Oracle® Fusion Middleware

Upgrading Oracle Access Manager

14c (14.1.2.1.0)
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Oracle Fusion Middleware Upgrading Oracle Access Manager, 14c (14.1.2.1.0)

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Preface

This document describes how to upgrade Oracle Access Manager to 14c (14.1.2.1.0).

Audience

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

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

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

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Related Documents

Refer to the Oracle Fusion Middleware Library for additional information.

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

Conventions

This document uses the following text conventions:

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

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Introduction to Upgrading Oracle Access Manager to 14c (14.1.2.1.0)

Before you begin, review all introductory information to understand the standard upgrade topologies and upgrade paths for Oracle Access Manager 14c (14.1.2.1.0).

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

> **Note:**
>
> For general information about Fusion Middleware upgrade planning and other upgrade concepts and resources, see the following sections in *Planning an Upgrade of Oracle Fusion Middleware*:
>
> - Planning an Upgrade to Oracle Fusion Middleware 14c (14.1.2.1.0)
> - Understanding In-Place versus Out-of-Place Upgrades
> - Understanding the Basic Upgrade Tasks

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

- About the Starting Points for a Oracle Access Manager Upgrade
  You can upgrade to Oracle Access Manager 14c (14.1.2.1.0) from a supported 12c release.
- About the Oracle Access Manager Upgrade Scenarios
  The steps to upgrade Oracle Access Manager to 14c (14.1.2.1.0) depend on the existing 12c (12.2.1.4.0) production topology.
- About the New Features for Oracle Access Manager 14c (14.1.2.1.0)
  Several changes have been made to Oracle Access Manager between 12c (12.2.1.4.0) and 14c (14.1.2.1.0).
- About Upgrade Restrictions
  If you are using two or more Oracle Fusion Middleware products of the same or different versions in a single, supported, Oracle Fusion Middleware configuration, you must consider the interoperability and compatibility factors before planning the upgrade.
- Terminology Used in this Guide
  For consistency, the following terminology is used in this guide.
- How to Use This Guide
  This guide covers various upgrade scenarios.

About the Starting Points for a Oracle Access Manager Upgrade

You can upgrade to Oracle Access Manager 14c (14.1.2.1.0) from a supported 12c release.

The supported starting point for upgrading Oracle Access Manager to 14c (14.1.2.1.0) is Oracle Access Manager 12c (12.2.1.4.0).

If you are not using the 12c (12.2.1.4.0) version of Oracle Access Manager, you must upgrade to 12c (12.2.1.4.0) before you move to 14c (14.1.2.1.0). For instructions, see the upgrade documentation for your release: Oracle Fusion Middleware Documentation Library.

The upgrade procedures in this guide explain how to upgrade an existing Oracle Access Manager 12c (12.2.1.4.0) domain to Oracle Access Manager 14c (14.1.2.1.0). If your domain contains other components, you will have to upgrade those components as well.

About the Oracle Access Manager Upgrade Scenarios

The steps to upgrade Oracle Access Manager to 14c (14.1.2.1.0) depend on the existing 12c (12.2.1.4.0) production topology.

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

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

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

- Single node environments
- Highly available (multinode) environments
- Oracle Access Manager Multi-data center setup

About the New Features for Oracle Access Manager 14c (14.1.2.1.0)

Several changes have been made to Oracle Access Manager between 12c (12.2.1.4.0) and 14c (14.1.2.1.0).

To understand what's new in general in 14c (14.1.2.1.0), see New and Changed Features in *Understanding Oracle Fusion Middleware*.

For information about Oracle Access Manager 14c (14.1.2.1.0), and its features, see the following topics in *Administering Oracle Access Management*:

- Understanding Oracle Access Management Services
- Understanding Oracle Access Management Access Manager

For more information about new features in Oracle Access Manager 14c (14.1.2.1.0),see What's New in Oracle Access Management in the *Release Notes for Oracle Identity Management*.

About Upgrade Restrictions

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

Interoperability

In the context of Oracle Fusion Middleware products, Interoperability is defined as the ability of two Oracle Fusion Middleware products or components of the same version (or release) to work together (interoperate) in a supported Oracle Fusion Middleware configuration. Specifically, interoperability applies when the first 4 digits of the release or version number are the same. For example, Oracle Fusion Middleware 14c (14.1.2.1.0) components are generally interoperable with other 14c (14.1.2.1.0) components. See Interoperability with Oracle Identity Management Products.

> **Note:**
>
> Exporting and importing OAM policies from other releases by using tools such as exportPolicy, importPolicy, and so on, is not certified. An upgrade is the only supported path to move policies from one release to another.

Compatibility

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

For a list of products and features available in Oracle Fusion Middleware Release 14.1.2.1.0, see Products and Features Available in Oracle Fusion Middleware 14c (14.1.2.1.0) in *Understanding Interoperability and Compatibility*.

Terminology Used in this Guide

For consistency, the following terminology is used in this guide.

Table 1-1 Terminology

Information	Example Value	Description
`JAVA_HOME`	`/home/Oracle/Java/jdk17.0.12`	Environment variable that points to the Java JDK home directory.
Database host	`examplehost.exampledomain`	Name and domain of the host where the database is running.
Database port	`1521`	Port number that the database listens on. The default Oracle database listen port is `1521`.
Database service name	`orcl.exampledomain`	Oracle databases require a unique service name. The default service name is `orcl`.

Table 1-1 (Cont.) Terminology

Information	Example Value	Description
DBA username	`FMW`	Name of user with database administration privileges. The default DBA user on Oracle databases is `SYS`.
DBA password	*<dba_password>*	Password of the user with database administration privileges.
ORACLE_HOME	`/u01/app/fmw/ORACLE_HOME`	Directory in which you will install your software. This directory will include Oracle Fusion Middleware Infrastructure and Oracle Access Manager, as needed.
Console port	`7001`	Port for Oracle Access Manager console.
DOMAIN_HOME	`/home/Oracle/config/domains/idm_domain`	Location in which your domain data is stored. **Note:** This is the domain where the primary Administration server is configured.
APPLICATION_HOME	`/home/Oracle/config/applications/idm_domain`	Location in which your application data is stored.
Administrator user name for your WebLogic domain	`weblogic`	Name of the user with Oracle WebLogic Server administration privileges. The default administrator user is `weblogic`.
Administrator user password	*<admin_password>*	Password of the user with Oracle WebLogic Server administration privileges.
RCU	*ORACLE_HOME*`/oracle_common/bin`	Path to the Repository Creation Utility (RCU).
RCU schema prefix	`oam`	Prefix for names of database schemas used by Oracle Access Manager.
RCU schema password	*<rcu_password>*	Password for the database schemas used by Oracle Access Manager.
Configuration utility	*ORACLE_HOME*`/oracle_common/common/bin`	Path to the Configuration Wizard for domain creation and configuration.

How to Use This Guide

This guide covers various upgrade scenarios.

Depending on your existing 12c (12.2.1.4.0) deployment, refer to the respective topics for upgrading Oracle Identity and Access Management to 14c (14.1.2.1.0):

- **Single Node Environments**

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

- **Multi-node or Highly Available Environments**
  - For upgrading multi-node Oracle Access Manager setup, see Upgrading Oracle Access Manager Highly Available Environments.
  - For upgrading Oracle Access Manager multi-data center setup, see Upgrading Oracle Access Manager Multi-Data Center Environments.

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

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Pre-Upgrade Requirements

Before you begin to upgrade Oracle Access Manager 14c (14.1.2.1.0), you must perform pre-upgrade tasks such as backing up, creating a replica of your current environment, and verifying that your system meets certified requirements.

- Oracle Fusion Middleware Pre-Upgrade Checklist
  Perform the tasks in this checklist before you begin any upgrade to ensure you have a successful upgrade and limited downtime.
- Creating a Complete Backup
  Before you start an upgrade, back up all system-critical files, including the Oracle home, Domain home, and databases that host your Oracle Fusion Middleware schemas.
- 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.
- Creating a Non-SYSDBA User to Run the Upgrade Assistant
  Oracle recommends that you create a non-SYSDBA user called `FMW` to run the Upgrade Assistant. This user has the privileges required to modify schemas, but does not have full administrator privileges.
- Identifying Existing Schemas Available for Upgrade
  This optional step can be used before an upgrade to query the schema version registry table. This table contains schema information such as the schema owner, version number, component name and ID, date of creation and modification, and custom prefixes.
- Verify the Database User for the WLSSchemaDataSource Data Source
  This step is required if your existing domain has a `WLSSchemaDataSource` data source.
- Remove the JAX-RS Deployment
  If JAX-RS (2.2.22.4.0) is present in the existing WebLogic domain, you must remove it before upgrading to 14c (14.1.2.1.0).
- Ensuring that the Keystore Passwords are Same
  Ensure that the passwords for `.oamkeystore` and `default-keystore.jks` are same for a successful upgrade.
- Shutting Down the Node Managers
  Ensure that you have shut down all the local and remote Node Managers before starting the upgrade process.

Oracle Fusion Middleware Pre-Upgrade Checklist

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

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

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

Table 2-1 Tasks to Perform Before You Upgrade

Task	Description
Required Create a complete backup of your existing environment.	Back up all system-critical files, including the Oracle home, Middleware home, and databases that contain any schemas that are to be upgraded. If the upgrade fails, you must restore your pre-upgrade environment and begin the upgrade again. 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.

Table 2-1 (Cont.) Tasks to Perform Before You Upgrade

Task	Description
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.	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. Review the Oracle Fusion Middleware Infrastructure release notes to see if there are any mandatory patches required for the software products that you are installing. See Install and Configure in *Release Notes for Oracle Fusion Middleware Infrastructure*. Verify that your hardware and software configurations (including operating systems) are supported by the latest certifications and requirements. Also make sure to use a supported JDK version before you install the product distributions. Upgrade a component at a time, whether it is an Oracle Component or a dependent component. For example. Do not upgrade OUD, OIM, OAM, the operating system, the database, and the hardware all at the same time. See Verifying Certification and System Requirements.
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
Optional Review the list of available schemas.	Query the schema version registry to view schema information. See Identifying Existing Schemas Available for Upgrade.
Required Change the database user assigned to the `WLSSchemaDataSource` data source from `<PREFIX>_WLS_RUNTIME` to `<PREFIX>_WLS`.	If the database user for the `WLSSchemaDataSource` data source is assigned to `<PREFIX>_WLS_RUNTIME`, then you must change it to `<PREFIX>_WLS` This step is required only if your existing domain has a `WLSSchemaDataSource` data source. See Verify the Database User for the WLSSchemaDataSource Data Source
Required If JAX-RS (2.2.22.4.0) is present in the existing WebLogic domain, you must remove it before upgrading to 14c (14.1.2.1.0).	See Remove the JAX-RS Deployment

Table 2-1 (Cont.) Tasks to Perform Before You Upgrade

Task	Description
Optional Shut down all the local and remote Node Managers before starting the upgrade process.	See Shutting Down the Node Managers.

Creating a Complete Backup

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

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

See:

- Backing Up Your Environment in *Administering Oracle Fusion Middleware*
- Upgrading and Preparing Your Oracle Databases for 14c (14.1.2.1.0) in *Planning an Upgrade of Oracle Fusion Middleware*
- Oracle Database Documentation for information about upgrading to Oracle Database 18c and 19c.
- Backing Up the Schema Version Registry Table
  Your system backup must include the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table.
- 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, and reconfiguration operations. Oracle recommends you to take a backup of the the customized files to a shared library location. In case of any failure or issues during the upgrade process, you can restore these files, if required.

Backing Up the Schema Version Registry Table

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

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

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

Maintaining Customized Domain and Environment Settings

If you have modified any domain-generated, server startup scripts, or configuration files in your pre-upgrade environment, it is important to note that these changes are overwritten during the installation, and reconfiguration operations. Oracle recommends you to take a backup of the the customized files to a shared library location. In case of any failure or issues during the upgrade process, you can restore these files, if required.

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.

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

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

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

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

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

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

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.
> See Install and Configure in *Release Notes for Oracle Fusion Middleware Infrastructure*.

- Verify Your Environment Meets Certification Requirements
  Oracle has tested and verified the performance of your product on all certified systems and environments. Make sure that you are installing your product on a supported hardware and software configuration.
- Verify System Requirements and Specifications
  It is important to 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.
- 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 (14.1.2.1.0).
- 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.

Verify Your Environment Meets Certification Requirements

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

Whenever new certifications occur, they are added to the appropriate certification document right away. New certifications can occur at any time, and for this reason the certification documents are kept outside of the documentation libraries and are available on Oracle Technical Resources. See the Certification Matrix for 14c (14.1.2.1.0). Under Oracle Fusion Middleware Certifications, open or save System Requirements and Supported Platforms for

Oracle Fusion Middleware 14c (14.1.2.1.0) (xls) file, and then in the Menu tab, click the link for Identity and Access Management.

> **Note:**
>
> Check for any mandatory patches that are required before the installation. Review the Oracle Fusion Middleware Infrastructure release notes to see if there are any mandatory patches required for the software products that you are installing.
>
> See Install and Configure in *Release Notes for Oracle Fusion Middleware Infrastructure*.

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.

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 (14.1.2.1.0).

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 (14.1.2.1.0).

> **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`.

Creating a Non-SYSDBA User to Run the Upgrade Assistant

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

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

Oracle recommends that you create a non-SYSDBA user to upgrade the schemas. The privileges listed below must be granted to user FMW before starting the Upgrade Assistant.

Notes:

The non-SYSDBA user FMW is created solely for the purpose of running the Upgrade Assistant. After this step is complete, drop the FMW user. Note that privileges required for running the Upgrade Assistant may change from release to release.

By default, the `v$xatrans$` table does not exist. You must run the `XAVIEW.SQL` script to create this table before creating the user. Moreover, the `grant select` privilege on the `v$xatrans$` table is required only by Oracle Identity Governance . If you do not require Oracle Identity Governance for configuration, or if you do not have the `v$xatrans$` table, then remove the following line from the script:

```
grant select on v$xatrans$ to FMW with grant option;
```

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

```
create user FMW identified by <password>;
grant dba to FMW;
grant execute on DBMS_LOB to FMW with grant option;
grant execute on DBMS_OUTPUT to FMW with grant option;
grant execute on DBMS_STATS to FMW with grant option;
grant execute on sys.dbms_aqadm to FMW with grant option;
grant execute on sys.dbms_aqin to FMW with grant option;
grant execute on sys.dbms_aqjms to FMW with grant option;
grant execute on sys.dbms_aq to FMW with grant option;
grant execute on utl_file to FMW with grant option;
grant execute on dbms_lock to FMW with grant option;
grant select on sys.V_$INSTANCE to FMW with grant option;
grant select on sys.GV_$INSTANCE to FMW with grant option;
grant select on sys.V_$SESSION to FMW with grant option;
grant select on sys.GV_$SESSION to FMW with grant option;
grant select on dba_scheduler_jobs to FMW with grant option;
grant select on dba_scheduler_job_run_details to FMW with grant option;
grant select on dba_scheduler_running_jobs to FMW with grant option;
grant select on dba_aq_agents to FMW with grant option;
grant execute on sys.DBMS_SHARED_POOL to FMW with grant option;
grant select on dba_2pc_pending to FMW with grant option;
grant select on dba_pending_transactions to FMW with grant option;
grant execute on DBMS_FLASHBACK to FMW with grant option;
grant execute on dbms_crypto to FMW with grant option;
grant execute on DBMS_REPUTIL to FMW with grant option;
grant execute on dbms_job to FMW with grant option;
grant select on pending_trans$ to FMW with grant option;
grant select on dba_scheduler_job_classes to fmw with grant option;
grant select on SYS.DBA_DATA_FILES to FMW with grant option;
grant select on SYS.V_$ASM_DISKGROUP to FMW with grant option;
grant select on v$xatrans$ to FMW with grant option;
grant execute on sys.dbms_system to FMW with grant option;
```

```
grant execute on DBMS_SCHEDULER to FMW with grant option;
grant select on dba_data_files to FMW with grant option;
grant execute on UTL_RAW to FMW with grant option;
grant execute on DBMS_XMLDOM to FMW with grant option;
grant execute on DBMS_APPLICATION_INFO to FMW with grant option;
grant execute on DBMS_UTILITY to FMW with grant option;
grant execute on DBMS_SESSION to FMW with grant option;
grant execute on DBMS_METADATA to FMW with grant option;
grant execute on DBMS_XMLGEN to FMW with grant option;
grant execute on DBMS_DATAPUMP to FMW with grant option;
grant execute on DBMS_MVIEW to FMW with grant option;
grant select on ALL_ENCRYPTED_COLUMNS to FMW with grant option;
grant select on dba_queue_subscribers to FMW with grant option;
grant execute on SYS.DBMS_ASSERT to FMW with grant option;
grant select on dba_subscr_registrations to FMW with grant option;
grant manage scheduler to FMW;
```

Identifying Existing Schemas Available for Upgrade

This optional step can be used before an upgrade to query the schema version registry table. This table contains schema information such as the schema owner, version number, component name and ID, date of creation and modification, and custom prefixes.

