Oracle products `MW_HOME` locations, you should **restore** only the binary backups to one host per volume.

For example:

On OAMHOST1, run the following command:

```
tar xvfzP oamhost1.tar.gz
```

On OAMHOST2, run the following command:

```
tar xvfzP oamhost2.tar.gz
```

## Cloning the Oracle Binaries Using T2P

You can use this method as an alternative to the backup/restore method.

Move a copy of the Middleware home for the component or suite from the source environment to the target environment using the `copyBinary` and `pasteBinary` scripts. See Moving the Middleware Home and the Binary Files.

## Cloning the Configuration

Following options are available for cloning the configuration:

- Using your preferred backup/restore tools to clone the configuration.
- Using the T2P process.
- Using Backup/Restore Tools to Clone the Oracle Identity Manager Domain
- Cloning the Configuration Using T2P
- Starting the OIM Domain
- Executing the OIM LDAP Consolidated Full Reconciliation Job

## Using Backup/Restore Tools to Clone the Oracle Identity Manager Domain

> **Note:**
>
> For this exercise, you can use any backup and restore tool you are familiar with. The example below uses the tar tool. But any command that can back up and restore directories and sub-directories can be used. You can take a back up with the domain and NodeManagers online or offline. However, Oracle recommends to execute the backup with all FMW processes shutdown.

**Take a backup:**

Perform the following steps to take a backup of the source environment binaries and Oracle Inventory:

1. Using your preferred backup tool, take a backup of the following locations from OIMHOST1 on the source site:
   - `oraInventory`
   - `Nodemanager`
   - Application Server domain home (`ASERVER_HOME`)
   - Managed Server domain home if you have a separate location as described in the Enterprise Deployment Guide (`MSERVER_HOME`)
   - `Keystores`
   - Runtime directories

   > **Note:**
   >
   > If you have a combined `DOMAIN_HOME` rather than a segregated one, as described in the Enterprise Deployment Guide, include `DOMAIN_HOME` rather than `ASERVER_HOME` and `MSERVER_HOME`.

For example, a command on `OIMHOST1` may appear as follows:

```
tar cvzPpsf oimhost1.tar.gz \
   /u01/oracle/oraInventory \
   /u01/oracle/config/nodemanager/OIMHOST1 \
   /u01/oracle/config/nodemanager/OIMHOST2 \
   /u01/oracle/config/nodemanager/IGDADMINVHN \
   /u01/oracle/config/keystores \
   /u01/oracle/runtime/domains/IAMGovernanceDomain \
   /u01/oracle/config/domains/IAMGovernanceDomain \
   /u02/private/oracle/config/domains/IAMGovernanceDomain
```

2. Repeat the command on any supplementary nodes. For example, a command on `OIMHOST2` may appear as follows:

```
tar cvzPpsf OIMHOST2.tar.gz /u02/private/oracle/config/domains/
IAMGovernanceDomain
```

3. Copy the resulting backup files to their appropriate target environment hosts.
4. Delete any lock and log files in the domain that have been replicated from the source environment.
   - Remove any lock files for all `NodeManager` folders on the appropriate cloned environment hosts by running the following command:

     ```
     find /u01/oracle/config/nodemanager -type f -name "*.lck" -exec rm
     -f {} \;
     ```

   - Remove any lock files from the `ASERVER_HOME` and `MSERVER_HOME` folders on the appropriate cloned environment hosts by running the following command:

     > **Note:**
     >
     > If you have a combined `DOMAIN_HOME` rather than a segregated one as described in the Enterprise Deployment Guide, include `DOMAIN_HOME` rather than `ASERVER_HOME` and `MSERVER_HOME`.

     For example, on `OIMHOST1`, run the following command:

     ```
     # Lock Files Cleanup:

     find /u01/oracle/config/nodemanager -type f -name "*.lck" -exec
     rm -f {} \;

     find  /u01/oracle/config/domains/IAMGovernanceDomain \
         -type f  \( -name "*.lck" -or -name "*.lok" \) -print -exec
     rm -f {} \;

     find  /u02/private/oracle/config/domains/IAMGovernanceDomain \
         -type f  \( -name "*.lck" -or -name "*.lok" \) -print -exec
     rm -f {} \;

     # Log File Cleanup:
     ```

```
find /u01/oracle/config/nodemanager/OIMHOST1 \
    -type f \( -name '*.log' -or -name '*.out' \) -print -exec rm -f
{} \;

find /u01/oracle/config/nodemanager/OIMHOST2 \
    -type f \( -name '*.log' -or -name '*.out' \) -print -exec rm -f
{} \;

find /u01/oracle/config/nodemanager/IGDADMINVHN \
    -type f \( -name '*.log' -or -name '*.out' \) -print -exec rm -f
{} \;

find ${ASERVER_HOME}/servers/AdminServer/logs \
    -type f ! -size 0c -print -exec rm -f {} \+

find ${MSERVER_HOME}/servers/*/logs \
    -type f ! -size 0c -print -exec rm -f {} \+
```

For example, on `OIMHOST2`, run the following command:

```
# Lock Files Cleanup:

find  /u02/private/oracle/config/domains/IAMGovernanceDomain \
    -type f  \( -name "*.lck" -or -name "*.lok" \) -print -exec rm -f
{} \;

# Log File Cleanup:

find ${MSERVER_HOME}/servers/*/logs \
    -type f ! -size 0c -print -exec rm -f {} \+
```

- Optionally, remove the old log files from the `NodeManager` and Managed Server folders in the cloned domain:

  For example, on `OIMHOST1`, run the following command:

```
find /u01/oracle/config/nodemanager/OIMHOST1 \
    -type f \( -name '*.log' -or -name '*.out' \) -print -exec rm -f
{} \;
find /u01/oracle/config/nodemanager/OIMHOST2 \
    -type f \( -name '*.log' -or -name '*.out' \) -print -exec rm -f
{} \;

find /u01/oracle/config/nodemanager/IGDADMINVHN \
    -type f \( -name '*.log' -or -name '*.out' \) -print -exec rm -f
{} \;

find ASERVER_HOME/servers/AdminServer/logs \
    -type f ! -size 0c -print -exec rm -f {} \+

find MSERVER_HOME/servers/*/logs \
    -type f ! -size 0c -print -exec rm -f {} \+
```

For example, on `OIMHOST2`, run the following command:

```
find MSERVER_HOME/servers/*/logs \ -type f ! -size 0c -print -exec
rm -f {} \+
```

**Restore the backup in the cloned environment**

Using your preferred extraction tool, extract the backup to your target environment nodes.

> **Note:**
>
> If using tar, be sure to preserve permissions and root paths.

For example:

On OIMHOST1, run the following command:

```
tar xvzPpsf oimhost1.tar.gz
```

On OIMHOST2, run the following command:

```
tar xvzPpsf oimhost2.tar.gz
```

## Cloning the Configuration Using T2P

You can clone the configuration using the T2P method. This method is an alternative to the backup/recovery option. The advantage of using T2P is that it enables you to change the host names during the process. You can move a copy of the configuration of components such as UMS (User Messaging Service) messaging preferences, Oracle Identity Management configuration files, and so on, by using the following scripts:

- `copyConfig`
- `extractMovePlan`
- `pasteConfig`

To modify the host name or ports that is specific to the new environment, see Moving Oracle Fusion Middleware Components

> **Note:**
>
> Before running `pasteConfig` on the target environment, connect to the cloned database and verify that all the schemas/data from the source environment are present.

## Starting the OIM Domain

After successfully restoring the backup to the target environment instances, do the following to start the domain:

- Start the Node Manager for the *ASERVER_HOME*.

- Start the Node Manager for the *MSERVER_HOME* on all nodes.

> **Note:**
>
> If you have a single *DOMAIN_HOME*, start the Node Manager associated with that *DOMAIN_HOME*.

- Start the Administration Server and check logs.
- Start the SOA Managed Server/Cluster and check logs.
- Start the Business Intelligence Platform Managed Server/Cluster and check logs.
- Start the OIM Managed Server/Cluster and check logs.

## Executing the OIM LDAP Consolidated Full Reconciliation Job

After cloning the domain, a full reconciliation job needs to be executed. See Jobs in *Administrator's Guide for Oracle Identity Manager*.

To execute the reconciliation job:

1. Log in to `https://igdadmin.example.com/sysadmin` and authenticate as *xelsysadm*.
2. In the left-pane, under **System Configuration**, click **Scheduler**. A popup window will appear.
3. In the Identity System Administration popup window, search for the scheduled job: *LDAP Consolidated Full Reconciliation*.
4. Click the *LDAP Consolidated Full Reconciliation* entry in the search results to view the job details.
5. Click **Run Now** to execute the job and verify the confirmation message: `Job is running`.
6. Periodically click the **Refresh** button and verify the job status.
7. When the Job Status shows `Stopped`, validate the Execution Status for `Success`. Check logs and troubleshoot as needed.
8. Click the **Event Management** tab and execute an empty search for all recent reconciliation events.
9. Spot-check the events to assure that the current status is either `Creation Succeeded` or `Update Succeeded`.

# Upgrading In-place Cloned Environment to 12c

Now that your 11g domain has been cloned to your target system, you can upgrade the target system to Oracle 12.2.1.3.0. For instructions, see:

- For highly available environments, see Upgrading Oracle Identity Manager Highly Available Environments.
- For single node environments, see Upgrading Oracle Identity Manager Single Node Environments.

# Increasing the Maximum Message Size for WebLogic Server Session Replication

As part of the post-upgrade tasks, Oracle recommends you to modify the Maximum Message Size from the default vale of 10 MB to 100 MB. This value is used to replicate the session data across the nodes. You should perform this step for all the Managed servers and the Administration server.

1. Log in to the WebLogic Server Administration Console.
2. Navigate to **Servers**, select **Protocols**, and then click **General**.
3. Set the value of **Maximum Message Size** to `100 MB`.

A

# Troubleshooting the Oracle Identity Manager Upgrade

If you encounter errors while upgrading Oracle Identity Manager, review the following troubleshooting procedures.

> **Note:**
>
> The product Oracle Identity Manager is referred to as Oracle Identity Manager (OIM) and Oracle Identity Governance (OIG) interchangeably in the guide.

