Oracle® Fusion Middleware

Planning an Upgrade of Oracle Fusion Middleware

12c (12.2.1.1)

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Provides an overview of the upgrade planning process, as well as upgrade concepts and common Fusion Middleware upgrade tasks.

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Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware, 12c (12.2.1.1)

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Primary Authors: Lisa Jamen, Contributing Author: Priyanka chheda

Contributors: Paul Dickson, Robert Donat, Sankar Mani, Daniel Mortimer, William Norcott, Renga Rengarajan, Michael Rubino, Olaf Stullich, Sitaraman Swaminathan, Ken Vincent

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Preface

This preface contains the following sections:

Audience

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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 11*g* system administration and configuration information for the existing deployment

- Oracle Fusion Middleware 12*c* system administration knowledge

- The configuration and expected behavior of the upgraded 12*c* system or systems.

Related Documents

For more information, see the following related documentation available in the Oracle Fusion Middleware Release 12c (12.2.1) documentation library:

- *Understanding Oracle Fusion Middleware*

- *Administering Oracle Fusion Middleware*

- *Upgrading with the Upgrade Assistant*

- *Upgrading Oracle WebLogic Server*

- *Upgrading Oracle Data Integrator*

- *Upgrading to the Oracle Fusion Middleware Infrastructure*

- *Upgrading Oracle SOA Suite and Business Process Management*

Conventions

The following text conventions are used in this document:

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

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Planning an Upgrade to Oracle Fusion Middleware 12*c* (12.2.1.1)

Before you begin an upgrade, you must understand what can and cannot be upgraded and how the upgrade will impact your production environment.

> **Note:** Use the following procedures to get a general understanding of how to plan for an upgrade to Oracle Fusion Middleware to 12*c* (12.2.1.1)

Upgrade Planning Roadmap
> This section can be used to help you determine whether an upgrade to Oracle Fusion Middleware 12*c* is right for you and your existing environment.

Introducing Oracle Fusion Middleware 12c to 11g Users
> This topic provides information about Oracle Fusion Middleware 12*c* concepts and terminology for existing Oracle Fusion Middleware 11*g* users.

Understanding the Supported Upgrade Starting Points
> You must be running a supported version of Oracle Fusion Middleware in order to upgrade to the latest version of Oracle Fusion Middleware.

Understanding the 12c Upgrade Process Flow
> The process flow shows the high-level upgrade procedures and tools used to upgrade to the 12*c* Fusion Middleware Infrastructure.

Understanding the Basic 12c Upgrade Process
> 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.

Understanding the Standard Upgrade Topology for 12c
> Each Oracle Fusion Middleware Release 12*c* upgrade guide features a **standard upgrade topology**. Standard upgrade topologies are based on the **standard installation topology** described in the component-specific installation guides. The standard installation topology is provided as an example and is not the only topology supported for the product. Each install guide provides specific instructions for achieving the standard topology; if your needs differ, then refer to the supporting documentation.

Developing a Backup Strategy for Upgrade
> It is important to include a strategy for creating, storing and restoring a backup in your upgrade plan in an event the upgrade fails.

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

Planning for System Downtime During an Upgrade
> Before you develop a successful upgrade strategy for your Fusion Middleware deployment, you should understand how your production environments are impacted during the upgrade. Some upgrade procedures can be time consuming, especially if you are upgrading a large number of artifacts. The size of your database and the speed of your system's infrastructure may also impact the overall downtime during an upgrade.

Understanding In-Place versus Out-of-Place Upgrades
> Oracle recommends that you perform your upgrades in-place. Out-of-place upgrades can be executed, but the schemas will still be upgraded in-place

Understanding 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.

Understanding 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.

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

Understanding and Obtaining Product Distributions for Your Upgrade
> Product distributions can be obtained from either the Oracle Software Delivery Cloud or from Oracle Technology Network.

Understanding and Obtaining the Upgrade and Configuration Tools
> Oracle Fusion Middleware 12*c* provides a suite of installation, upgrade, and configuration tools that automate many upgrade-related tasks.

1.1 Upgrade Planning Roadmap

This section can be used to help you determine whether an upgrade to Oracle Fusion Middleware 12*c* is right for you and your existing environment.

Should I upgrade to this release of Oracle Fusion Middleware?