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

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

   ```
   SET LINE 120
   COLUMN MRC_NAME FORMAT A14
   COLUMN COMP_ID FORMAT A20
   COLUMN VERSION FORMAT A12
   COLUMN STATUS FORMAT A9
   COLUMN UPGRADED FORMAT A8
   SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
   SCHEMA_VERSION_REGISTRY WHERE OWNER LIKE UPPER('<PREFIX>_%');
   ```

2. Examine the report that is generated.

Notes:

- After the upgrade you can generate the report again to see the updated versions of your schemas. If an upgrade was not needed for a schema, the `schema_version_registry` table retains the schema at its pre-upgrade version.
- If your existing schemas are not from a supported version, then you must upgrade them to a supported version before using the 14c (14.1.2.1.0) upgrade procedures. Refer to your pre-upgrade version documentation for more information.
- If you used an OID-based policy store in the earlier versions, make sure to create a new OPSS schema before you perform the upgrade. After the upgrade, the OPSS schema remains an LDAP-based store.
- You can only upgrade schemas for products that are available for upgrade in Oracle Fusion Middleware release 14c (14.1.2.1.0). Do not attempt to upgrade a domain that includes components that are not yet available for upgrade to 14c (14.1.2.1.0).

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 (14.1.2.1.0) 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 (14.1.2.1.0). This new `WLSRuntimeSchemaDataSource` will be created when the 14c (14.1.2.1.0) 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.

Remove the JAX-RS Deployment

If JAX-RS (2.2.22.4.0) is present in the existing WebLogic domain, you must remove it before upgrading to 14c (14.1.2.1.0).

Use the 12c (12.2.1.4.0) WebLogic Administration Console to remove the deployment.

1. Log in to the WebLogic Administration Console.
2. Select **Deployments.**
3. Locate the deployment called "`jax-rs(2.2.22.4.0)`"
4. Select the checkbox next to the deployment and then **Delete**.

Ensuring that the Keystore Passwords are Same

Ensure that the passwords for `.oamkeystore` and `default-keystore.jks` are same for a successful upgrade.

To validate the keystore passwords, use the following keytool command:

```
keytool -list -keystore $DOMAIN_HOME/config/fmwconfig/.oamkeystore -storepass
xxx -storetype jceks

keytool -list -keystore $DOMAIN_HOME/config/fmwconfig/default-keystore.jks
-storepass xxx -storetype jceks
```

If there is any mismatch between the keystore passwords, ensure that you correct the password for `keystore-csf-key` to be same as that of `.oamkeystore`, before starting the upgrade.

To change the password for `keystore-csf-key`:

1. Log in to the EM console :

   ```
   http://host:port/em
   ```

2. Navigate to **WebLogic Domain**, **Security**, and then **Credentials**.
3. Locate `oracle.wsm.security` and expand it.
4. Open the `keystore-csf-key` entry in the edit mode.
5. Change the password to be the same as the password used for the `.oamkeystore`.
6. Save the changes.

Shutting Down the Node Managers

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

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

Part I

In-Place Upgrade of Oracle Access Manager

You can perform an in-place upgrade of Oracle Access Manager single node deployments, highly available environments, and Oracle Access Manager in a Multi-Data Center setup by using the procedures described in this part.

This part contains the following topics:

- Upgrading Oracle Access Manager Single Node Environments
  You can upgrade Oracle Access Manager from Release 12c (12.2.1.4.0) to Oracle Access Manager 14c (14.1.2.1.0) .
- Upgrading Oracle Access Manager Highly Available Environments
  Describes the process of upgrading Oracle Access Manager highly available environments from 12c (12.2.1.4.0) to 14c (14.1.2.1.0).
- Upgrading Oracle Access Manager Multi-Data Center Environments
  You can upgrade Oracle Access Manager deployed across multi-data centers (MDC) from 12c (12.2.1.4.0) to 14c (14.1.2.1.0).

3

Upgrading Oracle Access Manager Single Node Environments

You can upgrade Oracle Access Manager from Release 12c (12.2.1.4.0) to Oracle Access Manager 14c (14.1.2.1.0) .

> **Note:**
>
> If you are using an earlier version of Oracle Access Manager, you must upgrade to Oracle Access Manager 12c (12.2.1.4.0) first, and then to 14c (14.1.2.1.0).

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

- About the Oracle Access Manager Single Node Upgrade Process
  Review the roadmap for an overview of the upgrade process for Oracle Access Manager single node deployments.
- Completing the Pre-Upgrade Tasks for Oracle Access Manager
  Complete the pre-upgrade tasks described in this section before you upgrade Oracle Access Manager.
- Stopping Servers and Processes
  Before you upgrade the configurations, you must shut down all of the 12c (12.2.1.4.0)pre-upgrade processes and servers, including the Weblogic Admin, Managed, and Node Manager servers that are running on the intended OAMHOST.
- Uninstalling the Software
  Follow the instructions in this section to start the Uninstall Wizard and remove the software.
- Installing 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.
- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade your 12.2.1.4.0 schemas to the 14c (14.1.2.1.0) release of Oracle Fusion Middleware.
- Reconfiguring a WebLogic Domain
  To reconfigure a domain using the Reconfiguration Wizard, you first launch it from a DOS command prompt or UNIX shell, and then provide the required upgrade details in a sequence of screens that are displayed.
- 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 Servers on an OAMHOST
  After you upgrade Oracle Access Manager on an OAMHOST, start the servers.
- Enabling WebGates to Work With Oracle Access Manager
  After upgrading to Oracle Access Manager 14c (14.1.2.1.0), the earlier version of WebGates continues to work with Oracle Access Manager. However, to leverage the latest security features of Oracle Access Manager and WebGates 14*c* (14.1.2.0.0), you must upgrade the WebGates to 14*c* (14.1.2.0.0), and register the agent's profile with the Oracle Access Manager Server.

About the Oracle Access Manager Single Node Upgrade Process

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

The steps required to upgrade an existing domain will vary depending on how the domain is configured and which components are being upgraded.

Table 3-1 Tasks for Upgrading Single Node Oracle Access Manager Deployments

Task	Description
Optional If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Access Manager to 14c (14.1.2.1.0) • Pre-Upgrade Requirements
Required Complete the necessary pre-upgrade tasks specific to Oracle Access Manager.	See Completing the Pre-Upgrade Tasks for Oracle Access Manager
Required Install Fusion Middleware Infrastructure and Oracle Access Manager 14c (14.1.2.1.0) in a new Oracle home.	Install Fusion Middleware Infrastructure and Oracle Access Manager in a *new* Oracle home on the same host as the 12c (12.2.1.4.0) production deployment before you begin the upgrade. See Installing Product Distributions
Optional Run a pre-upgrade readiness check.	See Running a Pre-Upgrade Readiness Check
Required Shut down the 12c (12.2.1.4.0) environment (stop all Administration and Managed Servers). Ensure that the Database is up during the upgrade.	**WARNING**: Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes
Required Uninstall Oracle Access Manager and Oracle Fusion Middleware Infrastructure from the existing Oracle home.	Uninstall first Oracle Access Manager 12c (12.2.1.4.0) and then Oracle Fusion Middleware Infrastructure from the existing 12c (12.2.1.4.0) Oracle home. See Uninstalling the Software.
Required Start the Upgrade Assistant to upgrade the 12c (12.2.1.4.0) database schemas and to migrate all active (in flight) instance data.	See Starting the Upgrade Assistant

Table 3-1 (Cont.) Tasks for Upgrading Single Node Oracle Access Manager Deployments

Task	Description
Required Start the Reconfiguration Wizard to reconfigure the domain.	During an upgrade, the Configuration Wizard is run in reconfiguration mode to update the existing domain to use the newly installed software. See Reconfiguring the Domain Using the Reconfiguration Wizard
Required Start the Upgrade Assistant (again) to upgrade Oracle Access Manager domain component configurations.	The Upgrade Assistant is used to update the reconfigured domain's component configurations. See Upgrading Domain Component Configurations

Completing the Pre-Upgrade Tasks for Oracle Access Manager

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

- Checking the Supported Starting Point for Oracle Access Manager Upgrade
  The Oracle Access Manager version that is supported for upgrade is 12c (12.2.1.4.0).

Checking the Supported Starting Point for Oracle Access Manager Upgrade

The Oracle Access Manager version that is supported for upgrade is 12c (12.2.1.4.0).

If you are using an earlier version of Oracle Access Manager, you must upgrade to Oracle Access Manager 12c (12.2.1.4.0) first, and then to 14c (14.1.2.1.0).

Stopping Servers and Processes

Before you upgrade the configurations, you must shut down all of the 12c (12.2.1.4.0)pre-upgrade processes and servers, including the Weblogic Admin, Managed, and Node Manager servers that are running on the intended OAMHOST.

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 or the WebLogic Server Administration 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) *DOMAIN_HOME*`/bin/stopComponent.sh` *component_name*
- (Windows) *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) *DOMAIN_HOME*`/bin/stopManagedWebLogic.sh` *managed_server_name admin_url*
- (Windows) *DOMAIN_HOME*`\bin\stopManagedWebLogic.cmd` *managed_server_name admin_url*

When prompted, enter your user name and password.

Step 3: Stop the Administration Server

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

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

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

Step 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*.

Uninstalling the Software

Follow the instructions in this section to start the Uninstall Wizard and remove the software.

If you want to uninstall the product in a silent (command-line) mode, see Running the Oracle Universal Installer for Silent Uninstallation in *Installing Software with the Oracle Universal Installer*.

Starting the Uninstall Wizard

Start the Uninstall Wizard:

1. Change to the following directory:

   (UNIX) *ORACLE_HOME*/oui/bin

   (Windows) *ORACLE_HOME*\oui\bin

2. Enter the following command:

   (UNIX) ./deinstall.sh

   (Windows) deinstall.cmd

Selecting the Product to Uninstall

Because multiple products exist in the Oracle home, ensure that you are uninstalling the correct product.

After you run the Uninstall Wizard, the Distribution to Uninstall screen opens.

From the drop-down menu, select the **Oracle Fusion Middleware 14c (14.1.2.1.0) Oracle Access Manager** product and click **Uninstall**.

> **Note:**
>
> The Uninstall Wizard displays the Distribution to Uninstall screen only if it detects more than one product distribution in the Oracle home from where you initate the wizard. If only **Oracle Fusion Middleware 14c (14.1.2.1.0) Oracle Access Manager** product distribution is available, the Uninstall Wizard will display the Deinstallation Summary screen.

> **Note:**
>
> Do not select **Weblogic Server for FMW**.

> **Note:**
>
> You can uninstall Oracle Fusion Middleware Infrastructure after you uninstall OIM or OAM software by running the Uninstall Wizard again. Before doing so, ensure that there are no other products using the Infrastructure, as those products will no longer function once the Infrastructure is removed. You will not encounter the Distribution to Uninstall screen if no other software depends on Oracle Fusion Middleware Infrastructure. See, Uninstalling Oracle Fusion Middleware Infrastructure in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*

Navigating the Uninstall Wizard Screens

The Uninstall Wizard shows a series of screens to confirm the removal of the software.

If you need help on screen listed in the following table, click **Help** on the screen.

Table 3-2 Uninstall Wizard Screens and Descriptions

Screen	Description
Welcome	Introduces you to the product Uninstall Wizard.
Uninstall Summary	Shows the Oracle home directory and its contents that are uninstalled. Verify that this is the correct directory. If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. You can use the response file later to uninstall the product in silent (command-line) mode. See Running the Oracle Universal Installer for Silent Deinstallation in *Installing Software with the Oracle Universal Installer*. Click **Deinstall** to begin removing the software.
Uninstall Progress	Shows the uninstallation progress.
Uninstall Complete	Appears when the uninstallation is complete. Review the information on this screen, then click **Finish** to close the Uninstall Wizard.

Note:

- Repeat these steps for uninstalling **Weblogic Server for FMW**.
  You will be reinstalling the Oracle binaries into the same *ORACLE_HOME* location.
- After the product is uninstalled, ensure that the *ORACLE_HOME* folder exists. During the initial 12c (12.2.1.4.0) install, if the default location was *ORACLE_HOME*, that is `/user_projects`, then the `domain-registry.xml` file will reside in *ORACLE_HOME*.

Complete the following steps to clean this directory:

1. After both OAM and WLS are uninstalled, run the following command:

   ```
   $ ls -al
   ```

   Following is an example of the output:

   ```
   total 28
   drwxr-x---. 6 <USER> <GROUP> 4096 Apr  2 20:27 .
   drwxr-x---. 6 <USER> <GROUP> 4096 Jul  9  2019 ..
   drwxr-x---. 5 <USER> <GROUP> 4096 Mar 23 17:48 cfgtoollogs
   -rw-r-----. 1 <USER> <GROUP>  225 Jul  9  2019 domain-registry.xml
   drwxr-x---. 7 <USER> <GROUP> 4096 Mar 26 17:12 .patch_storage
   drwxr-x---. 4 <USER> <GROUP> 4096 Jul  9  2019 user_projects
   drwxr-x---. 3 <USER> <GROUP> 4096 Apr  2 20:26 wlserver
   ```

2. Go to the *ORACLE_HOME* location. If the `user_projects` directory and the `domain-registry.xml` file are present, take their backup. They need to be restored after the upgrade is complete. After taking the backup, delete all the files in *ORACLE_HOME*.

Installing Product Distributions

> **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

To install the 14c (14.1.2.1.0) distributions:

1. Sign in to the target system.
2. Download the following from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - If you have not yet installed Oracle Fusion Middleware Infrastructure, then download Oracle Fusion Middleware Infrastructure (`fmw_14.1.2.0.0_infrastructure.jar`)
   - Oracle Identity and Access Management 14c (14.1.2.1.0) (`V1048198-01.zip`, which contains `fmw_14.1.2.1.0_idm.jar`) from OTN or Oracle Fusion Middleware 14.1.2.1.0 Identity and Access Management from Oracle Software Delivery Cloud.
   - Any additional distributions for your pre-upgrade environment
3. Change to the directory where you downloaded the product distribution
4. If you have already installed Oracle Fusion Middleware Infrastructure (`fmw_14.1.2.0.0_infrastructure.jar`), got to step 16.
5. Start the installation program for Oracle Fusion Middleware Infrastructure.

