

Oracle® Fusion Middleware

Planning an Upgrade of Oracle Fusion Middleware



12c (12.2.1.4)
E95115-03
April 2025

The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

ORACLE®

Copyright © 2015, 2025, Oracle and/or its affiliates.

Primary Author: Oracle Corporation

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle®, Java, MySQL, and NetSuite are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

Contents

Preface

Audience	vi
Documentation Accessibility	vi
Conventions	vi

1 Planning an Upgrade to Oracle Fusion Middleware 12c (12.2.1.4.0)

Upgrade Planning Roadmap	1-2
Introducing Oracle Fusion Middleware 12c to 11g Users	1-4
Common Fusion Middleware Terminology Changes	1-5
Upgrade and Patching Terminology Changes	1-5
Using the 12c Documentation Library Resources	1-5
About the Supported Upgrade Starting Points	1-6
Supported Upgrade Starting Points for Oracle Fusion Middleware 12c (12.2.1.4.0)	1-6
Supported Oracle Fusion Middleware Releases	1-6
Supported Oracle WebLogic Releases	1-7
Verify That the JDK Is Certified for This Release of Oracle Fusion Middleware	1-7
Supported Oracle HTTP Server Releases	1-7
Supported Database Versions	1-8
What If I'm Not Running the Supported Oracle Fusion Middleware Components?	1-8
About the Basic 12c Upgrade Process Flow	1-8
About the Basic 12c Upgrade Procedures	1-9
About the Standard Upgrade Topology for 12c	1-10
About Developing a Backup Strategy for Upgrade	1-10
About Developing an Upgrade Testing Strategy	1-11
About Creating Schemas with the Upgrade Assistant	1-11
About Using the Upgrade Assistant to Perform a Readiness Check Before an Upgrade	1-12
About Planning for System Downtime During an Upgrade	1-13
About In-Place versus Out-of-Place Upgrades	1-14
About Your Certification, Compatibility, and Interoperability Requirements	1-15
About Component Upgrade Restrictions	1-15
About Domain Upgrade Restrictions	1-15
About Obtaining Product Distributions for Your Upgrade	1-15

2 Securing Datastores

About Upgrading Security to 12c (12.2.1.4.0)	2-1
Before Upgrading the Security Store	2-2
Compatibility Table for 11g and 12c Versions	2-2
Upgrading Security: Main Steps	2-3
Reconfiguring Domains with the Fusion Middleware Reconfiguration Wizard	2-7
Upgrading a Shared Security Store	2-8
Upgrading a Shared 12c Security Store	2-8
Upgrading a Shared 11g Security Store	2-8

3 Upgrading and Preparing Your Oracle Databases for 12c

About Finding the Latest Information About Upgrading Oracle Database	3-1
Applying the Latest Patch Set Updates and Any Required Patches	3-2
Backing Up the Schema Version Registry Table	3-2
Verifying Your Database Objects Are Ready for Upgrade	3-3
Verify Schema Versions	3-3
Check for Invalid Database Objects	3-3

A Performing an Out-of-Place Domain Directory Upgrade

About Upgrading a Domain Directory Out of Place	A-1
Performing an Out-of-Place Domain Directory Upgrade on the Same Host	A-2
Stop all processes, including the Administration Server, Managed Servers, and Node Manager.	A-2
Stopping Servers and Processes	A-3
Create a Complete Backup of all Files from the Existing Domain	A-4
Restore the domain backup files to a new location.	A-4
Install the 12c (12.2.1.4.0) distributions in a new Oracle home.	A-4
Upgrade the cloned environment using the standard upgrade procedures.	A-5
Creating a Non-SYSDBA User to Run the Upgrade Assistant	A-5
Using the Upgrade Assistant to Run a Pre-Upgrade Readiness Check	A-7
Validate that the newly upgraded domain functions as expected.	A-8
Performing an Out-of-Place Domain Directory Upgrade on a Different Host	A-8
Stop all processes, including the Administration Server, Managed Servers, and Node Manager. (Host A)	A-8
Create a complete backup of all files from the host machine. (Host A)	A-8
Configure the target machine Host B with the same host name and IP address as Host A.	A-9
Restore from backup the pre-upgrade domain from Host A to Host B.	A-9

Install the product distributions in a new Oracle Home. (Host B)	A-9
Perform the upgrade using the standard upgrade procedures. (Host B)	A-9
Validate that the newly upgraded domain functions as expected.	A-9
Deinstalling the 11g Applications (Optional)	A-9

Preface

This preface contains the following sections:

- [Audience](#)
- [Documentation Accessibility](#)
- [Conventions](#)

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 11g system administration and configuration information for the existing deployment
- Oracle Fusion Middleware 12c system administration knowledge
- The configuration and expected behavior of the upgraded 12c system or systems.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

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.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Planning an Upgrade to Oracle Fusion Middleware 12c (12.2.1.4.0)

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 12c (12.2.1.4.0):

