Oracle® Fusion Middleware

Upgrading SOA Suite and Business Process Management

14*c* (14.1.2.0.0)
F85549-01
December 2024

ORACLE

Oracle Fusion Middleware Upgrading SOA Suite and Business Process Management, 14*c* (14.1.2.0.0)

F85549-01

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Preface

The following topics describe the intended audience, typographical conventions and additional resources that may be helpful during the upgrade process:

Audience

This document is intended for administrators who are familiar with Oracle Fusion Middleware installation, upgrade, and administration tasks.

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Related Documents

Upgrade documentation is organized by tasks in the 14c (14.1.2.0.0) documentation library. The task-specific pages provide direct links to common upgrade procedures and related documentation.

You can refer the Oracle Fusion Middleware Library for additional information.

- For installation information, see Fusion Middleware Installation Documentation.
- For upgrade information, see Fusion Middleware 12*c* Upgrade Documentation.
- For administration-related information, see Fusion Middleware 12*c* Administration Documentation.
- For release-related information, see Fusion Middleware 12*c* Release Notes.

Conventions

The following text conventions are used in this document:

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

1

Introduction to Oracle SOA Suite and Business Process Management Upgrade

Learn how the upgrade to Oracle Fusion Middleware SOA Suite and Business Process Management 14c (14.1.2.0.0) is performed. The procedures explain how to upgrade a production version of Oracle SOA Suite, including the Oracle Fusion Middleware component configurations in that domain, to this release.

Understanding the Oracle SOA Suite and Business Process Management Upgrade to 14c (14.1.2.0.0)

Understand how your pre-upgrade environment will be affected by the upgrade.

When upgrading your existing SOA Suite 12c environment to SOA Suite and Business Process Management 14c (14.1.2.0.0), you should understand how your pre-upgrade environment will be affected by the upgrade. For example, schemas and domain directory upgrades are performed "in place" which updates the existing files during the upgrade. The 14c (14.1.2.0.0) Oracle home binaries are upgraded "out of place" as the binaries are installed in a new directory.

The upgrade to 14c (14.1.2.0.0) includes the midtier and the schemas. You cannot perform a midtier-only or schema-only upgrade.

The list below describes how the upgrade is performed for the following Infrastructure and SOA Suite components:

- Oracle WebLogic Server, JRF and SOA Oracle Home Binaries

  You will install the Oracle Infrastructure (WebLogic Server and JRF) 14c (14.1.2.0.0) and the Oracle SOA Suite and Business Process Management 14c (14.1.2.0.0) distribution binaries in a new Oracle home. The existing binaries are not overwritten.

- Schemas - Upgraded In Place

  The schemas are upgraded "in place" which means that the Upgrade Assistant updates and overwrites the existing 12c schemas during the upgrade process. The servers must be down during this process.

- Instances - Migrated during the schema upgrade

  The upgrade of active and closed instances happens automatically as part of the schema upgrade. You can manage the upgrade using administration scripts.

- Domain Directory Reconfiguration - Upgraded In Place

  The existing SOA domain is upgraded "in place". During the upgrade you will provide the location of the existing 12c SOA domain and this domain will be reconfigured to point to the new SOA 14c (14.1.2.0.0) home directory.

- Domain Component Configuration - Upgraded In Place

After the reconfiguration of the existing SOA domain, the Upgrade Assistant is used again to upgrade any remaining domain component configurations that require an upgrade in the new SOA 14c (14.1.2.0.0) home directory.

> **Note:**
>
> Oracle recommends that you perform your domain upgrades in place. However, if an out-of-place domain upgrade is required, see Performing an Out-of-Place Domain Directory Upgrade in *Planning an Upgrade of Oracle Fusion Middleware*

Understanding the Starting Points for a SOA Suite 14c (14.1.2.0.0) Upgrade

Verify that your pre-upgrade environment is at a supported version before an upgrade.

You can upgrade to Oracle SOA Suite and Business Process Management 14c (14.1.2.0.0) from the following production starting points:

- SOA Suite and Business Process Management 12*c* (12.2.1.4.0)

> **Note:**
>
> Upgrading from a previous 12*c* release to 14c (14.1.2.0.0) requires a complete upgrade — it is not considered a patch set.

Understanding the Interoperability and Compatibility Restrictions Before You Upgrade

Read and understand how all of the components within your pre-upgrade domain will interact with the upgraded 14c (14.1.2.0.0) components.

Before you begin the upgrade process for SOA Suite and BPM to 14c (14.1.2.0.0) you must read and understand how all of the components within your existing domain will be impacted by the upgrade. *Understanding Interoperability and Compatibility* provides a detailed matrix of which components can and cannot be upgraded together.

In general, you cannot upgrade a domain that contains components that are not yet available in Oracle Fusion Middleware 14c (14.1.2.0.0). There are other restrictions on the components that can be upgraded to 14c (14.1.2.0.0) and you need to be sure that you have reviewed this information carefully before you proceed with the upgrade.

See Also: Understanding SOA Domain Upgrade Restrictions

Understanding SOA Domain Upgrade Restrictions

Review the domain upgrade restrictions before starting the upgrade.

Some domains should not be upgraded to 14c (14.1.2.0.0) because of known limitations and configuration changes from previous Fusion Middleware releases. Review the following to ensure your domains are not impacted by these restrictions. Domains that are impacted by these restrictions cannot be upgraded.

The following list describes the known SOA domain upgrade restrictions.

- **Domains that include SOA Core Extension cannot be upgraded in–place to 14c (14.1.2.0.0).**

  If your pre-upgrade environment contains SOA Core Extension, then you cannot upgrade to this release of Oracle Fusion Middleware. An upgrade of these products is not supported in 14c (14.1.2.0.0). If you want to include these products in your 14c (14.1.2.0.0) domain, you will have to manually migrate the files. Contact Oracle Support for more information.

- **Domains that include Oracle Enterprise Repository cannot be upgraded in-place to 14c (14.1.2.0.0)**

  If your pre-upgrade domain includes Oracle Enterprise Repository (OER), then you cannot upgrade to this release of Oracle Fusion Middleware. An upgrade of these products is not supported in 14c (14.1.2.0.0). If you want to include these products in your 14c (14.1.2.0.0) domain, you will have to manually migrate the files. Contact Oracle Support for more information..

Understanding the Standard SOA Upgrade Topologies

Your actual topology may vary, but the topologies described in this guide can be used to upgrade similar SOA Suite component topologies.

This upgrade documentation provides detailed instructions for upgrading two typical SOA Suite configurations. These topologies are referred to as the Oracle Fusion Middleware standard upgrade topologies. Specifically, for the purposes of this guide, a standard installation topology consists of a WebLogic Server domain that contains an Administration Server and a cluster containing two Managed Servers or a standalone domain.

A standalone domain is a container for system components, such as Oracle HTTP Server. It has a directory structure similar to an Oracle WebLogic Server domain, but it does not contain an Administration Server or Managed Servers. It can contain one or more instances of system components of the same type, such as Oracle HTTP Server, or a mix of system component types. For more information on the standalone topology, see What Is a Standalone Domain?

2

Oracle Fusion Middleware Pre-Upgrade Tasks

Before you start the upgrade process be sure to complete the required pre-upgrade tasks for your components and environment.
The required pre-upgrade tasks must be completed before you start the upgrade. Failure to complete the required tasks may result in a failed upgrade or extended system downtime. Complete only those tasks that apply to your deployment.

> **Note:**
>
> Depending on which Oracle SOA products are being upgraded, you may need to perform additional pre-upgrade tasks. Products such as Oracle Service Bus and User Messaging Service may require additional pre- and post-upgrade configuration tasks.

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 can be performed before the upgrade to limit your downtime. The more preparation you can 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.

Table 2-1 Tasks to Perform Before You Upgrade to Oracle Fusion Middleware 14c (14.1.2.0.0)

Task	Description
Required Create a complete backup of your existing environment.	Back up all system-critical files and database(s) 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. See Creating a Complete Backup. • Make sure that your backup includes the schema version registry table. See Backing Up the Schema Version Registry Table. • 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 Create additional backup files for an online recovery operation.	If the upgrade fails, and you will need to perform an online recovery, Oracle recommends that you generate additional back up files to facilitate the recovery.
Optional 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. See Cloning Your Source Environment for Testing.
Required Verify that you are installing and upgrading your product on a supported hardware and software configuration. **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 documents. Also make sure to use a supported JDK version before you install the 14c (14.1.2.0.0) product distributions. Oracle recommends that you verify this information right before you start the upgrade as the certification requirements are frequently updated. **Note:** Make sure that you have applied the latest patches to your components before you upgrade. See Verifying Certification and System Requirements.
Optional Update security policy files if you are using enhanced encryption (AES 256).	Some of the security algorithms used in Fusion Middleware 14c (14.1.2.0.0) require additional policy files for the JDK. 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. See Updating Policy Files when Using Enhanced Encryption (AES 256).
Optional 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. See Creating a Non-SYSDBA User to Run the Upgrade Assistant

Creating a Complete Backup

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

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

The Upgrade Assistant Prerequisites screen prompts you to acknowledge that backups have been performed before you proceed with the actual upgrade. However, note that 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 14c (14.1.2.0.0) in *Planning an Upgrade of Oracle Fusion Middleware*

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.

> **Note:**
>
> This step is only required for managed or collocated domains. Standalone domains will not have this 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 *`EXISTING_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*.

Special Considerations for Online Backup and Recovery

Perform these additional backup tasks if your environment includes multiple middleware homes, and performing a full database restore after an upgrade failure is not a desirable option.

Understanding the Impact of a Full Database Restore

It is important that you understand the impact of a full database restore when creating your backup and recovery plan. If your upgrade fails, you may be required to perform a complete database restore. However, in some cases this may not be possible or desirable.

- Is your database shared by production environments that must remain online when a single FMW home is being upgraded?
- Does your database need to remain online when recovering from a failed upgrade?

- Is performing a full database restore an undesirable solution for recovering from a failed upgrade?

If you answered ‘yes’ to any of the following questions, then complete these additional pre-upgrade tasks before you begin:

Saving Grants on SYS Owned Objects

In the event of an upgrade failure, all grants to SYS owned objects will be lost when the schema is dropped. Oracle recommends that you create a script that can be used to re-apply the grants if necessary.

An example of how to create this script is shown below. Please note the following about the generated SQL script:

- The spooled output will need to be edited before it can be executed by SQLPlus, the text of the SQL queries and the "spool off" command need to be removed from the spooled file.
- Some of the grants may return errors when being applied after a drop/import of a schema. Some instances where this is not a fatal error are:

  - The grant already exists

  - The name of the grant object is dynamically generated when the schema is created. For example, advanced queueing views are named `QTnnnnnnnn_BUFFER`.

Sample SQLPlus commands to create a script for re-applying grants:

```
# The schema prefix in this example is "DEV"
$ORACLE_HOME/bin/sqlplus username/password
exec
dbms_metadata.set_transform_param(dbms_metadata.SESSION_TRANSFORM,'SQLTERMINAT
OR',TRUE);
set long 100000
set longchunksize 100000
set lines 1000
set termout off echo off newp 0 spa 0 pages 0 feed off head off trims on tab
off
spool /tmp/create-grants.sql
select dbms_metadata.get_granted_ddl ('OBJECT_GRANT',username) from all_users
where username in ('DEV_MDS', 'DEV_IAU', 'DEV_IAU_APPEND', 'DEV_IAU_VIEWER',
'DEV_OPSS', 'DEV_UMS', 'DEV_WLS', 'DEV_SOAINFRA', 'DEV_STB', 'DEV_ESS')
union all
select dbms_metadata.get_granted_ddl ('SYSTEM_GRANT',username) from all_users
where username in ('DEV_MDS', 'DEV_IAU', 'DEV_IAU_APPEND', 'DEV_IAU_VIEWER',
'DEV_OPSS', 'DEV_UMS', 'DEV_WLS', 'DEV_SOAINFRA', 'DEV_STB', 'DEV_ESS')
union all
select dbms_metadata.get_granted_ddl ('DEFAULT_ROLE',username) from all_users
where username in ('DEV_MDS', 'DEV_IAU', 'DEV_IAU_APPEND', 'DEV_IAU_VIEWER',
'DEV_OPSS', 'DEV_UMS', 'DEV_WLS', 'DEV_SOAINFRA', 'DEV_STB', 'DEV_ESS');
spool off
```

Exporting Schemas Before You Upgrade

Use data pump export to backup the schemas that will be upgraded.

For information on using data pump, see Oracle Data Pump in *Oracle Database Utilities* guide.

The following example shows a sample export:

```
# The schema prefix in this example is "DEV"
# The schemas being exported are for the SOA, BPM and ESS environments
$ORACLE_HOME/bin/sqlplus username/password
create directory data_pump_directory as '/scratch/db12cr2/export';

expdp username/password
schemas=DEV_STB,DEV_SOAINFRA,DEV_IAU_VIEWER,DEV_MDS,DEV_IAU_APPEND,DEV_WLS,DEV
_UMS,DEV_OPSS,DEV_IAU,DEV_ESS directory=data_pump_directory
dumpfile=export.dmp compression=ALL
```

Identifying Queue States Before an Upgrade

In the event of a an upgrade failure, the queues must be manually restarted. Take inventory of these queues to assist in restarting them.

The restoration of a single schema will not restart any queues that are imported. You will need to restart all of the enabled queues. The following example shows the SQL commands that can be used to generate a list of the queues that would need to be restarted in the event of a failed upgrade. Provide the correct schema prefix for each schema owner.

```
set pagesize 20;
set linesize 200;
COLUMN OWNER FORMAT A50
COLUMN NAME FORMAT A50
select owner,name,enqueue_enabled,dequeue_enabled from dba_queues where
owner='DEV_SOAINFRA';
```

Verifying Certification and System Requirements

Review the certification matrix and system requirements documents to verify that your environment meets the necessary requirements for installation. You may be required to upgrade your operating system, hardware or other software packages.

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

> **WARNING:**
>
> Make sure that your current environment has been patched to the latest patch set *before* you begin the upgrade. Certifications are based on fully patched environments, unless stated otherwise.

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 or 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 Technology Network. See the Certification Matrix for 14c (14.1.2.0.0).

Verify System Requirements and Specifications

It is important to use both the System Requirements and Specifications document and the Oracle Fusion Middleware Certification Matrix 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 Oracle Fusion Middleware Certification matrix are met. For example, if the Certification Matrix indicates that your product is certified for installation on 64-Bit Oracle Linux 8, the System Requirements and Specifications document should be used to verify that your Oracle Linux 8 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 Technology Network (OTN).

> **Note:**
>
> Do not attempt an upgrade if you are unable to meet the minimum system requirements.

Specifically, you can use the Oracle Fusion Middleware System Requirements and Specifications document to verify the following:

- Processor Requirements
- Java Development Kit (JDK) Requirements
- General Memory and Disk Space Requirements
- Product-Specific Memory and Disk Space Requirements
- Network Requirements
- UNIX Operating System Requirements
- Windows Operating Systems Requirements
- Virtualization Requirements
- Database Requirements

What if my operating system is not supported?