- WebLogic Server is Not in the Running Status
  After upgrading, the WebLogic admin server does not change to the running status.
- Upgrading Product Schemas Error: OIMR2PS2_OIM.PK_POP
  When you are upgrading the product schemas, the unique constraint `OIMR2PS2_OIM.PK_POP` violated error is displayed.
- Upgrading Product Schemas Error: OIMR2PS2_OIM.UK_ENTITY_TYPE
  When you are upgrading the product schemas, the `OIMR2PS2_OIM.UK_ENTITY_TYPE` violated error is displayed.
- KeystoreService Exception in the Logs After Reconfiguring the OIM Domain
  After you reconfigure the Oracle Identity Manager (OIM) domain, the logs show some exceptions which can be ignored.
- Warning when Generating the Pre-Upgrade Report for OIM
  When you run the pre-upgrade report utility to generate the pre-upgrade report for Oracle Identity Manager, the audit store instantiation failure warning is seen on the console, which can be ignored.
- Domain Reconfiguration Error
  When using the reconfiguration utility you might notice a *Domain reconfig* error. To fix this error, you need to manually delete the related applications and references.
- OIM Bootstrap for DEPLOYSOACOMPOSITES Task Fails After Upgrade
  After you complete the Oracle Identity Manager upgrade, when you start the Oracle Identity Manager Managed Servers for the first time, bootstrapping happens. If the OIM bootstrap fails for `DEPLOYSOACOMPOSITES` task, use the workaround described in this section to resolve the issue.
- Authorization Policy Merge Issue
- MAR Update or Metadata Merge Issue
  When you start the Oracle Identity Manager Managed Severs for the first time after upgrade, if you encounter any error during the bootstrap process which is related to `MARUPDATE` bootstrap task, run the external utility `mergeMDSDataAfterUpgrade.sh` from the 12*c* Middleware Home to re-trigger the Metadata Services (MDS) merge process.

- Error When Opening ADF DI Excel Sheet After Upgrade
  The ADFDI functionality will not work after you upgrade Oracle Identity Manager to 12*c* (12.2.1.3.0).
- Complilation Error When Starting the SOA Server After Upgrade
  When you start the Oracle SOA Suite for the first time after upgrade, you may see the compilation error in the SOA server logs.
- Warning in Oracle Identity Manager Server Logs After Upgrade
  After upgrade, the Oracle Identity Manager (OIM) Server logs show NPE warning, which can be ignored.
- Default Challenges Questions are not Updated After Upgrade
  After you upgrade Oracle Identity Manager 11.1.2.3.0 to 12*c*, the default challenge questions are not updated. It still shows the old or existing challenge questions.
- OPSS Processing Error When Reconfiguring the Domain
  When you upgrade a Oracle Identity Manager in an integrated environment, the OPSS processing error is encountered.
- EditFailedException When Releasing Configuration From WebLogic Console
  After you upgrade Oracle Identity Manager to 12*c* (12.2.1.3.0), when you click **Release Configuration** on Oracle WebLogic Console, the following error is seen:
- OIM Application Deployment Fails Intermittently
  After you upgrade Oracle Identity Manager to 12*c* (12.2.1.3.0), the `oim` application deployment may fail with the following error:
- soa-infra Application is in 'Prepared' State Post Upgrade
  After you upgrade Oracle Identity Manager (OIM) and Oracle Access Manager (OAM) integrated environment that was set up using Life Cycle Management (LCM) tool, the `soa-infra` application continues to be in `Prepared` mode, instead of showing `active` mode.
- Oracle Identity Manager Server Throws OutOfMemoryError
  When you start the servers post upgrade, `OutOfMemoryError` is thrown.
- SOA Fails to Join Coherence Cluster During the First Start After Upgrade
  After you upgrade Oracle Identity Manager (OIM) and Oracle Access Manager (OAM) integrated environment, when you start the Oracle SOA Suite Server for the first time, the coherence cluster fails to start with the following error:
- LDAP User Create and Update Reconciliation Job Fails
  LDAP User Create and Update Reconciliation job fails to run with the following exception:
- BI Managed Server is Seen on WebLogic Console After Upgrade
  The BI Managed Servers and cluster may not be deleted automatically during the upgrade if your domain has custom names for these servers, that is, names other than `bi_server1`, `bi_server2`, and so on. If these servers and cluster still exist post the upgrade, remove them manually via the WebLogic Console.
- Empty Pages or Panels After Upgrade
  After you complete the upgrade, the Applications tile in the OIM Self Service console and the Import/Export links in the Admin console may be rendered as empty pages or panels.
- OIM-AD Communication Fails After the Upgrade
  After the upgrade to 12*c* (12.2.1.3.0), the OIM-AD communication fails because the upgrade to 12*c* (12.2.1.3.0) changes the trust key to `DemoTrust`.

- Deployment Manager is Not Working After the Upgrade
  After the upgrade, when you open Deployment Manager (DM) from the Identity Sysadmin console, the DM window opens, but the UI components do not render, leaving the page blank and inoperable.
- Out Of Memory Error When Running the oigcloneFileOps.sh File
  If you encounter an out-of-memory (OOM) error during the execution of the `oigcloneFileOps.sh` file, check for the presence of excessively large files in *Domain_Home* and remove them temporarily. Run the Clone utility again.
- MDS Customizations are Removed After You Restart the OIM Managed Server of an Upgraded Setup
  If any MDS customizations are done after a successful upgrade to 12*c* (12.2.1.3.0) and if those customizations are lost after you restart the OIM Managed Server, you cannot recover the MDS changes. You have to do the MDS customizations again.
- OPatch Fails for not Finding the 'fuser' Command
  OPatch fails when it is unable to locate the `fuser` command.
- JPS-07508 or WSM-00401 Errors Seen When Accessing the Sysadmin Console
  This issue occurs when upgrading from OIM 11g Release 2 (11.1.2.3.0) to OIM 12c (12.2.1.3) where the OPSS Keystore Service (KSS) certificates are either corrupted or missing.
- OIM Bootstrap Fails Due to the Presence of Custom Application JARs
  If there are any custom developed libraries or JARs placed inside the *OIM_HOME*, the OIM bootstrap fails during the upgrade to Oracle Identity Manager 12*c* (12.2.1.3.0).
- Failure in the Compilation of BPEL Generated Classes From 11g in 12c
  Compilation of the generated BPEL classes from 11g fails in 12c if the class path setting is incorrect. Custom composites should have the dependent jars under `BpelcClasspath` to ensure that the composites are deployed successfully.
- User, Role, and Organization UDFs Missing After Upgrade from 11g to 12.2.1.x

# WebLogic Server is Not in the Running Status

After upgrading, the WebLogic admin server does not change to the running status.

After upgrading to Weblogic Server to 12c (12.2.1.3.0), the admin server on WebLogic Server 12c (12.2.1.3) does not start. It does not display any relevant message for the current state in the admin server logs.

While tacking a thread dump we see:

```
"[STANDBY] ExecuteThread: '3' for queue: 'weblogic.kernel.Default (self-
tuning)'" #39 daemon prio=5 os_prio=0 tid=<tid#> nid=0x1c38a runnable
[0x00007fc4348bc000]
java.lang.Thread.State: RUNNABLE
at java.net.SocketInputStream.socketRead0(Native Method)
at java.net.SocketInputStream.socketRead(SocketInputStream.java:116)
at java.net.SocketInputStream.read(SocketInputStream.java:170)
at java.net.SocketInputStream.read(SocketInputStream.java:141)
at weblogic.nodemanager.common.NMReader.readLength(NMReader.java:223)
at weblogic.nodemanager.common.NMReader.readChunk(NMReader.java:200)
at weblogic.nodemanager.common.NMReader.readLine(NMReader.java:41)
at weblogic.nodemanager.common.NMInputOutput.readLine(NMInputOutput.java:30)
at weblogic.nodemanager.common.DataFormat.readResponse(DataFormat.java:504)
```

```
at
weblogic.nodemanager.client.NMServerClient.getResponseString(NMServerCl
ient.java:900)
at
weblogic.nodemanager.client.NMServerClient.checkResponse(NMServerClient
.java:884)
at
weblogic.nodemanager.client.NMServerClient.connect(NMServerClient.java:
733)
at
weblogic.nodemanager.client.NMServerClient.checkConnected(NMServerClien
t.java:668)
at
weblogic.nodemanager.client.NMServerClient.checkConnected(NMServerClien
t.java:674)
at
weblogic.nodemanager.client.NMServerClient.initState(NMServerClient.jav
a:519)
- locked <0x00000000f58683a8> (a
weblogic.nodemanager.client.PlainClient)
at
weblogic.nodemanager.mbean.NodeManagerRuntime.initState(NodeManagerRunt
ime.java:600)
at
weblogic.server.ServerLifeCycleRuntime.<init>(ServerLifeCycleRuntime.ja
va:161)
at
weblogic.server.ServerLifeCycleService.createServerLifeCycleRuntime(Ser
verLifeCycleService.java:263)
at
weblogic.server.ServerLifeCycleService.start(ServerLifeCycleService.jav
a:149)
at
weblogic.server.AbstractServerService.postConstruct(AbstractServerServi
ce.java:76)
at sun.reflect.GeneratedMethodAccessor5.invoke(Unknown Source)
at
sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccesso
rImpl.java:43)
at java.lang.reflect.Method.invoke(Method.java:497)
at
org.glassfish.hk2.utilities.reflection.ReflectionHelper.invoke(Reflecti
onHelper.java:1287)
at
org.jvnet.hk2.internal.ClazzCreator.postConstructMe(ClazzCreator.java:3
33)
at org.jvnet.hk2.internal.ClazzCreator.create(ClazzCreator.java:375)
at
org.jvnet.hk2.internal.SystemDescriptor.create(SystemDescriptor.java:48
7)
at
org.glassfish.hk2.runlevel.internal.AsyncRunLevelContext.findOrCreate(A
syncRunLevelContext.java:305)
at
org.glassfish.hk2.runlevel.RunLevelContext.findOrCreate(RunLevelContext
```

```
.java:85)
at org.jvnet.hk2.internal.Utilities.createService(Utilities.java:2126)
at
org.jvnet.hk2.internal.ServiceHandleImpl.getService(ServiceHandleImpl.java:11
6)
- locked <0x00000000e228e260> (a java.lang.Object)
at
org.jvnet.hk2.internal.ServiceHandleImpl.getService(ServiceHandleImpl.java:90
)
at
org.glassfish.hk2.runlevel.internal.CurrentTaskFuture$QueueRunner.oneJob(Curr
entTaskFuture.java:1237)
at
org.glassfish.hk2.runlevel.internal.CurrentTaskFuture$QueueRunner.run(Current
TaskFuture.java:1168)
at
weblogic.work.SelfTuningWorkManagerImpl$WorkAdapterImpl.run(SelfTuningWorkMan
agerImpl.java:678)
at
weblogic.invocation.ComponentInvocationContextManager._runAs(ComponentInvocat
ionContextManager.java:352)
at
weblogic.invocation.ComponentInvocationContextManager.runAs(ComponentInvocati
onContextManager.java:337)
at
weblogic.work.LivePartitionUtility.doRunWorkUnderContext(LivePartitionUtility
.java:57)
at
weblogic.work.PartitionUtility.runWorkUnderContext(PartitionUtility.java:41)
at
weblogic.work.SelfTuningWorkManagerImpl.runWorkUnderContext(SelfTuningWorkMan
agerImpl.java:652)
at weblogic.work.ExecuteThread.execute(ExecuteThread.java:420)
at weblogic.work.ExecuteThread.run(ExecuteThread.java:360
```

The admin server is connected to a node manager that is not running correctly or replying correctly.

