Oracle Fusion Middleware

Planning an Upgrade of Oracle Fusion Middleware

14c (14.1.2.0.0)
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Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware, 14c (14.1.2.0.0)

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Contents

Preface

This preface contains the following sections:

Audience

This manual is intended for Oracle Fusion Middleware system administrators who are responsible for installing and upgrading Oracle Fusion Middleware. It is assumed that the readers of this manual have knowledge of the following:

- Oracle Fusion Middleware system administration and configuration information for the existing deployment
- Oracle Fusion Middleware system administration knowledge
- The configuration and expected behavior of the upgraded 14*c* system or systems.

Documentation Accessibility

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Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.

Convention	Meaning
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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Planning an Upgrade to Oracle Fusion Middleware 14c (14.1.2.0.0)

Before you begin an upgrade, you must understand the limitations of the upgrade and how the upgrade will impact your production environment.
Use the following procedures to get a general understanding of how to plan for an upgrade to Oracle Fusion Middleware to 14c (14.1.2.0.0):

Upgrade Planning Roadmap

Oracle strongly recommends that you have a well-designed upgrade plan before starting the upgrade process.

Should I upgrade to Oracle Fusion Middleware 14c (14.1.2.0.0)?

If this is a question you are currently asking yourself, then take a minute to review the planning steps described in these sections. Upgrades can be complicated and time-consuming when you are unprepared or unfamiliar with the requirements associated with this release of Oracle Fusion Middleware.

Using this planning guide is your first step in designing your upgrade path. The Oracle Help Center and Oracle Technology Network (OTN) have additional planning resources, such as upgrade videos and links to support communities that may also be useful in your upgrade planning.

The following table describes the tasks you may be required to complete during the planning phase of your upgrade. The order in which you execute your upgrade planning tasks may vary depending on your current environment. Use this checklist for the most important pre-upgrade considerations to review. It is important to note that some of the tasks may not apply to your environment.

Table 1-1 Upgrade Planning Roadmap

Task	Description	Documentation
Review the process flow for upgrading to Oracle Fusion Middleware 14*c*.	The process flow map shows the primary tasks related to the upgrade process.	About the Basic 14*c* Upgrade Process Flow
Understand the high-level process of upgrading your existing Oracle Fusion Middleware deployment.	Upgrade is a complex process and involves system downtime. Understanding the overall process can help you plan your upgrade.	About the Basic 14*c* Upgrade Procedures
Develop a backup strategy that includes all system-critical files before you start the upgrade.	You need to determine which components, files, schemas to back up before you start the upgrade. If a failure occurs, you need to restore your environment back to the original pre-upgrade state.	About Developing a Backup Strategy for Upgrade

Table 1-1 (Cont.) Upgrade Planning Roadmap

Task	Description	Documentation
Develop a testing strategy.	Moving from a test environment to a production environment can be especially difficult when upgrading. Creating an upgrade testing strategy before you begin the upgrade can prevent unnecessary downtime. For example, consider performing the upgrade on a cloned production environment before executing the actual upgrade.	About Developing an Upgrade Testing Strategy
Plan for system downtime during the upgrade process.	The upgrade process involves an “in place" upgrade for most Oracle Fusion Middleware components. You need to prepare for the system to be down during this time. To test the backup and recovery in case of a failure and to plan the downtime for the upgrade, test the upgrade process and test the restore functionality. This can also help you to plan for the scenario if something goes wrong during upgrade and the system needs to be restored.	About Planning for System Downtime During an Upgrade About In-Place versus Out-of-Place Upgrades
Verify that you are running a supported hardware and software versions before you upgrade.	The hardware and software hosting your existing Oracle Fusion Middleware deployment must meet certain requirements before upgrading to this release of Oracle Fusion Middleware. **CAUTION**: If you cannot meet the hardware or software requirements, do not attempt an upgrade.	About the Supported Upgrade Starting Points
Verify that your database is supported.	The domain requires an Oracle database to store the new schemas. The database version that hosts the schemas used in Fusion Middleware must be supported.	Upgrading and Preparing Your Oracle Databases for 14c
Consider the impact on deployed applications and components.	Review and understand any potential interoperability and compatibility issues.	About Your Certification, Compatibility, and Interoperability Requirements
Understand the basic rules and any restrictions for your upgrade.	To prevent any potential problems with your upgrade, you should understand some basic rules and restrictions.	About Component Upgrade Restrictions About Domain Upgrade Restrictions
Understand where to go to get the latest product distributions and upgrade tools.	Before you begin the upgrade, visit the Oracle Help Center and the Oracle Technology Network and become familiar with the location of product documentation, videos, and other important planning resources.	About Obtaining Product Distributions for Your Upgrade About the Upgrade and Configuration Tools

About the Supported Upgrade Starting Points

Your pre-upgrade environment must be at a supported version of Oracle Fusion Middleware before you can upgrade.

An **upgrade starting point** is a specific version of Oracle Fusion Middleware that you must be running in order to upgrade to the latest version of Oracle Fusion Middleware. If you are not running a version of Oracle Fusion Middleware that is a supported upgrade starting point, then you must first upgrade to a supported starting point using documentation from a previous release.

Supported Upgrade Starting Points for Oracle Fusion Middleware 14c (14.1.2.0.0)

Review the supported releases for the Oracle Fusion Middleware components you want to upgrade.

All of your Oracle Fusion Middleware components, servers and databases must be certified versions. While the majority of Fusion Middleware components will have the same supported starting points, some components may differ. Always review the contents of your pre-upgrade domain to ensure you have versions supported for upgrade.

Supported Oracle Fusion Middleware Releases

You can upgrade to Oracle Fusion Middleware Release 14c (14.1.2.0.0) from the following previous versions of Oracle Fusion Middleware:

- Oracle Fusion Middleware 12c (12.2.1.4.0)

  You must perform a full upgrade to move to 14c (14.1.2.0.0) . Do not attempt to update the existing 12*c* domain by installing the 14c (14.1.2.0.0) distributions into the same Oracle home. Upgrading the domain to 14.1.2.0.0 is not a patch set installation.

- Oracle WebLogic Server 14c (14.1.1.0.0)

  Standalone Oracle WebLogic Server 14c (14.1.1.0.0) environments can be upgraded to 14c (14.1.2.0.0).

> **Note:**
>
> Review your component-specific upgrade guides for more information about supported starting points for the components you wish to upgrade.

Supported Oracle WebLogic Releases

When planning a WebLogic Server version upgrade, you should review the Fusion Middleware Supported Systems Configurations page on Oracle Technology Network (OTN) to ensure that your upgraded environment is supported by Oracle.

