Oracle® Fusion Middleware

Upgrading to the Oracle Fusion Middleware Infrastructure 12*c* (12.1.2)

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Documentation for Oracle Fusion Middleware administrators who want to upgrade to the Oracle Fusion Middleware Infrastructure 12*c*.

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Oracle Fusion Middleware Upgrading to the Oracle Fusion Middleware Infrastructure, 12*c* (12.1.2)

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Preface

This guide describes how to upgrade your Oracle Application Development Framework (Oracle ADF) runtime environment to Oracle Fusion Middleware Infrastructure 12*c* (12.1.2).

Specifically, it assumes you have installed and configured one or more Oracle WebLogic Server domains using the Oracle Fusion Middleware 12*c* Application Developer installer, and that you have deployed one or more Java or Oracle ADF applications on that domain.

Use this guide upgrade the domain and the supporting Oracle Fusion Middleware technologies to Oracle Fusion Middleware Infrastructure 12*c*.

Audience

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

Documentation Accessibility

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Related Documents

For more information, see the following documents in the Oracle Other Product One Release 7.0 documentation set or in the Oracle Other Product Two Release 6.1 documentation set:

- *Planning an Upgrade of Oracle Fusion Middleware*
- *Installing and Configuring the Oracle Fusion Middleware Infrastructure*

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.

What's New in This Guide

The following topics introduce the new and changed features of the Oracle Fusion Middleware upgrade tools and processes.

It also provides information about this book and provides pointers to additional information.

New and Changed Features for 12*c* (12.1.2)

Oracle Fusion Middleware 12*c* introduces the following new upgrade processes and tools, as well as a new set of installers, which are now referred to as **distributions**:

- A new distribution called Oracle Fusion Middleware Infrastructure. This distribution includes an installer that combines the features and capabilities of the Oracle WebLogic Server and Application Developer 11*g* installers.

  As a result, this distribution contains everything required to create Oracle WebLogic Server domains that can be used to deploy and manage Java and Oracle Application Development Framework (Oracle ADF) applications.

  For more information, see *Understanding Oracle Fusion Middleware*.

- A new and improved Oracle Fusion Middleware Upgrade Assistant, which is used to upgrade the Oracle Fusion Middleware database schemas and upgrade the component configurations to 12*c*.

  For more information, see *Planning an Upgrade of Oracle Fusion Middleware*.

- A new Reconfiguration Wizard, which upgrades your existing 11*g* domains to 12*c*.

  For more information, see *Upgrading Oracle WebLogic Server*.

Other Changes to This Guide

This is a new book for Oracle Fusion Middleware 12*c*. However, it contains information similar to the Oracle ADF content formerly included in the Oracle Fusion Middleware 11*g* version of *Oracle Fusion Middleware Upgrade Guide for SOA, WebCenter, and ADF*.

For Oracle Fusion Middleware 12*c*, a separate guide was required to describe the upgrade process for Oracle Fusion Middleware 11*g* users who have installed and configured an Application Developer 11*g* environment for the deployment and management of their Java and Oracle ADF custom applications.

1

Preparing for the Oracle Fusion Middleware Infrastructure Upgrade

This chapter provides a summary of the steps you should perform to prepare for an upgrade.

This chapter includes the following sections:

1.1 Understanding the Starting Points for an Infrastructure Upgrade

You can upgrade to Oracle Fusion Middleware Infrastructure 12*c* (12.1.2) from the following supported starting points:

- Oracle Fusion Middleware Application Developer 11*g* (11.1.1.6)
- Oracle Fusion Middleware Application Developer 11*g* (11.1.1.7)

The upgrade procedures in this guide explain how to upgrade an existing Application Server 11*g* domain and the Oracle Fusion Middleware component configurations in that domain to Oracle Fusion Middleware Infrastructure 12.1.2.

> **Note:** This guide also provides instructions for upgrading Oracle HTTP Server instances that were installed and configured to be associated with an existing Application Developer 11*g* domain.
>
> For information about upgrading standalone Oracle HTTP Server 11g, see Oracle Fusion Middleware Upgrading a Standalone Oracle HTTP Server.