As per stack trace we can see that communication to the node manager is established. By checking `NMServerClient.java` source, we see that it is still reading, but not progressing. This might be due to a network issue. In thread dumps, we can see that this is an on going process.

the same error may occur if the admin server is connecting to a node manager running on a different version of the WebLogic Server. In a clustered setup, this might occur if the node manager is running on any of the node in the cluster.

To solve this issue:

Ensure that the node manager on all nodes in the cluster setup is shut down. This allows the WLS admin Server to start-up without any issue.

Also, ensure that the node manager in the remote machine is of the same WebLogic Server version. In case of Weblogic upgrade, ensure that the node manager is not running on any of the nodes in the cluster.

For more information, see Doc ID 2431508.1.

# Upgrading Product Schemas Error: OIMR2PS2_OIM.PK_POP

When you are upgrading the product schemas, the unique constraint `OIMR2PS2_OIM.PK_POP` violated error is displayed.

The following error message is displayed:

```
2020-04-24T02:48:32.875-07:00] [OIM] [INCIDENT_ERROR] []
[upgrade.OIM.OIM1]
[tid: 90] [ecid: ab5f4fa6-a864-4c03-b79e-464f0b408557-00000002,0] [[
oracle.iam.oimupgrade.exceptions.OIMUpgradeException: SQL Exception in
running Upgrade Scripts
    at
oracle.iam.oimupgrade.onehop.SchemaUpgradeManager.upgrade(SchemaUpgrade
Manager
.java:314)
    at oracle.iam.oimupgrade.mrua.OIMMRUA.upgrade(OIMMRUA.java:203)
    at oracle.ias.update.plugin.Plugin.upgrade(Plugin.java:730)
    at oracle.ias.update.plan.PlanStep.upgrade(PlanStep.java:736)
    at
oracle.ias.update.PhaseProcessor$UpgradeProcessor.runStepPhase(PhasePro
cessor.
java:726)
    at
oracle.ias.update.PhaseProcessor.runStep(PhaseProcessor.java:369)
    at
oracle.ias.update.PhaseProcessor$ExtendedRunnable.run(PhaseProcessor.ja
va:1058
)
    at
java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.ja
va:1142
)
    at
java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.j
ava:617
)
    at java.lang.Thread.run(Thread.java:748)
Caused by: java.sql.SQLException: ORA-20100: Exception encountered!!
ORA-00001: unique constraint (OIMR2PS2_OIM.PK_POP) violated

ORA-06512: at line 268
ORA-06512: at line 468
```

To solve this issue, complete the following steps:

1. From the SQL developer, connect to OIM schema.
2. Open **POP** OIM DB table details.
3. Go to the **index** tab.
4. Manually delete the **PK_POP** index.

# Upgrading Product Schemas Error: OIMR2PS2_OIM.UK_ENTITY_TYPE

When you are upgrading the product schemas, the OIMR2PS2_OIM.UK_ENTITY_TYPE violated error is displayed.

The following error message is displayed:

```
ORA-00001: unique constraint (OIMR2PS2_OIM.UK_ENTITY_TYPE) violated
ORA-06512: at line 23
```

To solve the error, see Doc ID 2412393.1.

# KeystoreService Exception in the Logs After Reconfiguring the OIM Domain

After you reconfigure the Oracle Identity Manager (OIM) domain, the logs show some exceptions which can be ignored.

The following exceptions are seen in the logs after you reconfigure the OIM domain:

```
oracle.security.jps.upgrade.tools.KeyStoreUpgrade - Exception in checking
for
jdk cacert store
oracle.security.jps.service.keystore.KeyStoreServiceException: Failed to load
the keystore.
at
oracle.security.jps.internal.keystore.ldap.KeyStoreDataManager.getKeyStore(Ke
y
StoreDataManager.java:987)
at
oracle.security.jps.internal.keystore.ldap.LdapKeyStoreServiceImpl.getKeyStor
e
(LdapKeyStoreServiceImpl.java:279)
at
oracle.security.jps.upgrade.tools.KeyStoreUpgrade.importJdkCacerts(KeyStoreUp
g
rade.java:313)
at
oracle.security.jps.upgrade.tools.KeyStoreUpgrade.upgradeDITAndData(KeyStoreU
p
grade.java:266)
at
oracle.security.jps.upgrade.tools.utility.Upgrade.upgradeOPSSDITAndData(Upgra
d
e.java:1078)
at
oracle.security.jps.upgrade.tools.utility.Upgrade.upgradeOPSS(Upgrade.java:77
2)
at
oracle.security.opss.tools.lifecycle.OpssDomainConfigImpl.reconfigSubsystem(O
p
```

```
ssDomainConfigImpl.java:359)
at
oracle.security.opss.tools.lifecycle.OpssDomainConfigImpl.initializeSub
system(
OpssDomainConfigImpl.java:271)
at
oracle.security.opss.tools.lifecycle.cie.OpssSecurityConfiguration.init
ializeS
ubsystem(OpssSecurityConfiguration.java:188)
at
com.oracle.cie.domain.progress.template.importer.ImporterOPSSProcessing
Phase.i
nitialize(ImporterOPSSProcessingPhase.java:36)
at
com.oracle.cie.domain.progress.domain.generation.OPSSProcessingPhase.pr
ocessOP
SS(OPSSProcessingPhase.java:154)
at
com.oracle.cie.domain.progress.domain.generation.OPSSProcessingPhase.ex
ecute(O
PSSProcessingPhase.java:54)
at
com.oracle.cie.domain.progress.AbstractProgressGenerator.run(AbstractPr
ogressG
enerator.java:94)
at java.lang.Thread.run(Thread.java:745)
Caused by: java.io.IOException: Keystore publiccacerts in app stripe
system
does not exist
at
oracle.security.jps.internal.keystore.provider.FarmKeyStoreSpi.engineLo
ad(Farm
KeyStoreSpi.java:606)
at java.security.KeyStore.load(KeyStore.java:1479)
at
oracle.security.jps.internal.keystore.ldap.KeyStoreDataManager.getKeySt
ore(Key
StoreDataManager.java:976)
```

Ignore this warning and proceed.

# Warning when Generating the Pre-Upgrade Report for OIM

When you run the pre-upgrade report utility to generate the pre-upgrade report for Oracle Identity Manager, the audit store instantiation failure warning is seen on the console, which can be ignored.

The following warning is seen on the console when generating the pre-upgrade report for OIM:

```
WARNING: Audit store instantiation failure, type: db reason:
java.lang.ClassNotFoundException:
oracle.security.audit.config.dynamic.persistence.internal.ldap.LdapAudi
tStore
```

```
Jul 28, 2016 10:26:05 PM
oracle.security.jps.az.internal.runtime.service.PDPServiceImpl
oracle.security.jps.az.internal.runtime.service.PDPServiceImpl
SEVERE: Cannot read the default policy store.
oracle.security.jps.service.policystore.PolicyStoreException:
oracle.security.jps.az.internal.management.pd.PD
at
oracle.security.jps.az.common.pd.service.PDServiceFinder.getPolicyDistributio
n
Service(PDServiceFinder.java:65)
at
oracle.security.jps.az.internal.runtime.service.PDPServiceImpl.initializeMixe
d
Mode(PDPServiceImpl.java:714)
at
oracle.security.jps.az.internal.runtime.service.PDPServiceImpl.initial(PDPSer
v
iceImpl.java:685)
```

Ignore this warning and proceed.

# Domain Reconfiguration Error

When using the reconfiguration utility you might notice a *Domain reconfig* error. To fix this error, you need to manually delete the related applications and references.

During upgrade from 11g to 12c (12.2.1.3.0), the upgrade wizard displays the following error in the domain reconfiguration step:

```
Domain reconfig failed with:
CFGFWK-40951: Correct source path of the applications to refer to the new
installation.
2017-11-09 03:53:00,804 SEVERE [42]
com.oracle.cie.domain.progress.AbstractProgressGenerator - Error occurred in
phase {Validating Domain} execution.
com.oracle.cie.domain.ValidateException: CFGFWK-60953: An application or
library was not relocated to the new MW home.
CFGFWK-60953: An error in the reconfiguration templates resulted in the
following deployments being left in the original MW home:
OIMMetadata#11.1.1.3.0
oim#11.1.1.3.0
oracle.webcenter.skin#11.1.1@11.1.1
oracle.soa.bpel#11.1.1@11.1.1
oracle.soa.worklist#11.1.1@11.1.1
oracle.soa.b2b#11.1.1@11.1.1

CFGFWK-60953: Correct the reconfiguration templates
        at
com.oracle.cie.domain.progress.domain.reconfig.wlscore.ValidateDomainPhase.va
l

idateDeployments(ValidateDomainPhase.java:124)
        at
com.oracle.cie.domain.progress.domain.reconfig.wlscore.ValidateDomainPhase.ex
```

```
e

cute(ValidateDomainPhase.java:48)
        at
com.oracle.cie.domain.progress.AbstractProgressGenerator.run(AbstractPr
ogressG

enerator.java:94)
        at java.lang.Thread.run(Thread.java:748)
```

To fix the *Domain reconfig* error, complete the following steps:

1. Open to files *DOMAIN_HOME*`/config/config.xml` and *DOMAIN_HOME*`/init-info/config-groups.xml`.
2. Delete the following applications and references:
   - `oracle.soa.bpel#11.1.1@11.1.1`
   - `oracle.soa.worklist#11.1.1@11.1.1`
   - `oracle.soa.b2b#11.1.1@11.1.1`
   - `oracle.webcenter.skin#11.1.1@11.1.1`
3. Save and close the files.