- [Upgrade Planning Roadmap](#)
Oracle strongly recommends that you have a well-designed upgrade plan before starting the upgrade process.
- [Introducing Oracle Fusion Middleware 12c to 11g Users](#)
Introduction to Oracle Fusion Middleware 12c concepts and terminology for existing Oracle Fusion Middleware 11g users.
- [About the Supported Upgrade Starting Points](#)
Your pre-upgrade environment must be at a supported version of Oracle Fusion Middleware before you can upgrade.
- [About the Basic 12c Upgrade Process Flow](#)
You should understand the high-level upgrade procedures and tools used to upgrade to the 12c Fusion Middleware Infrastructure.
- [About the Basic 12c Upgrade Procedures](#)
Understand the basics of how to upgrade an Oracle Fusion Middleware deployment to 12c. Consult your component-specific upgrade documentation for the procedures you will perform for your upgrade.
- [About the Standard Upgrade Topology for 12c](#)
The standard installation topology is provided as an example and is not the only upgrade topology supported for the product.
- [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.
- [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.
- [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.
- [About Using the Upgrade Assistant to Perform a Readiness Check Before an Upgrade](#)
- [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

- [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.
- [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.
- [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.
- [About Domain Upgrade Restrictions](#)
Some domains cannot be upgraded to 12c because of known limitations and configuration changes from the previous Oracle Fusion Middleware releases.
- [About Obtaining Product Distributions for Your Upgrade](#)
Product distributions can be obtained from either the Oracle Software Delivery Cloud or from Oracle Technology Network.
- [About the Upgrade and Configuration Tools](#)
Oracle Fusion Middleware 12c provides a suite of installation, upgrade, and configuration tools that automate many upgrade-related tasks.

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 12c (12.2.1.4.0)?

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
Understand the differences between Oracle Fusion Middleware 11g and Release 12c.	Oracle Fusion Middleware 11g users should understand the conceptual and functional differences between 11g and Release 12c before starting the upgrade process.	Introducing Oracle Fusion Middleware 12c to 11g Users

Table 1-1 (Cont.) Upgrade Planning Roadmap

Task	Description	Documentation
Review the process flow for upgrading to Oracle Fusion Middleware 12c.	The process flow map shows the primary tasks related to the upgrade process. As of release 12c (12.2.1.4.0), users who are upgrading from 12c (12.2.1.3) and have a multi-node environment can perform a reduced or rolling downtime upgrade. See the component-specific upgrade guides for more information on this option.	About the Basic 12c 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 12c 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
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 12c. CAUTION: If you cannot meet the hardware or software requirements, do not attempt an upgrade.	About the Supported Upgrade Starting Points

Table 1-1 (Cont.) Upgrade Planning Roadmap

Task	Description	Documentation
Verify that your database is supported.	The 12c 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 12c
Understand which of your 11g products and features can be upgraded.	You should understand which of your components can be upgraded to this release of Oracle Fusion Middleware 12c. If you plan to use 11g components with upgraded 12c components, you should understand how the upgrade could impact interoperability or compatibility.	Products and Features Available in Oracle Fusion Middleware 12c Products and Features Not Available in Oracle Fusion Middleware 12c
Consider the impact on deployed applications and components.	If you will continue to use Fusion Middleware 11g components in your upgraded 12c environment, you should 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

Introducing Oracle Fusion Middleware 12c to 11g Users

Introduction to Oracle Fusion Middleware 12c concepts and terminology for existing Oracle Fusion Middleware 11g users.

Oracle Fusion Middleware 11g users need to understand the changes to existing 11g terms, as well as new terms and concepts introduced in 12c.

- [Common Fusion Middleware Terminology Changes](#)
Several key concepts and terms have been redefined in 12c. It is important that you understand the new terminology before you begin your upgrade. In addition, many terms have been deprecated.
- [Upgrade and Patching Terminology Changes](#)
The upgrade and patching definitions used in Fusion Middleware 11g have been redefined in Release 12c. Review the changes to the terms below to ensure you understand which path you should take to update your existing environment.
- [Using the 12c Documentation Library Resources](#)
Upgrade documentation is organized by tasks in the 12c documentation library. The task-specific pages provide direct links to common upgrade procedures and related documentation.

Common Fusion Middleware Terminology Changes

Several key concepts and terms have been redefined in 12c. It is important that you understand the new terminology before you begin your upgrade. In addition, many terms have been deprecated.

See *New and Deprecated Terminology for 12c*.

Upgrade and Patching Terminology Changes

The upgrade and patching definitions used in Fusion Middleware 11g have been redefined in Release 12c. Review the changes to the terms below to ensure you understand which path you should take to update your existing environment.

- A **major release** comprises new, innovative, standard-compliant features. A major release may introduce new certifications and language support, as well as a newer Database Required Support Files, JDBC driver, and JDK dependency. For example, upgrading from 11g to 12c is a major release, while upgrading from 12.1.3.0 to 12c (12.2.1.4.0) is a minor release.
- A **minor release** in 12c consists of a smaller set of significant new features in addition to bug fixes to existing functionality. After you upgrade to a minor release, all the existing product configurations are supported and new configuration options may become available.
- In Release 12c, an **upgrade** is performed to acquire new features, enhancements, and bug fixes for a supported Oracle Fusion Middleware 11g deployment. The following examples show supported upgrade paths:
 - Moving from 11.1.1.7.0 or 11.1.1.9.0 to 12.2.1.4.0
 - Moving from 12.1.3.0 to 12.2.1.4.0
 - Moving from 12.2.1.1 to 12.2.1.4.0
- In Release 12c, a Fusion Middleware **patch set** is released to address bugs. Patch set releases do not contain new features. Patch sets replace or add a new set of binaries to an existing installation.