   Run the following commands:

   - (UNIX) *JDK_HOME*`/bin/java -jar fmw_14.1.2.0.0_infrastructure.jar`
   - (Windows) *JDK_HOME*`\bin\java -jar fmw_14.1.2.0.0_infrastructure.jar`

   > **Note:**
   >
   > Restore the `user_projects` directory and the `domain-registry.xml` file from the backup taken during the cleaning up of the *Oracle_Home* directory, as part of the OAM 12c (12.2.1.4.0) uninstallation process.

6. 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.

7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. 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**.
9. 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*.
10. On the Installation Type screen, select **Fusion Middleware Infrastructure**.

    Click **Next**.
11. 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).
12. 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.
13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.
14. 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.
15. After you have installed Oracle Fusion Middleware Infrastructure, enter the following command to start the installer for Oracle Access Manager 14c (14.1.2.1.0) and repeat the steps above to navigate through the installer screens:

> **Note:**
>
> On the Installation Type screen, for Oracle Access Manager, select **Collocated Oracle Identity and Access Manager**.

- (UNIX) *JDK_HOME*`/bin/java -jar fmw_14.1.2.1.0_idm.jar`
- (Windows) *JDK_HOME*`\bin\java -jar fmw_14.1.2.1.0_idm.jar`

> **Note:**
>
> For more information about installing Oracle Access Manager 14c (14.1.2.1.0), see Installing and Configuring the Oracle Access Manager Software in the *Installing and Configuring Oracle Identity and Access Management*.

Running a Pre-Upgrade Readiness Check

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

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

About Running a Pre-Upgrade Readiness Check

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

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

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

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

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

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

Starting the Upgrade Assistant in Readiness Mode

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

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

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

   Where, *ORACLE_HOME* is the 14c (14.1.2.1.0) Oracle Home.
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

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

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

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

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

Table 3-3 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **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 3-3 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. 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 **Domain Based**.

   The **Domain Based** option enables 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.
3. In the **Domain Directory** field, select the 12c (12.2.1.4.0) domain folder that was copied to the 14c (14.1.2.1.0) setup machine. If the 14c (14.1.2.1.0) setup is on the same machine as the 12c Release, provide the 12c domain home location during the readiness check.

   Click **Next**.

4. The Component List screen displays the list of components whose schema will be upgraded.

   Click **Next**.

5. On the Schema Credentials screen, specify the database credentials to connect to the selected 12c (12.2.1.4.0) schema: **Database Type**, **DBA User Name**, and **DBA Password**. As part of the pre-upgrade requirements, you had created the required user, see Creating a Non-SYSDBA User to Run the Upgrade Assistant.

   Then click **Connect**.

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

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

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

   Click **Next** until all schema connections are validated (the screen name changes based on the schema selected).

   > **Note:**
   >
   > If you encounter any connection failure, check the cause and fix it.

6. 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**.

7. 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**.

The following components are marked as **ready for upgrade** although they are not upgraded. Ignore the **ready for upgrade** message against these components:

- Oracle JRF
- Common Infrastructure Services
- Oracle Web Services Manager

8. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):
   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.
   - If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

Understanding the Readiness Report

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

The format of the readiness report file is:

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

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

A readiness report contains the following information:

Table 3-4 Readiness Report Elements

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

Table 3-4 (Cont.) Readiness Report Elements

Report Information	Description	Required Action
Names of schemas that were checked	The names and current versions of the schemas included in the check and status.	Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade.
Individual Object Test Status: FAIL	The readiness check test detected an issue with a specific object.	Do not upgrade until all failed issues have been resolved.
Individual Object Test Status: PASS	The readiness check test detected no issues for the specific object.	If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade.
Completed Readiness Check of <Object> Status: FAILURE	The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype.	Do not upgrade until all failed issues have been resolved.
Completed Readiness Check of <Object> Status: SUCCESS	The readiness check test detected no issues.	No action required.

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

```
This readiness check report was created on Wed Dec 02 05:47:33 PST 2020 Log
file is located at:
/oracle/work/middleware_latest/oracle_common/upgrade/logs/
ua2020-12-02-05-35-03AM.log
Readiness Check Report File:
/oracle/work/middleware_latest/oracle_common/upgrade/logs/
readiness2020-12-02-05-47-33AM.txt
Domain Directory:
/oracle/work/middleware_1212/user_projects/domains/oim_domain

Starting readiness check of components.

Oracle Platform Security Services
    Starting readiness check of Oracle Platform Security Services.
      Schema User Name: DEV_OPSS
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_OPSS is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
```

```
    Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
    Starting schema test:  Test that the schema does not contain any
unexpected tables  TEST_UNEXPECTED_TABLES
    Completed schema test: Test that the schema does not contain any
unexpected tables --> TEST_UNEXPECTED_TABLES +++ Test that the schema does
not contain any unexpected tables
    Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
    Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
tablespaces automatically extend if full +++ PASS
    Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
    Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++ PASS
    Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
    Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
    Starting permissions test:  TEST_DBA_TABLE_GRANTS  Test that DBA user has
privilege to view all user tables
    Completed permissions test: TEST_DBA_TABLE_GRANTS --> Test that DBA user
has privilege to view all user tables +++ PASS
    Starting schema test:  TEST_MISSING_COLUMNS  Test that tables and views
are not missing any required columns
    Completed schema test: TEST_MISSING_COLUMNS --> Test that tables and
views are not missing any required columns +++ PASS
    Starting schema test:  TEST_UNEXPECTED_COLUMNS  Test that tables and
views do not contain any unexpected columns
    Completed schema test: TEST_UNEXPECTED_COLUMNS --> Test that tables and
views do not contain any unexpected columns +++ PASS
    Starting datatype test for table CT_29: TEST_COLUMN_DATATYPES_V2 --> Test
that all table columns have the proper datatypes
    Completed datatype test for table CT_29: TEST_COLUMN_DATATYPES_V2
--> Test that all table columns have the proper datatypes +++ PASS
    Starting index test for table JPS_ENTITY_LOCK: TEST_REQUIRED_INDEXES
--> Test that the table contains all the required indexes
    Completed index test for table JPS_ENTITY_LOCK:
TEST_REQUIRED_INDEXES --> Test that the table contains all the required
indexes +++ PASS
   Starting index test for table CT_9_3:  TEST_UNEXPECTED_INDEXES --> Test
that the table does not contain any unexpected indexes
    Completed index test for table CT_9_3: TEST_UNEXPECTED_INDEXES --> Test
that the table does not contain any unexpected indexes +++ PASS
    Starting schema test:  UPGRADE_SCRIPT_TEST  Test that the middleware
contains the required Oracle Platform Security Services upgrade script
    Completed schema test: UPGRADE_SCRIPT_TEST --> Test that the middleware
contains the required Oracle Platform Security Services upgrade script +++
PASS
    Starting schema test:  PRIVILEGES_TEST  Test that the Oracle Platform
Security Services schema has appropriate system privileges
    Completed schema test: PRIVILEGES_TEST --> Test that the Oracle Platform
Security Services schema has appropriate system privileges +++ PASS
    Starting schema test:  SEQUENCE_TEST  Test that the Oracle Platform
Security Services schema sequence and its properties are valid
    Completed schema test: SEQUENCE_TEST --> Test that the Oracle Platform
```

```
Security Services schema sequence and its properties are valid
+++ PASS
    Finished readiness check of Oracle Platform Security Services with
status: SUCCESS.

Oracle Metadata Services
    Starting readiness check of Oracle Metadata Services.
      Schema User Name: DEV_MDS
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_MDS is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
    Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
    Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
    Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the schema
contains all the required stored procedures +++ PASS
    Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema contains
all the required database views
    Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
    Starting index test for table MDS_ATTRIBUTES: TEST_REQUIRED_INDEXES
--> Test that the table contains all the required indexes
    Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
    Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++ PASS
    Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
    Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Finished readiness check of Oracle Metadata Services with status:
SUCCESS.

User Messaging Service
    Starting readiness check of User Messaging Service.
      Schema User Name: DEV_ORASDPM
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_ORASDPM is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
```

```
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Starting column test for table RULE_SET:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns
    Completed column test for table RULE_SET:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Starting column test for table STATUS: TEST_UNEXPECTED_TABLE_COLUMNS
--> Test that the table does not contain any unexpected columns
    Completed column test for table STATUS:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Starting column test for table STATUS_ORPHAN:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns
    Completed column test for table STATUS_ORPHAN:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Starting column test for table USER_DEVICE:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns
    Completed column test for table USER_DEVICE:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Finished readiness check of User Messaging Service with status: SUCCESS.

Oracle SOA
    Starting readiness check of Oracle SOA.
      Schema User Name: DEV_SOAINFRA
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_SOAINFRA is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
    Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
    Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
    Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the schema
contains all the required stored procedures +++ PASS
    Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema contains
all the required database views
    Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
    Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
    Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
```

```
tablespaces automatically extend if full +++ PASS
    Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
    Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
    Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
    Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++ PASS
    Starting schema test:  SOA_TABLESPACE_VALIDATION  Test SOAINFRA schema
for enough default table space and temp table space.
    Completed schema test: SOA_TABLESPACE_VALIDATION --> Test SOAINFRA schema
for enough default table space and temp table space. +++ PASS
    Starting schema test:  SOA_INSTANCE_VALIDATION  Test SOAINFRA schema for
inconsistencies of instance data.
    Completed schema test: SOA_INSTANCE_VALIDATION --> Test SOAINFRA schema
for inconsistencies of instance data. +++ PASS
    Finished readiness check of Oracle SOA with status: SUCCESS.

Oracle Identity Manager
    Starting readiness check of Oracle Identity Manager.
      Schema User Name: DEV_OIM
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
    Starting schema test:  examine  Calling examine method
      INFO Examine is successful
    Completed schema test: Examine --> Testing schema version +++ PASS
    Starting schema test:  TEST_MDS_BACKUP  Taking backup of MDS data related
to OIM to handle any unseen situation during upgrade.
      INFO MDSBackup passes. Backup of MDS data related to OIM is here:
/oracle/work/middleware_latest/oracle_common/upgrade/temp/mdsBackup/
    Completed schema test: TEST_MDS_BACKUP --> Taking backup of MDS data
related to OIM to handle any unseen situration during upgrade. +++ PASS
    Finished readiness check of Oracle Identity Manager with status:
SUCCESS.

User Messaging Service
    Starting readiness check of User Messaging Service.
    Starting config test:  TEST_USERMESSAGINGCONFIG  Test that configuration
file usermessagingconfig.xml is accessible, in place and valid.
    Completed config test: TEST_USERMESSAGINGCONFIG --> Configuration file
usermessagingconfig.xml is accessible, in place and valid. +++ PASS
    Starting config test:  TEST_ALREADY_UPGRADED  Test that configuration is
not already upgraded.
    Completed config test: TEST_ALREADY_UPGRADED --> Configuration is not
already upgraded. +++ PASS
    Finished readiness check of User Messaging Service with status: SUCCESS.

Oracle Identity Manager
    Starting readiness check of Oracle Identity Manager.
      INFO There are no configuration readiness tests for Oracle Identity
Manager.
    Finished readiness check of Oracle Identity Manager with status:
SUCCESS.

Oracle JRF
```

```
    Starting readiness check of Oracle JRF.
    Finished readiness check of Oracle JRF with status: SUCCESS.

System Components Infrastructure
    Starting readiness check of System Components Infrastructure.
    Starting config test:  TEST_SOURCE_CONFIG  Checking the source
configuration.
      INFO
/oracle/work/middleware_1212/user_projects/oim_domain/opmn/topology.xml
was not found. No upgrade is needed.
    Completed config test: TEST_SOURCE_CONFIG --> Checking the source
configuration. +++ PASS
    Finished readiness check of System Components Infrastructure with
status: ALREADY_UPGRADED.

Common Infrastructure Services
    Starting readiness check of Common Infrastructure Services.
    Starting config test:  CIEConfigPlugin.readiness.test  This tests the
readiness of the domain from CIE side.
    Completed config test: CIEConfigPlugin.readiness.test --> This tests the
readiness of the domain from CIE side. +++ PASS
    Finished readiness check of Common Infrastructure Services with
status: SUCCESS.

Oracle Web Services Manager
    Starting readiness check of Oracle Web Services Manager.
    Completed config test: BOOTSTRAP_PROPERTIES_CHECK --> Bootstrap
properties check +++ PASS
    Completed config test: CONFIGURATION_PROPERTIES_CHECK --> Configuration
properties check +++ PASS
    Completed config test: TOKEN_TRUST_PROPERTIES_CHECK --> Trust issuer
properties check +++ PASS
    Completed config test: MDS_REPOSITORY_CONNECTIVITY_CHECK --> MDS
repository connectivity check +++ PASS
    Finished readiness check of Oracle Web Services Manager with status:
SUCCESS.

Finished readiness check of components.
```

Note:

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

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade your 12.2.1.4.0 schemas to the 14c (14.1.2.1.0) 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 (14.1.2.1.0) 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 (14.1.2.1.0) with editions disabled and then upgraded to 14c (14.1.2.1.0) will become editions enabled.
> - Oracle Access Manager does not support editions. Oracle Access Manager schemas need to be created with edition disabled.
> - Schemas created in 14c (14.1.2.1.0) 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 (14.1.2.1.0).
- Upgrading Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.1.0).

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

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.

Table 3-5 (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 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 **All Schemas Used by a Domain**.

   - **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. However, use the **Individually Selected Schemas** option for standalone installations.

   Click **Next**.

3. If you selected **All Schemas Used by a Domain**: On the Component List screen you will see two lists of schemas. The first list shows the components whose schemas are present in the domain and will be upgraded. The second list shows the list of missing schemas that may need to be created. If none of the required schemas are missing, you will only see the first list. Review both lists and click **Next**.

   The Upgrade Assistant will attempt to create any missing schemas using the schema credentials used to create the existing domain schemas. You do not need to launch the Repository Creation Utility.

   If you want to exclude some components or schemas from the list, navigate back to the All Schemas screen and select **Individually Selected Schemas**. This option allows you to select only those schemas you want included in the upgrade.

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

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

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

   > **Note:**
   >
   > The schema name is changed for `UCSUMS` schema as of release 12.1.2, which means the Upgrade Assistant does not automatically recognize the possible schemas and display them in a drop-down list. You must manually enter the name in a text field. The name can be either *`prefix`*`_ORASDPM` or *`prefix`*`_UMS`, depending on the starting point for the upgrade.

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

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

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

7. On the Upgrade Summary screen, review the summary of the 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** .

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

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

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

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

Click **Next**.

9. 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 14.1.2.1.0.

  > **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.

Reconfiguring a WebLogic Domain

To reconfigure a domain using the Reconfiguration Wizard, you first launch it from a DOS command prompt or UNIX shell, and then provide the required upgrade details in a sequence of screens that are displayed.

To start the Reconfiguration Wizard in graphical mode from a Windows command prompt or on UNIX systems:

1. Log in to the system on which the domain resides.
2. Open an MS-DOS command prompt window (on Windows) or a command shell (on UNIX).
3. Go to the following directory,"where `ORACLE_HOME` is your 14c Oracle home directory:

   On Windows: `ORACLE_HOME\oracle_common\common\bin`

   On UNIX: `ORACLE_HOME/oracle_common/common/bin`
4. Run the following commands:

   On Windows: `reconfig.cmd`

   On UNIX: `sh reconfig.sh`

The Reconfiguration Setup Progress screen appears.

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 (14.1.2.1.0).

- Upgrading the Domain Configurations with the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.
- Verifying the Domain-Specific-Component Configurations Upgrade
  To verify that the domain-specific-component configurations upgrade was successful, sign in to the Remote Console and verify that the version numbers for each upgraded component is 14.1.2.1.0.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.1.0).

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

Upgrade Assistant Parameters

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

Table 3-6 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **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 3-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. 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 the Domain Configurations with 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 14c (14.1.2.1.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

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

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

2. On the All Configurations screen, select **All Configurations Used by a Domain** and specify your domain location in the **Domain Directory** field by entering it directly or by clicking **Browse** to use a navigation tree to select a valid domain directory. Click **Next**.
3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

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

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

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

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

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

6. On the 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.

7. 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.