# OIM Bootstrap for DEPLOYSOACOMPOSITES Task Fails After Upgrade

After you complete the Oracle Identity Manager upgrade, when you start the Oracle Identity Manager Managed Servers for the first time, bootstrapping happens. If the OIM bootstrap fails for `DEPLOYSOACOMPOSITES` task, use the workaround described in this section to resolve the issue.

The following error is seen in the OIM server logs:

```
<Oct 4, 2016, 4:53:51,904 AM PDT> <Info>
<oracle.iam.OIMPostConfigManager>
<BEA-000000> <FROM THREAD:Processing sar=/ORACLE_HOME/idm/server/
workflows/composites/scajars/sca_DefaultRequest Approval_rev5.0.jar>
<Oct 4, 2016, 4:53:51,906 AM PDT> <Info>
<oracle.iam.OIMPostConfigManager>
<BEA-000000> <FROM THREAD:Adding sar file -/ORACLE_HOME/idm/server/
workflows/composites/scajars/sca_DefaultRequestAppro val_rev5.0.jar>
<Oct 4, 2016, 4:53:52,40 AM PDT> <Info>
<oracle.iam.OIMPostConfigManager>
<BEA-000000> <FROM THREAD:INFO: Creating HTTP connection to
host:slc09pqg, port:16230>
<Oct 4, 2016, 4:53:54,694 AM PDT> <Info>
<oracle.iam.OIMPostConfigManager>
<BEA-000000> <FROM THREAD:INFO: Received HTTP response from the
server, response code=500>
<Oct 4, 2016, 4:53:54,695 AM PDT> <Info>
<oracle.iam.OIMPostConfigManager>
<BEA-000000> <FROM THREAD:---->Response code=500, error:There was an
```

```
error deploying the composite on soa_server1: keepInstancesOnRedeploy flag
can only be used with BPM enabled installation..>
<Oct 4, 2016, 4:53:54,696 AM PDT> <Info> <oracle.iam.OIMPostConfigManager>
<BEA-000000> <FROM THREAD:> <Oct 4, 2016, 4:53:54,964 AM PDT> <Info>
<oracle.iam.OIMPostConfigManager>
<BEA-000000> <Completed the script Command execution.>
<Oct 4, 2016, 4:53:54,965 AM PDT> <Info> <oracle.iam.OIMPostConfigManager>
<BEA-000000> <The logs are written to file :/tmp/
deploySOAComposites_1475582008428.log>
<Oct 4, 2016, 4:53:54,966 AM PDT> <Info> <oracle.iam.OIMPostConfigManager>
<BEA-000000> <  [OIM_CONFIG] Error while executing the wlst script /tmp/
deploySOAComposites_1475582008428.py>
<Oct 4, 2016, 4:53:54,967 AM PDT> <Error> <oracle.iam.OIMPostConfigManager>
<BEA-000000> < Error while executing the wlst script /tmp/
deploySOAComposites_1475582008428.py>
<Oct 4, 2016, 4:53:54,967 AM PDT> <Error> <oracle.iam.OIMPostConfigManager>
<BEA-000000> < Error while executing the wlst script /tmp/
deploySOAComposites_1475582008428.py>
<Oct 4, 2016, 4:53:54,967 AM PDT> <Info> <oracle.iam.OIMPostConfigManager>
<BEA-000000> <  deploySOAComposites() Failed.>
<Oct 4, 2016, 4:53:54,968 AM PDT> <Info> <oracle.iam.OIMPostConfigManager>
<BEA-000000> <  Forced deployment of 12c SOA composite failed.>
<Oct 4, 2016, 4:53:54,968 AM PDT> <Warning>
<oracle.iam.OIMPostConfigManager>
<BEA-000000> <   Unable to deploy te SOA Composites.>
<Oct 4, 2016, 4:53:54,968 AM PDT> <Warning>
<oracle.iam.OIMPostConfigManager>
<BEA-000000> <   Unable to deploy te SOA Composites.>
<Oct 4, 2016, 4:53:54,969 AM PDT> <Info> <oracle.iam.OIMPostConfigManager>
<BEA-000000> <Reason of fail :Error occurred while deploying the 12c SOA
composite>
```

The following error is seen in the Oracle SOA Suite (SOA) server logs:

```
<Oct 4, 2016, 2:57:30,535 AM PDT> <Error> <ServletContext-/soa-infra>
<BEA-000000> <Error during deployment
oracle.fabric.common.FabricDeploymentException: keepInstancesOnRedeploy flag
can only be used with BPM enabled installation. {rootCauses=[]}
at
oracle.integration.platform.blocks.deploy.servlet.DeployProcessor.doDeployWor
k
(DeployProcessor.java:582)
at
oracle.integration.platform.blocks.deploy.servlet.DeployProcessor.doDeployWor
k
(DeployProcessor.java:473)
at
oracle.integration.platform.blocks.deploy.servlet.DeployProcessor.doDeploy(De
p
loyProcessor.java:282)
at
oracle.integration.platform.blocks.deploy.servlet.DeployProcessor.process(Dep
l
oyProcessor.java:168)
```

```
at
oracle.integration.platform.blocks.deploy.servlet.CompositeDeployerServ
let.doP
ostInsideLoggingSession(CompositeDeployerServlet.java:250)
Truncated. see log file for complete stacktrace
<Oct 4, 2016, 2:57:30,553 AM PDT> <Error>
<oracle.integration.platform.blocks.deploy.servlet> <SOA-21537>
<Sending back
error message: There was an error deploying the composite on
soa_server1:
keepInstancesOnRedeploy flag can only be used with BPM enabled
installation...>
```

To resolve this issue, start the Oracle SOA Suite server with the following property:

`-Dbpm.enabled=true`

This completes the OIM bootstrap tasks successfully. After the successful completion of OIM bootstrap tasks, restart all of the servers. This time, do not use the property `-Dbpm.enabled=true` for starting the SOA server. When you start the Managed Servers for the first time after upgrade, start them with the Administration Server URL.

# Authorization Policy Merge Issue

Oracle Identity Manager 11.1.2.3.0 has two Oracle Platform Security Services (OPSS) application policy stripes namely `oim` and `OracleIdentityManager`, whereas Oracle Identity Governance 12.2.1.3 has only one OPSS application policy stripe named `oim`. The 12*c* upgrade process handles the merging of application stripes into one along with all the customization, at various phases.
If you encounter any error or issue related to OPSS application policies after upgrade, or if you find the policies in inconsistent state, complete the following steps to restore the OPSS application policies:

1. The Authorization policy backup for OIM lying in OPSS schema is taken by the 12c pre-upgrade utility. This backup folder is located at *oim.outputreportfolder*`/Auth-Policy-Backup`.

   `oim.outputreportfolder` is the name of the pre-upgrade report output folder specified by you in the `preupgrade_report_input.properties` file when you ran the pre-upgrade utility.

   The backup folder contains the following files:

   - *oim.outputreportfolder*`/Auth-Policy-Backup/oim.xml` — This is for `oim` application policy stripe of 11.1.2.3.0.
   - *oim.outputreportfolder*`/Auth-Policy-Backup/OracleIdentityManager.xml` — This is for `OracleIdentityManager` application policy stripe of 11.1.2.3.0.

   Restore these stripes data in OIM database using the following WLST offline commands:

   - `migrateSecurityStore(type="appPolicies", srcApp="OracleIdentityManager ", configFile="`*DOMAIN_HOME*`/config/fmwconfig/jps-config_temp.xml", src="desContextOracle", dst="migrateStripe",overWrite="true")`

- `migrateSecurityStore(type="appPolicies", srcApp="oim", configFile="DOMAIN_HOME/config/fmwconfig/jps-config_temp.xml", src="desContextOIM", dst="migrateStripe",overWrite="true")`

In the above commands, *DOMAIN_HOME*`/config/fmwconfig/jps-config_temp.xml` file is a copy of the *DOMAIN_HOME*`/config/fmwconfig/jps-config.xml` file. The following service instances and JPS contexts are added in this file:

```
<serviceInstance name="serviceInsOracle"
provider="policystore.xml.provider" location="<oim.outputreportfolder>/
Auth-Policy-Backup/OracleIdentityManager.xml"/> <serviceInstance
name="serviceInsOIM" provider="policystore.xml.provider"
location="<oim.outputreportfolder>/Auth-Policy-Backup/oim.xml"/>


<jpsContext name="desContextOracle">
<serviceInstanceRef ref="serviceInsOracle"/>
</jpsContext>
<jpsContext name="desContextOIM">
<serviceInstanceRef ref="serviceInsOIM"/>
</jpsContext>
<jpsContext name="migrateStripe">
<serviceInstanceRef ref="policystore.db"/>
</jpdContext>
```

2. Migrate the `OracleIdentityManager` stripe to `oim` stripe using the following WLST offline command:

   ```
   migrateSecurityStore(type="appPolicies", srcApp="OracleIdentityManager",
   dstApp="oim", configFile=DOMAIN_HOME/config/fmwconfig/jps-config_temp.xml,
   src="migrateStripe", dst="migrateStripe",overWrite="false")
   ```

3. Merge the 12c Out Of The Box application policies on OIM 11.1.2.3.0 application policy stripe named as `oim` by doing the following:

   a. Unzip the *ORACLE_HOME*`/idm/common/templates/wls/oracle.OIM.reconfig.template_1 2.2.1.2.0.jar` file to any temporary location. This temporary location is referred to as *unzip_location*.

   b. Verify that the file *unzip_location*`/security/authorization/jazn-data.xml` exists.

   c. Run the following WLST offline command:

      ```
      migrateSecurityStore(type="appPolicies", srcApp="oim",
      configFile=DOMAIN_HOME/config/fmwconfig/jps-config_temp.xml,
      src="12c_context", dst="migrateStripe",overWrite="false")
      ```

      The following service instances and JPS contexts are added in the *DOMAIN_HOME*`/config/fmwconfig/jps-config_temp.xml` file:

      ```
      <serviceInstance name="serviceIns12c_context"
      provider="policystore.xml.provide"
      location="unzip_location/security/authorization/jazn-dara.xml"/>
      <jpsContext name="12c_context">
      <serviceInstanceRef ref="service12c_context"/>
      </jpsContext>
      ```

   d. Delete the `OracleIdentityManager` stripe using the following WLST command:

```
deleteAppPolicies(appStripe="OracleIdentityManager")
```

# MAR Update or Metadata Merge Issue

When you start the Oracle Identity Manager Managed Severs for the first time after upgrade, if you encounter any error during the bootstrap process which is related to `MARUPDATE` bootstrap task, run the external utility `mergeMDSDataAfterUpgrade.sh` from the 12*c* Middleware Home to re-trigger the Metadata Services (MDS) merge process.