For more information, see the following:

- WebLogic Server Compatibility with Previous Releases
- Roadmap for Upgrading Your Application Environment

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`.

Supported Oracle HTTP Server Releases

You can upgrade your supported Oracle HTTP Server 12*c* (12.2.1.4.0) to the latest release as a part of the Oracle HTTP Server product distribution. For more information about upgrading Oracle HTTP Server to Oracle Fusion Middleware Release 14c (14.1.2.0.0), refer to the following:

- Oracle HTTP Server Interoperability
- For upgrading HTTP Server, see *Upgrading Oracle HTTP Server*

Supported Database Versions

If you are not using at least the minimum supported database version, you must upgrade your database to one of the supported versions before beginning a Fusion Middleware upgrade.

For information about the latest database versions supported by Oracle Fusion Middleware Release 14c (14.1.2.0.0), see Upgrading and Preparing Your Oracle Databases for 14c .

What If I'm Not Running the Supported Oracle Fusion Middleware Components?

If you are not running the supported Oracle Fusion Middleware components, you must first upgrade any unsupported Fusion Middleware components within your environment to a supported upgrade starting point before you begin the 14*c* upgrade process.

> **Caution:**
>
> Do not attempt to use any unsupported Fusion Middleware components in your upgraded environment.

To determine if your supported 12*c* components have any compatibility issues in this release, see About Your Certification, Compatibility, and Interoperability Requirements.

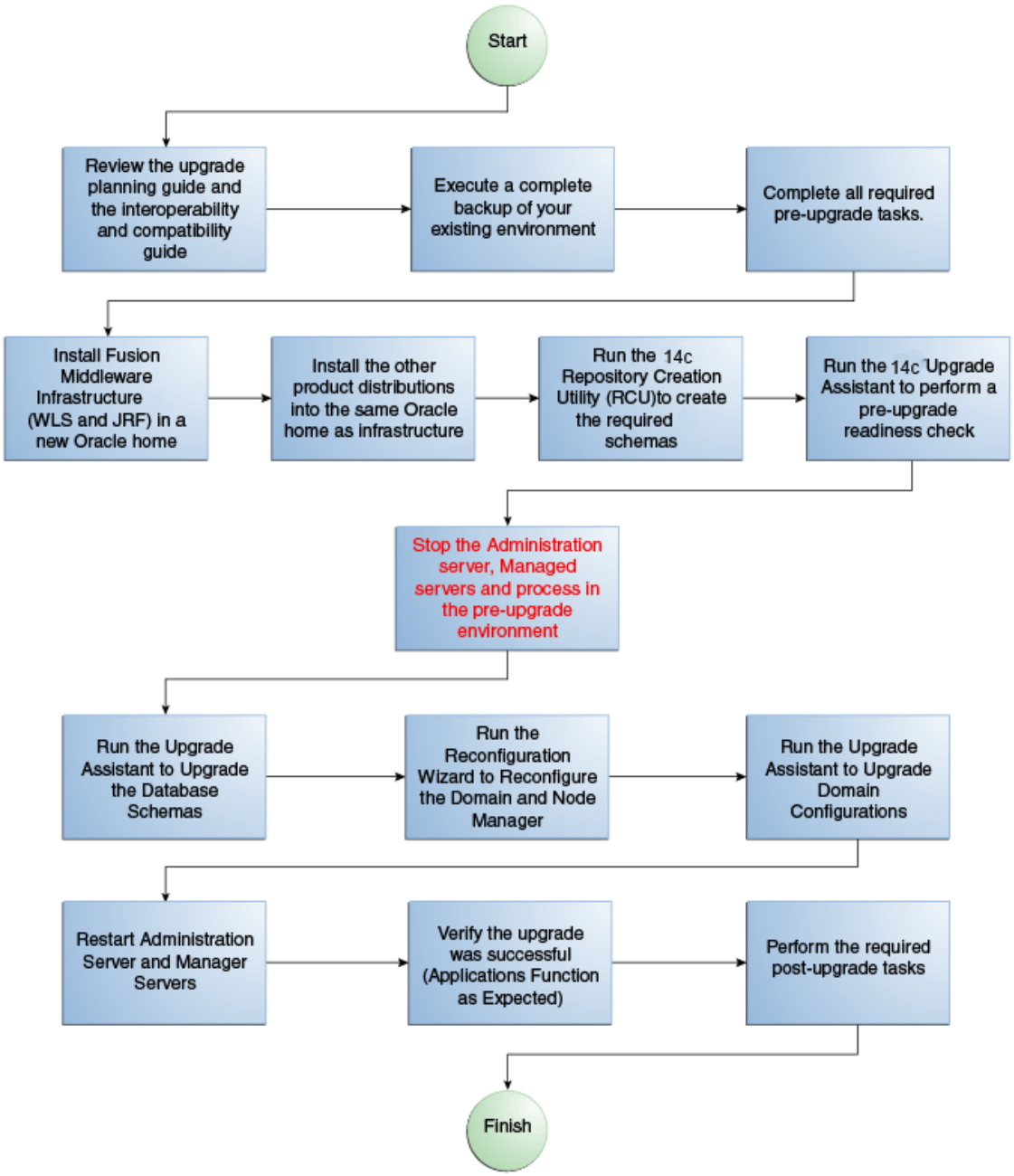
Patching and upgrade documentation for previous releases is available in the Oracle Help Center:

Oracle documentation

About the Basic 14*c* Upgrade Process Flow

You should understand the high-level upgrade procedures and tools used to upgrade to the 14*c* Fusion Middleware Infrastructure.

> **Note:**
>
> The flowchart is meant to illustrate a basic upgrade. The tasks you perform to complete your component-specific upgrade may vary from the example shown in this section. The component-specific upgrade documentation provides detailed information about the specific tasks that are required to upgrade the component.



About the Basic 14c Upgrade Procedures

Understand the basics of how to upgrade an Oracle Fusion Middleware deployment to 14c (14.1.2.0.0). Consult your component-specific upgrade documentation for the procedures you will perform for your upgrade.

A typical upgrade from the Oracle Fusion Middleware 12*c* (12.2.1.4.0) release to this Oracle Fusion Middleware 14c (14.1.2.0.0) release is described in this topic. There may be additional steps depending on the components that you are upgrading, but this gives you a general understanding of the upgrade process.

You can find the detailed upgrade procedures in the component-specific upgrade guides.