Patching with OPatch describes the new patching terminology for Release 12c.

Using the 12c Documentation Library Resources

Upgrade documentation is organized by tasks in the 12c documentation library. The task-specific pages provide direct links to common upgrade procedures and related documentation.

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

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

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 12c \(12.2.1.4.0\)](#)
Review the supported releases for the Oracle Fusion Middleware components you want to upgrade.
- [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 12c upgrade process.

Supported Upgrade Starting Points for Oracle Fusion Middleware 12c (12.2.1.4.0)

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](#)
- [Supported Oracle WebLogic Releases](#)
- [Verify That the JDK Is Certified for This Release of Oracle Fusion Middleware](#)
At the time this document was published, the certified JDK for 12c (12.2.1.4.0) was 1.8.0_211.
- [Supported Oracle HTTP Server Releases](#)
- [Supported Database Versions](#)

Supported Oracle Fusion Middleware Releases

You can upgrade to Oracle Fusion Middleware Release 12c (12.2.1.4.0) from the following previous versions of Oracle Fusion Middleware:

- Oracle Fusion Middleware 12c (12.2.1.2) and (12.2.1.3)
If you are upgrading from a previous 12c release, you must perform a full upgrade to move to 12c (12.2.1.4.0). Do not attempt to update the existing 12c domain by installing the 12c (12.2.1.4.0) distributions into the same Oracle home. Upgrading the domain to 12.2.1.4.0 is not a patch set installation.
- Oracle Fusion Middleware 11g (11.1.1.9.0) and (11.1.1.8).0 for some Oracle WebCenter products

- Oracle Identity and Access Management 12c (12.2.1.3)

If you are upgrading from a supported 11g release of Oracle Identity and Access Management, you must first upgrade to 12c (12.2.1.3) before you can upgrade to this release.

 **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

At the time this document was published, the certified JDK for 12c (12.2.1.4.0) was 1.8.0_211.

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`.

For more information on the difference between generic and platform-specific installers, see *Understanding the Difference Between Generic and Platform-Specific Distributions in the Oracle Fusion Middleware Download, Installation, and Configuration Readme Files*.

Supported Oracle HTTP Server Releases

You can upgrade your supported Oracle HTTP Server 11g release or 12c release 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 12c (12.2.1.4.0), 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 12c (12.2.1.4.0), see [Upgrading and Preparing Your Oracle Databases for 12c](#).

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 12c upgrade process.

Caution:

Do not attempt to use any unsupported Fusion Middleware 11g components in your upgraded environment.

To determine if your supported 11g or 12c 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 on the Oracle Technology Network (OTN):

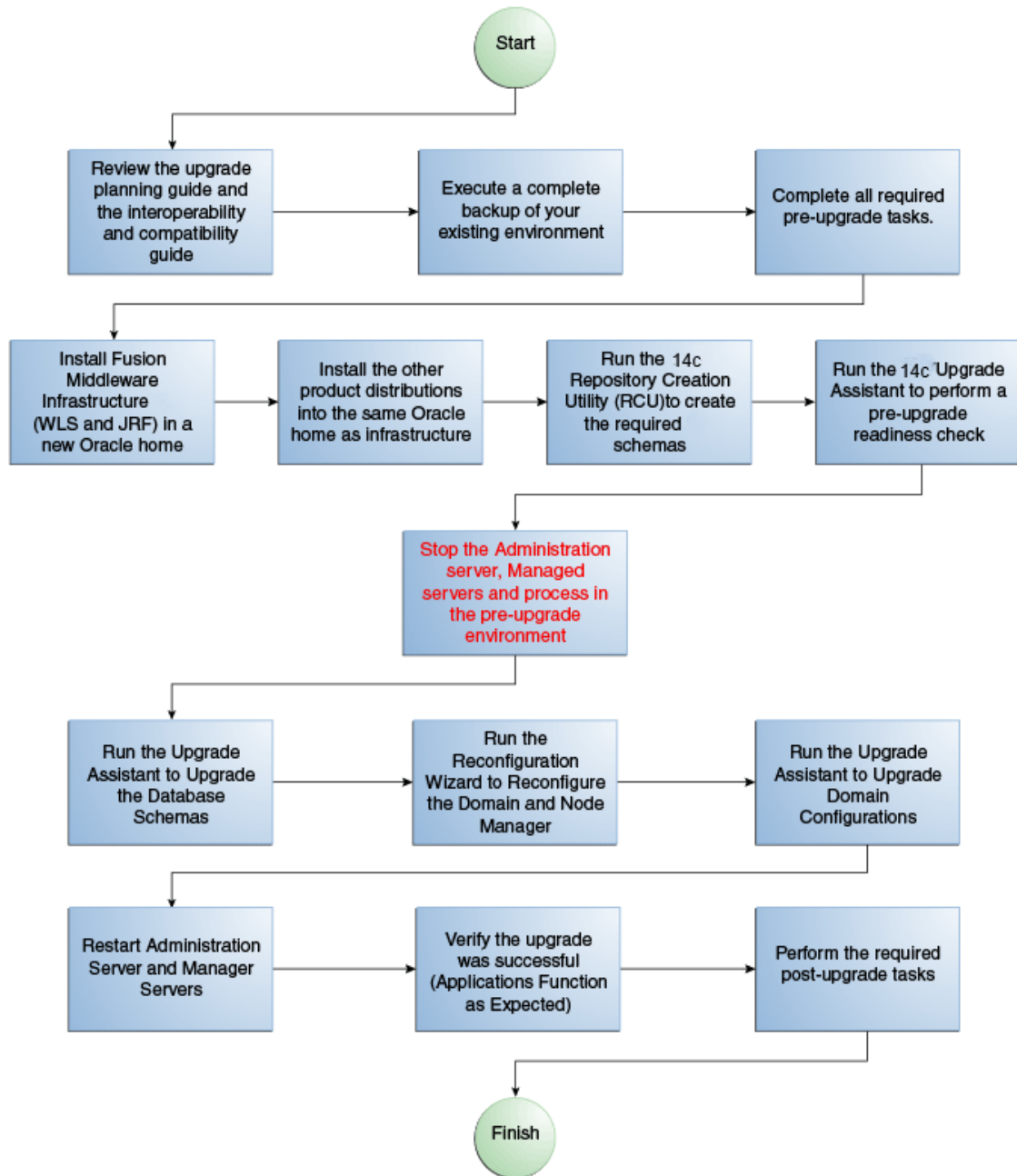
[Oracle documentation](#)