If you are running your environment on an unsupported operating system, you will need to create a supported environment before you begin your upgrade. Do not attempt an upgrade on an unsupported operating system.

Use the migration steps for your environment.

Migrating a Managed Domain from an Unsupported Operating System

If you are currently running your managed or collocated Oracle Fusion Middleware domain on an unsupported operating system, then you must migrate your existing environment to a supported operating system before you upgrade.

After the migration, validate that all of your existing Oracle Fusion Middleware 12c (12.2.1.4.0) software is working properly on the updated machine, and only then perform the upgrade to Oracle Fusion Middleware 14c (14.1.2.0.0).

In these tasks, *host* refers to the existing unsupported source machine and *target* refers to the new supported 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.

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 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, 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 Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

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

> **Note:**
>
> It is important that you stop the following servers in the correct order.

Step 1: Stop System Components

To stop system components, such as Oracle HTTP Server, use the `stopComponent` script:

- (UNIX) *`EXISTING_DOMAIN_HOME`*`/bin/stopComponent.sh` *`component_name`*
- (Windows) *`EXISTING_DOMAIN_HOME`*`\bin\stopComponent.cmd` *`component_name`*

You can stop system components in any order.

Step 2: Stop Any Managed Servers

To stop a WebLogic Server Managed Server, use the `stopManagedWebLogic` script:

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

When prompted, enter your user name and password.

Stop SOA servers and processes in this order:

1. Business Activity Monitoring (BAM) Managed Server
2. Oracle Service Bus (OSB) Managed Server
3. Service-Oriented Architecture (SOA) Managed Server
4. Oracle Web Services Manager (OWSM) Managed Server

Step 3: Stop the Administration Server

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

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

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

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

Step 4: Stop Node Manager

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

Alternatively, after setting 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 Oracle WebLogic Server*.

Back Up All Files from the Host Machine

Make sure that you have created a complete backup of your entire 12c (12.2.1.4.0) 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 operating system upgrade takes place on the same machine, there is a risk of corrupting the source environment if the upgrade fails.
> For general information about creating a complete backup of your existing environment, 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:

- *12c_DOMAIN_HOME*
- *12c*`/nodemanager` directory located in *12c_ORACLE_HOME*`/wlserver/common/`

The following steps explain how to use the **pack** command to create a domain template jar file. This is only one method that can be used to create a backup. Consult your own backup and recovery plans to choose the backup method that best suits your deployment.

1. Pack the domain that was created on the unsupported host using the pack command as follows:

```
cd ORACLE_HOME/oracle_common/common/bin/


./pack.sh -domain=/scratch/username/<product>_12214/user_projects/domains/
base_domain -template=/scratch/<product>.jar - template_author=<user_name>
-template_name=<product>_domain
```

2. Copy the domain template jar file that you just created to the new supported host.
Do not unpack the jar file. At this stage you are just copying the file to a temporary location on the new host until it is time to unpack the domain into the new 14.1.2 Oracle Home. To simplify the unpack process, consider recreating the exact same directory structure that you used in your 12.2.1.4 domain. This will ensure that the file is not overwritten.

> **Note:**
>
> Do not proceed with the upgrade until you have a complete backup.

Set Up the Target Machine with the 12c 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.

Copy the Contents of the Domain Template to the New Target Host

Unpack the contents of the generated domain template jar file on the target host. The directory structure on the target machine must be identical to the structure of the host machine.

1. On the target machine, navigate to the new Oracle home.

   ```
   cd 1412_ORACLE_HOME/oracle_common/common/bin/
   ```

2. Use the unpack command to copy the files to the new target:

   ```
   ./unpack.sh -domain=/scratch/<username>/<product>_12214/user_projects/
   domains/base_domain -template=/scratch/<product>.jar -user_name=weblogic -
   password=<enter your password>
   ```

Install the 14c (14.1.2.0.0) Product Distributions on the Target Machine

Oracle recommends an Out-of-Place approach for upgrade. Therefore, you must install the product distributions in a new Oracle home on the target machine.

Refer to the component-specific installation guides for the component(s) you are installing.

Upgrade the Target 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.

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 12c (12.2.1.4.0) Node Manger files that you backed up from the source 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 14c (14.1.2.0.0).

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 14c (14.1.2.0.0).

> **Note:**
>
> If your database version is no longer supported, you must upgrade to a supported version before starting an upgrade.

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

If your JDK is not supported, or you do not have a JDK installed, you must download the required Java SE JDK before you begin.

Refer to the Oracle Fusion Middleware Supported System Configurations information on the Oracle Technology Network (OTN) 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`.

Verify the Database User for the WLSSchemaDataSource Data Source

This step is required if your existing domain has a `WLSSchemaDataSource` data source.

If your domain has the `WLSSchemaDataSource` data source, then you will need to verify which database user is assigned to it. If `<PREFIX>_WLS_RUNTIME` is assigned to it, then you need to change that to `<PREFIX>_WLS` .

This change is necessary due to the following changes:

- The 14c (14.1.2.0.0) Upgrade Assistant uses the information in the `WLSSchemaDataSource` data source,when a domain-based schema upgrade is performed. That upgrade will fail if the `<PREFIX>_WLS` database user is not assigned to the `WLSSchemaDataSource`, or if `<PREFIX>_WLS` is not entered as the "Schema User Name" on the "WLS Schema" page of the Upgrade Assistant.

- Oracle recommends that you use the 12c Oracle WebLogic Administration Console to change the database user to `<PREFIX>_WLS` in the `WLSSchemaDataSource` data source. Doing this will avoid the Upgrade Assistant failure, and also allow the Reconfiguration Wizard to pre-populate fields with the correct values.
- The `<PREFIX>_WLS_RUNTIME` database user is reserved for use with a new `WLSRuntimeSchemaDataSource`, which was introduced in 14c (14.1.2.0.0). This new `WLSRuntimeSchemaDataSource` will be created when the 14c (14.1.2.0.0) Reconfiguration Wizard (reconfig.sh) is used to upgrade the domain.

You can use your Oracle WebLogic 12*c* Administration Console to change the user in the WLSSchemaDataSource from `<PREFIX>_WLS_RUNTIME` to `<PREFIX>_WLS`.

1. Log in the 12*c* (12.2.1.4.0) Administration Console.
2. In the administration console under Domain Structure, expand **Services** (by clicking the **+** next to it). Then click **Data Sources**.
3. If the user in Properties field contains `<PREFIX>_WLS_RUNTIME` , change it to`<PREFIX>_WLS`.
4. Save the change.
5. Use the Change Center to commit the change, if your domain is running in production mode.

Cloning Your Source Environment for Testing

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

Cloning your source 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. Identifying potential upgrade issues in a cloned environment can eliminate unnecessary downtime.

> **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; 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.

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 14c (14.1.2.0.0) 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.

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.

> **Note:**
>
> In this example we are using the name `FMW` for our non-SYSDBA administrator. Substitute `FMW` with your admin name.

When granting privileges, make sure that you specify your actual user names and password for the schemas in your domain.

```
CREATE USER FMW IDENTIFIED BY "<FMW password>";
GRANT pdb_dba TO FMW;
GRANT MANAGE SCHEDULER TO FMW;
GRANT USE ON EDITION ORA$BASE TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_LOB TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_OUTPUT TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_STATS TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aq TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aqadm TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aqin TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aqjms TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON utl_file TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON dbms_lock TO FMW WITH GRANT OPTION;
GRANT SELECT ON sys.V_$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_$SESSION TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_jobs TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_job_run_details TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_running_jobs TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_aq_agents TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.DBMS_SHARED_POOL TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_2pc_pending TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_pending_transactions TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_FLASHBACK TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON dbms_crypto TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON dbms_job TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_job_classes TO FMW WITH GRANT OPTION;
GRANT SELECT ON SYS.DBA_DATA_FILES TO FMW WITH GRANT OPTION;
GRANT SELECT ON SYS.V_$ASM_DISKGROUP TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON SYS.DBMS_ASSERT 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 dba_objects TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_queue_subscribers TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_subscr_registrations TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_RLS TO FMW WITH GRANT OPTION;
```

```
GRANT READ ON CTXSYS.CTX_PENDING TO FMW WITH GRANT OPTION;
GRANT SELECT ON SYS.V_$PARAMETER TO FMW WITH GRANT OPTION;
GRANT CREATE PROCEDURE TO FMW;
GRANT SELECT ON dba_users TO FMW WITH GRANT OPTION;
GRANT ALL ON sys.v_$parameter TO FMW WITH GRANT OPTION;
```

Performing SOA-Specific Pre-Upgrade Tasks

In addition to the Oracle Fusion Middleware pre-upgrade requirements, you may also be required to complete additional SOA-specific upgrade tasks depending on your pre-upgrade environment.

Review the pre-upgrade tasks that apply to the SOA, Business Process Management and integrated products. Perform only those tasks that apply to your environment.

> **Caution:**
>
> Failure to properly prepare for an upgrade may lead to unrecoverable errors and upgrade failures. Make sure that you have completed all applicable pre-upgrade tasks before beginning the upgrade.

Pre-Upgrade Task	More Information
Required Verify that your environment meets the Oracle Database requirements for upgrading to Oracle SOA Suite and BPM 14c (14.1.2.0.0)	Upgrading and Preparing the Fusion Middleware Database for a SOA Suite Upgrade
SOA Composer Users Only: Note that uncommitted changes are not available after upgrade.	Committing SOA Composer Changes Before Upgrade
Required only if you are upgrading from a previous 12c release. Delete the existing cloudsdk deployment from the domain before upgrade.	Deleting the cloudsdk Application when Upgrading from a Previous 12c Release
Optional Upgrade your standalone Oracle HTTP Server. This can be done before or after the upgrade.	Upgrading a Standalone Oracle HTTP Server

Upgrading and Preparing the Fusion Middleware Database for a SOA Suite Upgrade

You must have a supported database configured with the required schemas before you can run Fusion Middleware 14c (14.1.2.0.0).

It is imperative that you understand the Oracle Database requirements for upgrading to Oracle SOA Suite and BPM 14c (14.1.2.0.0), and ensure that the database hosting Oracle Fusion Middleware is supported and has sufficient space to perform an upgrade. You must have a supported database configured with the required schemas before you can run Fusion Middleware 14c (14.1.2.0.0). Always refer to the latest database certification matrix for the most current information.

As part of the Fusion Middleware pre-upgrade process, you verified that your database is supported. However it is important to note that when installing or identifying a database to use

with Oracle SOA Suite, there are additional considerations, including the size and profile of the database and its ability to store data for large numbers of Oracle SOA Suite composite applications. For more information, see the following resources:

- About the Database Profile Custom Variable in *Installing and Configuring Oracle SOA Suite and Business Process Management*
- Introduction to SOA Composite Applicationand Identifying the Profile or Size of the Database in *Administering Oracle SOA Suite and Oracle Business Process Management Suite*

Committing SOA Composer Changes Before Upgrade

If you do not commit or rollback your changes to the SOA Composer sandbox before you upgrade, your changes may not be propagated to the new environment.

Before you start the upgrade, make sure that you have committed or rolled back any changes that you do or do not want propagated to the upgraded environment.

Deleting the cloudsdk Application when Upgrading from a Previous 12c Release

If you installed cloudsdk in your pre-upgrade environment, you must delete it before starting the upgrade.

This step is required only if cloudsdk was deployed in a previous 12c release.

The 14c (14.1.2.0.0) version of cloudsdk is automatically deployed on the servers and could conflict with the previously deployed application due to a change in the naming conventions.

1. Login into the Oracle Enterprise Manager (EM) console.

   Enter the URL in your Web browser. For example:
   `http://host1.example.com:7001/em`

   Enter the Oracle Fusion Middleware administrator user name and password and click **Login**.
2. Click **Deployments** from the Domain Configuration panel of the console.

   (Optional) Enter the result of the step only if necessary. Do not state the obvious results. Tasks should be as concise as possible.
3. Click the **Control** tab.
4. Select **cloudsdk** and click **Stop - Force stop now.**
5. Click **Configuration.**
6. Select **cloudsdk** and click **Delete**.
7. Click on **Release configuration.**

Performing Pre-Upgrade Tasks for Oracle Service Bus (OSB)

You must complete the required pre-upgrade tasks for Oracle Service Bus (OSB) if you are upgrading OSB as part of your SOA Suite upgrade.

If you are upgrading a SOA domain with Oracle Service Bus, you must preform several required pre-upgrade tasks. See Performing Pre-Upgrade Tasks for Oracle Service Bus (OSB).

Upgrading a Standalone Oracle HTTP Server

If you are upgrading a standalone Oracle HTTP Server, then you should follow the instructions in *Upgrading Oracle HTTP Server*.

This optional step can be performed before or after the upgrade.

To upgrade a standalone Oracle HTTP Server instance (one that is *not* associated with a 14c (14.1.2.0.0) domain) or to upgrade the HTTP server at another time, refer to Upgrading a Standalone Oracle HTTP Server in *Upgrading Oracle HTTP Server*.

> **Note:**
>
> Managed Oracle HTTP Servers, those that are associated with an existing domain, are upgraded automatically during the Infrastructure upgrade process. You do not have to upgrade your managed HTTP Server separately.

3

Upgrading SOA Suite and Business Process Management

This section provides the end-to-end procedure for upgrading a SOA Suite with Business Process Management production installation to SOA Suite with Business Process Management 14c (14.1.2.0.0).

> **Note:**
>
> Oracle strongly recommends that you create a copy of your actual production environment, upgrade the cloned environment, verify that the upgraded components work as expected, and then (and only then) upgrade your production environment.
>
> Identifying potential upgrade issues in a cloned environment can eliminate unnecessary downtime of your production environment.

About the SOA Suite and BPM Upgrade Process Flow

This flowchart and the accompanying text describe the high-level steps for upgrading the Oracle Fusion Middleware SOA Suite 12*c* (12.2.1.4) to 14c (14.1.2.0.0).
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.