Table 1-2 Understanding the Basic Upgrade Process

Task	Tool Used
Create a complete backup copy of your existing deployment. Complete all of the required pre-upgrade tasks for your environment.	Pre-Upgrade Checklist in component upgrade guides
Install the product distributions in a new Oracle home.	Oracle Universal Installer (OUI)
Run a pre-upgrade readiness check to determine if your deployment is ready to be upgraded.	Upgrade Assistant (UA)
Create new schemas for your Fusion Middleware components.	Use the Repository Creation Utility (RCU) for schemas that require custom settings such as additional tablespace size, for example. Or: Use the Upgrade Assistant to create missing or required schemas using the default schema settings. Schemas are created during the upgrade process.
Upgrade the 11*g* or previous 12*c* database schemas for the components you will be upgrading.	Upgrade Assistant (UA)
Reconfigure the domain.	Reconfiguration Wizard
Upgrade component configurations.	Upgrade Assistant (UA)
Perform all required post-upgrade tasks.	Varies
Verify that the upgrade is successful. At a minimum, verify that the servers and node manager start and your applications functions as expected.	Varies

About the Standard Upgrade Topology for 14*c*

The standard installation topology is provided as an example and is not the only upgrade topology supported for the product.

Each Oracle Fusion Middleware Release 14*c* upgrade guide features a **standard upgrade topology**. Standard upgrade topologies are based on the **standard installation topology** described in the component-specific installation guides. Each install guide provides specific instructions for achieving the standard topology; if your needs differ, then refer to the supporting documentation.

The component-specific upgrade guides provides specific instructions for configuring an upgrade topology; if you choose to customize your selections during installation or configuration, references to supporting documentation will be provided to help you accomplish your tasks.

More information about standard topologies can be found in Using the Standard Installation Topology as a Starting Point.

About Developing a Backup Strategy for Upgrade

It is important to include in your upgrade plan a strategy for creating, storing and restoring a backup in case the upgrade fails.

> **Note:**
>
> If your backup and recovery plan does not include executing a complete database restoration, review Special Considerations for Online Backup and Recovery. You may need to perform additional pre-upgrade tasks to facilitate the online recovery.

Oracle recommends that you create a complete backup of your pre-upgrade environment before you begin an upgrade. While outside the scope of this document, you can learn more about Oracle Fusion Middleware backup and recovery strategies in these sections of *Administering Oracle Fusion Middleware*

- Introducing Backup and Recovery
- Backup and Recovery Recommendations for Oracle Fusion Middleware Components

About Developing an Upgrade Testing Strategy

Performing pre-upgrade testing on a cloned environment provides important data that can be applied to your overall production upgrade plan. Part of your testing strategy must also include restoring a backup of your pre-upgrade environment.

Some additional benefits include:

- Uncover and correct any upgrade issues.
- Practice completing an end-to-end upgrade.
- Understand the upgrade performance and how purge scripts can help.
- Understand the time required to upgrade metadata and other artifacts
- Understand the database resource usage (such as temporary tablespace; PGA, etc).

About the Upgrade Assistant

Use the Upgrade Assistant to upgrade supported component schemas, component configuration data, and standalone system component configurations. You can also use it to run a pre-upgrade readiness check.

The Upgrade Assistant can be used in several ways during the upgrade process:

- When run in `readiness` mode, the Upgrade Assistant runs a pre-upgrade check on the schemas and component configurations associated with a domain.
- For schema upgrades, the Administration server is offline and the list of schemas to upgrade is determined by reading the domain configuration.
- For component configuration upgrades, the Administration server is offline and the list of component configurations to upgrade is determined by reading the domain configuration.

About Using the Upgrade Assistant to Perform an Upgrade

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components.

Before beginning an upgrade with the Upgrade Assistant, you should create a complete backup and perform other pre-upgrade checks and tasks.

For detailed information about using the Upgrade Assistant to perform an upgrade, see your product-specific upgrade documentation: Fusion Middleware 14*c* Upgrade Documentation.

> **Note:**
>
> Oracle recommends that you run the Upgrade Assistant as a non-SYSDBA user, completing the upgrade for one domain at a time.

About Using the Upgrade Assistant to Perform a Readiness Check Before an Upgrade

You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform actual upgrade. This can be done using the Upgrade Assistant Wizard or by using a response file to perform a silent upgrade. Performing a readiness check is optional, but Oracle highly recommends that you run one before each upgrade. Note, however, that the readiness check cannot be performed on standalone domains.
The Upgrade Assistant readiness check performs a read-only, pre-upgrade review of your existing Oracle Fusion Middleware schemas and Oracle WebLogic configurations.

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

Readiness checks can be run any number of times before any actual upgrades are attempted. However, do not run the readiness check after an upgrade has been performed, as the report will not provide valid results.

> **Note:**
>
> Oracle recommends that you run the readiness checks during off-peak hours to prevent possible performance degradation.

Understanding the difference between the Examine Phase and a Readiness Check

The examine phase of the upgrade process is a separate operation from running a readiness check. Typically the readiness checks are more thorough than the checks performed during the Upgrade Assistant's examinantion phase. The readiness check is a read-only process performed before you start the actual upgrade, while the Examine phase occurs just before you click **Upgrade** in the Upgrade Assistant UI and identifies potential issues with the schemas and configuration data.

> **Note:**
>
> If you perform an upgrade and encounter issues that prevent a successful upgrade, you may have to revert to your backed-up, pre-upgrade environment and start the upgrade again. Running the readiness check can help identify some of these issues and prevent extended system downtime.

Understanding the Readiness Report

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.

Report Information	Description	Required Action
Overall Readiness Status: SUCCESS or FAILURE	The top of the report indicates whether the Upgrade 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	This is the date and time that the report was generated.	No action required.
Log file location	This is the directory location of the generated log file.	No action required.
Readiness Report location	This is 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, then 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, then do not attempt an upgrade.
Status: FAIL	The individual readiness check test detected an issue.	Do not upgrade until all FAILED issues have been resolved.
Status: PASS	The readiness check test detected no issues.	If your readiness check report shows only the PASS status, then 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.

> **Note:**
>
> You can also run the readiness check in `-response` mode to perform a silent readiness check using a response file.

About Creating Schemas with the Upgrade Assistant

Use the Upgrade Assistant to create missing schemas during the upgrade. The Upgrade Assistant applies the default schema attributes. If your schemas require customized settings, use the Repository Creation Utility (RCU) to create the schemas before starting the upgrade.