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 11*g* and Release 12*c*.	Oracle Fusion Middleware 11*g* users should understand the conceptual and functional differences between 11*g* and Release 12*c* before starting the upgrade process.	Introducing Oracle Fusion Middleware 12*c* to 11*g* Users
Review the process flow for upgrading to Oracle Fusion Middleware 12*c*.	The process flow map shows the primary tasks related to the upgrade process.	Understanding the 12*c* Upgrade Process Flow
Understand the high-level process of upgrading your existing Oracle Fusion Middleware deployment.	Upgrade is a complex process and involves system downtime. Understanding the overall process can help you plan your upgrade.	Understanding the Basic 12*c* Upgrade Process
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.	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.	Developing an Upgrade Testing Strategy

Table 1-1   (Cont.) Upgrade Planning Roadmap

Task	Description	Documentation
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.	Planning for System Downtime During an Upgrade Understanding 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 12*c*.	Understanding the Supported Upgrade Starting Points
Verify that your database is supported.	The 12*c* 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

Table 1-1   (Cont.) Upgrade Planning Roadmap

Task	Description	Documentation
Understand which of your 11*g* products and features can be upgraded.	You should understand which of your components can be upgraded to this release of Oracle Fusion Middleware 12*c*. **Note:** If you plan to use 11*g* components with upgraded 12*c* components, you should understand how the upgrade could impact interoperability or compatibility.	Products and Features Available in Oracle Fusion Middleware 12*c* Products and Features Not Available in Oracle Fusion Middleware 12*c*
Consider the impact on deployed applications and components.	If you will continue to use Fusion Middleware 11*g* components in your upgraded 12*c* environment, you should review and understand any potential interoperability and compatibility issues.	Understanding 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.	Understanding Component Upgrade Restrictions Understanding 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.	Understanding and Obtaining Product Distributions for Your Upgrade Understanding and Obtaining the Upgrade and Configuration Tools

1.2 Introducing Oracle Fusion Middleware 12*c* to 11*g* Users

This topic provides information about Oracle Fusion Middleware 12*c* concepts and terminology for existing Oracle Fusion Middleware 11*g* users.

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

Common Fusion Middleware Terminology Changes

> Several key concepts and terms have been redefined in 12*c*. 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 11*g* Release 1 have been redefined in Release 12*c*. 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 12*c* documentation library. The task-specific pages provide direct links to common upgrade procedures and related documentation.

1.2.1 Common Fusion Middleware Terminology Changes

Several key concepts and terms have been redefined in 12*c*. 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 12*c*.

1.2.2 Upgrade and Patching Terminology Changes

The upgrade and patching definitions used in Fusion Middleware 11*g* Release 1 have been redefined in Release 12*c*. Review the changes to the terms below to ensure you understand which path you should take to update your existing environment.

- A **major release** is comprised of 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 11*g* to 12*c* is a major release, while upgrading from 12.1.3 to 12.2.1 is a minor release.

- A **minor release** in 12*c* consist 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 12*c*, an **upgrade** is performed to acquire new features, enhancements, and bug fixes for a supported Oracle Fusion Middleware 11*g* 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

  – Moving from 12.1.3 to 12.2.1

- In Release 12*c*, 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 12*c*.

1.2.3 Using the 12*c* Documentation Library Resources

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

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

- For installation information, see Fusion Middleware Installation Documentation.

- For upgrade information, see Fusion Middleware 12*c* Upgrade Documentation.

- For administration-related information, see Fusion Middleware 12*c* Administration Documentation.

- For release-related information, see Fusion Middleware 12*c* Release Notes.

1.3 Understanding the Supported Upgrade Starting Points

You must be running a supported version of Oracle Fusion Middleware in order to upgrade to the latest version of Oracle Fusion Middleware.

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 (12.2.1.1)
  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 12*c* upgrade process.

1.3.1 Supported Upgrade Starting Points for Oracle Fusion Middleware 12*c* (12.2.1.1)

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

Supported Oracle HTTP Server Releases

Supported Database Versions

1.3.1.1 Supported Oracle Fusion Middleware Releases

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

- Oracle Fusion Middleware 12*c* Release 1 (12.2.1.0)

- Oracle Fusion Middleware 12*c* Release 1 (12.1.3)

- Oracle Fusion Middleware 12*c* Release 1 (12.1.2)

- Oracle Fusion Middleware 11*g* Release 1 (11.1.1.9)

- Oracle Fusion Middleware 11*g* Release 1 (11.1.1.8)

- Oracle Fusion Middleware 11*g* Release 1 (11.1.1.7)

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

1.3.1.2 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

1.3.1.3 Supported Oracle HTTP Server Releases

You can upgrade your supported Oracle HTTP Server 11*g* release or 12*c* 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 12*c* (12.2.1.1), refer to the following:

- Oracle HTTP Server Interoperability

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

1.3.1.4 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 12*c* (12.2.1.1), see Upgrading and Preparing Your Oracle Databases for 12c .