About the Basic 12c Upgrade Process Flow

You should understand the high-level upgrade procedures and tools used to upgrade to the 12c 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 12c Upgrade Procedures

Understand the basics of how to upgrade an Oracle Fusion Middleware deployment to 12c. Consult your component-specific upgrade documentation for the procedures you will perform for your upgrade.

A typical upgrade of Oracle Fusion Middleware 11g or previous 12c releases to this Oracle Fusion Middleware 12c 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 11g or previous 12c 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 12c

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 12c 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 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 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 examination 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 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 12c, 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 11g or 12c 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 12c 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 12c 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 12c 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 12c 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 12c (12.2.1.4.0).
- 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 12c 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 12c 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 Middleware 12c 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)	<p>Install the 12c product distributions and feature sets.</p> <p>Each major component has its own installation guide. These guides provide specific details about using the Universal Installer with the component.</p>
Oracle Upgrade Assistant (UA)	<p>Upgrade schemas, component configurations, and standalone system component configurations. Users upgrading from 11g should note that the separate Patch Set Assistant utility is no longer used for upgrading schemas.</p> <p>Each major component has its own upgrade guide. These guides provide specific details about using Upgrade Assistant with the component.</p>
Repository Creation Utility (RCU)	<p>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 12c distribution, unlike Fusion Middleware 11g, which required a separate download and installation of RCU.</p> <p>There are new 12c schemas that may need to be created for all components before an upgrade. Consult your component-specific upgrade documentation for more information.</p>
Oracle Configuration Wizard	<p>Create the WebLogic domain. The Configuration Wizard simplifies the process of creating and extending a WebLogic Server domain.</p> <p>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.</p>
Oracle Reconfiguration Wizard (New in 12c)	<p>Reconfigure a domain that is using Oracle WebLogic Server.</p> <p>When you use the Reconfiguration Wizard to reconfigure a domain, the WLS core infrastructure and domain version are automatically updated.</p>
OPatch	<p>Apply patches in 12c.</p> <p>There are no patch set installers in 12c. The Oracle Universal Installer is used to install all major and minor releases.</p>

2

Securing Datastores

The following sections explain how to upgrade security artifacts from 11g releases 11.1.1.7, 11.1.1.8, and 11.1.1.9 or 12c releases 12.1.2.0.0, 12.1.3.0.0, 12.2.1.0.0, 12.2.1.1.0, 12.2.1.2.0, and 12.2.1.3.0 to release 12c (12.2.1.4.0):

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:

- 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*

- [About Upgrading Security to 12c \(12.2.1.4.0\)](#)
- [Upgrading a Shared Security Store](#)

About Upgrading Security to 12c (12.2.1.4.0)

An upgraded system uses newly created data sources and will not use old data sources. After upgrading, you may see duplicate OPSS data sources: one that existed before upgrading and another created during the upgrade process. This duplication poses no functional impact and the old data source is not used by the upgraded system.

After upgrading, consider moving the keystore from Java Keystore (JKS) to the keystore service (KSS) keystore. In domains upgraded to 12.2.1.0 or later, KSS keystores under the `system` stripe differ from those in previous releases.