During the upgrade, the Upgrade Assistant (UA) can detect when component schemas are missing and must be created before the upgrade. The Upgrade Assistant can create these schemas for you using the default tablespace and temporary tablespace settings. To customize these settings you must run the Repository Creation Utility to create the schemas. If missing schemas are detected the Create Schemas screen appears. The **Create missing schemas for the specified domain** option is enabled by default. The Upgrade Assistant will attempt to

create the missing schemas for the domain using the database connection details and schema owner name provided.

If there are schemas in the source domain, then UA uses the existing schema prefix for the new schemas. If there are no existing schemas, then UA prompts you for schema information.

However, if you do not want the Upgrade Assistant to create these schemas for you, deselect this option and click **Next**. You will have to run the Repository Creation Utility to create the schemas.

About Planning for System Downtime During an Upgrade

Before you develop a successful upgrade strategy for your Fusion Middleware deployment, it is important to understand the impact of the upgrade on your production environments. Also, the factors that might impact the overall downtime during an upgrade, for example, size of your database and speed of system's infrastructure

Carefully consider the following when planning your downtime:

- The Upgrade Assistant requires that you shut down administration and managed servers for the entire duration of the upgrade.
- Run the pre-upgrade readiness check before you begin your actual upgrade to identify potential upgrade issues. If you encounter upgrade issues during the actual upgrade, then you must restart the upgrade process from the beginning. This includes recovering and redeploying from your backup files. You must consider this while planning and calculating the downtime.
- After upgrading the component schemas, the Reconfiguration Wizard is used to reconfigure the domain. After the domain is reconfigured, the Upgrade Assistant requires all servers and components to remain shut down during any configuration upgrades. In 12*c*, servers and components are down during the entire upgrade process.

About In-Place versus Out-of-Place Upgrades

During a Fusion Middleware upgrade, the existing domain is overwritten, in place. Oracle recommends that you perform your upgrades in-place instead of creating a new, separate domain.

An in-place upgrade updates and overwrites the existing files in your pre-upgrade environment. For example, upgrading schema and domain directories are performed in-place. During an out-of-place upgrade, however, you maintain your pre-upgrade Oracle home directory. In either case, the new binaries are installed in a new Oracle home directory and the schemas will always be upgraded in place.

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

The following list describes how the upgrade is performed on each component:

- **Oracle Home Binaries - upgraded out of place**

  You install the Oracle Infrastructure (which includes WebLogic Server and JRF) and other 14*c* distribution binaries in a new Oracle home. The upgrade of binaries is considered Out-of-Place because the pre-upgrade binaries are not overwritten.

- **Starting Point (Source) Schemas - upgraded in place**

The schemas in your pre-upgrade deployment are upgraded in-place, which means that the Upgrade Assistant updates and overwrites the schemas during the upgrade process. The servers must be down during this process.

- **Domain Directory Reconfiguration** - upgraded in place

  The existing domain is upgraded in-place. During the upgrade you identify the location of the existing domain and the domain is reconfigured to point to the new 14*c* Oracle home directory.

> **Note:**
>
> Oracle recommends that you perform your domain upgrades in-place. However, if an Out-of-Place domain upgrade is required, see Performing an Out-of-Place Domain Directory Upgrade. Schemas are still upgraded in-place.

- **Domain Component Configuration - upgraded in place**

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

About Your Certification, Compatibility, and Interoperability Requirements

It is important to check the cross-product interoperability and compatibility, system requirements, and certification requirements before starting the upgrade procedure.

- For information on supported operating systems, databases, web servers, LDAP servers, adapters, IPv6, JDKs, and third-party products, see Certification Matrix for 14c (14.1.2.0.0).
- For cross-product interoperability and compatibility, see Understanding Interoperability and Compatibility. This document contains important information regarding the ability of Oracle Fusion Middleware products to function with previous versions of other Oracle Fusion Middleware, Oracle, or third-party products.

About Component Upgrade Restrictions

It is important that you understand which of your integrated components can be upgraded to the latest version of Oracle Fusion Middleware.

Oracle strongly recommends that you practice the upgrade on a cloned production environment before you attempt to upgrade the production environment.

Additional upgrade considerations are documented in *Understanding Interoperability and Compatibility*.

About Domain Upgrade Restrictions

Some domains cannot be upgraded to 12*c* because of known limitations and configuration changes from the previous Oracle Fusion Middleware releases.

Do not attempt to upgrade a domain that is not supported. The upgrade will fail and you will have to recover from backup. For example, if you have in your existing domain a component at an unsupported version, then that domain cannot be upgraded to this release.

Other restrictions may apply. Oracle recommends that you review your component-specific upgrade guides and the release notes to ensure that your domains are not impacted by these restrictions.

About Obtaining Product Distributions for Your Upgrade

Product distributions can be obtained from either the Oracle Software Delivery Cloud or from Oracle Technology Network.

Oracle Fusion Middleware 14*c* software is available as a series of product distributions. A **distribution** is an archive with an installer that installs a pre-defined set of Oracle Fusion Middleware products and feature sets. **Feature sets** include the products and services that are automatically installed when their corresponding product is selected.

For more information on distributions and feature sets, see Understanding Distributions, Products, and Features.

For more information on which site you should visit to obtain your distribution, see the *Oracle Fusion Middleware Download, Installation, and Configuration Readme Files* page.

About the Upgrade and Configuration Tools

Oracle Fusion Middleware14c (14.1.2.0.0) provides a suite of installation, upgrade, and configuration tools that automate many upgrade-related tasks.

The following tools are installed as part of the product distribution:

Table 1-3 Installation, Upgrade and Configuration Tools

Tool Name	Use this tool to...
Oracle Universal Installer (OUI)	Install the 14*c* product distributions and feature sets. Each major component has its own installation guide. These guides provide specific details about using the Universal Installer with the component.
Oracle Upgrade Assistant (UA)	Upgrade schemas, component configurations, and standalone system component configurations. Each major component has its own upgrade guide. These guides provide specific details about using Upgrade Assistant with the component.
Repository Creation Utility (RCU)	Create schemas in your database. Depending on what you are upgrading, you may need to create schemas before you can run the Oracle Reconfiguration Wizard. The Repository Creation Utility is included in each 14*c* distribution. There may be new schemas that need to be created for some components before an upgrade. Consult your component-specific upgrade documentation for more information.
Oracle Configuration Wizard	Create the WebLogic domain. The Configuration Wizard simplifies the process of creating and extending a WebLogic Server domain. If you are upgrading a standalone system component, such as Oracle HTTP Server (OHS), do not use the Configuration Wizard to configure your domain. The Upgrade Assistant is used to create and configure the standalone domain.