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

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

If any 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**.

9. 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.

Verifying the Domain-Specific-Component Configurations Upgrade

To verify that the domain-specific-component configurations upgrade was successful, sign in to the Remote Console and verify that the version numbers for each upgraded component is 14.1.2.1.0.

> **Note:**
>
> Before you can access the Hosted WebLogic Remote Console, you must deploy the hosted WebLogic Remote Console. For more information, see the Remote Console Online Help.

To sign in to the Remote Console, go to: `http://hostname:port/rconsole` or for HTTPS, `https://hostname:port/rconsole`.

> **Note:**
>
> After a successful upgrade, make sure you run the administration tools from the new 14c (14.1.2.1.0) Oracle home directory and not from the previous Oracle home directory.
>
> During the upgrade process, some OWSM documents, including policy sets and predefined documents such as policies and assertion templates, may need to be upgraded. If a policy set or a predefined document is upgraded, its version number is incremented by 1.
>
> If you created the FMW user to run the Upgrade Assistant, ensure that you delete the account after verifying your upgrade was successful.

Starting the Servers on an OAMHOST

After you upgrade Oracle Access Manager on an OAMHOST, start the servers.

You must start the servers in the following order:

1. Start the Node Manager on the required OAMHOST.
2. Start the Administration Server on the required OAMHOST.
3. Start the Oracle Access Manager Managed Servers on the required OAMHOST.

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

Starting Servers and Processes

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

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

> **Note:**
>
> The procedures in this section describe how to start servers and 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 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 2: 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 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*.

> **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.

Enabling WebGates to Work With Oracle Access Manager

After upgrading to Oracle Access Manager 14c (14.1.2.1.0), the earlier version of WebGates continues to work with Oracle Access Manager. However, to leverage the latest security features of Oracle Access Manager and WebGates 14*c* (14.1.2.0.0), you must upgrade the WebGates to 14*c* (14.1.2.0.0), and register the agent's profile with the Oracle Access Manager Server.

> **Note:**
>
> If you have any other components of Oracle Identity and Access Management deployed, then all of the components must be upgraded to 14c (14.1.2.1.0) to leverage the new security features of 14c (14.1.2.1.0).

To upgrade the WebGates, you must upgrade the respective Web Servers to 14*c* (14.1.2.0.0). To upgrade the Oracle HTTP Server WebGates, upgrade Oracle HTTP Server to 14*c* (14.1.2.0.0). See Upgrading a Standalone Oracle HTTP Server in the *Upgrading Oracle HTTP Server*.

After you upgrade the Web Servers, do the following:

1. Register or edit the WebGate profile and copy the WebGate artifacts to the WebGate config folder. See Upgrading to OHS 14*c* (14.1.2.0.0) WebGate in the *Installing WebGates for Oracle Access Manager*.
2. Start and stop the WebGates.

4

Upgrading Oracle Access Manager Highly Available Environments

Describes the process of upgrading Oracle Access Manager highly available environments from 12c (12.2.1.4.0) to 14c (14.1.2.1.0).

- About the Oracle Access Manager Multinode Upgrade Process
  Review the topology and the roadmap for an overview of the upgrade process for Oracle Access Manager highly available environments.
- Backing up the 12c (12.2.1.4.0) Middleware Home Folder on OAMHOSTs
  Backup the 12c (12.2.1.4.0) Middleware Home on both OAMHOST1 and OAMHOST2.
- Stopping Servers and Processes
  Before you upgrade the configurations, you must shut down all of the pre-upgrade processes and servers, including the Weblogic Admin, Managed, and Node Manager servers that are running on the intended OAMHOST.
- Uninstalling the Software
  Follow the instructions in this section to start the Uninstall Wizard and remove the software.
- Installing Product Distributions on OAMHOSTs
  Install the binaries on an OAMHOST.
- 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.
- Upgrading Schemas on OAMHOST1
  Upgrade all of the necessary schemas for Oracle Access Management, on OAMHOST1 by using the Upgrade Assistant.
- Reconfiguring the Domain on OAMHOST1
  Run the Reconfiguration Wizard on OAMHOST1 to reconfigure your domain component configurations to 14c (14.1.2.1.0).
- Replicating the Domain Configurations on OAMHOST2
  Replicate the domain configurations on OAMHOST2. This involves packing the upgraded domain on OAMHOST1 and unpacking it on OAMHOST2.
- Upgrading Domain Component Configurations on OAMHOST1 and OAMHOST2
  After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain component configurations inside the domain to match the updated domain configuration.
- Starting the Servers on OAMHOSTs
  After you upgrade Oracle Access Manager on an OAMHOST, start the servers.
- Enabling WebGates to Work With Oracle Access Manager
  After upgrading to Oracle Access Manager 14c (14.1.2.1.0), the earlier version of WebGates continues to work with Oracle Access Manager. However, to leverage the latest security features of Oracle Access Manager and WebGates 14*c* (14.1.2.0.0), you must

upgrade the WebGates to 14*c* (14.1.2.0.0), and register the agent's profile with the Oracle Access Manager Server.

About the Oracle Access Manager Multinode Upgrade Process

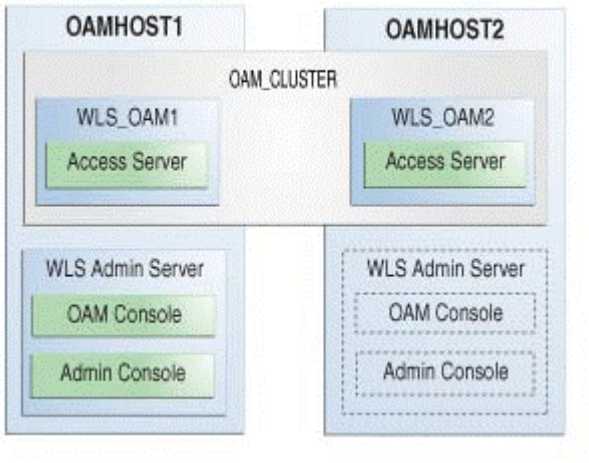
Review the topology and the roadmap for an overview of the upgrade process for Oracle Access Manager highly available environments.

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

Upgrade Topology

The following topology shows the Oracle Access Manager cluster set up that can be upgraded to 14c (14.1.2.1.0) by following the procedure described in this chapter.

Figure 4-1 Oracle Access Manager High Availability Upgrade Topology



On OAMHOST1, the following installations have been performed:

- An Oracle Access Server has been installed in the WLS_OAM1 Managed Server.
- A WebLogic Server Administration Server has been installed. Under normal operations, this is the active Administration Server.

On OAMHOST2, the following installations have been performed:

- An Oracle Access Server has been installed in the WLS_OAM2 Managed Server.
- A WebLogic Server Administration Server has been installed. Under normal operations, this is the passive Administration Server. You make this Administration Server active if the Administration Server on OAMHOST1 becomes unavailable.

The instances in the WLS_OAM1 and WLS_OAM2 Managed Servers on OAMHOST1 and OAMHOST2 are configured in a cluster named OAM_CLUSTER.

> **Note:**
>
> This topology diagram is only for illustration purposes. Typical customer topologies may have more than two OAM server nodes in their cluster. They may also have a separate cluster of OAM Policy Manager server nodes.

Table 4-1 Tasks for Upgrading Oracle Access Manager Highly Available Environments

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Identity and Access Management to 14c (14.1.2.1.0) • Pre-Upgrade Requirements
Required Create backup of the existing 12c (12.2.1.4.0) Middleware home folders on OAMHOSTs	See Backing up the 12c (12.2.1.4.0) Middleware Home Folder on OAMHOSTs.
Required on OAMHOST1 Shut down the 12c environment (stop all Administration and Managed Servers) on OAMHOST1. Ensure that the Database is up during the upgrade.	**WARNING**: Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.
Required on OAMHOST1 On OAMHOST1, uninstall Oracle Fusion Middleware Infrastructure and Oracle Access Manager 12c (12.2.1.4.0) in the existing Oracle home.	See #unique_90.
Required on OAMHOST1 On OAMHOST1, install Infrastructure (JRF) 14c (14.1.2.1.0) and Oracle Access Manager 14c (14.1.2.1.0) in the existing Oracle home.	See Installing Product Distributions on OAMHOSTs.
Required on OAMHOST1 Start the servers on OAMHOST1.	See Starting the Servers.
Required on OAMHOST2 Shut down the 12c environment (stop all Managed Servers) on OAMHOST2. Ensure that the Database is up during the upgrade.	**WARNING**: Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.
Required on OAMHOST2 On OAMHOST2, uninstall Oracle Fusion Middleware Infrastructure and Oracle Access Manager 12c (12.2.1.4.0) in the existing Oracle home.	See #unique_90.
Required on OAMHOST2 On OAMHOST2, install Infrastructure (JRF) 14c (14.1.2.1.0) and Oracle Access Manager 14c (14.1.2.1.0) in the existing Oracle home.	See Installing Product Distributions on OAMHOSTs.
Required on OAMHOST2 Start the node manager and managed servers on OAMHOST2.	See Starting the Servers.

Backing up the 12c (12.2.1.4.0) Middleware Home Folder on OAMHOSTs

Backup the 12c (12.2.1.4.0) Middleware Home on both OAMHOST1 and OAMHOST2.

As a backup, copy and rename the 12.2.1.4.0 Middleware home folder on OAMHOST1 and OAMHOST2.
For example:

From `/u01/app/fmw/ORACLE_HOME` to `/u01/app/fmw/ORACLE_HOME_old`

Stopping Servers and Processes

Before you upgrade the configurations, you must shut down all of the pre-upgrade processes and servers, including the Weblogic Admin, Managed, and Node Manager servers that are running on the intended OAMHOST.

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.

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*.

Uninstalling the Software

Follow the instructions in this section to start the Uninstall Wizard and remove the software.

If you want to uninstall the product in a silent (command-line) mode, see Running the Oracle Universal Installer for Silent Uninstallation in *Installing Software with the Oracle Universal Installer*.

Starting the Uninstall Wizard

Start the Uninstall Wizard:

1. Change to the following directory:

   (UNIX) *`ORACLE_HOME`*`/oui/bin`

   (Windows) *`ORACLE_HOME`*`\oui\bin`
2. Enter the following command:

   (UNIX) `./deinstall.sh`

   (Windows) `deinstall.cmd`

Selecting the Product to Uninstall

Because multiple products exist in the Oracle home, ensure that you are uninstalling the correct product.

After you run the Uninstall Wizard, the Distribution to Uninstall screen opens.

From the drop-down menu, select the **Oracle Fusion Middleware 14c (14.1.2.1.0) Oracle Access Manager** product and click **Uninstall**.

> **Note:**
>
> The Uninstall Wizard displays the Distribution to Uninstall screen only if it detects more than one product distribution in the Oracle home from where you initate the wizard. If only **Oracle Fusion Middleware 14c (14.1.2.1.0) Oracle Access Manager** product distribution is available, the Uninstall Wizard will display the Deinstallation Summary screen.

> **Note:**
>
> Do not select **Weblogic Server for FMW**.

> **Note:**
>
> You can uninstall Oracle Fusion Middleware Infrastructure after you uninstall OIM or OAM software by running the Uninstall Wizard again. Before doing so, ensure that there are no other products using the Infrastructure, as those products will no longer function once the Infrastructure is removed. You will not encounter the Distribution to Uninstall screen if no other software depends on Oracle Fusion Middleware Infrastructure. See, Uninstalling Oracle Fusion Middleware Infrastructure in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*

Navigating the Uninstall Wizard Screens

The Uninstall Wizard shows a series of screens to confirm the removal of the software.

If you need help on screen listed in the following table, click **Help** on the screen.

Table 4-2 Uninstall Wizard Screens and Descriptions

Screen	Description
Welcome	Introduces you to the product Uninstall Wizard.

Table 4-2 (Cont.) Uninstall Wizard Screens and Descriptions

Screen	Description
Uninstall Summary	Shows the Oracle home directory and its contents that are uninstalled. Verify that this is the correct directory. If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. You can use the response file later to uninstall the product in silent (command-line) mode. See Running the Oracle Universal Installer for Silent Deinstallation in *Installing Software with the Oracle Universal Installer*. Click **Deinstall** to begin removing the software.
Uninstall Progress	Shows the uninstallation progress.
Uninstall Complete	Appears when the uninstallation is complete. Review the information on this screen, then click **Finish** to close the Uninstall Wizard.

Note:

- Repeat these steps for uninstalling **Weblogic Server for FMW**.
  You will be reinstalling the Oracle binaries into the same *ORACLE_HOME* location.
- After the product is uninstalled, ensure that the *ORACLE_HOME* folder exists. During the initial 12c (12.2.1.4.0) install, if the default location was *ORACLE_HOME*, that is `/user_projects`, then the `domain-registry.xml` file will reside in *ORACLE_HOME*.

Complete the following steps to clean this directory:

1. After both OAM and WLS are uninstalled, run the following command:

   ```
   $ ls -al
   ```

   Following is an example of the output:

   ```
   total 28
   drwxr-x---. 6 <USER> <GROUP> 4096 Apr  2 20:27 .
   drwxr-x---. 6 <USER> <GROUP> 4096 Jul  9  2019 ..
   drwxr-x---. 5 <USER> <GROUP> 4096 Mar 23 17:48 cfgtoollogs
   -rw-r-----. 1 <USER> <GROUP>  225 Jul  9  2019 domain-registry.xml
   drwxr-x---. 7 <USER> <GROUP> 4096 Mar 26 17:12 .patch_storage
   drwxr-x---. 4 <USER> <GROUP> 4096 Jul  9  2019 user_projects
   drwxr-x---. 3 <USER> <GROUP> 4096 Apr  2 20:26 wlserver
   ```

2. Go to the *ORACLE_HOME* location. If the `user_projects` directory and the `domain-registry.xml` file are present, take their backup. They need to be restored after the upgrade is complete. After taking the backup, delete all the files in *ORACLE_HOME*.

Installing Product Distributions on OAMHOSTs

Install the binaries on an OAMHOST.

Complete the following steps:

1. Install the following products on the OAMHOST.
   - Oracle Fusion Middleware Infrastructure 14*c* (14.1.2.0.0)
   - Oracle Identity and Access Management 14c (14.1.2.1.0)
   - Any additional distributions for your pre-upgrade environment

- Installing Product Distributions
  Before beginning your upgrade, download Oracle Fusion Middleware Infrastructure and Oracle Access Manager 14c (14.1.2.1.0) distributions on the target system and install them using Oracle Universal Installer.

Installing Product Distributions

Before beginning your upgrade, download Oracle Fusion Middleware Infrastructure and Oracle Access Manager 14c (14.1.2.1.0) distributions on the target system and install them using Oracle Universal Installer.

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

To install the 14c (14.1.2.1.0) distributions:

1. Sign in to the target system.
2. Download the following from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Oracle Fusion Middleware Infrastructure (`fmw_14.1.2.0.0_infrastructure.jar`)
   - Oracle Access Manager (`fmw_14.1.2.1.0_idm.jar`)
   - Any additional distributions for your pre-upgrade environment

   > **Note:**
   >
   > If you are upgrading an integrated environment that was set up using Life Cycle Management (LCM) tool, that includes Oracle Access Manager, Oracle Identity Manager, and WebGates, then you must install the respective binaries in the same Oracle Home.

3. Change to the directory where you downloaded the 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.jar
- (Windows) *JDK_HOME*\bin\java -jar fmw_14.1.2.0.0_infrastructure.jar

5. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

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

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

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

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

   For more information about Oracle Fusion Middleware directory structure, see 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 following:
   - For Infrastructure, select **Fusion Middleware Infrastructure**
   - For Oracle Access Manager, select **Collocated Oracle Identity and Access Manager**.