The Keystore Service (KSS) keystore supports the Java Keystore (JKS), Java Cryptography Extension Keystore (JCEKS), and Oracle wallet certificate formats. Typical certificate management tasks include the following:

- Creating a certificate for a key pair.
- Generating a Certificate Signing Request (CSR) for the certificate and saving it to a file.
- Sending the CSR to a certificate authority who verifies the sender, and signs and returns the certificate.
- Importing user and trusted certificates into the keystore, by either pasting it into a text field or importing it from the file system.

 **Note:**

Keystore Service supports importing PEM/BASE64-encoded certificates only. You cannot import DER-encoded certificates or trusted certificates into a keystore.

- Exporting certificates or trusted certificates from the keystore to a file.
- Deleting certificates or trusted certificates from the keystore.

The following points regarding public CA certificates apply to domains upgraded to 12.2.1 and to new 12.2.1 Java Required Files (JRF) domains:

- Well-known public CA certificates are no longer available in the `trust` keystore in the `system` stripe.
- Use instead the `publiccacerts` keystore in the `system` stripe, which has been previously seeded with well-known public CA certificates from the Java SE Development Kit (JDK) `cacerts` file. Alternatively, import your own certificates as needed.
- The `merge.jdkcacerts.with.trust` property specifies whether to return public CA certificates in the `kss://system/publiccacerts` keystore when you query the `kss://system/trust` keystore. Set to `true`, to have all `publicacerts` certificates returned with the query. Do not set or set to `false`, to have no `publicacerts` certificates returned with the query.
- [Before Upgrading the Security Store](#)
- [Compatibility Table for 11g and 12c Versions](#)
- [Upgrading Security: Main Steps](#)
- [Reconfiguring Domains with the Fusion Middleware Reconfiguration Wizard](#)

Before Upgrading the Security Store

Before upgrading the security store:

- Perform a readiness check on the older version of Fusion Middleware to determine if it is suitable for upgrading to version 12c (12.2.1.4.0).
- Create a complete backup so that you can recover it in case the upgrade fails.

Compatibility Table for 11g and 12c Versions

This section presents the compatible versions of binaries, configurations, schemas, and stores for releases 11.1.1.5.0, 11.1.1.6.0, 11.1.1.7.0, 11.1.1.9.0, 12.1.2.0.0, 12.1.3.0.0 and 12.2.1.x. The compatible versions of these artifacts apply to both DB and LDAP security stores. In DB stores, exactly one security store is assumed per database schema.

The following table shows the versions compatible and it applies to both DB and LDAP security stores. Note the following terminology symbols:

- The prefix `=>` next to a version number denotes a version *equal to or higher than* the stated version number.
- The prefix `>` next to a version number denotes a version *higher than* the stated version number.

- The prefix < next to a version number denotes a version *lower than* the stated version number.

Binary	Configuration	Schema	Store	Status
11.1.1.5.0	11.1.1.5.0	=>11.1.1.5.0	11.1.1.5.0	Certified
11.1.1.5.0	11.1.1.5.0	>11.1.1.5.0	>11.1.1.5.0	Not supported
11.1.1.6.0	11.1.1.5.0	=>11.1.1.5.0	11.1.1.5.0	Certified
11.1.1.6.0	11.1.1.5.0	>11.1.1.5.0	>11.1.1.5.0	Not supported
11.1.1.6.0	11.1.1.6.0	=>11.1.1.6.0	11.1.1.6.0	Certified
11.1.1.6.0	11.1.1.6.0	>11.1.1.6.0	>11.1.1.6.0	Not supported
11.1.1.7.0	11.1.1.7.0	=>11.1.1.6.0	<11.1.1.7.0	Not supported
11.1.1.7.0	11.1.1.6.0	=>11.1.1.6.0	11.1.1.6.0	Certified
11.1.1.7.0	11.1.1.6.0	>11.1.1.6.0	>11.1.1.6.0	Not supported
11.1.1.7.0	11.1.1.7.0	=>11.1.1.7.0	11.1.1.7.0	Certified
11.1.1.9.0	11.1.1.7.0	=>11.1.1.7.0	11.1.1.7.0	Certified
	11.1.1.6.0	=>11.1.1.6.0	11.1.1.6.0	
	11.1.1.5.0	=>11.1.1.5.0	11.1.1.5.0	
	11.1.1.9.0	=>11.1.1.9.0	11.1.1.9.0	
12.1.2.0.0	12.1.2.0.0	=>12.1.2.0.0	12.1.2.0.0	Certified (schema only upgrade)
12.1.2.0.0	<12.1.2.0.0	<12.1.2.0.0	<12.1.2.0.0	Not supported
12.1.3.0.0	12.1.3.0.0	=>12.1.3.0.0	12.1.3.0.0	Certified (schema only upgrade)
12.1.3.0.0	<12.1.3.0.0	<12.1.3.0.0	<12.1.3.0.0	Not supported
12.2.1.0.0	12.2.1.0.0	12.2.1.0.0	12.2.1.0.0	Certified
12.2.1.0.0	<12.2.1.0.0	<12.2.1.0.0	<12.2.1.0.0	Not supported
12.2.1.1.0	12.2.1.1.0	12.2.1.0.0	12.2.1.1.0	Certified
12.2.1.1.0	<12.2.1.1.0	<12.2.1.0.0	<12.2.1.1.0	Not supported
12.2.1.2.0	12.2.1.2.0	12.2.1.0.0	12.2.1.2.0	Certified
12.2.1.2.0	<12.2.1.2.0	<12.2.1.0.0	<12.2.1.2.0	Not supported
12.2.1.3.0	12.2.1.3.0	12.2.1.0.0	12.2.1.3.0	Certified
12.2.1.3.0	<12.2.1.3.0	<12.2.1.0.0	<12.2.1.3.0	Not supported