Table 1-3 (Cont.) Installation, Upgrade and Configuration Tools

Tool Name	Use this tool to...
Oracle Reconfiguration Wizard (New in 12*c*)	Reconfigure a domain that is using Oracle WebLogic Server. When you use the Reconfiguration Wizard to reconfigure a domain, the WLS core infrastructure and domain version are automatically updated.
OPatch	Apply patches in 12*c*. There are no patch set installers in 12*c*. The Oracle Universal Installer is used to install all major and minor releases.

2
Securing Datastores

The following sections explain how to upgrade security artifacts to release 14*c* (14.1.2.0.0):

> **Note:**
>
> Before starting the procedures documented in this section, be sure that you have read and understand the tasks and concepts documented in the following:
>
> - About Using the Upgrade Assistant to Perform an Upgrade
> - Creating Schemas with the Repository Creation Utility (RCU)
> - Reconfiguring a WebLogic Domain in *Upgrading Oracle WebLogic Server*

3

Performing a Silent Upgrade with a Response File

Use the Upgrade Assistant to create a response file to perform silent upgrades.

When you create a response file to record the information that you enter through the Upgrade Assistant's screens, you can perform the same actions later by using the command line in silent mode.

Creating an Upgrade Response File

When you run the Upgrade Assistant in graphical user interface (GUI) mode, you can select to generate a response file.

The **Save Response File** option on the Upgrade Summary screen creates a file that stores the information you have already provided in the Upgrade Assistant screens.

When you select the **Save Response File** option, you are prompted for a name and location where you want to save the response file. After it is created, you can use it as isto replicate the upgrade options on other systems, or modify it as needed.

Starting the Upgrade Assistant with a Response File

Use a response file with the Upgrade Assistant to complete a silent readiness check or upgrade.

To start the Upgrade Assistant using a response file:

1. Go to the 14c (14.1.2.0.0) `Oracle Home /oracle_common/upgrade/bin` directory:

   ```
   (UNIX) ORACLE_HOME/oracle_common/upgrade/bin
   ```

   ```
   (Windows) ORACLE_HOME\oracle_common\upgrade\bin
   ```

2. Enter the following command:

   ```
   (UNIX) ./ua -response response_file[-examine] [-logLevel log_level] [-
   logDir log_directory] [-threads number]
   ```

   ```
   (Windows) ua.bat -response response_file[-examine] [-logLevel log_level] [-
   logDir log_directory] [-threads number]
   ```

4

Upgrading and Preparing Your Oracle Databases for 14c

It is important to understand the database requirements for upgrade. You may need to upgrade your database to a supported version prior to upgrade.
The following sections describe some of the tasks associated with preparing your Oracle database for an upgrade to 14c (14.1.2.0.0). For more information, see Preparing to Upgrade an Oracle Database in the *Oracle Database Upgrade Guide.*

> **Note:**
>
> When upgrading to 14c (14.1.2.0.0) your existing database must be used for the upgrade. Do not create a new database.

About Finding the Latest Information About Upgrading Oracle Database

Review and understand the database requirements before the upgrade. Many Oracle Fusion Middleware products require database schemas prior to domain configuration.

Through its support website, Oracle provides late-breaking updates, discussions, and best practices about pre-upgrade requirements, upgrade processes, post-upgrade, compatibility, and interoperability.

Oracle also strongly recommends that you download and run the Pre-Upgrade Information Tool, which is available on My Oracle Support.

- My Oracle Support:

  http://support.oracle.com

  You can search in the library, or search on My Oracle Support for keywords, such as "Database Upgrade"
- Oracle Database Pre-Upgrade Utility (Document ID 884522.1) at My Oracle Support
- Oracle Database 12c Release 2 Upgrade Companion (Document ID 1670757.1) at My Oracle Support

To find a certified database for your operating system, see the certification document for your release on the *Oracle Fusion Middleware Supported System Configurations* page.

To make sure your database is properly configured for schema creation, see "Verifying Requirements for Oracle Repository Creation Utility" in the *Oracle Fusion Middleware System Requirements and Specifications* document.

> **Note:**
>
> Only a certified database can be used for the standard installation topology. Do not attempt an upgrade if the database hosting the repository schemas is not supported.

Applying the Latest Patch Set Updates and Any Required Patches

It is important to understand the latest and recommended patches required to avoid any issues during the upgrade.

Potential interoperability and upgrade issues can be avoided by making sure you have applied the latest patch sets, and that you have reviewed the list of recommended patches that are designed to help you avoid any problems during upgrade.

For more information, see the Upgrade chapter of the Release Notes for your platform. For example, if you are using a Linux operating system, see Patches Required to Address Specific Upgrade and Compatibility Requirements in the *Oracle® Application Server Release Notes* .

For additional information about database patching requirements, see Review System Requirements and Specifications in the *Planning an Installation of Oracle Fusion Middleware*.

Backing Up the Schema Version Registry Table

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

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

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

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

Verifying Your Database Objects Are Ready for Upgrade

Before starting an upgrade, you should make sure that your supported database has no invalid objects and that the schemas you want to upgrade are at versions that are supported for upgrade.

It is important to know whether or not your schemas and are ready for upgrade because schemas are upgraded in place, which means that the existing database schemas are upgraded.

Verify Schema Versions

When the schemas are created in your database, RCU creates and maintains a table called `schema_version_registry`. This table contains schema information such as version number, component name and ID, date of creation and modification, and custom prefix.

Before you run the Upgrade Assistant, make sure that you have verified that the schemas you want to upgrade are supported for an upgrade to this version of Oracle Fusion Middleware.

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

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

If the number in the "VERSION" is at 12.2.1.4.0 or higher, and the STATUS column is 'VALID', then the schema is supported for upgrade.

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

Check for Invalid Database Objects

If you are using an Oracle database, you should recompile database objects before running the Upgrade Assistant to check for invalid objects before the upgrade. Connect to the database as `SYS` and run the following from SQL*Plus:

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

Take note of any invalid objects and run the following query for more information. The existence of invalid database objects may prevent the upgrade from completing successfully.

```
oracle_home/software/rdbms/admin/utlrp.sql
```

To recompile just the objects that belong to a single Oracle Fusion Middleware schema, you can use the Oracle Database stored procedure `dbms_utility.compile_schema` as shown in the example below:

```
SQL> execute
dbms_utility.compile_schema('1213_IAU');
PL/SQL procedure successfully completed
```

> **Note:**
>
> These procedures should be used again after running the Upgrade Assistant for verification.

5
Troubleshooting Your Upgrade

Before contacting Oracle Support, you can troubleshoot common problems and issues that may occur while you are using the Upgrade Assistant to perform an upgrade.