1.3.2 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 12*c* upgrade process.

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

To determine if your supported 11*g* or 12*c* components have any compatibility issues in this release, see Understanding Your Certification, Compatibility, and Interoperability Requirements.

Patching and upgrade documentation for previous releases is available on the Oracle Technology Network (OTN):

http://www.oracle.com/technology/documentation/middleware.htm

1.4 Understanding the 12*c* Upgrade Process Flow

The process flow shows the high-level upgrade procedures and tools used to upgrade to the 12*c* Fusion Middleware Infrastructure.

> **Note:** This is a high-level overview of the standard upgrade process for an 11g to 12c upgrade. 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.
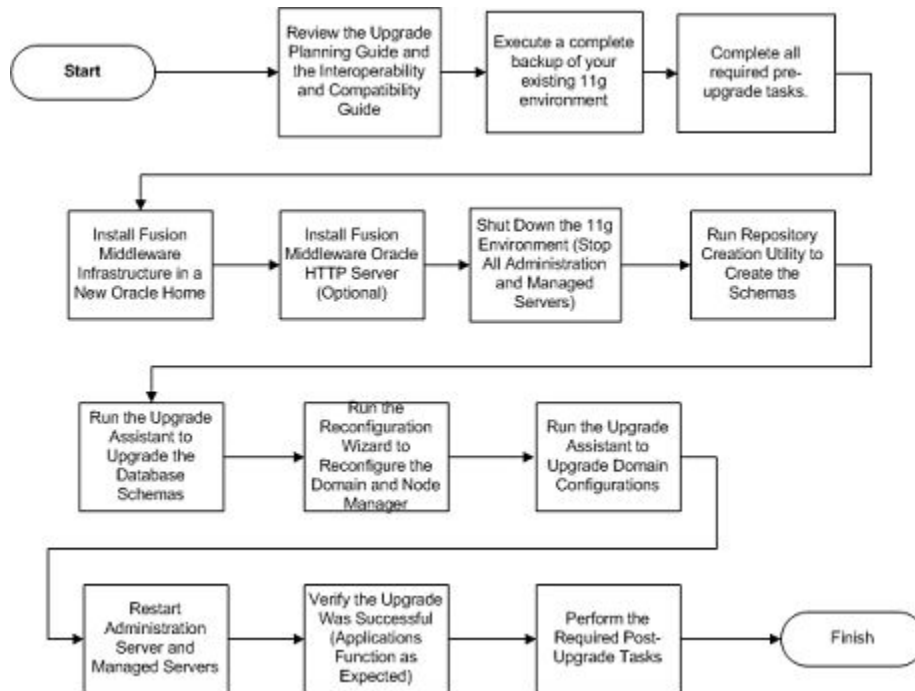
1.5 Understanding the Basic 12*c* Upgrade Process

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 11*g* or previous 12*c* releases to this Oracle Fusion Middleware 12*c* 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

No.	Task	Tool Used
1	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
2	Install the product distributions in a new Oracle home.	Oracle Universal Installer (OUI)
3	Create new schemas for your Fusion Middleware components.	Repository Creation Utility (RCU)
4	Run a pre-upgrade readiness check to determine if your deployment is ready to be upgraded.	Upgrade Assistant (UA)

Table 1-2   (Cont.) Understanding the Basic Upgrade Process

No.	Task	Tool Used
5	Upgrade the 11*g* or 12*c* (12.1.2,12.1.3 or 12.2.1.0) database schemas for the components you will be upgrading.	Upgrade Assistant (UA)
6	Reconfigure the domain.	Reconfiguration Wizard
7	Upgrade component configurations.	Upgrade Assistant (UA)
8	Perform all required post-upgrade tasks.	Varies
9	Verify that the upgrade is successful. At a minimum, verify that the servers and node manager start and your applications functions as expected.	Varies

1.6 Understanding the Standard Upgrade Topology for 12c

Each Oracle Fusion Middleware Release 12*c* upgrade guide features a **standard upgrade topology**. Standard upgrade topologies are based on the **standard installation topology** described in the component-specific installation guides. The standard installation topology is provided as an example and is not the only topology supported for the product. 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.