Upgrading Security: Main Steps

The following tables describe the steps you take to upgrade a system according to the type of security and audit stores. All of the procedures assume that your binaries have been upgraded to 12c (12.2.1.4.0) Oracle Fusion Middleware binaries.

 **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:

- 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*

 **Note:**

During the upgrade process, if you perform any OPSS runtime operations on any of the servers before you restart them, you may get errors related to operations being performed against the OPSS Security store. These errors can occur if the binary and schema have been upgraded, but the server process that is being run is still using the old classes that have not been updated or refreshed. Therefore, Oracle recommends that you always restart all of the Managed Servers in the domain after the upgrade process is complete.

Synonym objects owned by IAU_APPEND and IAU_VIEWER will appear as INVALID in the schema version registry table, but that does not indicate a failure. Synonym objects become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these INVALID objects.

Table 2-1 Upgrading from 12.1.2 or 12.1.3 to 12.2.1.x

Security Store Type	Audit Store Type	To upgrade to 12.2.1.x:
Oracle Internet Directory	Database	<ol style="list-style-type: none"> 1. Upgrade the OPSS, Audit Services (IAU) and Service Table (STB) schemas. Note that in this scenario, the OPSS schema is Oracle Internet Directory-based. . 2. Create the database-based OPSS schema using the 12.2.1.x Oracle Fusion Middleware Repository Creation Utility. Use the existing IAU and STB prefix for the OPSS schema. 3. Reconfigure the domain to bind the OPSS data source to the newly created OPSS schema. Enter the audit schema details in the Reconfiguration Wizard. Note that in this case, the database-based OPSS 12.2.1.x schema is redundant. 4. Restart all of the servers (Administration and Managed) in the domain.

Table 2-1 (Cont.) Upgrading from 12.1.2 or 12.1.3 to 12.2.1.x

Security Store Type	Audit Store Type	To upgrade to 12.2.1.x:
Database	Database	<ol style="list-style-type: none"> 1. Upgrade the OPSS, Audit Services IAU, IAU_Viewer, IAU_APPEND, and Service Table STB schemas. 2. Reconfigure the domain. 3. Restart all of the servers (Administration and Managed) in the domain.



Note:

Upgrading from a 12c file security store is not supported.

Table 2-2 Upgrading from 11.1.1.7 or 11.1.1.9 to 12.2.1.x

Security Store Type	Audit Store Type	To upgrade to 12.2.1.x:
File	File	<ol style="list-style-type: none"> 1. Create the OPSS schema using the 12.2.1.x Oracle Fusion Middleware Repository Creation Utility. Note that the Audit Services (IAU) and Service Table (STB) schemas are created by default with the OPSS schema. 2. Reconfigure the domain to provide the new schema details. 3. Restart all of the servers (Administration and Managed) in the domain.
File	Database	<ol style="list-style-type: none"> 1. Upgrade the 11g Audit Services (IAU) schema using the Oracle Fusion Middleware Upgrade Assistant. 2. Create the OPSS, Audit Services Viewer (IAU_VIEWER), and Audit Services Append (IAU_APPEND) schemas using the 12.2.1.x Oracle Fusion Middleware Repository Creation Utility. Use the existing IAU prefix that you upgraded in step 1 for the new schemas. Note that the Service Table (STB) schema is created automatically. 3. Reconfigure the domain to provide the new OPSS schema details, and to enter the 11g audit schema details in Fusion Middleware Reconfiguration Wizard. 4. Restart all of the servers (Administration and Managed) in the domain.