Understanding the errors that you may encounter while running the Upgrade Assistant will help you to effectively troubleshoot them.

> **Note:**
>
> Your course of action depends on the phase in which the error occurred.

If errors occur while you are running the Upgrade Assistant, use the following steps to troubleshoot the problem:

1. Locate and open the Upgrade Assistant log file with a text editor.
   For information about the location of the log file, see Reviewing Log Files.
2. To verify the correct version of the Upgrade Assistant .jar file:
   a. Go to the `jlib` directory:
      `cd ORACLE_HOME/oracle_common/upgrade/jlib`
   b. Enter the following command:
      `unzip -p ua.jar META-INF/MANIFEST.MF`

   > **Note:**
   >
   > The output of the `unzip -p ua.jar META-INF/MANIFEST.MF` command identifies the development label that was used to build the Upgrade Assistant, and that information identifies the date and version of the Upgrade Assistant software that was run. If you submit a service request, you need to provide this information to Oracle.

3. Locate and note any error messages that are identified by number; for example, `UPGAST-00091`. You will need to provide this information to Oracle.
4. Based on whether you can locate an error message and the error message description, do one of the following:
   - If you are able to identify a solution to the upgrade failure, implement your solution, then restart the Upgrade Assistant to perform the upgrade again.
     When you rerun the Upgrade Assistant, any components that were upgraded successfully during the previous run are not affected. However, the Upgrade Assistant attempts to upgrade any components that were not upgraded successfully.
   - Contact Oracle Support about any errors that are not documented or that cannot be resolved by following documented actions. Note that some errors that occur require the repository to be restored from backup, the problem to be resolved, and another

upgrade to be run. Note that Oracle Support requires you to provide both the UA.log file and the UA.out file, if present. Provide complete logs and not just excerpts of those files.

> **Note:**
>
> If you get any errors during Examination phase, and no components or schemas have been upgraded yet, run the readiness check. The types of checks performed by the readiness check are more thorough than Examination phase of upgrade.
>
> Errors that occur during or after the upgrade, however, require you to restore your environment from your backup copies, correct the errors and then restart the upgrade process from the beginning.

Reviewing Log Files

Do not delete the log files. They help diagnose and correct the problem while you run the Upgrade Assistant.

When running the Upgrade Assistant, you can alter the contents of your log files by specifying a different `-logLevel` value on the command line. The default value is `-logLevel NOTIFICATION`. You can alter the location of your log files using the `-logDir` parameter. You can obtain more detailed logging information by running the Upgrade Assistant with `-logLevel TRACE`. However, this may cause the log file to become very large.

> **Note:**
>
> `TRACE` messages are not included in the Upgrade Assistant Log File Viewer. To view `TRACE` messages, use another tool.

Investigating Examination Failures

Identify and troubleshoot failures that occur during the Examination phase of the upgrade.

To determine the cause of an Examination failure:

1. Note the name of the failed component in the Upgrade Assistant dialog or command-line output.
2. Open the following Upgrade Assistant log file.
   For information about the location of the log file, see .Reviewing Log Files.
3. In the log file, search for the message `Starting to examine component_name`.

To complete the upgrade, resolve the issues and then launch the Upgrade Assistant again, or, if possible, click **Back** to return to a previous screen and make the necessary changes.

> **Note:**
>
> The Upgrade Assistant readiness check performs checks with a greater level of detail than the Examination phase. If Examine fails, you can run the Upgrade Assistant with the `-readiness` parameter and make sure that the report does not show any test failures.
>
> Issues detected during the Examination phase can be resolved without restoring from backup (as is required to resolve errors encountered during the actual upgrade). However, if you attempt to resolve an Examination error in a way that changes the state of the system, you need to restore the entire system to the pre-upgrade state (before any upgrade operations were attempted).

Investigating Upgrade Failures

Identify and troubleshoot failures that occur during the upgrade.

To determine the cause of an upgrade failure:

1. Note the name of the failed component in the Upgrade Assistant dialog or command-line output.
2. Open the upgrade log file: For information about the location of the log file, see Reviewing Log Files.
3. Search for the message `Starting to upgrade component_name`.

To complete the upgrade, restore the entire environment using your pre-upgrade backup to a point in time before any upgrade operations were attempted, resolve the issues, then launch the Upgrade Assistant again. You will have to start the upgrade process from the beginning to ensure a successful (complete) upgrade

> **Note:**
>
> You should back up all databases and be able to do a point-in-time recovery from those backups. If the Fusion Middleware repository for your domains spans multiple servers, you must restore from each of those backups.

Resolving Common Upgrade Assistant Errors

Attempt to resolve common Upgrade Assistant errors before contacting Oracle Support.

The following sections provide descriptions of the most common upgrade errors. For a complete list of Fusion Middleware errors, see the Fusion Middleware Error Messages documentation for your product.

Ensuring there is sufficient disk space

Insufficient disk space is a common cause of upgrade failures.

If an upgrade fails because the database server has run out of disk space, you must restore the database server environment from backups, add sufficient disk space or remove unwanted files (such as temp or trace files) from the database server, and then retry the upgrade.

> **Note:**
>
> Once a database schema upgrade has failed due to this class of error, you cannot simply add more disk space and retry the upgrade. The schemas have been left in an inconsistent state and may have been marked INVALID. You cannot recover from this error without restoring the original database state from backups.

The following examples show some insufficient disk space errors that you may encounter:

ORA-01658: unable to create INITIAL extent for segment in tablespace

Cause: The existing schema tablespace does not have sufficient space to complete the upgrade.

Action: Make sure that the tablespace has sufficient room (space) for a successful upgrade. Oracle recommends that you add more data files to the existing database tablespaces, otherwise the upgrade will fail.

ORA-01114: IO error writing block to file block number

Cause: The device on which the file resides is probably offline. If the file is a temporary file, then it is also possible that the device has run out of space. This could happen because disk space of temporary files is not necessarily allocated at file creation time.

Action: Restore access to the device or remove unnecessary files to free up space.

ORA-09945: Unable to initialize the audit trail file

Cause: The system is unable to write header information to the file being used as the audit trail. The audit_trail_dest or audit trail destination is full for generation of audit file.

Action: Free up space and retry the operation.

Resolving Database Connection Problems When Upgrading Schemas

Verify that your databases are accessible and that you have access to manage them.

If you have trouble connecting to a database when using the Upgrade Assistant to upgrade a component schema, try connecting to the database using another tool, such as SQL*Plus. This helps you troubleshoot the problem by verifying that the database is up and running and available on the network.