1.7 Developing a Backup Strategy for Upgrade

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

You can learn more about Oracle Fusion Middleware backup and recovery strategies in::

- Introducing Backup and Recovery

- Backup and Recovery Recommendations for Oracle Fusion Middleware Components

1.8 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).

1.9 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 the actual upgrade. This can be done using the GUI or with silent upgrades using the response files.

The Upgrade Assistant readiness check performs a **read-only**, pre-upgrade review of your existing Oracle Fusion Middleware schemas and Oracle WebLogic configurations.

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

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

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

Understanding the difference between the Examine Phase and a Readiness Check

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

CAUTION: 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.

1.10 Planning for System Downtime During an Upgrade

Before you develop a successful upgrade strategy for your Fusion Middleware deployment, you should understand how your production environments are impacted during the upgrade. Some upgrade procedures can be time consuming, especially if you are upgrading a large number of artifacts. The size of your database and the speed of your system's infrastructure may also impact the overall downtime during an upgrade.

Carefully consider the following when planning your downtime:

- The Upgrade Assistant requires that you shut down administration and managed servers for the entire duration of the upgrade.

- Run the pre-upgrade readiness check before you begin your actual upgrade to identify potential upgrade issues. If you encounter upgrade issues during the actual upgrade, then you must restart the upgrade process from the beginning. This includes recovering and redeploying from your backup files. You must consider this while planning and calculating the downtime.

- After upgrading the component schemas, the Reconfiguration Wizard is used to reconfigure the domain. After the domain is reconfigured, the Upgrade Assistant requires all servers and components to remain shut down during any configuration upgrades. In 12*c*, servers and components are down during the entire upgrade process.

1.11 Understanding In-Place versus Out-of-Place Upgrades

Oracle recommends that you perform your upgrades in-place. Out-of-place upgrades can be executed, but the schemas will still be upgraded in-place

An **in-place** upgrade updates and overwrites the existing 11*g* or 12*c* files in your pre-upgrade environment. For example, upgrading schema and domain directories are performed in-place. An **out-of-place upgrade**, the new 12*c* binaries are installed in a new Oracle home directory and you maintain your pre-upgrade Oracle home directory. In either case, the schemas will always be upgraded in-place.

The upgrade to Oracle Fusion Middleware 12*c* 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 12*c* distribution binaries in a new Oracle home. The upgrade of binaries is considered Out-of-Place because the pre-upgrade binaries are not overwritten.

- **Starting Point (Source) Schemas - Upgraded In-Place**

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

- **Instances** - Migrated during the schema upgrade (**For SOA Upgrades Only**)

  The upgrade of active and closed instances from 11*g* to 12*c* happens automatically as part of the schema upgrade. You can manage the upgrade using administration scripts.

- **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 12*c* Oracle home directory.

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

- **Domain Component Configuration - Upgraded In-Place**

After the reconfiguration of the 11*g* domain, the Upgrade Assistant is used again to upgrade any remaining domain component configurations that require an upgrade in the new 12*c* Oracle home directory.

1.12 Understanding 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 12*c* (12.2.1.1).

- 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.

1.13 Understanding 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*.

1.14 Understanding Domain Upgrade Restrictions

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

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

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

1.15 Understanding and 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 12*c* software is available as a series of product distributions. A **distribution** is an archive with an installer that installs a pre-defined set of Oracle Fusion Middleware products and feature sets. **Feature sets** include the products and services that are automatically installed when their corresponding product is selected.

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

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

1.16 Understanding and Obtaining the Upgrade and Configuration Tools

Oracle Fusion Middleware 12*c* 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...	Related Documentation
Oracle Universal Installer (OUI)	Install the 12*c* product distributions and feature sets.	*Installing Software with the Oracle Universal Installer*.
	Note: Each major component has its own installation guide. These guides provide specific details about using the Universal Installer with the component.	Release 12*c* (12.2.1) Library: Installation Guides.

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

Tool Name	Use this tool to...	Related Documentation
Oracle Upgrade Assistant (UA)	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. **Note:** Each major component has its own upgrade guide. These guides provide specific details about using Upgrade Assistant with the component.	*Upgrading with the Upgrade Assistant*. Release 12*c* Library Upgrade Guides.