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

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

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

Click **Install** to begin the installation.

12. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.
13. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.
14. After you have installed Oracle Fusion Middleware Infrastructure, enter the following command to start the installer for your product distribution and repeat the steps above to navigate through the installer screens:

    (UNIX) `JAVA_HOME/bin/java -jar fmw_14.1.2.1.0_idm.jar`

    (Windows) `JAVA_HOME\bin\java -jar fmw_14.1.2.1.0_idm.jar`

> **Note:**
>
> - If your 12c (12.2.1.4.0) setup was deployed using Life Cycle Management (LCM) tool, you must install Oracle HTTP Server 14c (14.1.2.1.0) in the 14*c* Middleware home. See Preparing to Install and Configure Oracle HTTP Server in *Installing and Configuring Oracle HTTP Server*.
> - By using the opatch tool, apply the latest recommended patchsets from Oracle Support. Complete only the binary installation of patchsets and follow any post-patch steps after the upgrade process is complete. This provides the latest known fixes for upgrade process, if any.

Running a Pre-Upgrade Readiness Check

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

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

About Running a Pre-Upgrade Readiness Check

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

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

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

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

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

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

Starting the Upgrade Assistant in Readiness Mode

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

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

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

   Where, *`ORACLE_HOME`* is the 14c (14.1.2.1.0) Oracle Home.
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

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

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

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

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

Table 4-3 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **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 4-3 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. 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 **Domain Based**.

   The **Domain Based** option enables 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.
3. In the **Domain Directory** field, select the 12c (12.2.1.4.0) domain folder that was copied to the 14c (14.1.2.1.0) setup machine. If the 14c (14.1.2.1.0) setup is on the same machine as the 12c Release, provide the 12c domain home location during the readiness check.

   Click **Next**.

4. The Component List screen displays the list of components whose schema will be upgraded.

   Click **Next**.

5. On the Schema Credentials screen, specify the database credentials to connect to the selected 12c (12.2.1.4.0) schema: **Database Type**, **DBA User Name**, and **DBA Password**. As part of the pre-upgrade requirements, you had created the required user, see Creating a Non-SYSDBA User to Run the Upgrade Assistant.

   Then click **Connect**.

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

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

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

   Click **Next** until all schema connections are validated (the screen name changes based on the schema selected).

   > **Note:**
   >
   > If you encounter any connection failure, check the cause and fix it.

6. 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**.

7. 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**.

The following components are marked as **ready for upgrade** although they are not upgraded. Ignore the **ready for upgrade** message against these components:

- Oracle JRF
- Common Infrastructure Services
- Oracle Web Services Manager

8. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):
   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.
   - If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

Understanding the Readiness Report

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

The format of the readiness report file is:

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

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

A readiness report contains the following information:

Table 4-4 Readiness Report Elements

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

Table 4-4 (Cont.) Readiness Report Elements

Report Information	Description	Required Action
Names of schemas that were checked	The names and current versions of the schemas included in the check and status.	Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade.
Individual Object Test Status: FAIL	The readiness check test detected an issue with a specific object.	Do not upgrade until all failed issues have been resolved.
Individual Object Test Status: PASS	The readiness check test detected no issues for the specific object.	If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade.
Completed Readiness Check of <Object> Status: FAILURE	The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype.	Do not upgrade until all failed issues have been resolved.
Completed Readiness Check of <Object> Status: SUCCESS	The readiness check test detected no issues.	No action required.

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

```
This readiness check report was created on Wed Dec 02 05:47:33 PST 2020 Log
file is located at:
/oracle/work/middleware_latest/oracle_common/upgrade/logs/
ua2020-12-02-05-35-03AM.log
Readiness Check Report File:
/oracle/work/middleware_latest/oracle_common/upgrade/logs/
readiness2020-12-02-05-47-33AM.txt
Domain Directory:
/oracle/work/middleware_1212/user_projects/domains/oim_domain

Starting readiness check of components.

Oracle Platform Security Services
    Starting readiness check of Oracle Platform Security Services.
      Schema User Name: DEV_OPSS
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_OPSS is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
```

```
    Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
    Starting schema test:  Test that the schema does not contain any
unexpected tables  TEST_UNEXPECTED_TABLES
    Completed schema test: Test that the schema does not contain any
unexpected tables --> TEST_UNEXPECTED_TABLES +++ Test that the schema does
not contain any unexpected tables
    Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
    Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
tablespaces automatically extend if full +++ PASS
    Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
    Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++ PASS
    Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
    Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
    Starting permissions test:  TEST_DBA_TABLE_GRANTS  Test that DBA user has
privilege to view all user tables
    Completed permissions test: TEST_DBA_TABLE_GRANTS --> Test that DBA user
has privilege to view all user tables +++ PASS
    Starting schema test:  TEST_MISSING_COLUMNS  Test that tables and views
are not missing any required columns
    Completed schema test: TEST_MISSING_COLUMNS --> Test that tables and
views are not missing any required columns +++ PASS
    Starting schema test:  TEST_UNEXPECTED_COLUMNS  Test that tables and
views do not contain any unexpected columns
    Completed schema test: TEST_UNEXPECTED_COLUMNS --> Test that tables and
views do not contain any unexpected columns +++ PASS
    Starting datatype test for table CT_29: TEST_COLUMN_DATATYPES_V2 --> Test
that all table columns have the proper datatypes
    Completed datatype test for table CT_29: TEST_COLUMN_DATATYPES_V2
--> Test that all table columns have the proper datatypes +++ PASS
    Starting index test for table JPS_ENTITY_LOCK: TEST_REQUIRED_INDEXES
--> Test that the table contains all the required indexes
    Completed index test for table JPS_ENTITY_LOCK:
TEST_REQUIRED_INDEXES --> Test that the table contains all the required
indexes +++ PASS
   Starting index test for table CT_9_3:  TEST_UNEXPECTED_INDEXES --> Test
that the table does not contain any unexpected indexes
    Completed index test for table CT_9_3: TEST_UNEXPECTED_INDEXES --> Test
that the table does not contain any unexpected indexes +++ PASS
    Starting schema test:  UPGRADE_SCRIPT_TEST  Test that the middleware
contains the required Oracle Platform Security Services upgrade script
    Completed schema test: UPGRADE_SCRIPT_TEST --> Test that the middleware
contains the required Oracle Platform Security Services upgrade script +++
PASS
    Starting schema test:  PRIVILEGES_TEST  Test that the Oracle Platform
Security Services schema has appropriate system privileges
    Completed schema test: PRIVILEGES_TEST --> Test that the Oracle Platform
Security Services schema has appropriate system privileges +++ PASS
    Starting schema test:  SEQUENCE_TEST  Test that the Oracle Platform
Security Services schema sequence and its properties are valid
    Completed schema test: SEQUENCE_TEST --> Test that the Oracle Platform
```

```
Security Services schema sequence and its properties are valid
+++ PASS
    Finished readiness check of Oracle Platform Security Services with
status: SUCCESS.

Oracle Metadata Services
    Starting readiness check of Oracle Metadata Services.
      Schema User Name: DEV_MDS
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_MDS is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
    Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
    Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
    Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the schema
contains all the required stored procedures +++ PASS
    Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema contains
all the required database views
    Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
    Starting index test for table MDS_ATTRIBUTES: TEST_REQUIRED_INDEXES
--> Test that the table contains all the required indexes
    Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
    Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++ PASS
    Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
    Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Finished readiness check of Oracle Metadata Services with status:
SUCCESS.

User Messaging Service
    Starting readiness check of User Messaging Service.
      Schema User Name: DEV_ORASDPM
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_ORASDPM is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
```

```
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Starting column test for table RULE_SET:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns
    Completed column test for table RULE_SET:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Starting column test for table STATUS: TEST_UNEXPECTED_TABLE_COLUMNS
--> Test that the table does not contain any unexpected columns
    Completed column test for table STATUS:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Starting column test for table STATUS_ORPHAN:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns
    Completed column test for table STATUS_ORPHAN:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Starting column test for table USER_DEVICE:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns
    Completed column test for table USER_DEVICE:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Finished readiness check of User Messaging Service with status: SUCCESS.

Oracle SOA
    Starting readiness check of Oracle SOA.
      Schema User Name: DEV_SOAINFRA
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_SOAINFRA is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
    Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
    Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
    Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the schema
contains all the required stored procedures +++ PASS
    Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema contains
all the required database views
    Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
    Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
    Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
```

```
tablespaces automatically extend if full +++ PASS
    Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
    Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
    Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
    Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++ PASS
    Starting schema test:  SOA_TABLESPACE_VALIDATION  Test SOAINFRA schema
for enough default table space and temp table space.
    Completed schema test: SOA_TABLESPACE_VALIDATION --> Test SOAINFRA schema
for enough default table space and temp table space. +++ PASS
    Starting schema test:  SOA_INSTANCE_VALIDATION  Test SOAINFRA schema for
inconsistencies of instance data.
    Completed schema test: SOA_INSTANCE_VALIDATION --> Test SOAINFRA schema
for inconsistencies of instance data. +++ PASS
    Finished readiness check of Oracle SOA with status: SUCCESS.

Oracle Identity Manager
    Starting readiness check of Oracle Identity Manager.
      Schema User Name: DEV_OIM
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
    Starting schema test:  examine  Calling examine method
      INFO Examine is successful
    Completed schema test: Examine --> Testing schema version +++ PASS
    Starting schema test:  TEST_MDS_BACKUP  Taking backup of MDS data related
to OIM to handle any unseen situation during upgrade.
      INFO MDSBackup passes. Backup of MDS data related to OIM is here:
/oracle/work/middleware_latest/oracle_common/upgrade/temp/mdsBackup/
    Completed schema test: TEST_MDS_BACKUP --> Taking backup of MDS data
related to OIM to handle any unseen situration during upgrade. +++ PASS
    Finished readiness check of Oracle Identity Manager with status:
SUCCESS.

User Messaging Service
    Starting readiness check of User Messaging Service.
    Starting config test:  TEST_USERMESSAGINGCONFIG  Test that configuration
file usermessagingconfig.xml is accessible, in place and valid.
    Completed config test: TEST_USERMESSAGINGCONFIG --> Configuration file
usermessagingconfig.xml is accessible, in place and valid. +++ PASS
    Starting config test:  TEST_ALREADY_UPGRADED  Test that configuration is
not already upgraded.
    Completed config test: TEST_ALREADY_UPGRADED --> Configuration is not
already upgraded. +++ PASS
    Finished readiness check of User Messaging Service with status: SUCCESS.

Oracle Identity Manager
    Starting readiness check of Oracle Identity Manager.
      INFO There are no configuration readiness tests for Oracle Identity
Manager.
    Finished readiness check of Oracle Identity Manager with status:
SUCCESS.

Oracle JRF
```

```
    Starting readiness check of Oracle JRF.
    Finished readiness check of Oracle JRF with status: SUCCESS.

System Components Infrastructure
    Starting readiness check of System Components Infrastructure.
    Starting config test:  TEST_SOURCE_CONFIG  Checking the source
configuration.
      INFO
/oracle/work/middleware_1212/user_projects/oim_domain/opmn/topology.xml
was not found. No upgrade is needed.
    Completed config test: TEST_SOURCE_CONFIG --> Checking the source
configuration. +++ PASS
    Finished readiness check of System Components Infrastructure with
status: ALREADY_UPGRADED.

Common Infrastructure Services
    Starting readiness check of Common Infrastructure Services.
    Starting config test:  CIEConfigPlugin.readiness.test  This tests the
readiness of the domain from CIE side.
    Completed config test: CIEConfigPlugin.readiness.test --> This tests the
readiness of the domain from CIE side. +++ PASS
    Finished readiness check of Common Infrastructure Services with
status: SUCCESS.

Oracle Web Services Manager
    Starting readiness check of Oracle Web Services Manager.
    Completed config test: BOOTSTRAP_PROPERTIES_CHECK --> Bootstrap
properties check +++ PASS
    Completed config test: CONFIGURATION_PROPERTIES_CHECK --> Configuration
properties check +++ PASS
    Completed config test: TOKEN_TRUST_PROPERTIES_CHECK --> Trust issuer
properties check +++ PASS
    Completed config test: MDS_REPOSITORY_CONNECTIVITY_CHECK --> MDS
repository connectivity check +++ PASS
    Finished readiness check of Oracle Web Services Manager with status:
SUCCESS.

Finished readiness check of components.
```

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

Upgrading Schemas on OAMHOST1

Upgrade all of the necessary schemas for Oracle Access Management, on OAMHOST1 by using the Upgrade Assistant.

Run the Upgrade Assistant to upgrade the schemas.

Reconfiguring the Domain on OAMHOST1

Run the Reconfiguration Wizard on OAMHOST1 to reconfigure your domain component configurations to 14c (14.1.2.1.0).

To start the Reconfiguration Wizard in graphical mode from a Windows command prompt or on UNIX systems:

1. Log in to the system on which the domain resides.
2. Open an MS-DOS command prompt window (on Windows) or a command shell (on UNIX).
3. Go to the following directory, where `ORACLE_HOME` is your Oracle home directory:

   On Windows: `ORACLE_HOME\oracle_common\common\bin`

   On UNIX: `ORACLE_HOME/oracle_common/common/bin`
4. Run the following commands:

   On Windows: `reconfig.cmd`

   On UNIX: `sh reconfig.sh`

The Reconfiguration Setup Progress screen appears.

Replicating the Domain Configurations on OAMHOST2

Replicate the domain configurations on OAMHOST2. This involves packing the upgraded domain on OAMHOST1 and unpacking it on OAMHOST2.

Complete the following steps:

1. On OAMHOST1, run the following command from the location `$MW_HOME/oracle_common/common/bin` to pack the upgraded domain:
   - On UNIX:
     `sh pack.sh -domain=<Location_of_OAM_domain> -template=<Location_where_domain_configuration_jar_to_be_created> -template_name="OAM Domain" -managed=true`
   - On Windows:
     `pack.cmd -domain=<Location_of_OAM_domain> -template=<Location_where_domain_configuration_jar_to_be_created> -template_name="OAM Domain" -managed=true`
2. Copy the domain configuration jar file created by the pack command on OAMHOST1 to any accessible location on OAMHOST2.
3. On OAMHOST2, run the following command from the location `$MW_HOME/oracle_common/common/bin` to unpack the domain:
   - On UNIX:
     `sh unpack.sh -domain=<Location_of_OAM_domain> -template=<absolute_path_to the_location_of_domain_configuration_jar_file> -overwrite_domain=true`
   - On Windows:
     `unpack.cmd -domain=<Location_of_OAM_domain> -template=<absolute_path_to the_location_of_domain_configuration_jar_file> -overwrite_domain=true`

Upgrading Domain Component Configurations on OAMHOST1 and OAMHOST2

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

Upgrade the domain configurations on both OAMHOST1 and OAMHOST2.

- Upgrading the Domain Configurations with the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

Upgrading the Domain Configurations with 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 14c (14.1.2.1.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

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

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

2. On the All Configurations screen, select **All Configurations Used by a Domain** and specify your domain location in the **Domain Directory** field by entering it directly or by clicking **Browse** to use a navigation tree to select a valid domain directory. Click **Next**.
3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.
4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

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

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

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

6. On the 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.

7. 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.

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

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

   If any 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**.

9. 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.

Starting the Servers on OAMHOSTs

After you upgrade Oracle Access Manager on an OAMHOST, start the servers.

You must start the servers in the following order:

1. Start the Node Manager on the required OAMHOST.
2. Start the Administration Server on the required OAMHOST.
3. Start the Oracle Access Manager Managed Servers on the required OAMHOST.

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

Starting Servers and Processes

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

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

> **Note:**
>
> The procedures in this section describe how to start servers and 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*.

> **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.