Attempting to Upgrade an Unsupported Domain

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

If you receive an error stating that the specified domain cannot be upgraded, you must first upgrade the domain to a supported version. Do not attempt to upgrade schemas or domain configurations in an unsupported domain.

Restarting the Upgrade Assistant After a Failure

You must resolve errors before you restart the Upgrade Assistant.

If the Upgrade Assistant fails during the upgrade phase, or only partially upgrades your components, try to resolve the issues and then follow these steps:

1. Identify and resolve the issue. Review the log files and note that you may need to apply a patch. If you continue to experience upgrade failures, consider setting -logLevel to TRACE so that more information is logged. This is useful when troubleshooting a failed upgrade, but be sure to reset -logLevel to NOTIFICATION after the issue has been resolved to avoid performance issues.
2. Restore the entire environment from your pre-upgrade backup.
3. Restart the upgrade as described in your component-specific upgrade guide.

If you cannot follow the standard backup and recovery procedures recommended by Oracle, then you must perform an online restoration.

A

Performing an Out-of-Place Domain Directory Upgrade

By default, Fusion Middleware upgrades are performed in-place, which overwrites the existing domain directory. However, you have the option of upgrading to 14c (14.1.2.0.0) using a different domain directory. This option is called an out-of-place upgrade and it allows you to keep your existing domain directory intact.
Perform these tasks to complete an out-of-place upgrade:

About Upgrading a Domain Directory Out of Place

Standard Fusion Middleware upgrades are performed in place which updates and overwrites the existing domain. If you want to preserve your existing domain, then you can perform an out-of-place domain directory upgrade, but your schemas are still upgraded in place.

When upgrading from Oracle Fusion Middleware 12*c* (12.2.1.4.0) to 14c (14.1.2.0.0), schemas and domain directory upgrades are performed in place which updates the existing 11*g* or 12c domains during the upgrade.

If you prefer to leave your existing domain directory intact, you can perform an out-of-place domain directory upgrade using a new domain directory on the same - or different - host using the steps described in this chapter.

> **Caution:**
>
> When performing an out-of-place domain directory upgrade to , it is important to note that the existing schemas will be upgraded in-place. Your pre-upgrade environment must be shut down during the out-of-place domain directory upgrade process.

Performing an Out-of-Place Domain Directory Upgrade on the Same Host

Understanding the procedure of performing an out-of-place domain directory upgrade on the same host.

Perform the following tasks to complete the out-of-place domain directory upgrade on the same host at the existing domain:

> **Note:**
>
> If you are upgrading domain that is on a different host, see Performing an Out-of-Place Domain Directory Upgrade on a Different Host.

Stop all processes, including the Administration Server, Managed Servers, and Node Manager.

You must stop all processes, including the Administration Server, Managed Servers, and Node Manager.

Do not stop the database before starting the upgrade.

Stopping Servers and Processes

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

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

> **Note:**
>
> The procedures in this section describe how to stop the existing, pre-upgrade servers and processes using the WLST command-line utility or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

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

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

Step 1: Stop System Components

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

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

You can stop system components in any order.

Step 2: Stop Any Managed Servers

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

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

When prompted, enter your user name and password.

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*.

Create a Complete Backup of all Files from the Existing Domain

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

For more information on backing up your files, see Backing Up Your Environmentin the *Oracle® Fusion Middleware Administrator's Guide*.

During the upgrade you must have “read" access to the files in the backup storage:

- 12c domain home
- The `/nodemanager` directory located in the `MW_HOME/wlserver/common/`

For more information, see Backing Up Your Environmentin the *Oracle® Fusion Middleware Administrator's Guide*.

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

Restore the domain backup files to a new location.

Copy the files you backed up in Create a Complete Backup of all Files from the Existing Domain to a new location.

You will point to this location in Upgrade the cloned environment using the standard upgrade procedures.

Install the 14c (14.1.2.0.0) distributions in a new Oracle home.

You must obtain and install the**14c (14.1.2.0.0)** product distributions for the components you will be upgrading. However, you do not need to configure a new14c (14.1.2.0.0) domain.

For detailed instructions, see *Planning an Installation of Oracle Fusion Middleware* and the component-specific installation guides for the component(s) you are installing.

Upgrade the cloned environment using the standard upgrade procedures.

Perform the upgrade on the domain you created in Restore the domain backup files to a new location. .

Each component has an upgrade guide that describes the procedures required to upgrade from your Oracle Fusion Middleware infrastructure topology to the new 14c (14.1.2.0.0) topology. The guides are located in the Upgrade tab of the Oracle Fusion Middleware online library.

Creating a Non-SYSDBA User to Run the Upgrade Assistant

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

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

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

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

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

```
CREATE USER FMW IDENTIFIED BY "<FMW password>";
GRANT pdb_dba TO FMW;
GRANT MANAGE SCHEDULER TO FMW;
GRANT USE ON EDITION ORA$BASE TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_LOB TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_OUTPUT TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_STATS TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aq TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aqadm TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aqin TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aqjms TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON utl_file TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON dbms_lock TO FMW WITH GRANT OPTION;
GRANT SELECT ON sys.V_$INSTANCE TO FMW WITH GRANT OPTION;
GRANT SELECT ON sys.GV_$INSTANCE TO FMW WITH GRANT OPTION;
GRANT SELECT ON sys.V_$SESSION TO FMW WITH GRANT OPTION;
GRANT SELECT ON sys.GV_$SESSION TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_jobs TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_job_run_details TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_running_jobs TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_aq_agents TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.DBMS_SHARED_POOL TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_2pc_pending TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_pending_transactions TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_FLASHBACK TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON dbms_crypto TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON dbms_job TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_job_classes TO FMW WITH GRANT OPTION;
GRANT SELECT ON SYS.DBA_DATA_FILES TO FMW WITH GRANT OPTION;
GRANT SELECT ON SYS.V_$ASM_DISKGROUP TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON SYS.DBMS_ASSERT TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_SCHEDULER TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_data_files TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON UTL_RAW TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_XMLDOM TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_APPLICATION_INFO TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_UTILITY TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_SESSION TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_METADATA TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_XMLGEN TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_DATAPUMP TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_MVIEW TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_objects TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_queue_subscribers TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_subscr_registrations TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_RLS TO FMW WITH GRANT OPTION;
GRANT READ ON CTXSYS.CTX_PENDING TO FMW WITH GRANT OPTION;
GRANT SELECT ON SYS.V_$PARAMETER TO FMW WITH GRANT OPTION;
GRANT CREATE PROCEDURE TO FMW;
GRANT SELECT ON dba_users TO FMW WITH GRANT OPTION;
GRANT ALL ON sys.v_$parameter TO FMW WITH GRANT OPTION;
```

Using the Upgrade Assistant to Run a Pre-Upgrade Readiness Check

For most components, the Upgrade Assistant can be run in **-readiness** mode to perform a read-only, pre-upgrade check on your domain. If issues are detected, you can correct them before starting the actual upgrade.