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

Tool Name	Use this tool to...	Related Documentation
Repository Creation Utility (RCU)	Create schemas in your database. Depending on what you are upgrading, you may need to create schemas before you can run the Upgrade Assistant. The Repository Creation Utility is included in each 12*c* distribution, unlike Fusion Middleware 11*g*, which required a separate download and installation of RCU.	*Creating Schemas with the Repository Creation Utility*.
	Note: There are new 12*c* schemas that must be created for all components before an upgrade. Consult your component-specific upgrade documentation for more information.	

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

Tool Name	Use this tool to...	Related Documentation
Oracle Configuration Wizard	Create the WebLogic domain. The Configuration Wizard simplifies the process of creating and extending a WebLogic Server domain.	Overview of the Configuration Wizard in *Creating WebLogic Domains Using the Configuration Wizard*.
	Note: If you are upgrading a standalone system component, such as Oracle HTTP Server (OHS), do not use the Configuration Wizard to configure your domain. The Upgrade Assistant is used to create and configure the standalone domain.	

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

Tool Name	Use this tool to...	Related Documentation
Oracle Reconfiguration Wizard (New in 12*c*)	Reconfigure a domain that is using Oracle WebLogic Server. When you use the Reconfiguration Wizard to reconfigure a domain, the WLS core infrastructure and domain version are automatically updated. **Note:** This tool is introduced to Fusion Middleware as of Release 12*c* (12.1.2).	See your component-specific upgrade documentation for more information. Fusion Middleware 12*c* (12.2.1) Upgrade Documentation.
OPatch	Apply patches in 12*c*. The patching nomenclature has changed in 12*c*. Review the new patch definitions in Upgrade and Patching Terminology Changes. **Note:** There are no patch set installers in 12*c*. The Oracle Universal Installer is used to install all major and minor releases.	*Patching with OPatch*.

2

Upgrading and Preparing Your Oracle Databases for 12c

You may need to upgrade your database to a supported version prior to upgrade.

Make sure that the databases that are hosting your schemas are at supported versions. You cannot perform the upgrade on unsupported databases.

> **Note:**
>
> When upgrading to 12*c* (12.2.1.1) your existing database must be used for the upgrade. Do not create a new database.

Understanding the 12c (12.2.1.1) Database Requirements

Understanding Database Certification Changes in 12c

Determining the Upgrade Path for Upgrading Oracle Database

Backing Up the Schema Version Registry Table
        Your system backup must include the
        SYSTEM.SCHEMA_VERSION_REGISTRY$ table.

Verifying Your Schemas Are Ready for Upgrade

Applying the Latest Patch Set Updates and Any Required Patches

2.1 Understanding the 12*c* (12.2.1.1) Database Requirements

Many Oracle Fusion Middleware products require database schemas prior to domain configuration.

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 Oracle Fusion Middleware Infrastructure standard installation topology.
>
> The Oracle Platform Security Services (OPSS) schema is not supported on third-party databases for this release.

2.2 Understanding Database Certification Changes in 12c

It is important that you review the very latest information on certified databases for Oracle Fusion Middleware before proceeding with your database upgrade. For more information, see the Certification Matrix for 12*c* (12.2.1.1).

The certification matrix and system requirements documents should be used in conjunction with each other to verify that your environment meets the necessary requirements for installation. The Oracle Fusion Middleware 12*c* software requirements included in this guide were accurate at the time this manual was published.

Note the following important changes for 12c:

- Oracle XE is not supported.

- **Oracle Database Users:** Oracle Fusion Middleware only supports schemas in a byte-mode database. The NLS_LENGTH_SEMANTICS initialization parameter, on the database where the schemas reside, must be set to BYTE; setting this parameter to CHAR is not supported.

  If NLS_LENGTH_SEMANTICS is set to CHAR, then the Upgrade Assistant will report the following exception:

  ```
  JDBC SQLException - ErrorCode: 1450SQLState:72000 Message: ORA-01450: maximum key
  length (6398) exceeded
  ```

  To check the values of this parameter using SQL*Plus, you can use the show parameters command:

  ```
  SQL> sqlplus "sys/<password> as sysdba"
  SQL> show parameters nls_length_semantics
  ```

  Replace *<password>* with the actual password for the SYS user.