Enabling WebGates to Work With Oracle Access Manager

After upgrading to Oracle Access Manager 14c (14.1.2.1.0), the earlier version of WebGates continues to work with Oracle Access Manager. However, to leverage the latest security features of Oracle Access Manager and WebGates 14*c* (14.1.2.0.0), you must upgrade the WebGates to 14*c* (14.1.2.0.0), and register the agent's profile with the Oracle Access Manager Server.

> **Note:**
>
> If you have any other components of Oracle Identity and Access Management deployed, then all of the components must to be upgraded to 14c (14.1.2.1.0) to leverage the new security features of 14c (14.1.2.1.0).

To upgrade the WebGates, you must upgrade the respective Web Servers to 14*c* (14.1.2.0.0). To upgrade the Oracle HTTP Server WebGates, upgrade Oracle HTTP Server to 14*c* (14.1.2.0.0). See Upgrading a Standalone Oracle HTTP Server in the *Upgrading Oracle HTTP Server*.

After you upgrade the Web Servers, do the following:

1. Register or edit the WebGate profile and copy the WebGate artifacts to the WebGate config folder. See Upgrading to OHS 14*c* (14.1.2.0.0) WebGate in the *Installing WebGates for Oracle Access Manager*.

2. Start and stop the WebGates.

5

Upgrading Oracle Access Manager Multi-Data Center Environments

You can upgrade Oracle Access Manager deployed across multi-data centers (MDC) from 12c (12.2.1.4.0) to 14c (14.1.2.1.0).

> **Note:**
>
> To upgrade Oracle Access Manager MDC environments to 14c (14.1.2.1.0), ensure that all of the data centers (DC) are at the same Patch Set level.

When you plan to upgrade to 14c (14.1.2.1.0), you can choose to have zero down time by stopping the data center that needs to be upgraded, and routing all the traffic to the other data centers. Once the upgrade has been completed on one data center, it can start and function as an independent data center. You can then redirect all the traffic to the upgraded data center.

- About the Oracle Access Manager Multi-Data Center Topology
  The sample Oracle Access Manager Multi-Data Center topology has two data centers — Primary data center and Clone data center.
- Roadmap for Upgrading Oracle Access Manager MDC Setup
  Use the upgrade roadmap to upgrade your Oracle Access Manager multi-data center setup to 14c (14.1.2.1.0).
- Backing Up the Existing MDC Environment
  Before you begin with the upgrade, take a back up of your existing environment.
- Enabling Write Permission to Primary and Clones (If Necessary)
  Before you start the upgrade, you must enable modifications to the system and policy configurations on both Primary and Clones.
- Disabling and Deleting All Replication Agreements Between Primary and Clone
  Disable all replication agreements between the Primary and the Clone data centers.
- Redirecting Traffic to Primary Data Center
  An in-line upgrade procedure is used to upgrade the Clone data center which requires downtime. Therefore, all traffic must be rerouted to the Primary data center.
- Upgrading Oracle Access Manager on Clone Data Center
  Upgrade Oracle Access Manager on Clone data center to 14c (14.1.2.1.0) after you redirect the traffic to Primary data center.
- Redirecting Traffic to Clone Data Center
  An in-line upgrade procedure is used to upgrade the Primary data center which requires downtime. Therefore, all traffic must be rerouted to the Clone data centers (also referred to as, the backup data centers or the secondary data centers).
- Upgrading Oracle Access Manager on Primary Data Center
  Upgrade Oracle Access Manager on Primary data center to 14c (14.1.2.1.0) after you redirect the traffic to clone data center.

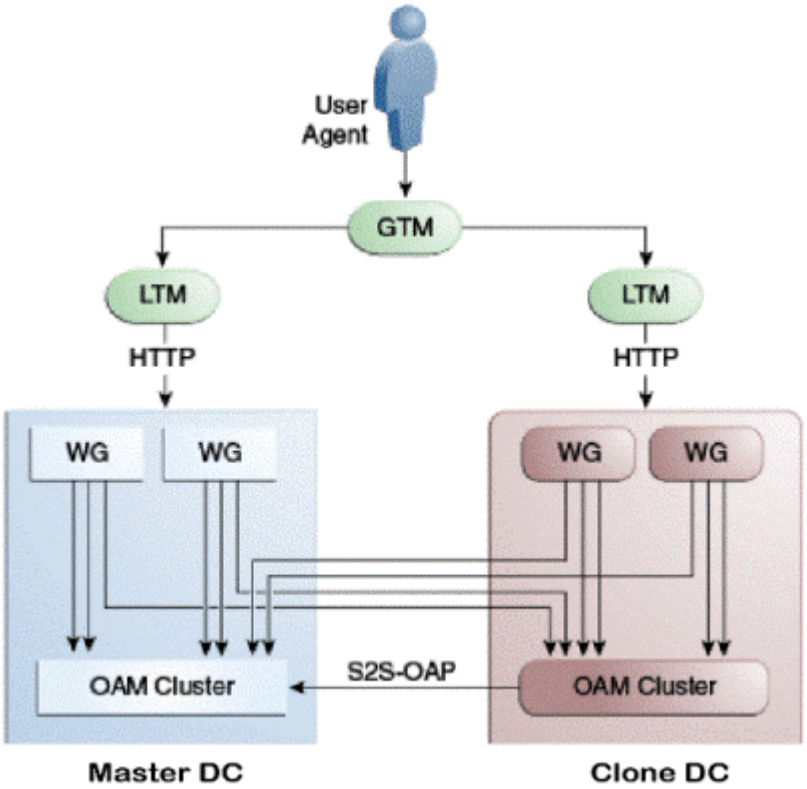
- Freezing all Changes to Clones (if Necessary)
  After you upgrade Oracle Access Manager on all of the Clone data center(s), it is recommended that you freeze the changes to the Clone data center(s). This is to avoid any inadvertent writes.
- Syncing Access Metadata
  Oracle Access Manager metadata stored in Unified Data Model (UDM) needs to be synced from Primary to Clone.
- Creating Replication Agreement
  Create the replication agreement again after upgrading the Primary and the Clone data centers.
- Bringing up the Primary and Clone Data Centers Online
  After successful upgrade, both Primary and Clone data centers can be brought up online. Traffic can be routed to both data centers based on existing routing rules.

About the Oracle Access Manager Multi-Data Center Topology

The sample Oracle Access Manager Multi-Data Center topology has two data centers — Primary data center and Clone data center.

The procedure in this chapter describes how to upgrade Oracle Access Manager in a MDC setup similar to the reference topology provided in this section. You can use this upgrade procedure to upgrade your environment with any number of data centers.

Figure 5-1 Oracle Access Manager in Multi—Data Center Setup



This figure shows a Primary data center and a Clone data center, each of them including a full Access Manager installation. In this topology, GTM refers to the global load balancer, LTM refers to the local load balancer, and WG refers to the WebGate. The S2S OAP is the Oracle Access Protocol.

Roadmap for Upgrading Oracle Access Manager MDC Setup

Use the upgrade roadmap to upgrade your Oracle Access Manager multi-data center setup to 14c (14.1.2.1.0).

Table 5-1 Oracle Access Manager MDC Upgrade Roadmap

Task	For More Information
Review the Oracle Access Manager multi-data center topology.	See About the Oracle Access Manager Multi-Data Center Topology
Back up your existing environment.	See Backing Up the Existing MDC Environment
Enable write permission to Primary and Clone data centers, if not already done.	See Enabling Write Permission to Primary and Clones (If Necessary)
Disable and delete all replication agreements between Primary and Clone data centers.	See Disabling and Deleting All Replication Agreements Between Primary and Clone
Redirect the traffic to the Primary data center.	See Redirecting Traffic to Primary Data Center
Upgrade Oracle Access Manager on Clone data center.	See Upgrading Oracle Access Manager on Clone Data Center
Redirect the traffic to the Clone data center.	See Redirecting Traffic to Clone Data Center
Upgrade Oracle Access Manager on Primary data center.	See Upgrading Oracle Access Manager on Primary Data Center
Freeze all changes to the Primary and Clones, if required.	See Freezing all Changes to Clones (if Necessary)
Sync the access UDM data by exporting the access store data from Primary data center and importing it on the Clone data center.	See Syncing Access Metadata
Create the replication agreement again.	See Creating Replication Agreement
Bring up the Primary and Clone data centers online.	See Bringing up the Primary and Clone Data Centers Online

Backing Up the Existing MDC Environment

Before you begin with the upgrade, take a back up of your existing environment.

After stopping all the servers, you must back up the following on every data center before proceeding with the upgrade process:

- *ORACLE_HOME*: the Oracle Home directory.
- Oracle Access Manager Domain Home directory on all OAM hosts.
- Following Database schemas:
  - Oracle Access Manager schema
  - Audit and any other dependent schema

For more information about backing up schemas, see *Oracle Database Backup and Recovery User's Guide*.

Enabling Write Permission to Primary and Clones (If Necessary)

Before you start the upgrade, you must enable modifications to the system and policy configurations on both Primary and Clones.

Complete the following:

1. Go to the *ORACLE_HOME*/common/bin directory.
   For example: *ORACLE_HOME*/oracle_common/common/bin
2. Run the following command on the Primary and Clone data centers:

```
cd ORACLE_HOME/oracle_common/common/bin
./wlst.sh
setMultiDataCenterWrite(WriteEnableFlag="true")
```

Disabling and Deleting All Replication Agreements Between Primary and Clone

Disable all replication agreements between the Primary and the Clone data centers.

See Disabling Automated Policy Synchronization in the *Administrator's Guide for Oracle Access Manager*.

Redirecting Traffic to Primary Data Center

An in-line upgrade procedure is used to upgrade the Clone data center which requires downtime. Therefore, all traffic must be rerouted to the Primary data center.

This is usually achieved by directing your load balancer to send all requests to the Primary Site. Contact your network administrator to perform this task.

Upgrading Oracle Access Manager on Clone Data Center

Upgrade Oracle Access Manager on Clone data center to 14c (14.1.2.1.0) after you redirect the traffic to Primary data center.

To upgrade Oracle Access Manager on Primary data center, follow the instructions described in Upgrading Oracle Access Manager Highly Available Environments.

Redirecting Traffic to Clone Data Center

An in-line upgrade procedure is used to upgrade the Primary data center which requires downtime. Therefore, all traffic must be rerouted to the Clone data centers (also referred to as, the backup data centers or the secondary data centers).

Consult your network infrastructure team or refer to the network infrastructure documentation to accomplish the traffic re-routing.

Upgrading Oracle Access Manager on Primary Data Center

Upgrade Oracle Access Manager on Primary data center to 14c (14.1.2.1.0) after you redirect the traffic to clone data center.

To upgrade Oracle Access Manager on Primary data center, follow the instructions described in Upgrading Oracle Access Manager Highly Available Environments.

Freezing all Changes to Clones (if Necessary)

After you upgrade Oracle Access Manager on all of the Clone data center(s), it is recommended that you freeze the changes to the Clone data center(s). This is to avoid any inadvertent writes.

To freeze the changes, complete the following on the Clone data center(s):

1. Go to *ORACLE_HOME*/common/bin.
2. Run the following command:

```
ORACLE_HOME/oracle_common/common/bin/wlst.sh
SetMultiDataCenterWrite(WriteEnableFlag="false")
```

Syncing Access Metadata

Oracle Access Manager metadata stored in Unified Data Model (UDM) needs to be synced from Primary to Clone.

You can sync the access metadata using the WLST commands - `exportAccessStore` and `importAccessStore`. These commands need to be executed after you upgrade all of the data centers and before creating the new replication agreement. This exports the UDM artifacts created till that point, from the Primary data center and imports them in the Clone data center(s).
To sync the UDM metadata, complete the following steps:

1. Go to the *ORACLE_HOME*/common/bin directory.

   For example: /home/oracle/oam/ORACLE_IDM/common/bin
2. Run the following WLST command on the Primary data center to create a ZIP file containing the UDM metadata:

   ```
   ORACLE_HOME/oracle_common/common/bin/wlst.sh

   exportAccessStore(toFile="/primary/location/dc1metadata.zip", namePath="/")
   ```
3. Copy *dc1metadata.zip* to each of the upgraded Clone data centers.
4. Run the following WLST command on the each of the Clone data centers to import the UDM metadata:

   ```
   importAccessStore(fromFile="/clone/location/dc1metadata.zip", namePath="/")
   ```

Creating Replication Agreement

Create the replication agreement again after upgrading the Primary and the Clone data centers.

To create the replication agreement, run the following command:

> **Note:**
>
> Ensure that Primary and Clone data centers REST endpoints are up and running, before you run this command.

```
curl -u <repluser> -H 'Content-Type: application/json' -X POST 'https://
supplier.example.com/oam/services/rest/_replication/setup' -d '{"name":"DC12DC2",
"source":"DC1","target":"DC2","documentType":"ENTITY"}'
```

For more information about creating a replication agreement, see Creating a Replication Agreement in the *Administrator's Guide for Oracle Access Manager*.

Bringing up the Primary and Clone Data Centers Online

After successful upgrade, both Primary and Clone data centers can be brought up online. Traffic can be routed to both data centers based on existing routing rules.

Consult your network infrastructure team or refer to the network infrastructure documentation to accomplish the traffic re-routing.

Part II

Out-of-Place Upgrade of Oracle Access Manager

In an out-of-place upgrade, you will create a new system and migrate the data from your existing system to the new system. You can perform an out-of-place upgrade of Oracle Access Manager 12c (12.2.1.4.0) environment to 14c (14.1.2.1.0) by using the procedure described in this part.

This part contains the following topic:

6

Performing an Out-of-Place Upgrade of Oracle Access Manager

- Pre-Upgrade Assessment
- Executing the pack command on the server where the Admin Server and one of the Managed Servers is installed.
- Install the 12c Binaries on the Target Before Unpack
  Prior to unpacking the domain, Oracle Access Manager 12*c* (12.2.1.4.0) needs to be installed in the target environment (OAMHOST2).
- Executing the unpack Command from the 12c Oracle Home on HOST2.
- 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.
- Upgrading Product Schemas
  After stopping servers and processes, use the Upgrade Assistant to upgrade your 12.2.1.4.0 schemas to the 14c (14.1.2.1.0) release of Oracle Fusion Middleware.
- Reconfiguring a WebLogic Domain
  To reconfigure a domain using the Reconfiguration Wizard, you first launch it from a DOS command prompt or UNIX shell, and then provide the required upgrade details in a sequence of screens that are displayed.
- 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 Servers and Processes
  After a successful upgrade, start all processes and servers, including the Administration Server and any Managed Servers.

Pre-Upgrade Assessment

You must ensure that the following assessment is completed before you start the upgrade.

- The out of place upgrade requires a new ORACLE_HOME and WLS domain.
- Database is upgraded in place.
- Complete all prerequisites in the Oracle Fusion Middleware Pre-Upgrade Checklist
- Evaluate the exisitng 12c (12.2.1.4.0) environment and list the important components for upgrade. This includes evaluation of your source as well as target environment.
- Install the latest patches on top of the 12c (12.2.1.4.0) environment.
- Install JDK jdk17.0.12 or jdk21.0.4
- Install `fmw_14.1.2.0.0_infrastructure.jar`, `fmw_14.1.2.1.0_idm.jar` on a new host or file-system Oracle Home.

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

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

In this example:

- *12c_ORACLE_HOME* refers the actual path to the 12*c* Oracle home directory (the installation directory for the 12c (12.2.1.4.0) bits).
- Replace *12c_DOMAIN_HOME* with the actual path of the domain directory to be upgraded.
- `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.

Install the 12c Binaries on the Target Before Unpack

Prior to unpacking the domain, Oracle Access Manager 12*c* (12.2.1.4.0) needs to be installed in the target environment (OAMHOST2).