For more information, see the following topics:

- About the Application Developer 11g Installer
- About Oracle Fusion Middleware Infrastructure 12c

1.1.1 About the Application Developer 11*g* Installer

The Oracle Fusion Middleware 11*g* Application Developer installer provides the software technologies and components to configure a Oracle WebLogic Server domain for the deployment of Oracle ADF applications. These technologies and components are often referred to as Oracle JRF.

To configure such a domain, you do the following:

1. Use the Oracle WebLogic Server 10.3.5 or 10.3.6 installer to create a new Oracle Fusion Middleware 11*g* Middleware home.
2. Install the Application Developer 11*g* software into that same Middleware home; this creates a new Oracle common directory inside that Middleware home.
3. You use the Configuration Wizard in that Middleware home to configure an Application Developer domain, consisting of one or more managed servers, which you can use to deploy your Oracle ADF applications.

For more information about the Oracle Fusion Middleware 11*g* Application Developer installer, see the *Oracle Fusion Middleware Installation Guide for Application Developer* in the Oracle Fusion Middleware 11*g* (11.1.1.7) documentation library on the Oracle Technology Network.

1.1.2 About Oracle Fusion Middleware Infrastructure 12*c*

Oracle Fusion Middleware Infrastructure distribution, which is available as part of the Oracle Fusion Middleware 12*c* (12.1.2) release, provides a set of technologies and components similar to those provided by the Oracle WebLogic Server and Application Developer installers in 11*g*.

For more information about Oracle Fusion Middleware Infrastructure, see "About Oracle Application Server Infrastructure 12c (12.1.2)" in *Understanding Interoperability and Compatibility*.

1.1.3 Key Differences Between Application Developer 11*g* and Infrastructure 12*c*

Oracle Fusion Middleware Infrastructure 12*c* is similar to the 11*g* Application Developer installation, except for the following differences:

1.1.3.1 Infrastructure 12*c* Includes Oracle WebLogic Server

The Application Developer 11*g* installation required two separate installations (Oracle WebLogic Server and then Application Developer to add the Oracle JRF libraries and components). In Oracle Fusion Middleware 12*c*, a fresh installation requires only the Oracle Fusion Middleware Infrastructure distribution, which contains both Oracle WebLogic Server and the required Java Required Files technologies.

Note that the upgrade procedure does not require the configuration of a new Oracle Fusion Middleware 12*c* domain. Instead, you use the Reconfiguration Wizard to upgrade the domain. For more information, see "Understanding and Obtaining the Upgrade and Configuration Tools" in *Planning an Upgrade of Oracle Fusion Middleware*.

1.1.3.2 Infrastructure 12*c* Requires Specific Database Schemas

Unlike the Application Developer 11*g* installation, the Infrastructure 12*c* installation requires that you create a set of required schemas in a supported database. In particular, you must use the 12*c* Repository Creation Utility (RCU) to create at least one required database schema before you can configure the Oracle Fusion Middleware Infrastructure 12*c* (12.1.2) software.

Depending upon your requirements, you must install one or more of the following database schemas before you can upgrade to Oracle Fusion Middleware Infrastructure 12*c* (12.1.2):

- The Service Table (STB) schema, which is a new schema required for all Oracle Fusion Middleware Infrastructure 12*c* installations. This schema enables a new Oracle Fusion Middleware 12*c* feature called Cross-Component Wiring. For more information, see "Cross-Component Wiring" in *Administering Oracle Fusion Middleware*. You must install this schema before upgrading to 12*c* (12.1.2).
- The OPSS schema, which provides a database-based security store for Oracle Platform Security Services.

  You might be required to create the OPSS 12*c* (12.1.2) schema, depending upon whether or not you are using a security store in 11*g* and the type of security you are using. For more information, see Table 1–1.