  Alternatively, you can check the values by querying the V$PARAMETER view:

  ```
  SQL> sqlplus "sys/password as sysdba"
  SQL> select name,value from v$parameter;
  ```

  For more information, refer to you database administration documentation.

  > **Note:**
  >
  > The information provided in this chapter was accurate at time of publication. Always refer to the Oracle Fusion Middleware 12c Certifications Matrix for the latest information.

2.3 Determining the Upgrade Path for Upgrading Oracle Database

The path that you must take to upgrade to a new Oracle Database release depends on the release number of your current database. It might not be possible to directly upgrade from your current release of Oracle Database to the latest release. Depending on your current release, you might be required to upgrade through one or more intermediate releases to upgrade to the new Oracle Database.

For example, if the current database is running release 9*i*, then follow these steps:

1. Upgrade release 9.0.1.4 to release 10.2.0.4 using the instructions in *Oracle Database Upgrade Guide* Release 2 (10.2).

2. Upgrade release 10.2.0.4 to the new Oracle Database 11*g* release using the instructions in .

Table 2-1 contains the required upgrade path for each release of Oracle Database. Use the upgrade path and the specified documentation to upgrade your database. The information provided below was accurate at time of publication. Always refer to the Oracle Fusion Middleware 12c Certifications Matrix for the latest information.

Table 2-1   Supported Upgrade Paths for Upgrading Oracle Database

Current Release	Upgrade Path
9.0.1.3 (or earlier)	Direct upgrade is *not* supported. Upgrade to an intermediate Oracle Database release before you can upgrade to the new Oracle Database 11*g* release, as follows: • 9.0.1.3 (or earlier) -> 9.0.1.4 -> 10.2.0.4 -> 11.2 When upgrading to an intermediate Oracle Database release, follow the instructions in the intermediate release's documentation. Then, upgrade the intermediate release database to the new Oracle Database 11*g* release using the instructions in "Upgrading to the New Release of Oracle Database..
9.2.0.8 10.1.0.5 10.2.0.2 11.1.0.6 12.1.0.1	Direct upgrade to Oracle Database 11*g* release is supported from 9.2.0.8 or higher, 10.1.0.5 or higher, 10.2.0.2 or higher, and 11.1.0.6 or higher. For release 9.2.0.3, you must first upgrade to an intermediate Oracle Database release, as follows: 9.2.0.3 (or earlier) -> 9.2.0.8 -> 11.1.0.7 9.2.0.3 (or earlier) -> 9.2.0.8 -> 11.2 To upgrade to a new Oracle Database release, follow the instructions in "Upgrading to the New Release of Oracle Database.

2.4 Backing Up the Schema Version Registry Table

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

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

> **Note:**   Performing these backups prior to performing a schema upgrade is a prerequisite for running Upgrade Assistant. In the Upgrade Assistant prerequisites GUI screen, you will be required to acknowledge that backups have been performed, before proceeding with the actual upgrade.

2.5 Verifying Your Schemas Are Ready for Upgrade

Before running Upgrade Assistant, you should make sure that your supported database is up and running and that the schemas you want to upgrade are at versions that are supported for upgrade.

Task 1: Verifying Schema Versions

2.5.1 Task 1: Verifying 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 12.2.1 upgrade.

2.5.2 Task 2: Checking 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.

```
/rdbms/admin/utlrp.sql
```

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

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

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

2.6 Applying the Latest Patch Set Updates and Any Required Patches

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, refer to "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*.

A

Performing an Out-of-Place Domain Directory Upgrade

This section describes the process of upgrading your Fusion Middleware 11g domain directory to Release 12c in a different domain directory, allowing you to keep your 11g domain directory intact.

Perform these tasks to complete an out-of-place upgrade:

About Upgrading a Domain Directory Out of Place

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

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

Deinstalling the 11g Applications (Optional)

A.1 About Upgrading a Domain Directory Out of Place

When upgrading from Oracle Fusion Middleware 11g or a previous 12c release to 12*c* (12.2.1.1), schemas and domain directory upgrades are performed "in-place" which updates the existing 11*g* or 12c files during the upgrade.

If you prefer to leave your 11*g* 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, it is important to note that the 11*g* and 12c (12.1.3 and 12.2.1.0) schemas will be upgraded in-place. Your pre-upgrade environment must be shut down during the out-of-place domain directory upgrade process.

A.2 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 11g 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 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.

Task 1: Stop all processes, including the Administration Server, Managed Servers, and Node Manager.