Table 2-2 (Cont.) Upgrading from 11.1.1.7 or 11.1.1.9 to 12.2.1.x

Security Store Type	Audit Store Type	To upgrade to 12.2.1.x:
Oracle Internet Directory	File	<ol style="list-style-type: none"> 1. Upgrade the Oracle Internet Directory-based OPSS schema using the Oracle Fusion Middleware Upgrade Assistant. 2. Create the database-based OPSS schema using the 12.2.1.x Repository Creation Utility. Note that the Audit Services (IAU, IAU_Viewer, IAU_APPEND) and Service Table (STB) schemas are created by default with the OPSS schema. 3. Reconfigure the domain to provide the new schema details to bind the OPSS data source to the newly created OPSS schema. Note that in this case, the 12.2.1.x OPSS schema is redundant. 4. Restart all of the servers (Administration and Managed) in the domain.
Oracle Internet Directory	Database	<ol style="list-style-type: none"> 1. Upgrade the 11g OPSS and audit schemas using the Oracle Fusion Middleware Upgrade Assistant. Note that in this scenario, the OPSS schema is Oracle Internet Directory-based. 2. Create the database-based OPSS schema using the 12.2.1.x Repository Creation Utility. Use the existing IAU prefix that you upgraded in step 1 for the new schemas. Note that the Service Table (STB) schema is created automatically. 3. Reconfigure the domain to bind the OPSS data source to the newly created OPSS schema. Enter the 11g audit schema details in Fusion Middleware Reconfiguration Wizard. Note that in this case, both the OPSS 12.2.1.x schema and the 12.2.1.x IAU schema are redundant. 4. Restart all of the servers (Administration and Managed) in the domain.
Database	File	<ol style="list-style-type: none"> 1. Create the Audit Services IAU, IAU_Viewer, IAU_APPEND schemas with 12.2.1.x Repository Creation Utility. Use the existing OPSS schema prefix. Note that the Service Table (STB) schema is created automatically. 2. Upgrade the 11g OPSS schema using the Oracle Fusion Middleware Upgrade Assistant.. 3. Reconfigure the domain to provide the new audit schema details, and to enter the 11g OPSS schema details. 4. Restart all of the servers (Administration and Managed) in the domain.

Table 2-2 (Cont.) Upgrading from 11.1.1.7 or 11.1.1.9 to 12.2.1.x

Security Store Type	Audit Store Type	To upgrade to 12.2.1.x:
Database	Database	<ol style="list-style-type: none"> 1. Create the Audit Services Viewer and Append schemas (IAU_VIEWER and IAU_APPEND) and Service Table (STB) schemas with the 12.2.1.x Repository Creation Utility. Use the same prefix as that used for the existing OPSS and IAU schemas. 2. Upgrade the OPSS and Audit Services (IAU) schemas using the Oracle Fusion Middleware Upgrade Assistant. Use the existing prefix for the schemas. . 3. Reconfigure the domain to provide the 11g OPSS schema details. 4. Restart all of the servers (Administration and Managed) in the domain.



Note:

An 11g file security store is automatically upgraded to a database-based security store.

Reconfiguring Domains with the Fusion Middleware Reconfiguration Wizard

Run the procedure in this section to reconfigure a domain using the Fusion Middleware Reconfiguration Wizard. For complete details about the Reconfiguration Wizard, see Reconfiguring WebLogic Domains in *Upgrading Oracle WebLogic Server*.



Note:

In some configurations, you may get an invalid key size exception when running the Reconfiguration Wizard. Oracle recommends that you check your configuration before running the Reconfiguration Wizard, and if necessary, install the JCE Unlimited Strength Jurisdiction Policy Files.

1. Start the Fusion Middleware Reconfiguration Wizard:


```
> cd oracle_common/common/bin
> ./reconfig.sh
```
2. In the **Select Domain** page, specify the directory of the domain to reconfigure, and then click **Next**.
3. In the **Database Configuration Type** page, select **RCU Data**, enter the database connection details, and click **Get RCU Configuration**. The results of the retrieval are displayed.
4. Click **Next**.

5. The **JDBC Component Schema** page displays the table of schemas affected. Check rows as appropriate, and then click **Next**.
6. In the **JDBC Component Schema Test** page, click **Test Selected Connections**. The results of the test are displayed. Click **Next**.
7. In the **Advanced Configuration** page, check boxes as appropriate, and then click **Next**. Additional pages are displayed depending on the options you selected.
8. When you have finished providing all the required information in the remaining pages, the **Configuration Summary** page displays the options you chose. Click **Reconfigure**.

Upgrading a Shared Security Store

To upgrade a security store shared (joined) by several domains, use one of the following tasks:

- [Upgrading a Shared 12c Security Store](#)
- [Upgrading a Shared 11g Security Store](#)

Upgrading a Shared 12c Security Store

Run the procedure in this section to upgrade to 12c (12.2.1.4.0) from a previous 12c shared security store.

1. Shut down all domains that share the store you want to upgrade.
2. Run the Upgrade Assistant to upgrade the OPSS schema of the shared security store and the audit schema if the source audit data is a database store.
3. In each of the domains sharing the security store, run Fusion Middleware Reconfiguration Wizard to reconfigure the domain and to upgrade OPSS data, directory information tree, and product security artifacts.
4. Restart all domains sharing the security store.

Upgrading a Shared 11g Security Store

Run the procedure in this section to upgrade to 12.2.1.x from an 11.1.1.7 or 11.1.1.9 shared security store.

1. Shut down all domains sharing the store you want to upgrade.
2. Run the Upgrade Assistant to upgrade the OPSS schema of the shared security store, and the audit schema if the source audit is a database store.
3. Run the Reconfiguration Wizard in each of the domains sharing the security store. When first run, it upgrades the data of the security store and configuration of the domain. When run from any other domain, it will upgrade only the configuration of that domain.
4. Restart all upgraded domains.