Table 1–1 Overview of Upgrading the Oracle Fusion Middleware 11g Security Store

If you are using...	Then perform the following action:	More Information
File- based security store in 11*g*	Before upgrade: 1. Use the 11*g* Repository Creation Utility to create the 11g OPSS 2. Reassociate the file-based security store with the database security store. During upgrade, use the Oracle Fusion Middleware 12*c* Upgrade Assistant to upgrade the OPSS schema to 12*c* (12.1.2).	Section 2.3, "Reassociating a File-Based Security Store Before Upgrade"
Oracle Internet Directory (OID)-based security store in 11g	▪ During the upgrade, use the 12*c* Repository Creation Utility to create the new 12*c* OPSS schema. ▪ In the Upgrade Assistant, select the OPSS schema; the Upgrade Assistant upgrades the OID-based security store. ▪ Note that the 12c OPSS database schema is required only so you can reference the 12*c* schema during the reconfiguration of the domain. Your domain will continue to use the OID-based security store after the upgrade.	▪ Section 2.8, "Creating the Required 12.1.2 Schemas Before You Upgrade" ▪ Section 2.9, "Upgrading 11g Schemas Using the Upgrade Assistant" ▪ Section 2.10, "Reconfiguring the Domain Using the Reconfiguration Wizard"
Database-based security store and the OPSS schema	Use the Upgrade Assistant to upgrade the existing 11*g* OPSS schema, and then reference the upgraded 11g schema during the domain reconfiguration.	▪ Section 2.9, "Upgrading 11g Schemas Using the Upgrade Assistant" ▪ Section 2.10, "Reconfiguring the Domain Using the Reconfiguration Wizard"

- The IAU schema, which is used for the OPSS auditing capabilities.

  You might be required to create the IAU 12*c* (12.1.2) schema, depending up whether or not you are using an Audit Data Store in 11*g* and the type of Audit Data Store you are using. For more information, see Table 1–2.

Table 1–2 Overview of Upgrading the Oracle Fusion Middleware 11g Audit Store

If you are using...	Then perform the following action:	More Information
File- based audit store in 11*g*	▪ During the upgrade, create a new 12*c* IAU schema. ▪ After the upgrade, configure the Oracle Platform Security Services Audit service to use the database-based Audit Data Store.	▪ Section 2.8, "Creating the Required 12.1.2 Schemas Before You Upgrade" ▪ Section 3.4, "Configuring an Oracle Fusion Middleware 12c Audit Data Store"
Database-based audit store and the IAU 11*g* schema	Use the Upgrade Assistant to upgrade the existing 11*g* IAU schema, and then reference the upgraded 11g schema during the domain reconfiguration.	▪ Section 2.9, "Upgrading 11g Schemas Using the Upgrade Assistant" ▪ Section 2.10, "Reconfiguring the Domain Using the Reconfiguration Wizard"

1.1.3.3 Infrastructure 12*c* Domains Can Include Oracle HTTP Server

In Oracle Fusion Middleware 11*g*, Oracle HTTP Server instances are typically configured in a separate Oracle instance directory outside the 11*g* Middleware home. Oracle HTTP Server 11*g* instances are managed using the Oracle Process Manager and Notification Server (OPMN) management software. Optionally, the Oracle HTTP Server 11*g* instances can be "associated with" the WebLogic domain.

In Oracle Fusion Middleware 12*c*, Oracle HTTP Server instances can be configured a part of an Oracle WebLogic Server domain, using the Oracle Fusion Middleware Configuration Wizard. When configured as part of an Oracle Fusion Middleware Infrastructure domain, Oracle HTTP Server instances can be managed using Oracle Enterprise Manager Fusion Middleware Control and the Oracle Weblogic Scripting Tool (WLST). In Oracle Fusion Middleware 12c, the Node Manager agent is responsible for delegating and executing management requests to OHS instances"

For more information about the changes to the ways system components, such as Oracle HTTP Server, are configured and managed in Oracle Fusion Middleware 12*c*, as well as other key changes for Oracle Fusion Middleware 12*c*, see Section 1.3.

1.2 Understanding the Standard Upgrade Topologies

Using the Oracle Fusion Middleware Application Developer 11*g* software, you can create a variety of production topologies to suit the needs of your applications, your organization, and your application users.

As a result, it is difficult to provide exact upgrade instructions for every possible Application Developer 11*g* installation. To solve this problem, this upgrade documentation provides detailed instructions for upgrading two typical Application Developer configurations. These typical topologies are referred to as the Oracle Fusion Middleware 12*c* standard upgrade topologies.