Figure 3-1 Upgrade Process Flowchart for SOA Suite and BPM

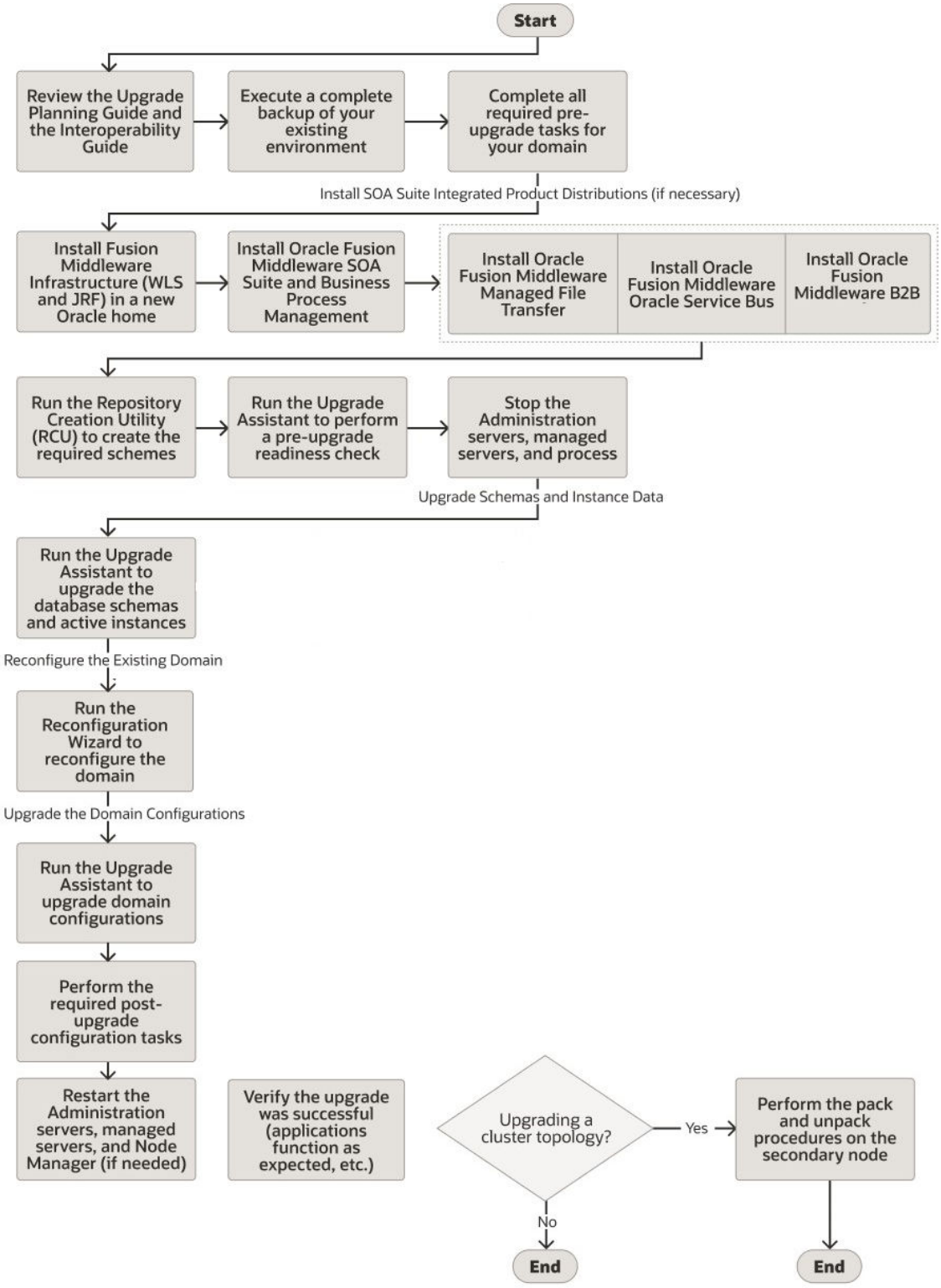


Table 3-1 Task Descriptions for Upgrading Oracle SOA Suite

Description	More Information
Required If you have not done so already, perform all of the required pre-upgrade tasks for the components you are upgrading.	**CAUTION**: Be sure to create a complete backup of your existing domain before you begin the upgrade.
Required Create a new 14c (14.1.2.0.0) Oracle home on the target host.	Create a directory for the 14c (14.1.2.0.0) binaries, for example: `1412_ORACLE_HOME`
Required You must install Fusion Middleware Infrastructure 14c (14.1.2.0.0) in a **NEW Oracle home** before you begin the upgrade.	**CAUTION**: Install the product distributions but do not use the Configuration Wizard to configure the newly installed domain. You will use the Reconfiguration Wizard during the upgrade to configure the existing domain.
Required Install SOA Suite and Business Process Management 14c (14.1.2.0.0) and any integrated SOA-integrated distributions (such as Oracle HTTP Server and Oracle Service Bus) in your newly created Oracle home.	You must install the Fusion Middleware 14c (14.1.2.0.0) distributions for each SOA-integrated product you are upgrading. For example, if you are upgrading a SOA environment with Oracle Service Bus, you must acquire the Oracle Service Bus distribution as well as the Oracle SOA Suite and BPM 14c (14.1.2.0.0) distribution.
Optional Run a pre-upgrade readiness check with the Upgrade Assistant	Run the Upgrade Assistant in Readiness Mode before you begin the upgrade to identify any potential issues with the pre-upgrade environment that could cause the upgrade to fail. If necessary, fix the issues and run the readiness check again.
Required Stop all Administration and Managed Servers.	**WARNING**: Failure to shut down your servers during an upgrade may lead to data corruption.
Required Run the Upgrade Assistant to upgrade the database schemas and to migrate all active (in flight) instance data.	The Upgrade Assistant will detect missing schemas and attempt to create them for you. These schemas are created using the default schema settings and cannot be modified. If you require specific settings for your schemas, use the Repository Creation Utility (RCU). **NOTE:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 14c (14.1.2.0.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.
Required Run the Reconfiguration Wizard to reconfigure the domain and node manager.	Use the Reconfiguration Wizard to update the existing domain to use the newly installed software.
Required Run the Upgrade Assistant (again) to upgrade domain configurations.	The Upgrade Assistant is used to update the reconfigured domain's component configurations.
Required Perform the required post-upgrade configuration tasks (if needed).	Your components may not require any additional post-upgrade procedures.

Table 3-1 (Cont.) Task Descriptions for Upgrading Oracle SOA Suite

Description	More Information
Required As part of the upgrade verification process, Oracle recommends that you start the new Administration and Managed Servers and node manager to ensure there are no issues.	Oracle recommends that you ensure all of the upgraded components are working as expected before deleting your backups.
Required for Cluster Upgrades Once you have verified that the upgrade was successful, you will need to propagate the environment to the other host.	Propagating Domain Configuration to Another Host

Installing the 14c (14.1.2.0.0) Product Distributions for Oracle SOA Suite and Business Process Management

Before beginning your upgrade, use the Oracle Universal Installer to install the Oracle Fusion Middleware Infrastructure distribution, the Oracle SOA Suite and Business Process Management 14c (14.1.2.0.0) distribution, and any other SOA Suite products on the target system.

> **Note:**
>
> When Infrastructure is required for the upgrade, you must install the Oracle Fusion Middleware Infrastructure distribution first before you install other Fusion Middleware products. If your JDK is not supported, or you do not have a JDK installed, you must download the required Java SE JDK before you begin

Before you begin, note the following:

- You must install the 14c (14.1.2.0.0) distributions into a new Oracle home. Do not attempt to reuse the existing Oracle home for this upgrade. Upgrading to 14c (14.1.2.0.0) is not a patch release.
- Oracle SOA Suite requires the Oracle Fusion Middleware Infrastructure (Oracle WebLogic Server and JRF).

  Installing Fusion Middleware Infrastructure creates an Oracle home directory and lays supporting software to install other Fusion Middleware products.
- If your SOA domain has other SOA-integrated components, such as Oracle Service Bus, Managed File Transfer, or Oracle B2B, you must install those distributions into the same new Oracle home. Oracle Business Activity Monitoring and Business Process Management are part of the generic SOA distribution.

To install the Oracle SOA Suite component distributions:

1. Sign in to the target system.
2. Download the following distributions from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Fusion Middleware Infrastructure distribution (`fmw_14.1.2.0.0_infrastructure_generic.jar`)

- Fusion Middleware SOA Suite and Business Process Management distribution (`fmw_14.1.2.0.0_soa_generic.jar`)
- If you are running Managed File Transfer, Oracle Service Bus or Oracle B2B, download the Managed File Transfer distribution (`fmw_14.1.2.0.0_mft_generic.jar`), Oracle Service Bus (`fmw_14.1.2.0.0_osb_generic.jar`), and Oracle B2B (`fmw_14.1.2.0.0_b2b_generic.jar`)

3. Change to the directory where you downloaded the 14c (14.1.2.0.0) product distribution.
4. Start the installation program for Oracle Fusion Middleware Infrastructure:
   - (UNIX) *JDK_HOME*`/bin/java -jar fmw_14.1.2.0.0_infrastructure_generic.jar`
   - (Windows) *JDK_HOME*`\bin\java -jar fmw_14.1.2.0.0_infrastructure_generic.jar`

> **Note:**
>
> When you install the Oracle Fusion Middleware Release 14c (14.1.2.0.0) 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 14c (14.1.2.0.0) files and directories.

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 Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.

9. On the Installation Type screen, select the product(s) to install. Product dependencies will be automatically selected, and 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 the Infrastructure, repeat steps 3 through 13 to install the other product distributions.

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.

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`
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, set the `DISPLAY` environment variable to the system name or IP address of your local workstation, and rerun Upgrade Assistant.
>
> If you continue to receive these errors after setting `DISPLAY`, try launching another GUI tool, such as `vncconfig`. If you see the same errors, your `DISPLAY` environment variable may still not be set correctly.

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

Upgrade Assistant Parameters

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

Table 3-2 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **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. Schemas and configurations are checked. 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. 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. 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: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. 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 3-2 (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. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *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 domain directory.
   - Specify schema credentials to connect to the selected schema: **Database Type**, **DBA User Name**, and **DBA Password**. 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**.

     > **Note:**
     >
     > The Upgrade Assistant automatically enables default credentials. If you are unable to connect, make sure that you manually enter the credentials for your schema before you continue.

   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.

   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 3-3 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_common/upgrade/logs`	The directory location of the generated log file.	No action required.
Domain Directory	Displays the domain location	No action required.
Readiness report location `/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 3-3 (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.

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 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, 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 Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

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

> **Note:**
>
> It is important that you stop the following servers in the correct order.

Step 1: Stop System Components

To stop system components, such as Oracle HTTP Server, use the `stopComponent` script:

- (UNIX) *EXISTING_DOMAIN_HOME*`/bin/stopComponent.sh` *component_name*
- (Windows) *EXISTING_DOMAIN_HOME*`\bin\stopComponent.cmd` *component_name*

You can stop system components in any order.

Step 2: Stop Any Managed Servers

To stop a WebLogic Server Managed Server, use the `stopManagedWebLogic` script:

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

When prompted, enter your user name and password.

Stop SOA servers and processes in this order:

1. Business Activity Monitoring (BAM) Managed Server
2. Oracle Service Bus (OSB) Managed Server
3. Service-Oriented Architecture (SOA) Managed Server
4. Oracle Web Services Manager (OWSM) Managed Server

Step 3: Stop the Administration Server

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

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

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

Step 4: Stop Node Manager

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

Alternatively, after setting 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 Oracle WebLogic Server*.

Upgrading Schemas with the Upgrade Assistant

If you are upgrading non-partitioned schemas, follow the steps described in Upgrading Schemas with the Upgrade Assistant. If you are upgrading partioned schemas, follow the steps described in Upgrading Partitioned Schemas.

> **Note:**
>
> Make sure that you select the procedure for your schema configuration. Partitioned schemas cannot be upgraded using the Upgrade Assistant.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade your 12.2.1.4.0 schemas to the 14c (14.1.2.0.0) release of Oracle Fusion Middleware.

> **Note:**
>
> If your domain has the `WLSSchemaDataSource` data source, then you will need to verify which database user is assigned to it. If `<PREFIX>_WLS_RUNTIME` is assigned to it, then you need to change that to `<PREFIX>_WLS` . For more information, see Verify the Database User for the WLSSchemaDataSource Data Source.

> **Note:**
>
> As of 14c (14.1.2.0.0) the following schema changes have been made to help you prepare for an optional zero downtime upgrade to a future release:
>
> - Schemas created prior to 14c (14.1.2.0.0) with editions disabled and then upgraded to 14c (14.1.2.0.0) will become editions enabled.
> - Schemas created in 14c (14.1.2.0.0) will be created with editions enabled.

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.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.0.0).

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 set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

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

Upgrade Assistant Parameters

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

Table 3-4 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **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. Schemas and configurations are checked. 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. The value must be a positive integer in the range 1 to 8. The default is 4.

Table 3-4 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-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. 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: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. 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. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading SOA Schemas Using the Upgrade Assistant

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

Caution: Complete all required prerequisites before you begin the upgrade. For example, as of 14.1.2.0.0 if your existing domain has a `WLSSchemaDataSource` data source, then you must verify which database user is assigned to it. If `<PREFIX>_WLS_RUNTIME` is assigned to it, then you need to change that to `<PREFIX>_WLS`. For more information see Verify the Database User for the WLSSchemaDataSource Data Source.

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:

   - **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.

   - **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 14c (14.1.2.0.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 14c (14.1.2.0.0).

   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.

For example, when Oracle SOA is selected, the Oracle SOA (_SOAINFRA), Audit Services (_IAU), Metadata Service (_MDS), Oracle Platform Security Services (_OPSS), and User Messaging Services (_UMS) schemas will be included in the upgrade.

When Managed File Transfer is selected, Audit Services (_IAU), Enterprise Scheduler (_ESS) and Platform Security Services (OPSS) will be included in the upgrade.

4. The Domain Directory screen appears when Oracle Platform Security Services or Oracle Audit Services is selected on the Available Components screen. Enter the absolute path to the existing WebLogic domain directory, or click Browse to navigate to and select the domain directory you are upgrading
5. 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.

6. 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):

Element	Description
Database Type	The database type chosen for upgrade must be identical to the database type that was selected when RCU originally created the schema. If you select Oracle Edition-Based Redefinition (EBR) as the database type, the schema that you are upgrading also must have been created by RCU as the EBR database type. In particular, Upgrade Assistant never converts schemas from one database type to another.
Edition Name	For database type "Oracle Database enabled for edition-based redefinition" (EBR database) you will need to enter the name of an existing Edition in the **Edition Name** element field. The database schema upgrade will occur in the edition you have chosen.
Database Connect String	Enter the location of the database. For example, if you are selecting an Oracle database, the following URL format could be used: *host*:*port*/*db_service_name* 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 14c (14.1.2.0.0). **Note:** If your database version is no longer supported, you must upgrade to a supported version before starting an upgrade.

Element	Description
DBA User Name	Enter the database user name used to connect to the database. Oracle Database Users Only: If SSL authentication is used, then the DBA User Name field may be optional. If you do provide a DBA User Name, then the information will be used during the database authentication. For Oracle database users, if you are not running as SYS or SYSDBA, then user of Upgrade Assistant must have all of the privileges granted in the FMW user account. Refer to your component-specific upgrade documentation for more information on creating a non-sysdba user to run Upgrade Assistant.
DBA Password	Enter the password associated with the specified DBA database user. Oracle Database Users Only: If SSL authentication is used, then the DBA Password field may be optional. If you do provide a DBA user name and password, then the information will be used during the database authentication.
Schema User Name	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.
Schema Password	Enter the password associated with the specified schema user name.

7. 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.