The upgrade utility merges the existing `11.1.2.3.0` MDS data with 12`c` Out of the Box (OOTB) to preserve the customization.
When you start the OIM Managed Server for the first time, if you encounter errors for `MARUPDATE` bootstrap task, check if the issue is occurring during the MDS merge process. If so, run an external utility to re-trigger the MDS merge process as described in this section.

To check if the issue is occurring during the MDS merge process, do the following:

1. Connect to the Oracle Identity Manager database.
2. Use the following SQL query to check the status of the `MARUPDATE` bootstrap task:

   ```
   select State from OIMBootState where  FEATURENAME='MARUPDATE';
   ```

3. If the query returns `VALID` or `COMPLETE`, the issue is not because of the MDS merge failure. Therefore, no action is required. If the query returns any other result, run the merge utility to re-trigger the MDS merge process.

To re-trigger the MDS merge process using the merge utility, complete the following steps:

1. The OIM pre-upgrade reports folder must exist on the same machine from which the MDS merge utility is going to be triggered. If the pre-upgrade reports are on a different machine, copy them to the machine from which you wish to run the merge utility. The pre-upgrade report utility takes a back up of the MDS data and saves it in the pre-upgrade reports folder.

   The MDS backup data is located at *<oim.outputreportfolder>*`/MDS-Backup` folder. *<oim.outputreportfolder>* is the path that you specified for the property `oim.outputreportfolder` in the `preupgrade_report_input.properties` file, when generating the pre-upgrade reports for OIM.

2. Run the following command from the location *ORACLE_HOME*`/idm/server/bin/mergeMDSDataAfterUpgrade.sh`

   You must specify the location of the OIM pre-upgrade reports folder. The MDS merge utility that you triggered merges the MDS backup data from the pre-upgrade reports folder with the 12*c* data OOTB.

3. After the successful completion of the MDS merge process, connect to the OIM database and run the following query: `update OIMBootState set State='COMPLETE' where FEATURENAME='MARUPDATE';`

4. Restart the OIM Managed Server.

(Optional) Enter the result of the procedure here.

# Error When Opening ADF DI Excel Sheet After Upgrade

The ADFDI functionality will not work after you upgrade Oracle Identity Manager to 12*c* (12.2.1.3.0).

After upgrade, when you open the ADF DI spreadsheet in Excel, the following error is displayed:

```
ADFDI-05587: The client and server versions do not match. Using this
version  of the client may result in unexpected behavior or errors.
The client version is 11.1.1.7.0 (6882) but the server at http://
host.example.com:22925/identity/adfdiRemoteServlet expects  version
12.2.1.3.0 (16546) using precision 3.
```

To resolve this, uninstall and reinstall the ADF DI Excel plug-in, and then re-download the Excel.

# Complilation Error When Starting the SOA Server After Upgrade

When you start the Oracle SOA Suite for the first time after upgrade, you may see the compilation error in the SOA server logs.

The following error is displayed in the SOA server logs:

```
[2016-07-01T02:04:18.239-07:00] [soa_server1] [ERROR] []
[oracle.soa.bpel.system] [tid: DaemonWorkThread: '8' of WorkManager:
'wm/SOAWorkManager'] [userId: ] [ecid:
4f969dd2-853a-4ddf-be01-0ac2ca0d2210-00000009,0:11854] [APP: soa-infra]
[partition-name: DOMAIN] [tenant-name: GLOBAL] Error while loading process.
[[
The process domain is encountering the following errors while loading the
process "ApprovalProcess" (composite
"default/DefaultRequestApproval!5.0*soa_c9c16746-016e-40c4-
aaea-6ccd2d685cb4")
.
: BPEL 1.1 compilation failed.
This error contained an exception thrown by the underlying process loader
module.
Check the exception trace in the log (with logging level set to debug mode).
If there is a patch installed on the server, verify that the bpelcClasspath
domain property includes the patch classes.
```

Check the SOA composites status from Oracle Enterprise Manager console after successful start of the Oracle Identity Manager Managed Server.

If the Enterprise Manager console shows `DefaultRequestApproval!5.0` composite status as `actively deployed`, ignore this one time error.

If you have upgraded your 11*g* Release 2 (11.1.2.2.0) environments to 11*g* Release 2 (11.1.2.3.0), and then to 12*c* (12.2.1.3.0), you will see the compilation error for `DefaultRequestApproval!3.0` composite. This composite was in use in 11*g* Release 2 (11.1.2.2.0). Before you upgraded to 11.1.2.3.0, this composite processed all of the inflight

requests. After upgrading to 11.1.2.3.0, all of the new requests go via `DefaultRequestApproval!5.0` composite.

`DefaultRequestApproval!3.0` is irrelevant when upgrading from 11.1.2.3.0 to 12*c* (12.2.1.3.0). Therefore, this compilation error can be ignored.

# Warning in Oracle Identity Manager Server Logs After Upgrade

After upgrade, the Oracle Identity Manager (OIM) Server logs show NPE warning, which can be ignored.

After you upgrade Oracle Identity Manager , the following warning is seen in the OIM Server logs for once:

```
<Warning>  <oracle.iam.platform.entitymgr.impl> <BEA-000000>
<EntityManagerConfigImpl.getEntityConfig()..Can throw NPE with
providerType:
RDBMSChildDataProviderProvider Definition:  type:
RDBMSChildDataProvider   className:
oracle.iam.platform.entitymgr.provider.rdbms.RDBMSChildDataProvider
 m_params:
parent_id_column : name:parent_id_column type:string required:true
multiValued:falseid_sequence : name:id_sequence type:string
required:false multiValued:false
table : name:table type:string required:true multiValued:false
data_level_column : name:data_level_column type:string required:false
multiValued:false  modify_timestamp_column :
name:modify_timestamp_column type:stringrequired:false
multiValued:false
id_column : name:id_column type:string required:true
multiValued:false
optimistic_locking : name:optimistic_locking type:boolean
required:true
multiValued:false
 paramName: id_type>
<Apr 18, 2017 9:52:54,122 AM PDT> <Warning>
<oracle.iam.platform.entitymgr.impl> <IAM-0040000> <Cannot load
entity
definition - java.lang.NullPointerException  at
oracle.iam.platform.entitymgr.impl.EntityManagerConfigImpl.getEntityCon
fig(Ent
ityManagerConfigImpl.java:1164)  at
oracle.iam.platform.entitymgr.impl.EntityManagerConfigImpl.getEntityCon
fig(Ent
ityManagerConfigImpl.java:1242)
```

This warning can be ignored.

# Default Challenges Questions are not Updated After Upgrade

After you upgrade Oracle Identity Manager 11.1.2.3.0 to 12*c*, the default challenge questions are not updated. It still shows the old or existing challenge questions.

If you are using default password policy with default challenge questions, you must modify them manually post upgrade per your organization needs to have a better security.

# OPSS Processing Error When Reconfiguring the Domain

When you upgrade a Oracle Identity Manager in an integrated environment, the OPSS processing error is encountered.

The following exception is seen when you run `reconfig.sh` command to reconfigure the Oracle Identity Manager domain:

```
SEVERE [93] com.oracle.cie.domain.progress.AbstractProgressGenerator - Error
occurred in
phase {OPSS Processing} execution.
java.lang.IllegalStateException: SecurityContext: Domain Name:
IAMGovernanceDomain
JDBC URL: opss-audit-DBDS:jdbc:oracle:thin:@//slc03rmj:1521/IDMDB
JDBC URL: opss-data-source:jdbc:oracle:thin:@//slc03rmj:1521/idmdb
le.com
Caused by: java.security.InvalidKeyException: Illegal key size
at javax.crypto.Cipher.checkCryptoPerm(Cipher.java:1039)
at javax.crypto.Cipher.implInit(Cipher.java:805)
at javax.crypto.Cipher.chooseProvider(Cipher.java:864)
at javax.crypto.Cipher.init(Cipher.java:1396)
at javax.crypto.Cipher.init(Cipher.java:1327)
```

To resolve this issue, do the following:

1. Install the Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files from the following location:

   http://www.oracle.com/technetwork/java/javase/downloads/jce8-download-2133166.html

2. Copy `local_policy.jar` and `US_export_policy.jar` files to the location *JAVA_HOME*`/jre/lib/security/`. If the files already exist in the destination folder, overwrite them.

# EditFailedException When Releasing Configuration From WebLogic Console

After you upgrade Oracle Identity Manager to 12*c* (12.2.1.3.0), when you click **Release Configuration** on Oracle WebLogic Console, the following error is seen:

```
weblogic.management.provider.EditFailedException: Error loading jdbc/OIMMDS-
jdbc.xml
```

This error does not have any functional impact on the WebLogic configuration. To resolve this, open the following DataSource configurations, make any changes, save, and activate the changes:

- `ApplicationDB`
- `mds-oim`
- `OIMJMSStoreDS`
- `OIMOperationsDB`
- `soaOIMLookupDB`

# OIM Application Deployment Fails Intermittently

After you upgrade Oracle Identity Manager to 12*c* (12.2.1.3.0), the `oim` application deployment may fail with the following error:

```
<Error> <Deployer> <BEA-149231> <Unable to  set the activation state
to true for the application "oim".
weblogic.application.ModuleException: java.lang.NoClassDefFoundError:
Could
not initialize class oracle.iam.platform.utils.cache.Cache
```

To resolve this, restart the Oracle Identity Manager Server.