Specifically, for the purposes of this guide, it is assumed that you have used Oracle WebLogic Server and the Application Developer 11*g* software to configure a domain that contains a cluster of two managed servers, both of which are configured to support Oracle JRF and the deployment of Oracle ADF applications.

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

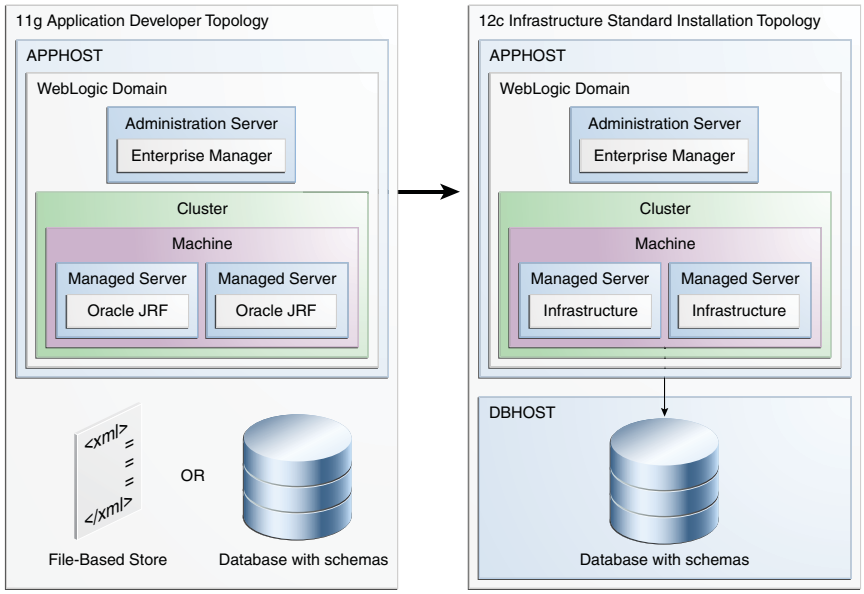
This guide explains step-by-step how to upgrade two specific upgrade topologies:

- Fusion Middleware Infrastructure Standard Upgrade Topology
- Fusion Middleware Infrastructure Standard Upgrade Topology with Oracle HTTP Server

1.2.1 Fusion Middleware Infrastructure Standard Upgrade Topology

Figure 1–1 shows the Oracle Fusion Middleware 11*g* Application Developer standard upgrade topology and the resulting Oracle Fusion Middleware 12*c* Infrastructure topology as it appears after you complete the upgrade procedures in this guide.

Figure 1–1 Infrastructure Upgrade Topology



All elements in this topology illustration are described in Table 1–3.

Table 1–3 Description of the Elements in the Infrastructure Standard Upgrade Topology

Element	Description and Links to Additional Documentation
11g Application Developer Topology	This is the label for the left side of Figure 1–1. It shows a typical single-host topology created using the Oracle Fusion Middleware 11*g* Application Developer installer. It consists of a single domain that contains a cluster of two managed servers and the Administration Server. It also has an optional file-based store or database with schemas. This document describes, step-by-step, how to upgrade this topology to an equivalent topology created using the Oracle Fusion Middleware 12*c* Infrastructure distribution.
12c Infrastructure Standard Installation Topology	This is the label for the right side of the figure. It shows a typical single-host topology created using the Oracle Fusion Middleware 12*c* Infrastructure distribution. Like the Application Developer 11*g* topology, it also consists of a single domain that contains a cluster of two managed servers and the Administration Server.
APPHOST	Standard term used in Oracle documentation referring to the machine that is hosting the application tier.
DBHOST	Standard term used in Oracle documentation referring to the machine that is hosting the database. Note that for Application Developer 11*g*, a database was optional; for Oracle Fusion Middleware Infrastructure 12*c*, a database is required. For more information, see Section 1.1.3.2.
File-Based Store	An XML, file-based security store. In 11*g*, you could use a file-base security store or a database-based security store. However, in 12*c*, the file-based store is deprecated, and you must use the Oracle Platform Security Services (OPSS) schema in a supported database.
Database with Schemas	Represents a supported database, where the Oracle Fusion Middleware schemas have been created using the Repository Creation Utility.
WebLogic Domain	A logically related group of Java components (in this case, the administration Server, Managed Servers, and other related software components). For more information, see "What is an Oracle WebLogic Server Domain" in *Understanding Oracle Fusion Middleware*.
Administration Server	The central control entity of a domain which maintains the domain's configuration objects and distributes configuration changes to Managed Servers. For more information, see "What is the Administration Server" in *Understanding Oracle Fusion Middleware*.
Enterprise Manager	Oracle Enterprise Manager Fusion Middleware Control. This is the main tool that can be used to manage your domain. For more information, see "Oracle Enterprise Manager Fusion Middleware Control" in *Understanding Oracle Fusion Middleware*.
Cluster	A collection of multiple WebLogic Server instances running simultaneously and working together. For more information, see "Understanding Managed Servers and Managed Server Clusters" in *Understanding Oracle Fusion Middleware*.
Machine	Logical representation of the computer that hosts one or more WebLogic Server instances (servers). Machines are also the logical glue between WebLogic Managed Servers and the Node Manager; in order to start or stop a Managed Server with Node Manager, the Managed Server must be associated with a machine.