8. On the Upgrade Summary screen, review the summary of the schemas that will be upgraded and/or created.

   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 **Next** .

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 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**.

10. If the upgrade is successful: On the Upgrade Success screen, 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 *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.

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. Be sure to replace <*PREFIX*> with your schema prefix.

```
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, EDITION NAME, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY where owner like '<PREFIX>_%';
```

In the query result:

- Verify that the `EDITION NAME` column appears as `ORA$BASE`.
- 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 14.1.2.0.0.

> **Note:**
>
> Not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- 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` will appear as `INVALID`, but that does not indicate a failure.

  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 14c (14.1.2.0.0).

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only.

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 Management (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/init-info/domain-info.xml` that are similar to this example:

```
<!--extention-template-ref name="Oracle Identity Navigator"
  version="14.1.2.0.0"
  location="/u01/app/oracle/product/fmw/iam111130/common/templates/
applications/yourcomany.oinav_14.1.2.0.0_template.jar"
  symbol=""/-->

<!--install-comp-ref name="oracle.idm.oinav" version="14.1.2.0.0"
  symbol="yourcompany.idm.oinav_14.1.2.0.0_iam141200_ORACLE_HOME"
  product_home="/u01/app/oracle/product/fmw/iam141200"/-->
```

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

```
<!--app-deployment>
  <name>oinav#14.1.2.0.0</name>
  <target>AdminServer</target>
  <module-type>ear</module-type>

  <source-path>/u01/app/oracle/product/fmw/iam141200/oinav/modules/
oinav.ear_14.1.2.0.0/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.

Backing Up the Domain

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

1. Create a backup of the domain directory.
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 collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a command prompt window (on Windows operating systems).
3. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/common/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\commom\bin`
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.

> **Note:**
>
> When you run this command, the following error message might appear to indicate that the default cache directory is not valid:
>
> ```
> *sys-package-mgr*: can't create package cache dir
> ```
>
> You can change the cache directory by setting the environment variable `CONFIG_JVM_ARGS`. For example:
>
> ```
> CONFIG_JVM_ARGS=-Dpython.cachedir=valid_directory
> ```

Reconfiguring the SOA Domain with the Reconfiguration Wizard

You must first reconfigure your existing domain using the Reconfiguration Wizard before running the Upgrade Assistant to configure domain component configurations.

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the pack/unpack utility to apply the changes to other cluster members in the domain.

To reconfigure the domain:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the 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).
   - Scripts and other files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
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 14c (14.1.2.0.0) is 17.0.12 and later. Click **Next**.

> **Note:**
>
> You cannot change the **Domain Mode** at this stage. Your domain will retain its pre-upgrade domain mode. If you want to change the domain to secure mode, then after the upgrade see Changing Domain Mode Post Upgrade.

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 (<*PREFIX*>_STB) schema.

   Note: <*PREFIX*> is the RCU schema prefix of the 12.2.1.4 domain that is being upgraded.

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

   The Reconfiguration Wizard uses this connection to automatically update 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.

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

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**.

6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

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

7. On the Advanced Configuration screen, 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:**
   >
   > The optional categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain. Some common categories are described below.

   Advanced Configuration > Managed Servers:
   You must specify the actual hostname for the Listen Address for each managed server in your domain.

Do not use the default `localhost` or `All Local Addresses` option.

You must specify the actual hostname as `hostname.yourcompany.com`

Managed Servers >Targeting Server Groups

If you are upgrading a domain that was created in 12*c* (12.2.1.4.0), you MUST target your servers to the correct Server Groups during the domain reconfiguration phase of the upgrade. Failure to target these servers may result in a failed upgrade and excess downtime.

a. On the **Managed Servers** screen, target each server to the correct **Server Group** by selecting the correct group name from the Server Groups drop-down menu.

b. Verify that Each of the servers is targeted to the correct server group and should not show as Unspecified.

Component and Server	Server Group
SOA (soa_server1)	SOA-MGD-SVRS-ONLY
Oracle Service Bus - OSB (osb_server1)	OSB-MGD-SVRS-ONLY
Business Activity Monitoring - BAM (bam_server1)	BAM-MGD-SVRS-ONLY
Managed File Transfer - MFT (mft_server1)	MFT-MGD-SVRS-ONLY

Advanced Configuration > Assign Servers to Machines

If you have created servers as part of the upgrade process, then select the server name in the Servers list box and target them to the correct Node Manager Machine.

Otherwise, no action is required on this screen when you are upgrading or reconfiguring the domain.

Advanced Configuration > Assign Servers to Clusters

Cluster Upgrades Only: If you are upgrading clusters, use this screen to assign Managed Servers to clusters.

Note that only Managed Servers are displayed in the Server list box. The Administration Server is not listed because it cannot be assigned to a cluster.

> **Note:**
>
> When OWSMPM is in its own cluster and not part of SOA or OSB clusters:
>
> - Target only SOA-MGD-SVRS-ONLY user extensible server group to the SOA cluster
> - Target only OSB-MGD-SVRS-ONLY to the OSB cluster
> - Target WSMPM-MAN-SVER server group to OWSM

8. 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.

9. 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**.

10. 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 again 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 14c (14.1.2.0.0).

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 set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

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

Upgrade Assistant Parameters

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

Table 3-5 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **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. Schemas and configurations are checked. 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. 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. Do not specify this parameter if you have specified the `-readiness` parameter.

Table 3-5 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. 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. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Domain Components Using the Upgrade Assistant

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 Oracle Analytics server, 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.

   Click **Next**.
3. If your pre-upgrade environment has multiple WebLogic domains, but the Oracle Web Services Manager (OWSM) Policy Manager is in only one domain, and OWSM agents are in the other domains: On the OWSM Policy Manager screen, provide the credentials for the WebLogic Administration Server domain where the Oracle Web Services Manager (OWSM) Policy Manager is deployed.
4. 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.
5. 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.

6. 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.

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 *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.

4

Upgrading Oracle Service Bus (without Oracle SOA Suite)

Describes the upgrade-specific tasks for upgrading Oracle Service Bus without Oracle SOA Suite and Business Process Management.

> **Note:**
>
> If Oracle Service Bus is part of your existing 12*c* domain, and you will be upgrading Oracle Service Bus as part of your Oracle SOA Suite upgrade to 14c (14.1.2.0.0), follow the standard upgrade process described in Upgrading SOA Suite and Business Process Management.

Understanding the Oracle Service Bus Standalone Upgrade

Follow this process flow to upgrade an Oracle Service Bus 12*c* (12.2.1.4.0) deployment that does not include Oracle SOA Suite.

Oracle Service Bus (OSB) can be upgraded to 14c (14.1.2.0.0) with or without Oracle SOA Suite and Business Process Management. The upgrade steps in this topic describe how to upgrade Oracle Service Bus without SOA.

If Oracle Service Bus is part of your existing SOA 12c domain, and you will be upgrading Oracle Service Bus as part of your Oracle SOA Suite upgrade to 14c (14.1.2.0.0), follow the standard upgrade process described in Upgrading SOA Suite and Business Process Management.

> **Note:**
>
> Even though your domain does not include SOA, you will still have to upgrade the `_SOAINFRA` schema to upgrade Oracle Service Bus metadata. Oracle Service Bus does not have a separate schema.

Task	Description
Required Export services, projects and resources when upgrading Oracle Service Bus	You must export services, projects and resources into a configuration JAR file before you can upgrade to Oracle Service Bus 14c (14.1.2.0.0). After the upgrade, you will import the JAR file to the new environment.
Required Delete all services, projects and resources from the existing environment.	After the export, you must delete all user-created services, projects and resources before the upgrade.
Required Install the 14c (14.1.2.0.0) Oracle Fusion Middleware Infrastructure distribution into a new Oracle home.	You must install the 14c (14.1.2.0.0) Infrastructure (which includes Oracle WebLogic Server and JRF components).

Task	Description
Required Install Oracle Service Bus into a new Oracle home.	Obtain the Oracle Service Bus distribution and install the content to a new Oracle home.
Required Stop all servers and processes.	You must stop all servers and processes before starting the upgrade.
Required Run the Upgrade Assistant to upgrade the required schemas.	The `_SOAINFRA` schema must be upgraded to 14c (14.1.2.0.0).
Required Run the Reconfiguration Wizard to reconfigure the existing domain.	You will continue to use the existing domain after the upgrade, so it must be reconfigured to work with the new components.
Required Run the Upgrade Assistant to configure the component configurations.	You will run the Upgrade Assistant a second time to update the component configuration to work in the new domain.
Required Perform all post-upgrade tasks.	Perform the standard post-upgrade tasks, as well as any post-upgrade OSB-specific tasks, that apply to your deployment.

Upgrade Limitations for Oracle Service Bus

If your Oracle Service Bus topology is configured with more than one component within a single domain, then you will not be able to upgrade to 14c (14.1.2.0.0)

Upgrading Multiple Components that use UMS in a Single OSB Domain (Not Supported)

Certain Fusion Middleware components such as Oracle SOA, Oracle Service Bus (OSB) and Business Activity Monitoring (BAM) have a dependency on User Messaging Service (UMS). If you configure more than one of these components within a single 14c (14.1.2.0.0) domain, then **each of these components must run within its own cluster** — even if there is only one server that runs that component.

In order to upgrade these components, you must create a separate cluster for each component during the domain reconfiguration as described in Clusters.

The supported upgrade topology for these components is described in Upgrading a Clustered Topology .

Performing Pre-Upgrade Tasks for Oracle Service Bus (OSB)

If you are upgrading Oracle Service Bus, you must perform the following tasks before you begin the upgrade. Review your own use case scenarios and existing deployment to determine if the following tasks apply to your environment.

Exporting Services, Projects and Resources when Upgrading Oracle Service Bus

You must export your existing services, projects and resources into a configuration JAR file before you can upgrade to Oracle Service Bus 14c (14.1.2.0.0). After the upgrade, you will import the JAR file to the new environment.

> **Note:**
>
> While WebLogic Server allows forward slashes in JNDI names, such as "`myqueues/myqueue`", JNDI names with forward slashes interfere with the URI format required by Service Bus, and you cannot use those names. To work around this issue, define a JMS foreign server and reference that foreign server in the URI.
>
> See Configure foreign servers in the Oracle WebLogic Server Administration Console Online Help.

Note that you can manually export resources and services from older, supported releases. See Migrating Oracle Service Bus Resources from Previous Releases.

For more information, see Importing and Exporting Resources and Configurations in *Developing Services with Oracle Service Bus*.

Deleting All Services, Projects and Resources

After the export, you must delete all user-created services, projects and resources before the upgrade.

For information on using the Oracle Service Bus Console to delete resources, see How to Delete Projects, Folders, and Resources.

For information on using JDeveloper to delete resources, see How to Delete a Project or Resource.

Migrating Oracle Service Bus Resources from Previous Releases

You can manually export resources and services and use them with Oracle Service Bus 14c (14.1.2.0.0):

For more information, see Importing and Exporting Resources and Configurations in *Developing Services with Oracle Service Bus*.

Installing Oracle Service Bus

Use the Oracle Universal Installer to install the required product distribution on the target system. You can install and upgrade Oracle Service Bus without Oracle SOA Suite and Business Process Management, but you must still install the Oracle Fusion Middleware Infrastructure 14c (14.1.2.0.0) before upgrading Oracle Service Bus.

> **Note:**
>
> When Infrastructure is required for the upgrade, you must install the Oracle Fusion Middleware Infrastructure distribution first before you install other Fusion Middleware products. If your JDK is not supported, or you do not have a JDK installed, you must download the required Java SE JDK before you begin

Before you begin, note the following:

- Oracle Service Bus requires the Oracle Fusion Middleware Infrastructure (Oracle WebLogic Server and JRF).
- If you want to use Oracle Web Services Manager policies with Oracle Service Bus, then you must select the Oracle Web Services Manager extension template after selecting one of the Oracle Service Bus domain templates when configuring the Oracle WebLogic domain.

To install the required distributions for Oracle Service Bus:

1. Sign in to the target system.
2. Download the Oracle Fusion Middleware Infrastructure (`fmw_14.1.2.0.0_infrastructure.jar`) from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Fusion Middleware Infrastructure distribution (`fmw_14.1.2.0.0_infrastructure.jar`)
   - Oracle Service Bus (`fmw_14.1.2.0.0_osb.jar`)
3. Change to the directory where you downloaded the 14c (14.1.2.0.0) product distribution.
4. Start the installation program for Oracle Fusion Middleware Infrastructure:
   - (UNIX) *JDK_HOME*`/bin/java -jar fmw_14.1.2.0.0_infrastructure_generic.jar`
   - (Windows) *JDK_HOME*`\bin\java -jar fmw_14.1.2.0.0_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 Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.
8. On the Installation Type screen, select the product(s) to install. Product dependencies will be automatically selected and click **Next**.
9. 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).
10. 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.

11. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.
12. 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.
13. After you have installed the Infrastructure, repeat steps 3 through 11 to install the Oracle Service Bus distribution.

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 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, 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 Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

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

> **Note:**
>
> It is important that you stop the following servers in the correct order.

Step 1: Stop System Components

To stop system components, such as Oracle HTTP Server, use the `stopComponent` script:

- (UNIX) *`EXISTING_DOMAIN_HOME`*`/bin/stopComponent.sh` *`component_name`*
- (Windows) *`EXISTING_DOMAIN_HOME`*`\bin\stopComponent.cmd` *`component_name`*

You can stop system components in any order.

Step 2: Stop Any Managed Servers

To stop a WebLogic Server Managed Server, use the `stopManagedWebLogic` script:

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

When prompted, enter your user name and password.

Stop SOA servers and processes in this order:

1. Business Activity Monitoring (BAM) Managed Server
2. Oracle Service Bus (OSB) Managed Server
3. Service-Oriented Architecture (SOA) Managed Server
4. Oracle Web Services Manager (OWSM) Managed Server

Step 3: Stop the Administration Server

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

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

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

Step 4: Stop Node Manager

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

Alternatively, after setting 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 Oracle WebLogic Server*.

Upgrading Schemas with the Upgrade Assistant

> **Note:**
>
> For Service Bus this step is only required if there are schemas in the domain that must be upgraded. If you just created the required schemas using the RCU, and there are no other schemas in the domain, you can skip this step and move to the Reconfiguration Wizard step.

Although there is no Oracle Service Bus schema, the database schema data for Oracle Service Bus is incorporated in the SOAINFRA schema. Therefore, to upgrade Oracle Service Bus, you must upgrade the SOAINFRA schema — if it exists.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.0.0).

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 set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

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

Upgrade Assistant Parameters

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

Table 4-1 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **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. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.

Table 4-1 (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. 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. 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: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. 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 4-1 (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. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading SOA Schemas Using the Upgrade Assistant

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

Run the Upgrade Assistant to upgrade any product schemas in the Service Bus domain. The Upgrade Assistant can also detect which schemas are required and will create them for you (if you did not use the RCU to create them in the previous step).

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:
   - **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.

- **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 14c (14.1.2.0.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 14c (14.1.2.0.0).

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.
4. The Domain Directory screen appears when Oracle Platform Security Services or Oracle Audit Services is selected on the Available Components screen. Enter the absolute path to the existing WebLogic domain directory, or click Browse to navigate to and select the domain directory you are upgrading
5. 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.

6. On the Schema Credentials screen, 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.
7. On the Create Schemas screen, specify if you want the Upgrade Assistant to create the missing schemas. By default the **Create missing schemas for the specified domain** option is enabled.`The Upgrade Assistant will attempt to create the missing schemas for the domain using the database connection details and schema owner name provided. The Upgrade Assistant creates the schemas using the default settings.`Select **Use same passwords for all schemas** if the same password is used for all schemas. Enter and confirm the password in the table. You only have to supply the password once.

> **Note:**
>
> Do not allow the Upgrade Assistant to create schemas for you if you require customized options for your schemas. The schemas are created using the default Repository Creation Utility settings. For example, if your schemas require additional tablespace, you must use the RCU to create the schemas.
>
> If you do not want the Upgrade Assistant to create these schemas for you, deselect this option and click **Next**. You will have to run the Repository Creation Utility to create the schemas.

8. 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.

9. On the Upgrade Summary screen, review the summary of the schemas that will be upgraded and/or created.

   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 **Next** .

10. 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**.

11. If the upgrade is successful: On the Upgrade Success screen, 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 *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.

About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 14c (14.1.2.0.0).

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only.

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 Management (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/init-info/domain-info.xml` that are similar to this example:

```
<!--extention-template-ref name="Oracle Identity Navigator"
  version="14.1.2.0.0"
  location="/u01/app/oracle/product/fmw/iam111130/common/templates/
applications/yourcomany.oinav_14.1.2.0.0_template.jar"
  symbol=""/-->

<!--install-comp-ref name="oracle.idm.oinav" version="14.1.2.0.0"
  symbol="yourcompany.idm.oinav_14.1.2.0.0_iam141200_ORACLE_HOME"
  product_home="/u01/app/oracle/product/fmw/iam141200"/-->
```

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

```
<!--app-deployment>
  <name>oinav#14.1.2.0.0</name>
  <target>AdminServer</target>
  <module-type>ear</module-type>

  <source-path>/u01/app/oracle/product/fmw/iam141200/oinav/modules/
oinav.ear_14.1.2.0.0/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.

Backing Up the Domain

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

1. Create a backup of the domain directory.
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 collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a command prompt window (on Windows operating systems).
3. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/common/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\commom\bin`
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.

> **Note:**
>
> When you run this command, the following error message might appear to indicate that the default cache directory is not valid:
>
> ```
> *sys-package-mgr*: can't create package cache dir
> ```
>
> You can change the cache directory by setting the environment variable `CONFIG_JVM_ARGS`. For example:
>
> ```
> CONFIG_JVM_ARGS=-Dpython.cachedir=valid_directory
> ```

Reconfiguring the SOA Domain with the Reconfiguration Wizard

You must first reconfigure your existing domain using the Reconfiguration Wizard before running the Upgrade Assistant to configure domain component configurations.

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the pack/unpack utility to apply the changes to other cluster members in the domain.

To reconfigure the domain:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the 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).
   - Scripts and other files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
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 14c (14.1.2.0.0) is 17.0.12 and later. Click **Next**.

> **Note:**
>
> You cannot change the **Domain Mode** at this stage. Your domain will retain its pre-upgrade domain mode. If you want to change the domain to secure mode, then after the upgrade see Changing Domain Mode Post Upgrade.

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 (<*PREFIX*>_STB) schema.

   Note: <*PREFIX*> is the RCU schema prefix of the 12.2.1.4 domain that is being upgraded.

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

   The Reconfiguration Wizard uses this connection to automatically update 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.

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

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**.

6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

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

7. On the Advanced Configuration screen, 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:**
   >
   > The optional categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain. Some common categories are described below.

   Advanced Configuration > Managed Servers:
   You must specify the actual hostname for the Listen Address for each managed server in your domain.

Do not use the default `localhost` or `All Local Addresses` option.

You must specify the actual hostname as `hostname.yourcompany.com`

Managed Servers >Targeting Server Groups

If you are upgrading a domain that was created in 12*c* (12.2.1.4.0), you MUST target your servers to the correct Server Groups during the domain reconfiguration phase of the upgrade. Failure to target these servers may result in a failed upgrade and excess downtime.

a. On the **Managed Servers** screen, target each server to the correct **Server Group** by selecting the correct group name from the Server Groups drop-down menu.

b. Verify that Each of the servers is targeted to the correct server group and should not show as Unspecified.

Component and Server	Server Group
SOA (soa_server1)	SOA-MGD-SVRS-ONLY
Oracle Service Bus - OSB (osb_server1)	OSB-MGD-SVRS-ONLY
Business Activity Monitoring - BAM (bam_server1)	BAM-MGD-SVRS-ONLY
Managed File Transfer - MFT (mft_server1)	MFT-MGD-SVRS-ONLY

Advanced Configuration > Assign Servers to Machines

If you have created servers as part of the upgrade process, then select the server name in the Servers list box and target them to the correct Node Manager Machine.

Otherwise, no action is required on this screen when you are upgrading or reconfiguring the domain.

Advanced Configuration > Assign Servers to Clusters

Cluster Upgrades Only: If you are upgrading clusters, use this screen to assign Managed Servers to clusters.

Note that only Managed Servers are displayed in the Server list box. The Administration Server is not listed because it cannot be assigned to a cluster.

> **Note:**
>
> When OWSMPM is in its own cluster and not part of SOA or OSB clusters:
>
> - Target only SOA-MGD-SVRS-ONLY user extensible server group to the SOA cluster
> - Target only OSB-MGD-SVRS-ONLY to the OSB cluster
> - Target WSMPM-MAN-SVER server group to OWSM

8. 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.

9. 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**.

10. 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 again 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 14c (14.1.2.0.0).

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 set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

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

Upgrade Assistant Parameters

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

Table 4-2 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **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. Schemas and configurations are checked. 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. 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. Do not specify this parameter if you have specified the `-readiness` parameter.

Table 4-2 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. 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. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Domain Components Using the Upgrade Assistant

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 Oracle Analytics server, 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.

   Click **Next**.
3. If your pre-upgrade environment has multiple WebLogic domains, but the Oracle Web Services Manager (OWSM) Policy Manager is in only one domain, and OWSM agents are in the other domains: On the OWSM Policy Manager screen, provide the credentials for the WebLogic Administration Server domain where the Oracle Web Services Manager (OWSM) Policy Manager is deployed.
4. 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.
5. 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.

6. 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.

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 *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 for Oracle Service Bus

After a successful upgrade, you may need to perform one or more of the following tasks. Review your own use case scenarios and existing deployment to determine if the following tasks apply to your environment.

> **Note:**
>
> If you experience any post-upgrade issues with Oracle Service Bus, refer to Troubleshooting Oracle Service Bus for a list of common solutions.

Configuring Oracle HTTP Server for the WLS_OSB Managed Servers

To enable Oracle HTTP Server to route to Oracle Service Bus console and Oracle Service Bus service, set the WebLogicCluster parameter to the list of nodes in the cluster.

For more information, see Configuring Oracle HTTP Server for the Oracle Service Bus in the *Enterprise Deployment Guide for Oracle SOA Suite*.

Importing Domain Configuration Data

After the upgrade you will need to import the domain configuration data that you exported in Exporting Services, Projects and Resources when Upgrading Oracle Service Bus.

> **Note:**
>
> While WebLogic Server allows forward slashes in JNDI names, such as "`myqueues/myqueue`", JNDI names with forward slashes interfere with the URI format required by Service Bus, and you cannot use those names. To work around this issue, define a JMS foreign server and reference that foreign server in the URI.
>
> See Configure foreign servers in the Oracle WebLogic Remote Console Online Help.

For more information, see How to Import Resources from a Configuration JAR File in the Console and Executing a Configuration File.

Importing Security Configurations

Use the Oracle WebLogic Remote Console to import the security data that you exported pre-upgrade into the new Oracle Service Bus domain.

For more information, see the "Import data into a security provider" section of the *Oracle WebLogic Remote Console Online Help*.

> **Note:**
>
> You must import the security information for each security provider separately.

Troubleshooting Oracle Service Bus Upgrade

If you experience post-upgrade issues with Oracle Service Bus, review the following and apply any relevant solutions.

Resolving the HTTP 404 Error After OSB Upgrade with OHS as Cluster Frontend Host

If you configure Oracle HTTP Server (OHS) as a cluster domain frontend host, then you must add the following code to the OHS configuration file (ohs.confg):

```
 <Location /sbconsole>
  SetHandler weblogic-handler
  WebLogicCluster [ADMIN_SERVER_HOST]:[ADMIN.SERVER:PORT]
</Location>
<Location /servicebus>
  SetHandler weblogic-handler
  WebLogicCluster [ADMIN_SERVER_HOST]:[ADMIN.SERVER:PORT]
</Location>
```

Where `ADMIN.SERVER:PORT` is the machine name, server name and port number used for the OHS.

`mymachine.us.mycompany.com:7001` as shown in this sample code example:

```
<Location /sbconsole>
  SetHandler weblogic-handler
  WebLogicCluster mymachine.us.mycompany.com:7001
</Location>
<Location /servicebus>
  SetHandler weblogic-handler
  WebLogicCluster mymachine.us.mycompany.com:7001
</Location>
```

5

Upgrading a Clustered Environment

Describes the process of upgrading to a multi-node environment and performing post-upgrade configuration tasks.

> **Note:**
>
> If the Oracle wallet configured with OHS is not located on the same machine where the Upgrade Assistant is being invoked, then the wallets cannot be taken care of during the upgrade process. You must perform the following steps to ensure that the wallets are available.

Upgrading a Clustered Topology

Table 5-1 lists the steps required to upgrade the example clustered, multi-host Oracle SOA Suite topology illustrated in Figure 5-1.

Table 5-1 Oracle SOA Suite and BPM Cluster Upgrade Roadmap

Task	For More Information
Review the upgrade topology, and identify `SOAHOST1` and `SOAHOST2` on your setup.	See Understanding the SOA Cluster Upgrade Topology
Shut down the Administration Server, all the Managed Servers, and the Node Managers running on `SOAHOST1` or `SOAHOST2`.	See Stopping Servers and Processes
Perform a complete upgrade of your existing deployment on `SOAHOST1`. Perform the post-upgrade configurations that apply to your environment.	See Upgrading SOA Suite and Business Process Management
After a successful upgrade, propagate the domain configuration of `SOAHOST1` on `SOAHOST2`. To do this, you must pack the domain on `SOAHOST1`, and unpack it on `SOAHOST2` in a NEW 14c (14.1.2.0.0) domain.	See Propagating Domain Configuration to Another Host
Restart the Administration Server and the Managed Servers on `SOAHOST1` and `SOAHOST2`.	Starting the Admin Server and SOA Managed Servers
Perform any additional post-upgrade configuration tasks for your environment.	See Performing Post Upgrade Tasks

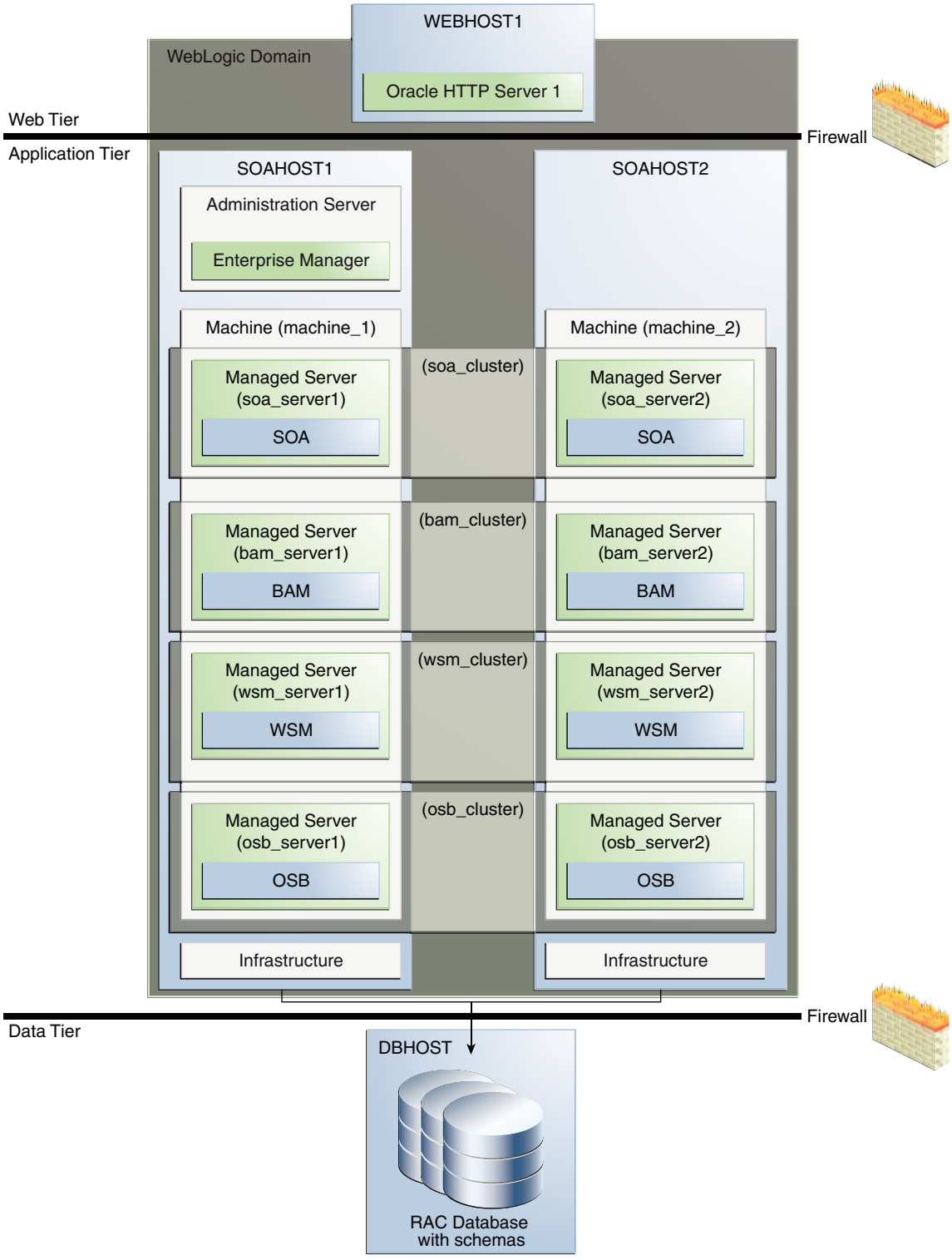
Understanding the SOA Cluster Upgrade Topology

Figure 5-1 shows a sample topology of a clustered Oracle SOA Suite deployment with SOA, Oracle Web Services Manager (OWSM), Oracle Service Bus (OSB) and Oracle Business Activity Monitoring (Oracle BAM) in separate clusters across two application hosts, SOAHOST1 and SOAHOST2. The Oracle HTTP Server, Administration Server, Oracle Enterprise Manager Fusion Middleware Control and database are shared with both hosts.