# soa-infra Application is in 'Prepared' State Post Upgrade

After you upgrade Oracle Identity Manager (OIM) and Oracle Access Manager (OAM) integrated environment that was set up using Life Cycle Management (LCM) tool, the `soa-infra` application continues to be in `Prepared` mode, instead of showing `active` mode.

To resolve this issue, do the following:

1. Stop all of the managed servers in the private domain. See Stopping Servers and Processes.
2. Take a back up and delete the contents of the private domain.
3. Pack the shared domain and unpack it on the private domain.
4. Start the managed servers in private domain. See Starting the Servers.

Verify that the `soa-infra` application comes up in `active` state.

# Oracle Identity Manager Server Throws OutOfMemoryError

When you start the servers post upgrade, `OutOfMemoryError` is thrown.

The following error is seen in the OIM server logs for this issue:

```
[oim_server1] [NOTIFICATION] []
[oracle.iam.oimdataproviders.impl] [tid: [ACTIVE].ExecuteThread: '9'
for
queue: 'weblogic.kernel.Default (self-tuning)'] [userId: xelsysadm]
```

```
[ecid:
5679ce10-f0df-457f-88f1-6bc04e10aa13-000013b1,0] [APP: oim-runtime]
[partition-name: DOMAIN] [tenant-name: GLOBAL] [DSID:
0000Lg0PPYTBd5I_Ipt1if1OpGGi00000U] RM_DEBUG_PERF - 2017-03-24 06:09:51.087
-
search criteria = arg1 = (usr_key) EQUAL arg2 = (1)[[
 query = Select usr.usr_key, usr.usr_status  from usr where usr.usr_key = ?
 time = 1
]]
[2017-03-24T06:09:52.286-07:00] [oim_server1] [NOTIFICATION] []
[oracle.iam.oimdataproviders.impl] [tid: [ACTIVE].ExecuteThread: '9' for
queue: 'weblogic.kernel.Default (self-tuning)'] [userId: xelsysadm] [ecid:
5679ce10-f0df-457f-88f1-6bc04e10aa13-000013b1,0] [APP: oim-runtime]
[partition-name: DOMAIN] [tenant-name: GLOBAL] [DSID:
0000Lg0PPYTBd5I_Ipt1if1OpGGi00000U]
oracle.iam.oimdataproviders.impl.OIMUserDataProvider
[2017-03-24T06:11:52.171-07:00] [oim_server1] [ERROR] [ADFC-50018]
[oracle.adfinternal.controller.application.AdfcExceptionHandler] [tid:
[ACTIVE].ExecuteThread: '27' for queue: 'weblogic.kernel.Default
(self-tuning)'] [userId: xelsysadm] [ecid:
5679ce10-f0df-457f-88f1-6bc04e10aa13-000013e0,0] [APP:
oracle.iam.console.identity.self-service.ear] [partition-name: DOMAIN]
[tenant-name: GLOBAL] [DSID: 0000Lg0RtM9Bd5I_Ipt1if1OpGGi00000V] ADFc: No
exception handler was found for an application exception.[[
java.lang.OutOfMemoryError: GC overhead limit exceeded ]
```

To resolve this issue, do the following (on Linux):

1. Ensure that you set the following parameters in the `/etc/security/limits.conf` file, to the specified values:

   ```
   FUSION_USER_ACCOUNT soft nofile 32767
   FUSION_USER_ACCOUNT hard nofile 327679
   ```

2. Ensure that you set `UsePAM` to `Yes` in the `/etc/ssh/sshd_config` file.
3. Restart `sshd`.
4. Log out (or reboot) and log in to the system again.

Before you start the Oracle Identity Manager 12*c* Server, run the following command to increase the limit of open files, so that you do not hit into memory issues:

```
limit maxproc 16384
```

# SOA Fails to Join Coherence Cluster During the First Start After Upgrade

After you upgrade Oracle Identity Manager (OIM) and Oracle Access Manager (OAM) integrated environment, when you start the Oracle SOA Suite Server for the first time, the coherence cluster fails to start with the following error:

```
<Error> <com.oracle.coherence> <BEA-000000>  <2017-08-03
15:49:14.010/123.585 Oracle Coherence GE 12.2.1.3.0
<Error>  (thread=Cluster, member=n/a): This member could not join the
```

```
cluster because  of a mismatch
between Coherence license types. This member was attempting to  run in
dev mode.
Rejected by Member(Id=1, Timestamp=2017-08-03 15:36:20.874,
Address=10.241.57.43:57023, MachineId=8125,
Location=process:19490,member:oam_policy_mgr1, Role=WeblogicServer).>
<Aug 3, 2017 3:49:14,017 PM UTC> <Error> <com.oracle.coherence>
<BEA-000000>
<2017-08-03 15:49:14.017/123.592 Oracle Coherence GE 12.2.1.3.0
<Error>  (thread=[ACTIVE] ExecuteThread:
'10' for queue: 'weblogic.kernel.Default  (self-tuning)', member=n/a):
Error while starting cluster:
java.lang.RuntimeException: Failed to start Service "Cluster"
(ServiceState=SERVICE_STOPPED, STATE_JOINING)
at
com.tangosol.coherence.component.util.daemon.queueProcessor.Service.sta
rt(Serv  ice.CDB:38)
```

This occurs if both the OIM and OAM WebLogic domains have the same default coherence cluster port. To resolve this issue, change the cluster port for either OAM or OIM by doing the following, pre-upgrade:

1. Log in to the WebLogic Administration console using following URL:

   `http://weblogic_admin_host:weblogic_admin_port/console`

2. Click **Environments** on the left navigation pane.
3. Click **Coherence Clusters**, and then click **defaultCoherenceCluster**.
4. Change the port from `7574` to `7575` for either OIM or OAM .

# LDAP User Create and Update Reconciliation Job Fails

LDAP User Create and Update Reconciliation job fails to run with the following exception:

```
java.lang.Exception: Full resync required. Reason: The provided cookie
is older than the start of historical
in the server for the replicated domain : dc=example,dc=com
```

To resolve this issue, you must update the parameter `Last Change Number` of the job. to do this, complete the following steps:

1. Get the value from Oracle Unified Directory using the following command:

   ```
   ./ldapsearch -h <OUDHOST>-p 1389 -D "cn=oudadmin" -w Fusionapps1 --
   control "1.3.6.1.4.1.26027.1.5.4:false:;" -b "cn=changelog"
   "(objectclass=*)" "*" +
   ```

2. Search for the following line in the output of the above command:

   ```
   changeLogCookie: dc=example,dc=com:0000015dcefd65a3000100000102;
   ```

3. Fill in `dc=example,dc=com:0000015dcefd65a3000100000102;` in to the `Last Change Number` parameter of the job.

# BI Managed Server is Seen on WebLogic Console After Upgrade

The BI Managed Servers and cluster may not be deleted automatically during the upgrade if your domain has custom names for these servers, that is, names other than `bi_server1`, `bi_server2`, and so on. If these servers and cluster still exist post the upgrade, remove them manually via the WebLogic Console.

To delete these objects manually:

1. Log in to the WebLogic Administration Console using the following URL:

   `http://`*`weblogic_admin_host`*`:`*`weblogic_admin_port`*`/console`
2. On the left navigation pane, click **Environment**, and then **Servers**.
3. Click **Lock and Edit** to allow changes to the domain configuration.
4. Select the check box for each BI Managed Server (custom names).
5. Click **Delete**, and then click **Yes** in the confirmation dialog box.
6. On the left navigation pane, click **Clusters**.
7. Select the check box for the BI Cluster name (`bi_cluster` or the custom name).
8. Click **Delete**, and then click **Yes** in the confirmation dialog box.
9. Click **Activate Changes**.
10. Observe the status message that appears below the top menu bar. Validate that all changes have been activated and no restarts are needed.

# Empty Pages or Panels After Upgrade

After you complete the upgrade, the Applications tile in the OIM Self Service console and the Import/Export links in the Admin console may be rendered as empty pages or panels.

This can occur if the following URIs are being filtered by a proxy:

- /OIGUI/
- /FacadeWebApp/
- /iam/

To avoid this issue, update your proxy rules to allow access to these URIs.

# OIM-AD Communication Fails After the Upgrade

After the upgrade to 12*c* (12.2.1.3.0), the OIM-AD communication fails because the upgrade to 12*c* (12.2.1.3.0) changes the trust key to `DemoTrust`.

The following error messages is displayed:

```
< org.identityconnectors.framework.common.exceptions.ConnectorException:
javax.net.ssl.SSLHandshakeException:
sun.security.validator.ValidatorException: PKIX path building failed:
```

```
sun.security.provider.certpath.SunCertPathBuilderException: unable to
find valid certification path to requested target
  at
org.identityconnectors.framework.common.exceptions.ConnectorException.w
rap(ConnectorException.java:101)
  at
org.identityconnectors.framework.impl.api.remote.RemoteFrameworkConnect
ion.(RemoteFrameworkConnection.java:54)
  at
org.identityconnectors.framework.impl.api.remote.RemoteConnectorInfoMan
agerImpl.(RemoteConnectorInfoManagerImpl.java:50)
  at
org.identityconnectors.framework.impl.api.ConnectorInfoManagerFactoryIm
pl.getRemoteManager(ConnectorInfoManagerFactoryImpl.java:94)
  at
oracle.iam.connectors.icfcommon.ConnectorFactory.getRemoteConnectorInfo
Manager(ConnectorFactory.java:250)
  at oracle.iam.connectors.icfcommon.Co
```

To resolve this issue, search the files in the `$DOMAIN_HOME/bin` directory for `DemoTrust`, back up the files that have `DemoTrust` in them, and then replace all occurrences of `DemoTrust` with the name of the custom truststore.

# Deployment Manager is Not Working After the Upgrade

After the upgrade, when you open Deployment Manager (DM) from the Identity Sysadmin console, the DM window opens, but the UI components do not render, leaving the page blank and inoperable.