You can run the readiness check while the system is online. Depending on the comprehensiveness of the checks, the readiness checks can take more time to complete. Consider running the check during off-peak hours.

To perform a readiness check on your pre-upgrade environment, launch the Upgrade Assistant in `-readiness` mode:

1. Change directory to *`ORACLE_HOME`*`/oracle_common/upgrade/bin`. on UNIX operating systems or *`ORACLE_HOME`*`\oracle_common\upgrade\bin` on Windows operating systems.
2. To start the Upgrade Assistant on UNIX operating systems:

   ```
   ./ua -readiness
   ```

3. To start the Upgrade Assistant on Windows operating systems:

   ```
   ua.bat -readiness
   ```

4. Provide the required information in each of the Upgrade Assistant screens.

The screens you see will vary depending on the upgrade options you select. Consult your component-specific upgrade documentation for complete details.

Validate that the newly upgraded domain functions as expected.

Perform the usual administration tasks using the new domain and verify that the components work as expected.

You do not need to decommission the old Oracle home, however if you would like to remove it, see Deinstalling the 12c Applications (Optional).

Performing an Out-of-Place Domain Directory Upgrade on a Different Host

Understanding the procedure to perform an out-of-place upgrade on a different host.

Perform these steps to compete an out-of-place upgrade on a different host.

The Fusion Middleware 12c certification matrix includes 12.1 databases, therefore, the reference to 11 in this chapter is to the Fusion Middleware 11g schemas and not to the Oracle 11g database version.

Stop all processes, including the Administration Server, Managed Servers, and Node Manager. (Host A)

You must stop all processes, including the Administration Server, Managed Servers, and Node Manager, if they are started on the host. Do not stop the database at this time.

For example, to stop the Administration Server:

```
DOMAIN_HOME/bin/stopWebLogic.sh username password [admin_url]
```

Create a complete backup of all files from the host machine. (Host A)

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

See Backing Up Your Environmentin the *Oracle® Fusion Middleware Administrator's Guide*.

During the upgrade you must have “read" access to the files in the backup storage:

- Pre-upgrade domain home
- The `/nodemanager` directory located in the `MW_HOME/wlserver_10.3/common/`

Configure the target machine Host B with the same host name and IP address as Host A.

The host name and IP address of the target machine (Host B) must be made identical to the source host (Host A). This will require you to change the IP address and name of the source machine or decommission the source machine to avoid conflicts in the network.

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

Restore from backup the pre-upgrade domain from Host A to Host B.

Restore the files you backed up in Create a complete backup of all files from the host machine. (Host A) using the same directory structure that was used in the pre-upgrade environment. The directory structure on Host B must be identical to the structure used on Host A.

For detailed information about restoring your files to the target machine, see Recovering Your Environmentin *Oracle® Fusion Middleware Administrator's Guide*.

Install the product distributions in a new Oracle Home. (Host B)

You must obtain, install and configure the product distributions for the components you will be upgrading.

See *Planning an Installation of Oracle Fusion Middleware* and the component-specific installation guides for the component(s) you are installing.

Perform the upgrade using the standard upgrade procedures. (Host B)

Each component or suite of components has an upgrade guide that describes the procedures required to upgrade the infrastructure topology to the latest topology. The guides are located on the Upgrade landing page of the Oracle Fusion Middleware Upgrade Documentation.

The Node Manager upgrade procedure requires access to the original Node Manager files. Use the Node Manger files that were backed up from the source machine as part of Configure the target machine Host B with the same host name and IP address as Host A..

Validate that the newly upgraded domain functions as expected.

Perform the usual administration tasks using the new domain and verify that the components work as expected.

You do not need to decommission the existing Oracle home, however if you would like to remove it, see Deinstalling the 12c Applications (Optional).

Deinstalling the 12c Applications (Optional)

Procedure to deinstall the old 12*c* applications and domain setup.

While not required, you can use these steps to deinstall the old application and domain setup after the upgrade. **Do not deinstall a domain that is still being referenced by a non-upgraded component.** If you are unsure, leave the domain intact.

> **Note:**
>
> The commands mentioned in this section must be run from the 12*c* Oracle Home that you are removing and not from the new home that was created as part of the 12*c* upgrade process.

1. Shutdown all the 12*c* servers and processes (including the Admin Server, Managed Servers and Node Manager). See Starting and Stopping Oracle WebLogic Server Administration and Managed Servers in the *Oracle® Fusion Middleware Administrator's Guide*.
2. To remove the Oracle Home, start the Oracle Universal Installer in -deinstall mode.

   (UNIX) ORACLE_HOME/oui/bin

   ```
   ./runInstaller.sh -deinstall
   ```

   (Windows) ORACLE_HOME\oui\

   ```
   binsetup.exe -deinstall
   ```
3. On the Deinstall screen, specify the 12*c* Oracle home to deinstall. Click **Deinstall** to continue.
4. On the Warning screen, select whether or not you want the OUI to remove the Oracle home directory. Click **Yes** to have the Oracle Universal Installer remove the software and Oracle home. There is no undo.
5. To remove the 12*c* Oracle common home, start the Oracle Universal Installer in -deinstall mode from the following directory:

   (UNIX) ORACLE_HOME/oracle_common/oui/bin

   ```
   ./runInstaller -deinstall -jreLoc JRE_LOCATION
   ```

   (Windows) ORACLE_HOME\oracle_common\oui\

   ```
   binsetup.exe -deinstall -jreLoc JRE_LOCATION
   ```
6. On the Deinstall screen, verify the Oracle common home that is about to be removed is the correct one and click **Deinstall** to continue.

7. On the Warning screen, select whether or not you want to remove the Oracle Common home directory. Click **Yes** to remove the software and Oracle common home.
8. To remove the WebLogic Server, start the WebLogic Uninstall program from the following directory:

   (UNIX) ORACLE_HOME/utilw/uninstall

   ./uninstall.sh

   (Windows) ORACLE_HOME\utils\uninstall

   uninstall.exe
9. Click **Next** to start the uninstall program.
10. Select the components to uninstall by selecting the check boxes next to the installed components. Note that by default, all installed components are selected.
11. After selecting the components to uninstall, click **Next** to complete the uninstall.