Specifically, this chapter describes the steps required to upgrade a WebLogic domain that contains multiple WebLogic Server clusters that are scaled out to multiple host computers. You can apply the concepts and procedures in this chapter to your own specific Oracle SOA Suite environment.

The steps required to upgrade this sample topology are described in the next section in Table 5-1.

Figure 5-1 Clustered SOA Topology



Using Secured Task Forms in a Clustered Topology

The task form is a Java Server Page XML (.jspx) file that you create in the Oracle JDeveloper designer where you created the SOA composite containing the human task.

If your SOA composite includes a human task form, or if task forms are deployed on non-SOA servers, then you must secure the task form after the upgrade.

Propagating Domain Configuration to Another Host

After verifying that the upgrade was successful, use these steps to propagate the newly upgraded files to another host.

After you have completed your single node upgrade on `HOST1`, use these steps to propagate the newly upgraded files to another node (in this example the secondary host is called `HOST2`).

Executing the pack command on the server where the Admin Server and one of the Managed Servers is installed.

In our sample topology, you would execute the following on `HOST1`:

`cd` */14c_ORACLE_HOME*`/oracle_common/common/bin`

```
./pack.sh -domain=/12c_DOMAIN_HOME -template=domainupgradetemplate.jar -
template_name=domainupgradetemplate -managed=true
```

In this example:

- *14c_ORACLE_HOME* refers the actual path to the 14*c* Oracle home directory (the installation directory for the 14c (14.1.2.0.0)bits).
- Replace *12c_DOMAIN_HOME* with the actual path to the upgraded domain directory.
- `domainupgradetemplate.jar` is a sample name for the jar file you are creating, which will contain the domain configuration files.
- `domainupgradetemplate` is the name assigned to the domain template file.
- By default, the `domainupgradetemplate` is created in the current directory where you ran the pack command. In this example, it would be created in the following directory, but you can specify a full path for the template jar file as part of the `-template` argument to the pack command:

  ORACLE_COMMON_HOME`/common/bin/`

The `pack` command creates a template archive (.jar) file that contains a snapshot of either an entire domain or a subset of a domain. You can use a template that contains a subset of a domain to create a Managed Server domain directory hierarchy on a remote machine.

Executing the unpack Command from the 12c Oracle Home on HOST2.

Make sure that the Administration and Managed Servers are still stopped and then execute the `unpack` command to create a full domain (or a subset of a domain) used for a Managed Server

domain directory on the remote machine. You may use unpack only with a template compatible with your current installation.

> **Note:**
>
> Do not attempt to unpack the domain on top of an existing domain. Oracle recommends that you unpack the contents of the domain upgrade template jar file into a new domain location.
> It is important to note that even if you use the `-overwrite_domain=true` argument when unpacking the domain, the contents of the existing domain will remain in place and will cause issues with when starting the servers. For this reason, Oracle recommends that you unpack the domain template jar file into a new location, or, manually delete the contents of the existing location before you unpack.

A sample unpack command code snippet is shown below.

cd */12c_ORACLE_HOME/*`oracle_common/common/bin`

`./unpack.sh -template=domainupgradetemplate.jar - domain=`*NEW_DOMAIN_LOCATION*

In this example:

- *12c_ORACLE_HOME* refers the actual path to the 12c Oracle home directory, the installation directory for the 14c (14.1.2.0.0).
- Replace *NEW_DOMAIN_LOCATION* with the actual path to the upgraded domain directory.
- `domainupgradetemplate.jar` is a sample name for the jar file you are creating, which will contain the domain configuration files.
- `domainupgradetemplate` is the name assigned to the domain template file.

Copying the template file created on HOST 1 to HOST2.

After you perform a complete upgrade of your deployment on HOST1, and you have completed any post-upgrade configurations that apply to your new environment, you must copy the domain template to HOST2.
Use the following command to copy from HOST1 the domain upgrade template JAR file created during the upgrade.

```
scp domaintemplate.jar company@HOST2:14c_ORACLE_HOME/oracle_common/common/bin
```

Completing the following verification steps after the unpack.

1. Verify that settings for WLS_HOME and ORACLE_HOME located in the setDomainEnv.sh script from the 12*c* domain are pointing to 14c (14.1.2.0.0).
2. Start the Node Manager, WebLogic Administration Server, and the Managed Servers on HOST1 and HOST2 in the following order:
   a. On HOST1 and HOST2, start the Node Manager.
   b. On HOST1, start the WebLogic Administration Server.
   c. On HOST1 and HOST2, start the Managed Servers.

For more information, see Starting Servers and Processes. Carefully review the order in which Managed Servers should be started.

Post-Upgrade Tasks for Cluster Upgrades

After a successful cluster upgrade, you may need to perform additional post-upgrade configurations tasks. Perform only those tasks that pertain to your clustered environment.

Changing Domain Mode Post Upgrade

After the upgrade, your domain retains its original pre-upgrade domain security mode settings. If you want to change the domain mode, to enable enhanced security, for example, you must explicitly change the settings using the WebLogic Remote Console or by modifying the `DomainMBean`.

If your domain is currently set to Production Mode, and you want to enable added security, then after the upgrade use the WebLogic Remote Console to change the domain mode and enable the Secured Production Mode. Change the Domain Mode in *Oracle WebLogic Remote Console Online Help*.

> **Caution:**
>
> Changes to the domain mode require a full domain restart - a rolling restart is not sufficient. You must stop all managed servers before you attempt to change the domain mode.

When upgrading a domain to 14c (14.1.2.0.0), if there is no explicit secure mode setting, then the Reconfiguration Wizard will explicitly set secure mode to *disabled* in the upgraded domain. This is to preserve the behavior that was present in the original domain. If there is an explicit secure mode setting, it will be preserved in the upgraded domain. For more information, see Understand How Domain Mode Affects the Default Security Configuration in *Securing a Production Environment for Oracle WebLogic Server*.

> **Note:**
>
> Secured Production Mode enforces more restrictive and stringent security settings to ensure less vulnerability to threats. To make sure that your domain is secure, after enabling Secured Production Mode, you will have to choose the security configuration options that are appropriate for the environment in which the domain runs, such as obtaining and storing certificates, protecting user accounts, and securing the network on which the domain runs. If these options are not properly configured, you will be blocked from using WebLogic Server.
>
> After you have created your WebLogic domain, several key steps remain to ensure its integrity such as selecting appropriate security configurations. For more information, see Securing the Domain After You Have Created It in *Administering Security for Oracle WebLogic Server*.

Starting the Admin Server and SOA Managed Servers

Restart the Oracle WebLogic Administration server and any other SOA Managed servers.

> **Note:**
>
> The procedures in this section describe how to start 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 Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

> **Note:**
>
> Depending on your existing security settings, you may need to perform additional configuration before you can start or manage a domain with secured production mode enabled. For more information, see Using Secured Production Mode.

Start the Administration Server

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

To start an Administration Server, use the following script:

```
(UNIX) DOMAIN_HOME/bin/startWebLogic.sh

(Windows)DOMAIN_HOME\bin\startWebLogic.cmd
```

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Administration Server. See Connecting to the Administration Server using WLST in *Administering Security for Oracle WebLogic Server*.

When prompted, enter your username, password and the URL of the administration server.

Start the Managed Servers

Start the WebLogic Server Managed Servers with the following script:

```
(UNIX) DOMAIN_HOME/bin/startManagedWebLogic.sh managed_server_name admin_url

(Windows) DOMAIN_HOME\bin\startManagedWebLogic.cmd managed_server_name admin_url
```

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Managed Servers. See Starting Managed Servers using a Start Script in *Administering Security for Oracle WebLogic Server*.

When prompted, enter your username and password.

Start SOA servers and processes in this order:

1. Oracle Web Services Manager (OWSM) Managed Server
2. Service-Oriented Architecture (SOA) Managed Server and Managed File Transfer (MFT)
3. Oracle Service Bus (OSB) Managed Server
4. Business Activity Monitoring (BAM) Managed Server

> **Note:**
>
> The startup of a Managed Server will typically start the applications which are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Removing OWSM Targets from SOA and OSB Clusters

If your 12c domain includes an Oracle Web Services Manager (OWSM) in its own cluster and you have extended that domain with a SOA cluster and an OSB cluster, then post upgrade you must manually untarget the wsm-pm from the SOA and OSB clusters.

To remove the owsm-pm target from the SOA and OSB clusters:

1. Log in to the WebLogic Server Administration Console 12c.

   Enter the following URL in a browser:

   `http://host name:port_number/console`

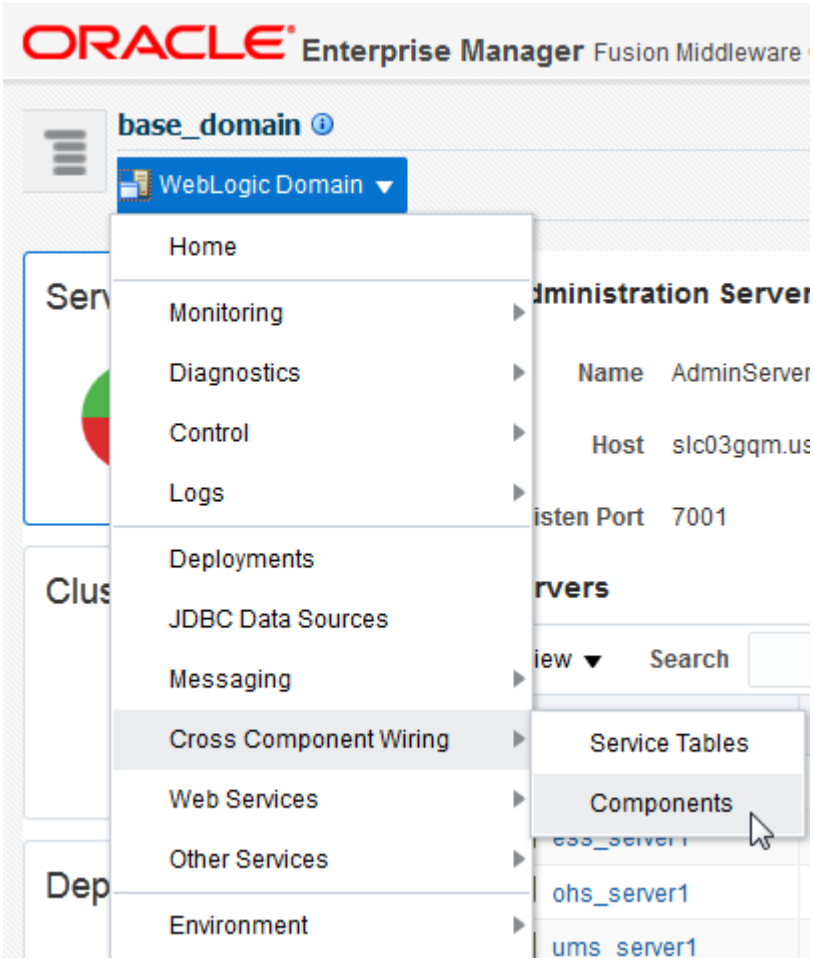
   The port number is the port number of the Administration Server. By default, the port number is 7001.

   The login page is displayed.
2. Select **Deployments** from Domain Structure.
3. Select **wsm-pm** under Deployments.
4. In the settings for wsm-pm, select **Targets**.
5. Select wsm-pm component of type Enterprise Application and select **Change Targets**.
6. Uncheck SOA cluster and OSB cluster.
7. When prompted, click **Yes** to apply the changes.
8. **REQUIRED**: Once the wsm-pm is targeted only to the OWSM cluster, you must rewire the components as described in Updating OWSM Cross-Component Wiring.

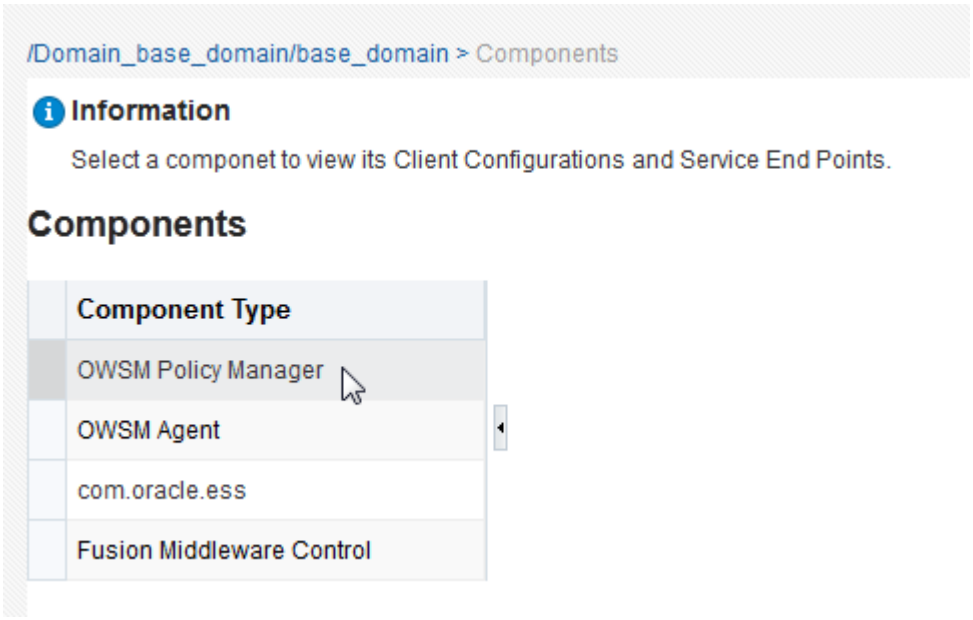
Updating OWSM Cross-Component Wiring

After you have removed OWSM targets from SOA and OSB clusters as described in Removing OWSM Targets from SOA and OSB Clusters, you must rewire the OWSM Policy Manager components as described below:

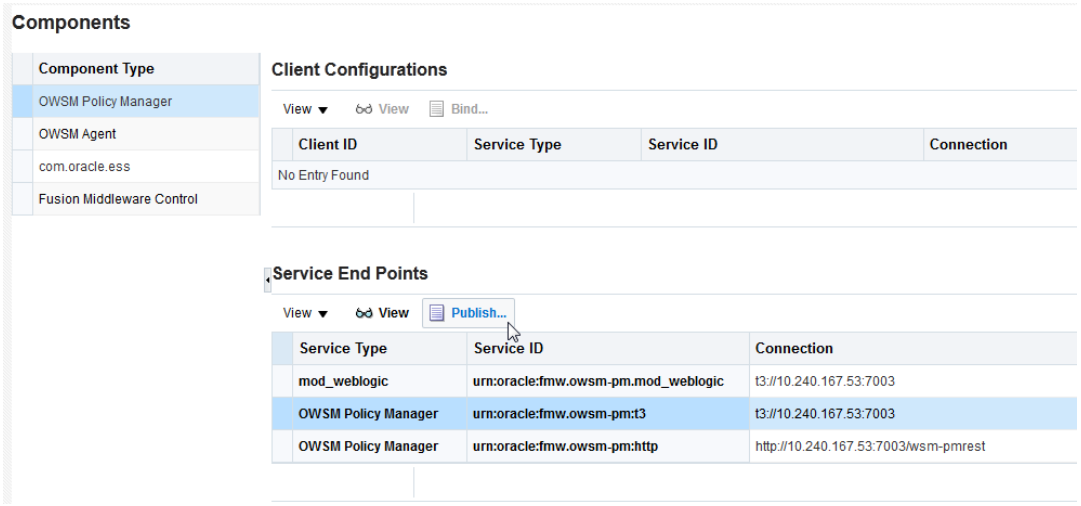
1. Start the Administration (*admin*) server and one OWSM server.
2. Log in to the Oracle Enterprise Manager Fusion Middleware Control 12c console and navigate to the **Cross Components Wiring** > **Components** option.