The following are the standard entries created by the upgrade scripts:

```
<property name="trust.issuerName" value="www.oracle.com"/>
<property name="trust.aliasName" value="xell"/>
```

Ensure that there is only one definition in the `jps-config.xml` file. If there are any duplicate entries with the same property name, remove them from the file. Additionally, you should also ensure that the Administration server and Managed servers have the same changes made simultaneously while the servers are down. The changes will take effect after you restart the servers.

# Out Of Memory Error When Running the `oigcloneFileOps.sh` File

If you encounter an out-of-memory (OOM) error during the execution of the `oigcloneFileOps.sh` file, check for the presence of excessively large files in *Domain_Home* and remove them temporarily. Run the Clone utility again.

# MDS Customizations are Removed After You Restart the OIM Managed Server of an Upgraded Setup

If any MDS customizations are done after a successful upgrade to 12*c* (12.2.1.3.0) and if those customizations are lost after you restart the OIM Managed Server, you cannot recover the MDS changes. You have to do the MDS customizations again.

To avoid the repeated occurrence of this issue each time you restart the Managed Server, replace the existing 12*c* (12.2.1.3.0)_*ORACLE_HOME*>/idm/server/apps/oim.ear/metadata.tar file with the file that is present at the same location after you install the 12*c* (12.2.1.3.0) binaries, prior to the upgrade.

> **Note:**
>
> This issue is applicable only for MDS customizations that were made after the successful upgrade to 12c but lost after restarting the OIM Managed Server.

As part of the pre-upgrade tasks, after installing the 12*c* (12.2.1.3.0) binaries, you would have already taken a backup of the original 12*c* (12.2.1.3.0)_*ORACLE_HOME*>/idm/server/apps/oim.ear/metadata.tar file. See Backing Up the metadata.mar File Manually.

If the backup of the original file is not present after you install the binaries, you should install the 12*c* (12.2.1.3.0) binaries at any temporary location and extract the file.

For a HA setup, the original 12*c* (12.2.1.3.0)_*ORACLE_HOME*>/idm/server/apps/oim.ear/metadata.tar file is present on the secondary nodes where upgrade bootstrap was not executed.

# OPatch Fails for not Finding the '`fuser`' Command

OPatch fails when it is unable to locate the `fuser` command.

OPatch fails with the following error on the command line:

```
Verifying environment and performing prerequisite checks...
Prerequisite check "CheckActiveFilesAndExecutables" failed.
The details are:
Exception occured : fuser could not be located:
UtilSession failed: Prerequisite check "CheckActiveFilesAndExecutables" failed.
Log file location: <PATH>/fmw/cfgtoollogs/opatch/opatch20xx-0x-20_11-40-12AM_1.log
```

Following options are available to resolve this issue:

**Pass argument for OPatch to ignore `fuser` and continue with patching:**

1. Set the environment variable *OPATCH_NO_FUSER*=`true`. Setting this variable to "true" informs OPatch to skip the check for active executables.
2. Shut down the WebLogic instances.
3. Run the OPatch utility.

**Set a temporary `fuser`:**

1. Set `/tmp` in your PATH.
2. Create an empty file named "`fuser`".
3. Shut down the WebLogic instances.
4. Run the OPatch utility.

**Install the 'fuser' utility:**

1. Install the 'fuser' utility on the machine (contact your OS Admin).
2. Ensure that 'fuser' is located under `/sbin/fuser` or `/bin/fuser`.
3. Shut down the WebLogic instances.
4. Run the OPatch utility.

# JPS-07508 or WSM-00401 Errors Seen When Accessing the Sysadmin Console

This issue occurs when upgrading from OIM 11g Release 2 (11.1.2.3.0) to OIM 12c (12.2.1.3) where the OPSS Keystore Service (KSS) certificates are either corrupted or missing.

In such cases, when you access **Sysadmin Console** > **IT Resource** or search for applications in the Self Service console, you will get the following error message:

```
<oracle.jps.trust> <JPS-07508> <Token issue operation failed.
oracle.security.jps.internal.trust.token.TokenProviderException: Private key
is unavailable

<Error> <oracle.iam.token> <BEA-000000> <Exception in getting token>
java.security.PrivilegedActionException:
oracle.security.jps.service.trust.token.TokenException:
oracle.security.jps.internal.trust.token.TokenProviderException: Token issue
operation failed.
```

OR

```
The jwt token found in the request, [[ Encoded token: [Token Content]
is invalid and token authentication failed, Failed due to :
oracle.wsm.security.SecurityException: WSM-00401 : JWT signature verification
failed.
```

To resolve this issue, perform the steps detailed in Doc ID 2735573.1.

# OIM Bootstrap Fails Due to the Presence of Custom Application JARs

If there are any custom developed libraries or JARs placed inside the *OIM_HOME*, the OIM bootstrap fails during the upgrade to Oracle Identity Manager 12*c* (12.2.1.3.0).

The failure results in an error message similar to the following:

```
<Server state changed to FORCE_SHUTTING_DOWN.>
<Nov 19, 2020 4:04:50,356 PM EST> <Notice> <Log Management>
<BEA-170037> <The
```

```
log monitoring service timer has been stopped.>
<Nov 19, 2020 4:06:16,377 PM EST> <Warning> <JMX> <BEA-149513> <JMX Connector
Server stopped at
service:jmx:iiop://idmoimtl3.chop.edu:14000/jndi/
weblogic.management.mbeanserv
ers.runtime.>
<Nov 19, 2020 4:15:43,045 PM EST> <Error> <netuix> <BEA-423142> <The control
com.bea.netuix.servlets.controls.layout.Layout could not be rendered properly
due to the following error:>
<Nov 19, 2020 4:15:44,356 PM EST> <Warning> <Socket> <BEA-000449> <Closing
the socket, as no data read from it on 10.250.116.181:54,532 during the
configured idle timeout of 5 seconds.>
<Nov 19, 2020 4:17:57,525 PM EST> <Warning> <J2EE> <BEA-160188> <Unresolved
application library references, for application
oracle.iam.console.identity.self-service.ear, defined in
weblogic-application.xml: [Extension-Name: oracle.iam.ui.model, exact-match:
false].>
<Nov 19, 2020 4:17:57,810 PM EST> <Warning> <J2EE> <BEA-160188> <Unresolved
WebApp library references defined in weblogic.xml, of module
'oracle.iam.console.identity.self-service.war' [Extension-Name:
oracle.iam.ui.view, exact-match: false], [Extension-Name:
oracle.iam.ui.oia-view, exact-match: false], [Extension-Name:
oracle.iam.ui.custom, exact-match: false], [Extension-Name:
oracle.idm.msm.ui.library, exact-match: false].>
java.lang.ClassNotFoundException:
oracle.iam.ui.platform.view.backing.SkinBean at
weblogic.utils.classloaders.GenericClassLoader.findLocalClass(GenericClassLoa
d
er.java:1029) at
weblogic.utils.classloaders.GenericClassLoader.findClass(GenericClassLoader.j
a
va:990)  at
weblogic.utils.classloaders.GenericClassLoader.doFindClass(GenericClassLoader
.
java:611) at
weblogic.utils.classloaders.GenericClassLoader.loadClass(GenericClassLoader.j
a
va:543) at
weblogic.servlet.internal.AnnotationProcessingManager.processAnnotations(Anno
t
ationProcessingManager.java:105) at
weblogic.servlet.tools.WARModule.processAnnotations(WARModule.java:513) at
weblogic.servlet.tools.WARModule.processAnnotations(WARModule.java:605) at
weblogic.servlet.tools.WARModule.merge(WARModule.java:553) at
weblogic.application.compiler.ToolsModuleWrapper.merge(ToolsModuleWrapper.jav
a
:96) at
weblogic.application.utils.CustomModuleManager.merge(CustomModuleManager.java
:
78) at
weblogic.application.compiler.flow.MergeModuleFlow.compile(MergeModuleFlow.ja
v
a:38) at
weblogic.application.compiler.FlowDriver$FlowStateChange.next(FlowDriver.java
:
```

```
70) at
weblogic.application.utils.StateMachineDriver.nextState(StateMachineDri
ver.jav
a:45) at
weblogic.application.compiler.FlowDriver.nextState(FlowDriver.java:37)

weblogic.application.compiler.flow.AppMergerFlow.mergeInput(AppMergerFl
ow.java
:75)at
weblogic.application.compiler.flow.AppMergerFlow.compile(AppMergerFlow.
java:40
) at
weblogic.application.compiler.FlowDriver$FlowStateChange.next(FlowDrive
r.java:
70) at
weblogic.application.utils.StateMachineDriver.nextState(StateMachineDri
ver.jav
a:45) at
weblogic.application.compiler.FlowDriver.nextState(FlowDriver.java:37)
at
weblogic.application.compiler.AppMerge.runBody(AppMerge.java:168) at
weblogic.utils.compiler.Tool.run(Tool.java:159) at
weblogic.utils.compiler.Tool.run(Tool.java:116) at
weblogic.application.compiler.AppMerge.merge(AppMerge.java:198) at
weblogic.deploy.api.internal.utils.AppMerger.merge(AppMerger.java:94)at
weblogic.deploy.api.internal.utils.AppMerger.getMergedApp(AppMerger.jav
a:58)
at
weblogic.deploy.api.model.internal.WebLogicDeployableObjectFactoryImpl.
createD
eployableObject(WebLogicDeployableObjectFactoryImpl.java:186) at
weblogic.deploy.api.model.internal.WebLogicDeployableObjectFactoryImpl.
createD
eployableObject(WebLogicDeployableObjectFactoryImpl.java:167)at
com.bea.console.utils.DeploymentConfigurationHelper$1.execute(Deploymen
tConfig
urationHelper.java:860) at
com.bea.console.utils.DeploymentUtils.runDeploymentAction(DeploymentUti
ls.java
:5690) at
com.bea.console.utils.DeploymentConfigurationHelper.initDeploymentConfi
guratio
n(DeploymentConfigurationHelper.java:848) at
com.bea.console.utils.DeploymentConfigurationHelper.completeInitializat
ion(Dep
loymentConfigurationHelper.java:444) at
com.bea.console.utils.DeploymentConfigurationManager.getDeploymentConfi
guratio
n(DeploymentConfigurationManager.java:151) at
com.bea.console.utils.DeploymentConfigurationManager.getDeploymentConfi
guratio
n(DeploymentConfigurationManager.java:104) at
```

To resolve this issue, Oracle recommends not to keep the custom-developed JARs or libraries inside OIM_HOME to avoid file system dependencies. The file system

dependencies add an overhead of maintaining such custom libraries during the out-of-place Oracle Home upgrades because such custom JARs remain in the old Oracle Home (Oracle Home before the upgrade process).