Task 2: Backup all files from the 11g domain.

Task 3: Restore the 11g domain backup files to a new location.

Task 4: Install the 12.2.1 distributions in a new Oracle Home.

Task 5: Upgrade the cloned environment using the standard upgrade procedures.

Task 6: Validate that the newly upgraded domain functions as expected.

A.2.1 Task 1: 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, if they are started on the host. For example, to stop the Administration Server:

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

A.2.2 Task 2: Backup all files from the 11g domain.

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

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:

- 11*g* 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*. Do not proceed with the upgrade until you have a complete backup.

A.2.3 Task 3: Restore the 11g domain backup files to a new location.

Copy the files you backed up in Task 2: Backup all files from the 11g domain. to a new location using the same directory structure that was used for the existing 11*g* environment. The directory structure you create for the upgrade must be identical to the structure used for the original 11g environment.

You will point to this location in Task 5: Upgrade the cloned environment using the standard upgrade procedures. .

A.2.4 Task 4: Install the 12.2.1 distributions in a new Oracle Home.

You must obtain, install and configure the 12c (12.2.1) product distributions for the components you will be upgrading.

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

A.2.5 Task 5: Upgrade the cloned environment using the standard upgrade procedures.

Perform the upgrade on the domain you created in Task 3: Restore the 11g 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 12*c* infrastructure topology to the new 12*c* (12.2.1.1) topology. The guides are located in the Upgrade tab of the Oracle Fusion Middleware 12c (12.2.1) online library.

Creating a Non-SYSDBA User to Run Upgrade Assistant
> Oracle recommends that you create a non-SYSDBA user to run the Upgrade Assistant. The user created using this procedure has the privileges required to complete the upgrade.

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.

A.2.5.1 Creating a Non-SYSDBA User to Run Upgrade Assistant

Oracle recommends that you create a non-SYSDBA user to run the Upgrade Assistant. The user created using this procedure has the privileges required to complete the upgrade.

SYSDBA is an administrative privilege, 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 in this topic must be granted before starting the Upgrade Assistant.

> **Note:** The v$xatrans$ table does not exist by default. You must run the XAVIEW.SQL script to create this table before creating the user. Moreover, grant on v$xatrans$ table is required only for Oracle Identity Manager. If you do not require Oracle Identity Manager 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;
> ```

> **Note:** If you are upgrading an ORASDPM schema that was created using RCU 11*g* (11.1.1.1.4 or earlier), and you subsequently upgraded ORASDPM to 11*g* (11.1.1.6 or later), the FMW user will need to grant the CREATE TABLE privilege to user *prefix*_ORASDPM before upgrading to 12*c* (12.2.1.1).
>
> ```
> grant CREATE TABLE to prefix_ORASDPM;
> ```
>
> Where *prefix* is the name given to the schema when it was created.

In the example below, welcome1 is the password. Make sure that you specify your actual password when granting privileges.

```
create user FMW identified by welcome1;
grant dba to FMW;
grant execute on DBMS_LOB to FMW with grant option;
grant execute on DBMS_OUTPUT to FMW with grant option;
grant execute on DBMS_STATS to FMW with grant option;
grant execute on sys.dbms_aqadm to FMW with grant option;
grant execute on sys.dbms_aqin to FMW with grant option;
grant execute on sys.dbms_aqjms to FMW with grant option;
grant execute on sys.dbms_aq to FMW with grant option;
grant execute on utl_file to FMW with grant option;
grant execute on dbms_lock to FMW with grant option;
grant select on sys.V_$INSTANCE to FMW with grant option;
grant select on sys.GV_$INSTANCE to FMW with grant option;
grant select on sys.V_$SESSION to FMW with grant option;
grant select on sys.GV_$SESSION to FMW with grant option;
grant select on dba_scheduler_jobs to FMW with grant option;
grant select on dba_scheduler_job_run_details to FMW with grant option;
grant select on dba_scheduler_running_jobs to FMW with grant option;
grant select on dba_aq_agents to FMW with grant option;
grant execute on sys.DBMS_SHARED_POOL to FMW with grant option;
grant select on dba_2pc_pending to FMW with grant option;
grant select on dba_pending_transactions to FMW with grant option;
grant execute on DBMS_FLASHBACK to FMW with grant option;
grant execute on dbms_crypto to FMW with grant option;
grant execute on DBMS_REPUTIL to FMW with grant option;
grant execute on dbms_job to FMW with grant option;
grant select on pending_trans$ to FMW with grant option;
grant select on dba_scheduler_job_classes to fmw with grant option;
grant select on SYS.DBA_DATA_FILES to FMW with grant option;
grant select on SYS.V_$ASM_DISKGROUP to FMW with grant option;
grant select on v$xatrans$ to FMW with grant option;
grant execute on sys.dbms_system to FMW with grant option;
grant execute on DBMS_SCHEDULER to FMW with grant option;
grant select on dba_data_files to FMW with grant option;
grant execute on UTL_RAW to FMW with grant option;
grant execute on DBMS_XMLDOM to FMW with grant option;
grant execute on DBMS_APPLICATION_INFO to FMW with grant option;
grant execute on DBMS_UTILITY to FMW with grant option;
grant execute on DBMS_SESSION to FMW with grant option;
grant execute on DBMS_METADATA to FMW with grant option;
grant execute on DBMS_XMLGEN to FMW with grant option;
grant execute on DBMS_DATAPUMP to FMW with grant option;
grant execute on DBMS_MVIEW to FMW with grant option;
grant select on ALL_ENCRYPTED_COLUMNS to FMW with grant option;
grant select on dba_queue_subscribers to FMW with grant option;
grant execute on SYS.DBMS_ASSERT to FMW with grant option;
```