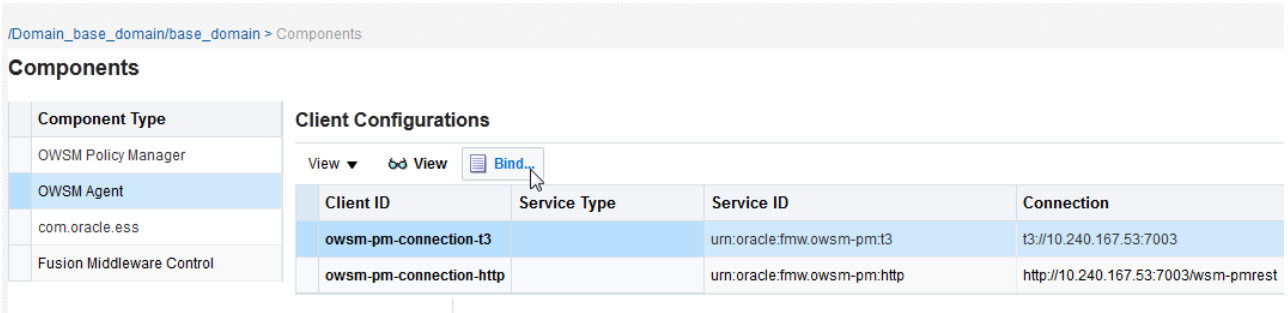
3. Select **OWSM Policy Manager** from the list of available components:



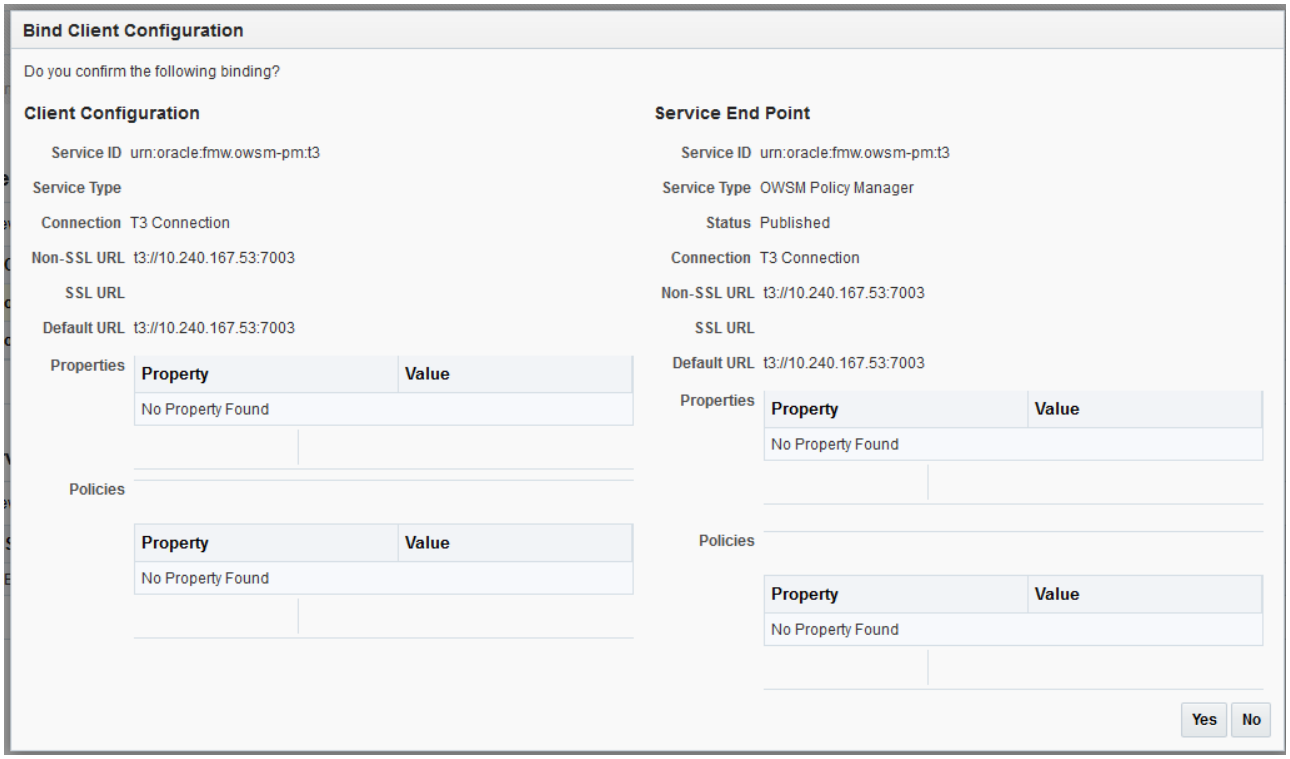
4. From the Service End Points table, select the **OWSM Policy Manager** t3 connection entry and click **Publish**. The status will change from Out of Sync to Published.



5. Select **OWSM Agent** from the Component Type list. Select the t3 connection entry and click **Bind**.



6. Verify that the Service Type for the service end point is **OWSM Policy Manager**.



7. Repeat steps 5 and 6 to Bind the remaining component types. In this example, you will select com.oracle.ess and Fusion Middleware Control.

Reapplying an EDNTopic to SOA JMS Module After Cluster Upgrade

After upgrading a SOA Cluster domain to 14c (14.1.2.0.0), the upgraded SOA JMS module may be missing the EDNTopic. If the JMS module is missing the EDNTopic, you must manually add the topic or UDD for this topic using the Administration Console or WLST.

See the Remote Console online help for more information on reapplying the EDNTopic.

6

Performing Post Upgrade Tasks

Summarizes the tasks you might have to perform after upgrading to Oracle SOA Suite 14c (14.1.2.0.0).

Performing Post Upgrade Tasks

The following tasks should be performed after an upgrade:

Changing Domain Mode Post Upgrade

After the upgrade, your domain retains its original pre-upgrade domain security mode settings. If you want to change the domain mode, to enable enhanced security, for example, you must explicitly change the settings using the WebLogic Remote Console or by modifying the `DomainMBean`.

If your domain is currently set to Production Mode, and you want to enable added security, then after the upgrade use the WebLogic Remote Console to change the domain mode and enable the Secured Production Mode. Change the Domain Mode in *Oracle WebLogic Remote Console Online Help*.

> **Caution:**
>
> Changes to the domain mode require a full domain restart - a rolling restart is not sufficient. You must stop all managed servers before you attempt to change the domain mode.

When upgrading a domain to 14c (14.1.2.0.0), if there is no explicit secure mode setting, then the Reconfiguration Wizard will explicitly set secure mode to *disabled* in the upgraded domain. This is to preserve the behavior that was present in the original domain. If there is an explicit secure mode setting, it will be preserved in the upgraded domain. For more information, see Understand How Domain Mode Affects the Default Security Configuration in *Securing a Production Environment for Oracle WebLogic Server*.

> **Note:**
>
> Secured Production Mode enforces more restrictive and stringent security settings to ensure less vulnerability to threats. To make sure that your domain is secure, after enabling Secured Production Mode, you will have to choose the security configuration options that are appropriate for the environment in which the domain runs, such as obtaining and storing certificates, protecting user accounts, and securing the network on which the domain runs. If these options are not properly configured, you will be blocked from using WebLogic Server.
>
> After you have created your WebLogic domain, several key steps remain to ensure its integrity such as selecting appropriate security configurations. For more information, see Securing the Domain After You Have Created It in *Administering Security for Oracle WebLogic Server*.

Reapplying Start Script Properties for JVM

If you used a start script to specify required startup properties, or to perform any other work required at start up in your existing environment, then you will need to reapply the properties post-upgrade.

Specifically, if you have configured JRockit JVM arguments, then these configurations must be reapplied post-upgrade. Oracle recommends that you use either `startup-plan.xml` or `startscript.xml` for configuring JVM startup parameters.

> **Caution:**
>
> Failure to update the start script arguments may prevent you from starting the SOA and OSB servers after the upgrade.

To enable the scripts:

1. In the `nodemanager.properties` file, set the `StartScriptEnabled` property to `true`. (The default is `false`.) If your start script is named `startWebLogic.sh` or `startWebLogic.cmd`, Node Manager uses one of those scripts as the default.
2. If you want to specify a custom start script, set the `StartScriptName` property to the name of your script in the `nodemanager.properties` file.

Node Manager sets the `JAVA_VENDOR`, `JAVA_HOME`, `JAVA_OPTIONS`, `SECURITY_POLICY`, `CLASSPATH`, and `ADMIN_URL`. It retrieves these values from the `ServerMBean`, `ServerStartMBean`, and `SSLMBean` when you use the Administration Console to start the server, or WLST connected to the Administration Server. When you use WLST connected directly to the Node Manager, you can specify the values; otherwise, they are left empty.

Node Manager combines all of the command line startup options (-D flags) that are specified in the `ServerStartMBean Arguments` attribute, as well as the `SSLArguments` into a single environmental variable called `JAVA_OPTIONS`. `SSLArguments` are retrieved from the values in the `SSLMBean`. The `SSLMBean` is inspected for `ignoreHostnameVerification`, `HostnameVerifier`, and `ReverseDNSAllowed` values, then those values are appended to the -D flags. All of those flags comprise the `SSLArguments` parameter. All of the values for `SSLArguments` as well as `Arguments` in the `ServerStartMBean` comprise the `JAVA_OPTIONS` environment variable that is

defined for the start script. In addition, the script will append any of its own defined values onto this environment variable.

Reapplying Customizations to setDomainEnv.sh

If servers do not start, or they start in AdminMode, the cause is most likely that the `setDomainEnv.sh` changes from the previous environment were not reapplied to the newly configured domain. During the upgrade process, startup scripts are replaced with the latest version. If you made any modifications to these files, then you will need to edit the new startup scripts with the same information.

To determine if this is the cause, compare the setDomainEnv file from your pre-upgrade backup to the new setDomainEnv file. If there are differences, then make the same changes in the new setDomainEnv file.

Reapplying Customizations to XEngine Configuration Files

Any pre-upgrade changes made to the XEngine configuration files, such as `SeverityConfig.xml`, will be overwritten by new, regenerated configuration files during the domain reconfiguration process. Therefore, all customized settings used in the pre-upgrade configuration files will need to be reapplied after the upgrade.

For example, if you added a section for SNIP in the pre-upgrade XEngine configuration file, `SeverityConfig.xml`, the same section will have to be added to the new, post-upgrade `SeverityConfig.xml` file.

Copying Custom XPath Classes

If you modified the default XPath classes in your pre-upgrade environment, then after the upgrade you will need to copy the customized XPath classes to the new Oracle home as shown in the example below:

Copy the custom XPath classes from your pre-upgrade backups. Classes are found in the following directory:

```
/12c_ORACLE_HOME/soa/modules/oracle.soa.ext_xxx/classes
```

to the following 14*c* directory:

```
/14c_ORACLE_HOME/soa/modules/oracle.soa.ext_xxx/classes
```

Recreating Partition-Specific Roles for Application Roles and Policies

After the upgrade, you will have to recreate any partition-specific roles used in your existing environment.

Partition application roles for existing applications are not recreated by the 14c upgrade process. Instead, you must manually create these roles using the following WLST script:

`sca_createDefaultPartitionAppRoles` *`partition`*

Upgrading Business Process Management (BPM) Metadata

The Business Process Management metadata upgrade begins once you log into Business Process Composer 14c (14.1.2.0.0) for the first time (after a successful upgrade).

For more information on using Business Process Composer, see *Developing Business Processes with Oracle Business Process Composer*.

Configuring an Oracle Fusion Middleware Audit Data Store

As a part of the overall upgrade process, you should have created the IAU schema in the database where your other Oracle Fusion Middleware schemas reside.

For more information about the main administration tasks and tools you use to manage the audit store, audit policies, and bus-stop files, see Managing the Audit Data Store in *Securing Applications with Oracle Platform Security Services*

Verifying the Upgraded Components Work as Expected

After a successful upgrade, you should perform the following tasks to make sure that the components are still working as expected and that there are no issues with the new deployment.

Starting Servers and Processes

After a successful upgrade, restart 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 processes using the WLST command-line utility or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

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

> **Note:**
>
> Depending on your existing security settings, you may need to perform additional configuration before you can manage a domain with secured production mode enabled. For more information, see Connecting to the Administration Server using WebLogic Remote Console
>
> .

Step 1: Start the Administration Server

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *`NEW_DOMAIN_HOME`*`/bin/startWebLogic.sh`

- (Windows) *NEW_DOMAIN_HOME*\bin\startWebLogic.cmd

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Administration Server. See Connecting to the Administration Server using WLST in *Administering Security for Oracle WebLogic Server*.

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

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *NEW_DOMAIN_HOME*/bin/startNodeManager.sh
- (Windows) *NEW_DOMAIN_HOME*\bin\startNodeManager.cmd

Step 3: Start Any Managed Servers

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

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

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Managed Servers. See Starting Managed Servers using a Start Script in *Administering Security for Oracle WebLogic Server*.

Start SOA servers and processes in this order:

1. Oracle Web Services Manager (OWSM) Managed Server
2. Service-Oriented Architecture (SOA) Managed Server
3. Managed File Trasfer (MFT)
4. Oracle Service Bus (OSB) Managed Server
5. Business Activity Monitoring (BAM) Managed Server

> **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.

Step 4: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startComponent.sh` *component_name*
- (Windows) *NEW_DOMAIN_HOME*`\bin\startComponent.cmd` *component_name*

You can start system components in any order.