The OAM 12*c* (12.2.1.4.0) binaries should be installed using the same path on the filesystem that was used in the source environment. Make sure that the target environment is patched to the same level as the source environment. See Installing and Configuring the Oracle Access Management Software in the *Oracle Fusion Middleware 12c (12.2.1.4.0) Installing and Configuring Oracle Identity and Access Management* guide.

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

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

In this example:

- *14c_ORACLE_HOME* refers the actual path to the 12c Oracle home directory, the installation directory for the 14c (14.1.2.1.0).
- 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.

Running a Pre-Upgrade Readiness Check

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

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

About Running a Pre-Upgrade Readiness Check

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

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

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

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

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

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

Starting the Upgrade Assistant in Readiness Mode

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

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

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

   Where, *ORACLE_HOME* is the 14c (14.1.2.1.0) Oracle Home.
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

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

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

- Upgrade Assistant Parameters

Upgrade Assistant Parameters

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

Table 6-1 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.
`-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 6-1 (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.

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 **Domain Based**.

The **Domain Based** option enables 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.

3. In the **Domain Directory** field, select the 12c (12.2.1.4.0) domain folder that was copied to the 14c (14.1.2.1.0) setup machine. If the 14c (14.1.2.1.0) setup is on the same machine as the 12c Release, provide the 12c domain home location during the readiness check.

   Click **Next**.

4. The Component List screen displays the list of components whose schema will be upgraded.

   Click **Next**.

5. On the Schema Credentials screen, specify the database credentials to connect to the selected 12c (12.2.1.4.0) schema: **Database Type**, **DBA User Name**, and **DBA Password**. As part of the pre-upgrade requirements, you had created the required user, see Creating a Non-SYSDBA User to Run the Upgrade Assistant.

   Then click **Connect**.

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

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

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

Click **Next** until all schema connections are validated (the screen name changes based on the schema selected).

> **Note:**
>
> If you encounter any connection failure, check the cause and fix it.

6. 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**.

7. 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**.

   The following components are marked as **ready for upgrade** although they are not upgraded. Ignore the **ready for upgrade** message against these components:

   - Oracle JRF
   - Common Infrastructure Services
   - Oracle Web Services Manager

8. 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 6-2 Readiness Report Elements

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

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

```
This readiness check report was created on Wed Dec 02 05:47:33 PST 2020 Log
file is located at:
/oracle/work/middleware_latest/oracle_common/upgrade/logs/
ua2020-12-02-05-35-03AM.log
Readiness Check Report File:
/oracle/work/middleware_latest/oracle_common/upgrade/logs/
readiness2020-12-02-05-47-33AM.txt
Domain Directory:
/oracle/work/middleware_1212/user_projects/domains/oim_domain
```

```
Starting readiness check of components.

Oracle Platform Security Services
    Starting readiness check of Oracle Platform Security Services.
      Schema User Name: DEV_OPSS
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_OPSS is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
    Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
    Starting schema test:  Test that the schema does not contain any
unexpected tables  TEST_UNEXPECTED_TABLES
    Completed schema test: Test that the schema does not contain any
unexpected tables --> TEST_UNEXPECTED_TABLES +++ Test that the schema does
not contain any unexpected tables
    Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
    Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
tablespaces automatically extend if full +++ PASS
    Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
    Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++ PASS
    Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
    Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
    Starting permissions test:  TEST_DBA_TABLE_GRANTS  Test that DBA user has
privilege to view all user tables
    Completed permissions test: TEST_DBA_TABLE_GRANTS --> Test that DBA user
has privilege to view all user tables +++ PASS
    Starting schema test:  TEST_MISSING_COLUMNS  Test that tables and views
are not missing any required columns
    Completed schema test: TEST_MISSING_COLUMNS --> Test that tables and
views are not missing any required columns +++ PASS
    Starting schema test:  TEST_UNEXPECTED_COLUMNS  Test that tables and
views do not contain any unexpected columns
    Completed schema test: TEST_UNEXPECTED_COLUMNS --> Test that tables and
views do not contain any unexpected columns +++ PASS
    Starting datatype test for table CT_29: TEST_COLUMN_DATATYPES_V2 --> Test
that all table columns have the proper datatypes
    Completed datatype test for table CT_29: TEST_COLUMN_DATATYPES_V2
--> Test that all table columns have the proper datatypes +++ PASS
    Starting index test for table JPS_ENTITY_LOCK: TEST_REQUIRED_INDEXES
--> Test that the table contains all the required indexes
```

```
    Completed index test for table JPS_ENTITY_LOCK:
TEST_REQUIRED_INDEXES --> Test that the table contains all the required
indexes +++ PASS
   Starting index test for table CT_9_3:  TEST_UNEXPECTED_INDEXES --> Test
that the table does not contain any unexpected indexes
    Completed index test for table CT_9_3: TEST_UNEXPECTED_INDEXES --> Test
that the table does not contain any unexpected indexes +++ PASS
    Starting schema test:  UPGRADE_SCRIPT_TEST  Test that the middleware
contains the required Oracle Platform Security Services upgrade script
    Completed schema test: UPGRADE_SCRIPT_TEST --> Test that the middleware
contains the required Oracle Platform Security Services upgrade script +++
PASS
    Starting schema test:  PRIVILEGES_TEST  Test that the Oracle Platform
Security Services schema has appropriate system privileges
    Completed schema test: PRIVILEGES_TEST --> Test that the Oracle Platform
Security Services schema has appropriate system privileges +++ PASS
    Starting schema test:  SEQUENCE_TEST  Test that the Oracle Platform
Security Services schema sequence and its properties are valid
    Completed schema test: SEQUENCE_TEST --> Test that the Oracle Platform
Security Services schema sequence and its properties are valid
+++ PASS
    Finished readiness check of Oracle Platform Security Services with
status: SUCCESS.

Oracle Metadata Services
    Starting readiness check of Oracle Metadata Services.
      Schema User Name: DEV_MDS
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_MDS is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
    Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
    Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
    Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the schema
contains all the required stored procedures +++ PASS
    Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema contains
all the required database views
    Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
    Starting index test for table MDS_ATTRIBUTES: TEST_REQUIRED_INDEXES
--> Test that the table contains all the required indexes
    Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
    Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++ PASS
    Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
    Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
```

```
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Finished readiness check of Oracle Metadata Services with status:
SUCCESS.

User Messaging Service
    Starting readiness check of User Messaging Service.
      Schema User Name: DEV_ORASDPM
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_ORASDPM is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Starting column test for table RULE_SET:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns
    Completed column test for table RULE_SET:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Starting column test for table STATUS: TEST_UNEXPECTED_TABLE_COLUMNS
--> Test that the table does not contain any unexpected columns
    Completed column test for table STATUS:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Starting column test for table STATUS_ORPHAN:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns
    Completed column test for table STATUS_ORPHAN:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Starting column test for table USER_DEVICE:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns
    Completed column test for table USER_DEVICE:
TEST_UNEXPECTED_TABLE_COLUMNS --> Test that the table does not contain any
unexpected columns +++ PASS
    Finished readiness check of User Messaging Service with status: SUCCESS.

Oracle SOA
    Starting readiness check of Oracle SOA.
      Schema User Name: DEV_SOAINFRA
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
      VERSION Schema DEV_SOAINFRA is currently at version 11.1.1.9.0.
Readiness checks will now be performed.
    Starting schema test:  TEST_DATABASE_VERSION  Test that the database
server version number is supported for upgrade
      INFO   Database product version: Oracle Database 11g Enterprise Edition
```

```
Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data
Mining and Real Application Testing options
    Completed schema test: TEST_DATABASE_VERSION --> Test that the database
server version number is supported for upgrade +++ PASS
    Starting schema test:  TEST_REQUIRED_TABLES  Test that the schema
contains all the required tables
    Completed schema test: TEST_REQUIRED_TABLES --> Test that the schema
contains all the required tables +++ PASS
    Starting schema test:  TEST_REQUIRED_PROCEDURES  Test that the schema
contains all the required stored procedures
    Completed schema test: TEST_REQUIRED_PROCEDURES --> Test that the schema
contains all the required stored procedures +++ PASS
    Starting schema test:  TEST_REQUIRED_VIEWS  Test that the schema contains
all the required database views
    Completed schema test: TEST_REQUIRED_VIEWS --> Test that the schema
contains all the required database views +++ PASS
    Starting schema test:  TEST_ENOUGH_TABLESPACE  Test that the schema
tablespaces automatically extend if full
    Completed schema test: TEST_ENOUGH_TABLESPACE --> Test that the schema
tablespaces automatically extend if full +++ PASS
    Starting schema test:  TEST_ONLINE_TABLESPACE  Test that schema
tablespaces are online
    Completed schema test: TEST_ONLINE_TABLESPACE --> Test that schema
tablespaces are online +++ PASS
    Starting schema test:  TEST_USER_TABLESPACE_QUOTA  Test that tablespace
quota for this user is sufficient to perform the upgrade
    Completed schema test: TEST_USER_TABLESPACE_QUOTA --> Test that
tablespace quota for this user is sufficient to perform the upgrade +++ PASS
    Starting schema test:  SOA_TABLESPACE_VALIDATION  Test SOAINFRA schema
for enough default table space and temp table space.
    Completed schema test: SOA_TABLESPACE_VALIDATION --> Test SOAINFRA schema
for enough default table space and temp table space. +++ PASS
    Starting schema test:  SOA_INSTANCE_VALIDATION  Test SOAINFRA schema for
inconsistencies of instance data.
    Completed schema test: SOA_INSTANCE_VALIDATION --> Test SOAINFRA schema
for inconsistencies of instance data. +++ PASS
    Finished readiness check of Oracle SOA with status: SUCCESS.

Oracle Identity Manager
    Starting readiness check of Oracle Identity Manager.
      Schema User Name: DEV_OIM
      Database Type: Oracle Database
      Database Connect String: example.oracle.com:1521:oimdb
    Starting schema test:  examine  Calling examine method
      INFO Examine is successful
    Completed schema test: Examine --> Testing schema version +++ PASS
    Starting schema test:  TEST_MDS_BACKUP  Taking backup of MDS data related
to OIM to handle any unseen situation during upgrade.
      INFO MDSBackup passes. Backup of MDS data related to OIM is here:
/oracle/work/middleware_latest/oracle_common/upgrade/temp/mdsBackup/
    Completed schema test: TEST_MDS_BACKUP --> Taking backup of MDS data
related to OIM to handle any unseen situration during upgrade. +++ PASS
    Finished readiness check of Oracle Identity Manager with status:
SUCCESS.

User Messaging Service
```

```
    Starting readiness check of User Messaging Service.
    Starting config test:  TEST_USERMESSAGINGCONFIG  Test that configuration
file usermessagingconfig.xml is accessible, in place and valid.
    Completed config test: TEST_USERMESSAGINGCONFIG --> Configuration file
usermessagingconfig.xml is accessible, in place and valid. +++ PASS
    Starting config test:  TEST_ALREADY_UPGRADED  Test that configuration is
not already upgraded.
    Completed config test: TEST_ALREADY_UPGRADED --> Configuration is not
already upgraded. +++ PASS
    Finished readiness check of User Messaging Service with status: SUCCESS.

Oracle Identity Manager
    Starting readiness check of Oracle Identity Manager.
      INFO There are no configuration readiness tests for Oracle Identity
Manager.
    Finished readiness check of Oracle Identity Manager with status:
SUCCESS.

Oracle JRF
    Starting readiness check of Oracle JRF.
    Finished readiness check of Oracle JRF with status: SUCCESS.

System Components Infrastructure
    Starting readiness check of System Components Infrastructure.
    Starting config test:  TEST_SOURCE_CONFIG  Checking the source
configuration.
      INFO
/oracle/work/middleware_1212/user_projects/oim_domain/opmn/topology.xml
was not found. No upgrade is needed.
    Completed config test: TEST_SOURCE_CONFIG --> Checking the source
configuration. +++ PASS
    Finished readiness check of System Components Infrastructure with
status: ALREADY_UPGRADED.

Common Infrastructure Services
    Starting readiness check of Common Infrastructure Services.
    Starting config test:  CIEConfigPlugin.readiness.test  This tests the
readiness of the domain from CIE side.
    Completed config test: CIEConfigPlugin.readiness.test --> This tests the
readiness of the domain from CIE side. +++ PASS
    Finished readiness check of Common Infrastructure Services with
status: SUCCESS.

Oracle Web Services Manager
    Starting readiness check of Oracle Web Services Manager.
    Completed config test: BOOTSTRAP_PROPERTIES_CHECK --> Bootstrap
properties check +++ PASS
    Completed config test: CONFIGURATION_PROPERTIES_CHECK --> Configuration
properties check +++ PASS
    Completed config test: TOKEN_TRUST_PROPERTIES_CHECK --> Trust issuer
properties check +++ PASS
    Completed config test: MDS_REPOSITORY_CONNECTIVITY_CHECK --> MDS
repository connectivity check +++ PASS
    Finished readiness check of Oracle Web Services Manager with status:
SUCCESS.
```

```
Finished readiness check of components.
```

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

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade your 12.2.1.4.0 schemas to the 14c (14.1.2.1.0) 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 (14.1.2.1.0) 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 (14.1.2.1.0) with editions disabled and then upgraded to 14c (14.1.2.1.0) will become editions enabled.
> - Oracle Access Manager does not support editions. Oracle Access Manager schemas need to be created with edition disabled.
> - Schemas created in 14c (14.1.2.1.0) 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 (14.1.2.1.0).
- Upgrading Schemas Using the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.
- Verifying the Schema Upgrade
  After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.1.0).

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

Upgrade Assistant Parameters

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

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

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. 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 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 **All Schemas Used by a Domain**.

   - **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. However, use the **Individually Selected Schemas** option for standalone installations.

Click **Next**.

3. If you selected **All Schemas Used by a Domain**: On the Component List screen you will see two lists of schemas. The first list shows the components whose schemas are present in the domain and will be upgraded. The second list shows the list of missing schemas that may need to be created. If none of the required schemas are missing, you will only see the first list. Review both lists and click **Next**.

   The Upgrade Assistant will attempt to create any missing schemas using the schema credentials used to create the existing domain schemas. You do not need to launch the Repository Creation Utility.

   If you want to exclude some components or schemas from the list, navigate back to the All Schemas screen and select **Individually Selected Schemas**. This option allows you to select only those schemas you want included in the upgrade.

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

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

5. On the Schema Credentials screen(s), specify the database connection details for each schema you are upgrading (the screen name changes based on the schema selected):

   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.

   > **Note:**
   >
   > The schema name is changed for `UCSUMS` schema as of release 12.1.2, which means the Upgrade Assistant does not automatically recognize the possible schemas and display them in a drop-down list. You must manually enter the name in a text field. The name can be either *`prefix`*`_ORASDPM` or *`prefix`*`_UMS`, depending on the starting point for the upgrade.

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

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to

Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

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

7. On the Upgrade Summary screen, review the summary of the 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** .

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

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

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

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

   Click **Next**.

9. 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 14.1.2.1.0.

> **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.

Reconfiguring a WebLogic Domain

To reconfigure a domain using the Reconfiguration Wizard, you first launch it from a DOS command prompt or UNIX shell, and then provide the required upgrade details in a sequence of screens that are displayed.

To start the Reconfiguration Wizard in graphical mode from a Windows command prompt or on UNIX systems:

1. Log in to the system on which the domain resides.
2. Open an MS-DOS command prompt window (on Windows) or a command shell (on UNIX).
3. Go to the following directory,"where `ORACLE_HOME` is your 14c Oracle home directory:

   On Windows: `ORACLE_HOME\oracle_common\common\bin`

   On UNIX: `ORACLE_HOME/oracle_common/common/bin`
4. Run the following commands:

   On Windows: `reconfig.cmd`

   On UNIX: `sh reconfig.sh`

The Reconfiguration Setup Progress screen appears.