To avoid such issues, you should upload the custom libraries to the database. If the custom library is in the OIM plug-in compressed (.zip) format, register them using the plug-in utility. If the custom library is a JAR, upload the same to the database using the Upload JAR Utility.

If for some reason, you do not want to follow the above recommendations, you can manually copy the custom-developed JARs from the old to the new Oracle home, in the appropriate location.

# Failure in the Compilation of BPEL Generated Classes From 11g in 12c

Compilation of the generated BPEL classes from 11g fails in 12c if the class path setting is incorrect. Custom composites should have the dependent jars under `BpelcClasspath` to ensure that the composites are deployed successfully.

To resolve the issue:

1. Go to Enterprise Manager Console and log in as `weblogic` user.
2. On the left pane, expand **Weblogic Domain**, select **<WLS_DOMAIN>** right-click **System MBeans Browser**.
3. Go to **Application Defined MBeans**, select **oracle.as.soainfra.config**, click **Server:<SOA_SERVER>**, select **BPELConfig**, and then click **bpel**.
4. Under the **Attributes** column, click **BpelcClasspath** and take a backup of those values.
5. Add the following jar file paths separated by a colon, and save the details.

```
$MW_HOME/oracle_common/modules/oracle.jps/jps-api.jar:/$OIM_HOME/server/
client
/oimclient.jar
```

# User, Role, and Organization UDFs Missing After Upgrade from 11g to 12.2.1.x

The User Defined Fields (UDFs) previously defined in the `organization.xml` and `user.xml` files are missing in the MDS storage, after the upgrade of Oracle Identity Manager from 11g (11.1.2.3) to 12c (12.2.1.x).

To resolve this issue:

1. Export the required files from the MDS storage.
   - `/db/identity/entity-definition/Organization.xml` (for Organization UDFs)
   - `/db/identity/entity-definition/Role.xml` (for Roles UDFs)
   - `/file/user.xml` (for Users UDFs)
2. Append the missing UDFs and save the changes.

3. Import the modified files to MDS.

For more information about this issue, see Doc ID 2438738.1.

B

# Updating the JDK After Installing and Configuring an Oracle Fusion Middleware Product

Consider that you have a JDK version jdk1.8.0_121 installed on your machine. When you install and configure an Oracle Fusion Middleware product, the utilities, such as Configuration Wizard (`config.sh|exe`), OPatch, or RCU point to a default JDK, for example, jdk1.8.0_121. After some time, Oracle releases a new version of the JDK, say jdk1.8.0_131 that carries security enhancements and bug fixes. From 12*c* (12.2.1.3.0) onwards, you can upgrade the existing JDK to a newer version, and can have the complete product stack point to the newer version of the JDK.

You can maintain multiple versions of JDK and switch to the required version on need basis.

- About Updating the JDK Location After Installing an Oracle Fusion Middleware Product
  The binaries and other metadata and utility scripts in the Oracle home and Domain home, such as RCU or Configuration Wizard, use a JDK version that was used while installing the software and continue to refer to the same version of the JDK. The JDK path is stored in a variable called JAVA_HOME which is centrally located in .globalEnv.properties file inside the *`ORACLE_HOME`*`/oui` directory.

## About Updating the JDK Location After Installing an Oracle Fusion Middleware Product

The binaries and other metadata and utility scripts in the Oracle home and Domain home, such as RCU or Configuration Wizard, use a JDK version that was used while installing the software and continue to refer to the same version of the JDK. The JDK path is stored in a variable called JAVA_HOME which is centrally located in .globalEnv.properties file inside the *`ORACLE_HOME`*`/oui` directory.

The utility scripts such as config.sh|cmd, launch.sh, or opatch reside in the *ORACLE_HOME*, and when you invoke them, they refer to the JAVA_HOME variable located in .globalEnv.properties file. To point these scripts and utilities to the newer version of JDK, you must update the value of the JAVA_HOME variable in the .globalEnv.properties file by following the directions listed in Updating the JDK Location in an Existing Oracle Home .

To make the scripts and files in your Domain home directory point to the newer version of the JDK, you can follow one of the following approaches:

- Specify the path to the newer JDK on the Domain Mode and JDK screen while running the Configuration Wizard.

  For example, consider that you installed Oracle Fusion Middleware Infrastructure with the JDK version 8u191. So while configuring the WebLogic domain with the Configuration Assistant, you can select the path to the newer JDK on the Domain Mode and JDK screen of the Configuration Wizard. Example: `/scratch/jdk/jdk1.8.0_131`.

- Manually locate the files that have references to the JDK using `grep` (UNIX) or `findstr` (Windows) commands and update each reference. See Updating the JDK Location in an Existing Oracle Home .

> **Note:**
>
> If you install the newer version of the JDK in the same location as the existing JDK by overwriting the files, then you don't need to take any action.

When you upgrade Oracle Identity Manager in an integrated environment, you may encounter the OPSS processing error. The following exception is seen when you run reconfig.sh command to reconfigure the Oracle Identity Manager domain:

```
SEVERE [93] com.oracle.cie.domain.progress.AbstractProgressGenerator -
Error occurred in
phase {OPSS Processing} execution.
java.lang.IllegalStateException: SecurityContext: Domain Name:
IAMGovernanceDomain
JDBC URL: opss-audit-DBDS:jdbc:oracle:thin:@//slc03rmj:1521/IDMDB
JDBC URL: opss-data-source:jdbc:oracle:thin:@//slc03rmj:1521/idmdb
le.com
Caused by: java.security.InvalidKeyException: Illegal key size
at javax.crypto.Cipher.checkCryptoPerm(Cipher.java:1039)
at javax.crypto.Cipher.implInit(Cipher.java:805)
at javax.crypto.Cipher.chooseProvider(Cipher.java:864)
at javax.crypto.Cipher.init(Cipher.java:1396)
at javax.crypto.Cipher.init(Cipher.java:1327)
```

To resolve this issue:

1. Install the Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files from the following location: Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files 8 Download.
2. Copy the local_policy.jar and the US_export_policy.jar files to the location `JAVA_HOME/jre/lib/security/`. If the files already exist in the destination folder, overwrite them.

- Updating the JDK Location in an Existing Oracle Home
  The `getProperty.sh|cmd` script displays the value of a variable, such as JAVA_HOME, from the .globalEnv.properties file. The `setProperty.sh|cmd` script is used to set the value of variables, such as OLD_JAVA_HOME or JAVA_HOME that contain the locations of old and new JDKs in the .globalEnv.properties file.
- Updating the JDK Location in an Existing Domain Home
  You must search the references to the current JDK, for example jdk1.8.0_121 manually, and replace those instances with the location of the new JDK.

# Updating the JDK Location in an Existing Oracle Home

The `getProperty.sh|cmd` script displays the value of a variable, such as JAVA_HOME, from the .globalEnv.properties file. The `setProperty.sh|cmd` script is used to set the

value of variables, such as OLD_JAVA_HOME or JAVA_HOME that contain the locations of old and new JDKs in the .globalEnv.properties file.

The `getProperty.sh|cmd` and `setProperty.sh|cmd` scripts are located in the following location:

(UNIX) *ORACLE_HOME*`/oui/bin`
(Windows) *ORACLE_HOME*`\oui\bin`
Where, *ORACLE_HOME* is the directory that contains the products using the current version of the JDK, such as jdk1.8.0_121.

To update the JDK location in the .globalEnv.properties file:

1. Use the `getProperty.sh|cmd` script to display the path of the current JDK from the JAVA_HOME variable. For example:

   (UNIX) *ORACLE_HOME*`/oui/bin/getProperty.sh JAVA_HOME`
   (Windows) *ORACLE_HOME*`\oui\bin\getProperty.cmd JAVA_HOME`
   `echo JAVA_HOME`
   Where JAVA_HOME is the variable in the .globalEnv.properties file that contains the location of the JDK.

2. Back up the path of the current JDK to another variable such as OLD_JAVA_HOME in the .globalEnv.properties file by entering the following commands:

   (UNIX) *ORACLE_HOME*`/oui/bin/setProperty.sh -name OLD_JAVA_HOME -value` *specify_the_path_of_current_JDK*
   (Windows) *ORACLE_HOME*`\oui\bin\setProperty.cmd -name OLD_JAVA_HOME -value` *specify_the_path_of_current_JDK*

   This command creates a new variable called OLD_JAVA_HOME in the .globalEnv.properties file, with a value that you have specified.

3. Set the new location of the JDK in the JAVA_HOME variable of the .globalEnv.properties file, by entering the following commands:

   (UNIX) *ORACLE_HOME*`/oui/bin/setProperty.sh -name JAVA_HOME -value` *specify_the_location_of_new_JDK*
   (Windows) *ORACLE_HOME*`\oui\bin\setProperty.cmd -name JAVA_HOME -value` *specify_the_location_of_new_JDK*

   After you run this command, the JAVA_HOME variable in the .globalEnv.properties file now contains the path to the new JDK, such as jdk1.8.0_131.

## Updating the JDK Location in an Existing Domain Home

You must search the references to the current JDK, for example jdk1.8.0_121 manually, and replace those instances with the location of the new JDK.

You can use the `grep` (UNIX) or `findstr` (Windows) commands to search for the jdk-related references.

You'll likely be required to update the location of JDK in the following three files:

(UNIX) *DOMAIN_HOME*`/bin/setNMJavaHome.sh`
(Windows) *DOMAIN_HOME*`\bin\setNMJavaHome.cmd`

(UNIX) *DOMAIN_HOME*`/nodemanager/nodemanager.properties`

(Windows) *DOMAIN_HOME*\nodemanager\nodemanager.properties

(UNIX) *DOMAIN_HOME*/bin/setDomainEnv.sh
(Windows) *DOMAIN_HOME*\bin\setDomainEnv.cmd