Verifying the Domain Component Configurations Upgrade

To verify that the domain component configurations upgrade was successful, log in to the Remote console and the Fusion Middleware Control using the following URLs, and verify the upgraded version numbers for each component:

Remote Console URL: `http://`*administration_server_host*`:`*administration_server_port*`/console`

Fusion Middleware Control URL: `http://`*administration_server_host*`:`*administration_server_port*`/em`

> **Note:**
>
> After the upgrade, you must run all of your administration tools from the new 14c (14.1.2.0.0) Oracle home and not from the existing 12*c* (12.2.1.4) Oracle home.

Starting Composer After an Upgrade

Composer is not operational post upgrade until the user `weblogic` logs in. You cannot log in as a demo user until after the `weblogic` user has started Composer. If you attempt to log in as a `demo` user, then you will see the following message:

```
Migration is running in the background.
```

If you get this error, log out and log back in as `weblogic` user and wait for the migration to complete.

A

Troubleshooting the Upgrade

This appendix describes some common procedures for troubleshooting a failed upgrade, domain reconfiguration or server start issues.

Update Task Forms URL

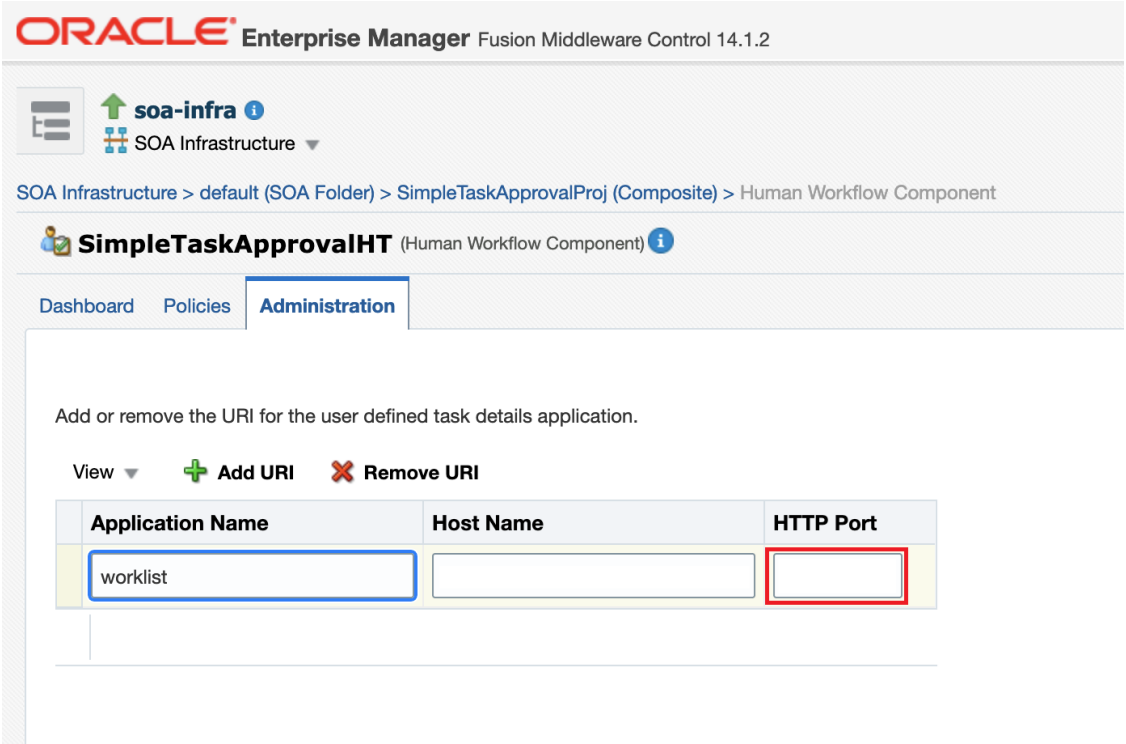
After the SOA upgrade using secure mode, task forms in Worklistapp will not open if the URL is using the SOA HTTP port instead of the HTTPS port.

If you received the following error after upgrading, you will need to modify the task form URL as described below:

```
taskform failed to open
     Unable to connect
     Firefox can't establish a connection to the server at
    <hostname_server_location>:<soa_http_port_number>
```

Log in to Enterprise Manager and modify the worklist to use the SOA HTTPS port:

Figure A-1 Task Form Worklist App URL



Reviewing the Release Notes

Make sure that you review the release notes to determine if any known issues could be impacting your upgrade. You can find the release notes in the Oracle Fusion Middleware 14c (14.1.2.0.0) library.

Resolving Server Start Errors

If the administration or managed servers do not start after the upgrade, you may need to re-apply any customizations added to startup scripts, files and classes.

If servers do not start, or they start in AdminMode, the cause is most likely that changes to startup scripts or domain variables from the previous environment were not reapplied to the newly configured domain. During the upgrade process, startup scripts are replaced with the latest version. If you made any modifications to these files, then you will need to edit the new startup scripts with the same information.

To determine if this is the cause, compare the pre-upgrade startup scripts or files from your backups to the new scripts and files. If there are differences, then update files as described in the following procedures.

Reapplying Customizations to setDomainEnv.sh

If servers do not start, or they start in AdminMode, the cause is most likely that the `setDomainEnv.sh` changes from the previous environment were not reapplied to the newly configured domain. During the upgrade process, startup scripts are replaced with the latest version. If you made any modifications to these files, then you will need to edit the new startup scripts with the same information.

To determine if this is the cause, compare the setDomainEnv file from your pre-upgrade backup to the new setDomainEnv file. If there are differences, then make the same changes in the new setDomainEnv file.

Reapplying Start Script Properties for JVM

If you used a start script to specify required startup properties, or to perform any other work required at start up in your existing environment, then you will need to reapply the properties post-upgrade.

Specifically, if you have configured JRockit JVM arguments, then these configurations must be reapplied post-upgrade. Oracle recommends that you use either `startup-plan.xml` or `startscript.xml` for configuring JVM startup parameters.

> **Caution:**
>
> Failure to update the start script arguments may prevent you from starting the SOA and OSB servers after the upgrade.

To enable the scripts:

1. In the `nodemanager.properties` file, set the `StartScriptEnabled` property to `true`. (The default is `false`.) If your start script is named `startWebLogic.sh` or `startWebLogic.cmd`, Node Manager uses one of those scripts as the default.
2. If you want to specify a custom start script, set the `StartScriptName` property to the name of your script in the `nodemanager.properties` file.

Node Manager sets the `JAVA_VENDOR`, `JAVA_HOME`, `JAVA_OPTIONS`, `SECURITY_POLICY`, `CLASSPATH`, and `ADMIN_URL`. It retrieves these values from the `ServerMBean`, `ServerStartMBean`, and `SSLMBean` when you use the Administration Console to start the server, or WLST connected to the Administration Server. When you use WLST connected directly to the Node Manager, you can specify the values; otherwise, they are left empty.

Node Manager combines all of the command line startup options (-D flags) that are specified in the `ServerStartMBean Arguments` attribute, as well as the `SSLArguments` into a single environmental variable called `JAVA_OPTIONS`. `SSLArguments` are retrieved from the values in the `SSLMBean`. The `SSLMBean` is inspected for `ignoreHostnameVerification`, `HostnameVerifier`, and `ReverseDNSAllowed` values, then those values are appended to the -D flags. All of those flags comprise the `SSLArguments` parameter. All of the values for `SSLArguments` as well as `Arguments` in the `ServerStartMBean` comprise the `JAVA_OPTIONS` environment variable that is defined for the start script. In addition, the script will append any of its own defined values onto this environment variable.

Reapplying Customizations to XEngine Configuration Files

Any pre-upgrade changes made to the XEngine configuration files, such as `SeverityConfig.xml`, will be overwritten by new, regenerated configuration files during the domain reconfiguration process. Therefore, all customized settings used in the pre-upgrade configuration files will need to be reapplied after the upgrade.

For example, if you added a section for SNIP in the pre-upgrade XEngine configuration file, `SeverityConfig.xml`, the same section will have to be added to the new, post-upgrade `SeverityConfig.xml` file.

Copying Custom XPath Classes

If you modified the default XPath classes in your pre-upgrade environment, then after the upgrade you will need to copy the customized XPath classes to the new Oracle home as shown in the example below:

Copy the custom XPath classes from your pre-upgrade backups. Classes are found in the following directory:

```
/12c_ORACLE_HOME/soa/modules/oracle.soa.ext_xxx/classes
```

to the following 14*c* directory:

```
/14c_ORACLE_HOME/soa/modules/oracle.soa.ext_xxx/classes
```

Recovering From a Failed Upgrade

Recovering from a failed upgrade depends on when the error(s) occurred. Review the following to determine how to recover:

- If there are errors while running the Upgrade Assistant to upgrade `_SOAINFRA` schema, you must fix the errors in the schema and rerun batch jobs.

Note that this recovery method only applies when you are running the Upgrade Assistant for the first time and you selected the Schema option.

- If there are errors while running the Reconfiguration Wizard, you must restore from source environment and restart the upgrade from the beginning.
- If there are errors while running the Upgrade Assistant to upgrade WebLogic Component Configurations option, then you can fix the errors and rerun the Upgrade Assistant. The second time you run the Upgrade Assistant there is no need to restore from backup and restart the upgrade process from the beginning. This process is reentrant.
- If there are errors while running the Upgrade Assistant to upgrade schemas, and the error occurs during the upgrade phase, you will have to restore from backup, correct the issues, and then restart the upgrade from the beginning. If the error occurs during the examine phase, however, you can correct the issues and restart the Upgrade Assistant. Errors that occur prior to the upgrade phase are reentrant.

For more information on troubleshooting your upgrade, see "General Troubleshooting Guidelines" in *Upgrading with the Upgrade Assistant*.

Reapplying an EDNTopic to SOA JMS Module After Upgrade

After upgrading to 14c (14.1.2.0.0), the upgraded SOA JMS module may be missing the EDNTopic. If the JMS module is missing the EDNTopic, you must manually add the topic or UDD for this topic using the WebLogic Remote Console or WLST.

This is a known issue and can occur in both clustered and unclustered environments.

See the Remote Console online help for more information on reapplying the EDNTopic or contact Oracle Support.

Troubleshooting Oracle Service Bus

If you experience post-upgrade issues with Oracle Service Bus, review the troubleshooting procedures described in Troubleshooting Oracle Service Bus Upgrade.

Troubleshooting Oracle Managed File Transfer (MFT) Upgrade Issues

If you encounter an upgrade error while upgrading Oracle Managed File Transfer, refer to these troubleshooting tasks to correct the issue.

Some common upgrade error messages for Managed File Transfer are listed below:

SQLException: ORA-04020: deadlock detected while trying to lock object

Resolution: Make sure that you selected Managed File Transfer on the Available Components screen of the Upgrade Assistant. If you do not select Oracle Managed File Transfer, the upgrade will not include MFT schema.

Creating Backward Compatibility of SOAP Services

If you have Managed File Transfer-specific projects created in older versions using JDev, you must correct the WSDL definition of existing SOA/SOAP projects by opening them with JDev and redeploying the composite.

This is necessary when MFT is the target for SOA composite and not when it is a source for SOA.

Encryption Issues During Upgrade

If you received the following error message during the reconfiguration, you may need to apply additional policy files to the JDK and restart the upgrade from your backup:

```
JPS-06513: Failed to save keystore. Reason
oracle.security.jps.service.keystore.KeyStoreServiceException: Failed to perform
cryptographic operation
```

To prevent this error from reoccurring, apply the policy files before the subsequent upgrade as described in:

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 14c (14.1.2.0.0) 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.

Upgrading Unsupported Domains with the Upgrade Assistant

If you receive an error from the Upgrade Assistant stating that the specified domain cannot be upgraded, then your domain configurations are not supported for this release. For more information on supported configurations and domain restrictions, see Understanding SOA Domain Upgrade Restrictions.

Do not attempt to upgrade or schemas or domain configurations in an unsupported domain.

Resolving a Coherence Cache Exception

If you see the following WebLogic Cache Provider Coherence exception then it is likely that you are not following an enterprise deployment topology recommendation to specify a specific ListenAddress.

When you see this exception, you must set the ListenAddress for your managed server as shown below:

Exception:

```
weblogic.cacheprovider.coherence.CoherenceException:
  at
weblogic.cacheprovider.coherence.CoherenceClusterManager.ensureWKAAddresses(CoherenceClus
terManager.java:510)
  at
weblogic.cacheprovider.coherence.CoherenceClusterManager.configureClusterService(Coherenc
eClusterManager.java:236)
  at
weblogic.cacheprovider.CacheProviderServerService.bootCoherenceFromWLSCluster(CacheProvid
erServerService.java:225)
  at
weblogic.cacheprovider.CacheProviderServerService.initCoherence(CacheProviderServerServic
e.java:94)
```

Resolution:

1. Log in to the WebLogic Server Remote Console.
2. Navigate to **Servers**.
3. Locate the **Managed Servers** (SOA or OSB, for example).
4. Modify the Listen Address from `localhost` to `127.0.0.1` or provide the actual machine name.

WSDL Generated Missing Elements for Custom Exception

If your EJBs contain custom exceptions, and you export the Web Service Description Language (WSDL) file from your EJB business service, the generated WSDL file will not have the custom exception properties in it. You will need to manually edit the WSDL file to include these custom exception properties after the upgrade.

The issue is limited only to the WSDL generation part of the file. During runtime, the custom exception thrown from the EJB will be mapped to the respective elements in the SOAP fault. The response payload will have the elements populated corresponding to the properties of the custom exception.

Troubleshooting Invalid Objects in Schema Registry

Schemas with a post-upgrade status of `INVALID` may indicate a failed upgrade, but not in all situations.

If the post-upgrade schema status appears as INVALID, it may indicate that the schema update failed. You should examine the logs files to determine the reason for the failure. Run this query to identify which objects may be invalid:

```
SELECT owner, object_name FROM all_objects WHERE status='INVALID';
```

EXCEPTION: Synonym objects owned by IAU_APPEND and IAU_VIEWER will appear as INVALID in the schema version registry table, but that does not indicate a failure. Synonym objects 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.

B

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/jdk17.0.12.

- Manually locate the files that have references to the JDK using grep command for Linux or UNIX operating systems 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.

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:

(Linux) *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 jdk17.0.12.

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:

   (Linux) *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:

   (Linux) *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:

   (Linux) *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 jdk17.0.12.

Updating the JDK Location in an Existing Domain Home

You must search the references to the current JDK, for example 1.8.0_191 manually, and replace those instances with the location of the new JDK.

You can use the `grep` or `findstr` commands to search for the JDK-related references.

You'll likely be required to update the location of JDK in the following three files:

(Linux) *DOMAIN_HOME*/bin/setNMJavaHome.sh

(Windows) *DOMAIN_HOME*\bin\setNMJavaHome.cmd

(Linux) *DOMAIN_HOME*/nodemanager/nodemanager.properties

(Windows)*DOMAIN_HOME*\nodemanager\nodemanager.properties

(Linux) Start `bash` and then run *DOMAIN_HOME*/bin>source setDomainEnv.sh

(Windows)*DOMAIN_HOME*\bin\setDomainEnv.cmd