> **Note:**
>
> **Oracle Database 11.2.0.3 Database Users ONLY:** You must apply **Oracle Patch 13036331** before you begin the upgrade. Go to My Oracle Support to download the patch.
>
> If you do not apply this patch, then you will have to grant additional privileges for some schemas.

A.2.5.2 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.

A.2.6 Task 6: 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).

A.3 Performing an Out-of-Place Domain Directory Upgrade on a Different Host

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

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

Task 1: Stop all processes, including the Administration Server, Managed Servers, and Node Manager. (Host A)

Task 2: Backup all files from the host machine. (Host A)

Task 3: Set up the target machine (Host B) with the 11g host name and IP address.

Task 4: Restore the 11g domain backup from Host A to Host B.

Task 5: Install the 12.2.1 distributions in a new Oracle Home. (Host B)

Task 6: Upgrade the environment using the standard upgrade procedures. (Host B)

Task 7: Validate that the newly upgraded domain functions as expected.

A.3.1 Task 1: 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. For example, to stop the Administration Server:

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

A.3.2 Task 2: Backup all files from the host machine. (Host A)

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

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:

- 11*g* Domain Home

- The /nodemanager directory located in the MW_HOME/wlserver_10.3/ common/

A.3.3 Task 3: Set up the target machine (Host B) with the 11g host name and IP address.

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.

A.3.4 Task 4: Restore the 11g domain backup from Host A to Host B.

Restore the files you backed up in Task 2: Backup all files from the host machine. (Host A) using the same directory structure that was used in 11*g*. 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*.

A.3.5 Task 5: Install the 12.2.1 distributions in a new Oracle Home. (Host B)

You must obtain, install and configure the 12c (12.2.1) product distributions for the components you will be upgrading.

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

A.3.6 Task 6: Upgrade the environment using the standard upgrade procedures. (Host B)

Each 12c (12.2.1) component has an upgrade guide that describes the procedures required to move from your 11g (11.1.1.6 or 11.1.1.7) or 12c (12.1.2 or 12.1.3) infrastructure topology to the new 12c (12.2.1) topology. The guides are located in the Upgrade tab of the Oracle Fusion Middleware 12c (12.2.1) online library.

The Node Manager upgrade procedure requires access to the original Node Manager files. Use the 11*g* Node Manger files that were backed up from the source machine as part of Task 3: Set up the target machine (Host B) with the 11g host name and IP address..

A.3.7 Task 7: 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).

A.4 Deinstalling the 11g Applications (Optional)

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). For more information see "Starting and Stopping Oracle WebLogic Server Administration and Managed Servers" in the *Oracle® Fusion Middleware Administrator's Guide*.

2. To remove the Oracle Home, start the Oracle Universal Installer in -deinstall mode.

   (UNIX) ORACLE_HOME/oui/bin

   ```
   ./runInstaller.sh –deinstall
   ```

   (Windows) ORACLE_HOME\oui\

```
binsetup.exe -deinstall
```

3. On the Deinstall screen, specify the 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 OUI 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.