3

Upgrading and Preparing Your Oracle Databases for 12c

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 12c (12.2.1.4.0). For more information, see *Preparing to Upgrade an Oracle Database* in the *Oracle Database Upgrade Guide*.

Note:

When upgrading to 12c (12.2.1.4.0) 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.
- [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.
- [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.
- [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.

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.

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 are ready for upgrade because schemas are upgraded in place, which means that the existing database schemas are upgraded.

- [Verify Schema Versions](#)
- [Check for Invalid Database Objects](#)

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 11.1.1.7.0 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/utlpr.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.

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 12c (12.2.1.4.0) 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.
- [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.
- [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.
- [Deinstalling the 11g Applications \(Optional\)](#)
Procedure to deinstall the 11g applications and domain setup.

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 11g or a previous 12c release to 12c (12.2.1.4.0), schemas and domain directory upgrades are performed in place which updates the existing 11g 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 11g or 12c (12.1.3.0.0, 12.2.1.0.0, 12.2.1.1.0, and 12.2.1.2.0) 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](#).

 **Note:**

The Fusion Middleware 12c certification matrix includes only 12.1 databases. Hence, the reference to 11 in these procedures 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.](#)
- [Create a Complete Backup of all Files from the Existing Domain](#)
- [Restore the domain backup files to a new location.](#)
- [Install the 12c \(12.2.1.4.0\) distributions in a new Oracle home.](#)
- [Upgrade the cloned environment using the standard upgrade procedures.](#)
- [Validate that the newly upgraded domain functions as expected.](#)

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.

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 such as Identity Management components, and a database used as a repository for metadata. The components may be dependent on each other, so they must be stopped in the correct order.

Note:

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

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

Step 1: Stop System Components

To stop 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 the 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 Oracle Identity Management Components

Stop any Oracle Identity Management components, such as Oracle Internet Directory:

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

Step 4: Stop the Administration Server

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

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

- (UNIX) `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 5: 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 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 Environment](#) in the *Oracle® Fusion Middleware Administrator's Guide*.

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

- `11g` or previous `12c` domain home
- The `/nodemanager` directory located in the `MW_HOME/wlserver_10.3/common/`

For more information, see [Backing Up Your Environment](#) in 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 12c (12.2.1.4.0) distributions in a new Oracle home.

You must obtain and install the **12c (12.2.1.4.0)** product distributions for the components you will be upgrading. However, you do not need to configure a new `12c (12.2.1.4.0)` 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 11g or previous 12c infrastructure topology to the new 12c (12.2.1.4.0) 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.
- [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.

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_TABLESPACE_USAGE_METRICS to FMW with grant option;
grant select on SYS.DBA_DATA_FILES to FMW with grant option;
grant select on SYS.V_$ASM_DISKGROUP to FMW with grant option;
grant select on v$xsatrans$ to FMW with grant option;
grant execute on sys.dbms_system to FMW with grant option;
grant execute on DBMS_SCHEDULER to FMW with grant option;
grant select on dba_data_files to FMW with grant option;
grant execute on UTL_RAW to FMW with grant option;
grant execute on DBMS_XMLDOM to FMW with grant option;
grant execute on DBMS_APPLICATION_INFO to FMW with grant option;
grant execute on DBMS_UTILITY to FMW with grant option;
grant execute on DBMS_SESSION to FMW with grant option;
grant execute on DBMS_METADATA to FMW with grant option;
grant execute on DBMS_XMLGEN to FMW with grant option;
grant execute on DBMS_DATAPUMP to FMW with grant option;
grant execute on DBMS_MVIEW to FMW with grant option;
grant select on ALL_ENCRYPTED_COLUMNS to FMW with grant option;
grant select on dba_queue_subscribers to FMW with grant option;
grant execute on SYS.DBMS_ASSERT to FMW with grant option;
grant select on dba_subscr_registrations to FMW with grant option;
grant manage scheduler to FMW;

```


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

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

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 11g Oracle home, however if you would like to remove it, see [Deinstalling the 11g 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 complete 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. \(Host A\)](#)
- [Create a complete backup of all files from the host machine. \(Host A\)](#)
- [Configure the target machine Host B with the same host name and IP address as Host A.](#)
- [Restore from backup the pre-upgrade domain from Host A to Host B.](#)
- [Install the product distributions in a new Oracle Home. \(Host B\)](#)
- [Perform the upgrade using the standard upgrade procedures. \(Host B\)](#)
- [Validate that the newly upgraded domain functions as expected.](#)

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 Environment](#) in 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 Environment](#) in *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 12c (12.2.1) online library.

The Node Manager upgrade procedure requires access to the original Node Manager files. If you are upgrading from a supported 11g release, then use the 11g 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 11g Applications \(Optional\)](#).

Deinstalling the 11g Applications (Optional)

Procedure to deinstall the 11g applications and domain setup.

While not required, you can use these steps to deinstall the 11g 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 11g Oracle Home that you are removing and not from the new home that was created as part of the 12c upgrade process.

1. Shutdown all the 11g servers and processes (including the Admin Server, Managed Servers and Node Manager). See [Starting and Stopping Oracle Fusion Middleware](#) 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 11g 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 11g 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.