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 (14.1.2.1.0).
- Upgrading the Domain Configurations with the Upgrade Assistant
  Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.
- Verifying the Domain-Specific-Component Configurations Upgrade
  To verify that the domain-specific-component configurations upgrade was successful, sign in to the Remote Console and verify that the version numbers for each upgraded component is 14.1.2.1.0.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.1.0).

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

Upgrade Assistant Parameters

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

Table 6-4 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 6-4 (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 the Domain Configurations with 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 14c (14.1.2.1.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

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

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

2. On the All Configurations screen, select **All Configurations Used by a Domain** and specify your domain location in the **Domain Directory** field by entering it directly or by clicking **Browse** to use a navigation tree to select a valid domain directory. Click **Next**.
3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

   If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.
4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

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

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

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

6. On the 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.

7. 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.

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

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

   If any 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**.

9. 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.

Verifying the Domain-Specific-Component Configurations Upgrade

To verify that the domain-specific-component configurations upgrade was successful, sign in to the Remote Console and verify that the version numbers for each upgraded component is 14.1.2.1.0.

> **Note:**
>
> Before you can access the Hosted WebLogic Remote Console, you must deploy the hosted WebLogic Remote Console. For more information, see the Remote Console Online Help.

To sign in to the Remote Console, go to: `http://hostname:port/rconsole` or for HTTPS, `https://hostname:port/rconsole`.

> **Note:**
>
> After a successful upgrade, make sure you run the administration tools from the new 14c (14.1.2.1.0) Oracle home directory and not from the previous Oracle home directory.
>
> During the upgrade process, some OWSM documents, including policy sets and predefined documents such as policies and assertion templates, may need to be upgraded. If a policy set or a predefined document is upgraded, its version number is incremented by 1.
>
> If you created the FMW user to run the Upgrade Assistant, ensure that you delete the account after verifying your upgrade was successful.

Starting Servers and Processes

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

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

> **Note:**
>
> The procedures in this section describe how to start servers and 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 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 2: 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 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*.

> **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.

A

Troubleshooting the Oracle Access Manager Upgrade

If you encounter errors during or after the upgrade of Oracle Access Manager to 14c (14.1.2.1.0), review the following troubleshooting procedures.

- Troubleshooting OAM During the Upgrade
  This section describes the troubleshooting procedures for issues that you may encounter during the OAM upgrade process.
- Activation State is set as FAILED when Restarting the Admin Server
  After you upgrade the domain component configurations and start the Admin server, the activation state is set as `FAILED`.
- AMInitServlet Fails to Preload when Restarting OAM Managed Server
  After you upgrade the domain component configurations and start the OAM managed server, `AMInitServlet` fails to preload.
- File Not Found Exception when Starting the OAM Managed Server
  After you upgrade the domain component configurations and start the server a `File Not Found` exception is displayed.
- Error When Starting SSL Enabled OAM Managed Server After Upgrade
  If SSL is enabled for Oracle Access Manager Managed Servers, the SSL port for the Administration Server must be changed manually before starting the servers.
- OAM Upgrade Fails With InvalidKeyException
  Oracle Access Manager upgrade fails with InvalidKeyException if Java JSE Policy is not upgraded.
- OWSM Error Messages in the Reconfiguration Logs
  During the Oracle Access Management (OAM) upgrade, when you reconfigure the OAM domain, Oracle Web Services Manager (OWSM) error messages are seen in the reconfig logs.

Troubleshooting OAM During the Upgrade

This section describes the troubleshooting procedures for issues that you may encounter during the OAM upgrade process.

- Troubleshooting Security Policy Issues When Upgrading
  OAM 14c (14.1.2.1.0) has an improved security posture and leverages the capabilities added in the underlying infrastructure. OAM 14c (14.1.2.1.0) is certified with JDK jdk17.0.12, and based on thejdk17.0.12 update used, its behavior may vary.
- Load Balancer Value Changes During the Upgrade
  During the upgrade, the load balancer value changes from its original machine details and displays different values.

Troubleshooting Security Policy Issues When Upgrading

OAM 14c (14.1.2.1.0) has an improved security posture and leverages the capabilities added in the underlying infrastructure. OAM 14c (14.1.2.1.0) is certified with JDK jdk17.0.12, and based on thejdk17.0.12 update used, its behavior may vary.

For specific JDK jdk17.0.12 updates and their corresponding Java policies, see Java Release Notes.

> **Note:**
>
> Ensure that the OAM 12c (12.2.1.4.0) environment is operational/functional before you initiate the upgrade process.

- Modifying the Java Security Posture

Modifying the Java Security Posture

OAM Server 14c (14.1.2.1.0) supports TLS1.2 and SHA-2. For compatibility with older products (including Webgate, OIM, and OAAM), relax the OAM security posture by making the following changes to the java.security policy:

1. Remove TLSv1, TLSv1.1, MD5withRSA from the following key:

   ```
   key - jdk.tls.disabledAlgorithms
   ```

2. Remove MD5 from the following key:

   ```
   key - jdk.certpath.disabledAlgorithms
   ```

Load Balancer Value Changes During the Upgrade

During the upgrade, the load balancer value changes from its original machine details and displays different values.

The values are as follows:

- Host name = oam-host
- Port= 8002

To resolve this issue, manually change the host name and port number to the original value.

Activation State is set as `FAILED` when Restarting the Admin Server

After you upgrade the domain component configurations and start the Admin server, the activation state is set as `FAILED`.

```
Caused By: oracle.security.am.install.AMInstallException: Invalid Simple
Mode Artifacts at
oracle.security.am.install.startup.AMKeyStoreValidator.execute(AMKeyStoreValid
ator.java:70)at
```

```
oracle.security.am.install.startup.OamInstallTopologyConfigListener.doMandator
yValidations(OamInstallTopologyConfigListener.java:114)
```

To solve the error, complete the following steps:

1. In the 14c environment, open to the `oam-config.xml` file.
2. Replace the value of `sslGlobalPassphrase` with the value that you copied from the 12c environment.

For more information about how to import or export `oam-config.xml` from database, see Doc ID 2310234.1.

`AMInitServlet` Fails to Preload when Restarting OAM Managed Server

After you upgrade the domain component configurations and start the OAM managed server, `AMInitServlet` fails to preload.

The following error message is displayed:

```
Caused By: oracle.security.am.common.utilities.exception.AmRuntimeException:
Fail to decrypt oamkeystore data with cipher key from OAM config
(/DeployedComponent/Server/NGAMServer/Profile/ssoengine/CipherKey)
at oracle.security.am.engines.sso.adapter.OAMSessionConfiguration$Config
Listener.configurationChanged(OAMSessionConfiguration.java:295)
```

To solve the error, complete the following steps:

1. In the 14c environment, open to the `oam-config.xml` file.
2. Replace the value of `cipherKey` with the value that you copied from the 12c environment.

For more information about how to import or export `oam-config.xml` from database, see Doc ID 2310234.1.

File Not Found Exception when Starting the OAM Managed Server

After you upgrade the domain component configurations and start the server a `File Not Found` exception is displayed.

This is a known issue. Ignore the following `File Not Found` exception:

```
[2019-09-04T05:52:24.349+00:00] [wls_oam1] [WARNING] [J2EE JMX-46714]
[oracle.as.jmx.framework.wls.spi.ComponentMBeans] [tid:
[ACTIVE].ExecuteThread: '4' for queue: 'weblogic.kernel.Default
(self-tuning)'] [userId: <WLS Kernel>] [ecid:
ab946520-e9e8-498c-89f6-5e9e0f055f40-00000007,0] [partition-name: DOMAIN]
[tenant-name: GLOBAL] Error parsing MBean descriptor file
"fmwconfig/mbeans/oamconfig_mbeans.xml".[[
java.io.FileNotFoundException: The Config MBean jar file
"C:\Oracle\Middleware_IAM\user_projects\domains\oam_domain\config\fmwconfig\mb
eans\${OAM_ORACLE_HOME}\server\lib\jmx\configmgmt.jar" does not exist.

[2019-09-04T05:52:26.693+00:00] [wls_oam1] [WARNING] [J2EE JMX-46714]
```

```
[oracle.as.jmx.framework.wls.spi.ComponentMBeans] [tid:
[ACTIVE].ExecuteThread: '4' for queue: 'weblogic.kernel.Default
(self-tuning)'] [userId: <WLS Kernel>] [ecid:
ab946520-e9e8-498c-89f6-5e9e0f055f40-00000007,0] [partition-name: DOMAIN]
[tenant-name: GLOBAL] Error parsing MBean descriptor file
"fmwconfig/mbeans/t2p_mbeans.xml".[[
java.io.FileNotFoundException: The Config MBean jar file
"C:\Oracle\Middleware_IAM\user_projects\domains\oam_domain\config\fmwconfig\mb
eans\${OAM_ORACLE_HOME}\server\lib\jmx\was-t2p.jar" does not exist.
```

- WADL Generation Does not Show Description

WADL Generation Does not Show Description

Issue

WADL generation fails and a `java.lang.IllegalStateException: ServiceLocatorImpl` is returned.

```
Exception thrown when provider
class
org.glassfish.jersey.server.internal.monitoring.MonitoringFeature$StatisticsLi
stener
was processing MonitoringStatistics. Removing provider from further
processing.
java.lang.IllegalStateException:
ServiceLocatorImpl(__HK2_Generated_6,9,221656053) has been shut down
at
org.jvnet.hk2.internal.ServiceLocatorImpl.checkState(ServiceLocatorImpl.java:2
393)
```

Also, when the WADL generation fails, the description field shows **Root Resource**, instead of a proper description in the following URLs.

```
http://<Host>:<AdminServerPort>/oam/services/rest/11.1.2.0.0/ssa/policyadmin/
application.wadl
http://<Host>:<ManagedServerPort>/iam/access/api/v1/health/application.wadl
```

Resolution

Restart the Admin server and managed servers to resolve the wadl issue.

Error When Starting SSL Enabled OAM Managed Server After Upgrade

If SSL is enabled for Oracle Access Manager Managed Servers, the SSL port for the Administration Server must be changed manually before starting the servers.

This issue occurs when you upgrade Oracle Identity Manager (OIM) and Oracle Access Manager (OAM) integrated environments. If the SSL port is not updated for the SSL enabled

Oracle Access Manager Managed Server, the following exception is displayed when you start the Managed Server:

```
<Error> <Server>  <idmr2ps3> <AdminServer> <[ACTIVE] ExecuteThread: '11'
for  queue: 'weblogic.kernel.Default (self-tuning)'> <<WLS Kernel>> <>
<303f1768-cdd2-4e0c-9b1e-564a32e22aa1-00000056> <1494577396454>  <[severity-
value: 8]
[rid: 0] [partition-id: 0] [partition-name: DOMAIN] >  <BEA-002606> <The
server is unable to
create a server socket for listening on  channel "DefaultSecure[iiops]". The
address x.x.x.x
might be incorrect  or another process is using port 7503:
java.net.BindException: Address  already in use>
```

The following exception is seen in the Administration Server log file:

```
<Error> <Server> <idmr2ps3>  <AdminServer>
<DynamicJSSEListenThread[DefaultSecure]>
<<WLS Kernel>> <>
<1880691887b793b2:4b6e5462:15ba94a4abd:-8000-0000000000000015>
<1493194022003>
<BEA-002606> <Unable to create a server socket for listening  on channel
"DefaultSecure".
The address x.x.x.x might be incorrect or  another process is using port
7503: java.net.BindException: Address already  in use.>
```

To resolve this issue, do the following:

1. Change the SSL port of the Administration Server from `7503` to another free port, for example, `7505`, on the WebLogic Administration Console.
2. Edit the startManagedWebLogic.sh file located at DOMAIN_HOME/bin/ to change the port from `7503` to `7505`.

In an OIM and OAM integrated environment, you must use different SSL ports for OIM Administration Server and OAM Administration Server.

OAM Upgrade Fails With InvalidKeyException

Oracle Access Manager upgrade fails with InvalidKeyException if Java JSE Policy is not upgraded.

The following exception is displayed:

```
oracle.security.jps.JpsException:
oracle.security.jps.service.keystore.KeyStoreServiceException:
Failed to perform cryptographic operation
Caused by: java.security.InvalidKeyException: Illegal key size
```

OWSM Error Messages in the Reconfiguration Logs

During the Oracle Access Management (OAM) upgrade, when you reconfigure the OAM domain, Oracle Web Services Manager (OWSM) error messages are seen in the reconfig logs.

The following error messages are seen in the reconfig logs:

```
2017-07-23 10:49:11,791 SEVERE [18]
oracle.wsm.common.logging.WsmMessageLogger - Following validation errors were
encountered while validating document
"/assertiontemplates/oracle/http_pkinit_over_ssl_template" :
2017-07-23 10:49:11,868 SEVERE [18]
oracle.wsm.common.logging.WsmMessageLogger - Following validation errors were
encountered while validating document
"/assertiontemplates/oracle/http_kinit_over_ssl_template" :
2017-07-23 10:49:35,462 SEVERE [18]
oracle.wsm.common.logging.WsmMessageLogger - Following validation errors were
encountered while validating document
"/policies/oracle/multi_token_over_ssl_client_policy" :
2017-07-23 10:49:35,562 SEVERE [18]
oracle.wsm.common.logging.WsmMessageLogger - Following validation errors were
encountered while validating document
"/policies/oracle/multi_token_client_policy" :
```

The errors are caused because of the corrupted custom documents which need to be either removed or fixed before upgrade.

This does not impact the functionality of OWSM functionality, and hence can be ignored.

B

Upgrade Scenarios for OAM

An upgraded OAM environment can result in the following cases:

- If WebGate is upgraded and the OAM Server is not, then SSL communication between them uses TLSv1 with MD5 certificates.
- If OAM Server is upgraded and WebGate is not, then SSL communication between them fails, as the OAM Server rejects MD5 certificates and doesn't support TLSv1. In this case, you need to modify the Java security policy to enable TLSv1, TLSv1.1 and MD5.
- If both OAM Server and WebGate are upgraded, edit the WebGate profile and copy the WebGate artifacts to the WebGate config folder. SSL communication between the OAM Server and WebGates will use TLSv1.2 with SHA-2 certificates.

WebGates

12c (12.2.1.4.0) WebGates that employ version 4 of the OAP protocol will continue to work with OAM 14c (14.1.2.1.0). However, these WebGates must be upgraded to leverage the full capability of 14c (14.1.2.1.0). To upgrade the WebGates:

1. Stop the WebGates (OHS/OTD)
2. Upgrade WebGate binaries to 14c (14.1.2.1.0)
3. Edit WebGate profile and register the updated profile
4. Copy the WebGate artifacts to the WebGate config folder
5. Start the WebGates (OHS/OTD)

Multi-Data Center

If an upgrade results in a 14c (14.1.2.1.0) Primary server and a 12c (12.2.1.4.0) Clone server (or vice versa), then SSL communication between the servers fails. To enable communication between these servers, modify the java.security policy to enable TLSv1, TLSv1.1, and MD5 as suggested above.

Federation

For scenarios that involve Service Provider (SP) or Identity Provider (IDP) registration, the certificates used may undergo the same limitations as that for Client Certificates listed above.

Note that federation agreements will break if the Token Signing Certificate is changed. As a result, the 12c (12.2.1.4.0) security posture is carried forward after upgrading, which may require enabling the legacy algorithms (TLSv1, TLSv1.1, and MD5), as described above. The use of SHA-2 certificates is supported.

OIC

Similar to Federation, changing the OAuth Token Signing Certificate breaks existing trust relationships. As a result, the 12c (12.2.1.4.0) security posture is carried forward after upgrading, which may require enabling the legacy algorithms (TLSv1, TLSv1.1, and MD5), as described above. The use of SHA-2 certificates is supported.