Table 1–3 (Cont.) Description of the Elements in the Infrastructure Standard Upgrade Topology

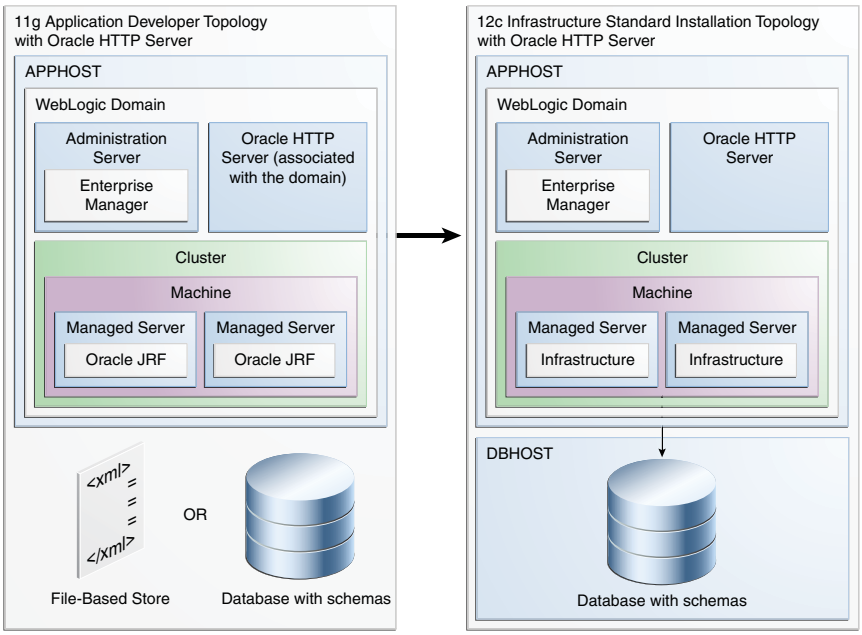
Element	Description and Links to Additional Documentation
Managed Server	Host for your applications, application components, Web services, and their associated resources. For more information, see "Understanding Managed Servers and Managed Server Clusters" in *Understanding Oracle Fusion Middleware*.
Oracle JRF	Oracle JRF (Java Required Files) consists of those components not included in the Oracle WebLogic Server installation and that provide common functionality for Oracle business applications and application frameworks. JRF consists of several independently developed libraries and applications that are deployed into a common location. The components that are considered part of Java Required Files include Oracle Application Development Framework shared libraries and ODL logging handlers.
Infrastructure	Oracle Fusion Middleware 12*c* term (similar to Oracle JRF) that refers to the collection of services that include the following: ■ Metadata repository (MDS) This contains metadata for Oracle Fusion Middleware components, such as the Oracle Application Developer Framework. For more information, see "What is the Metadata Repository" in *Understanding Oracle Fusion Middleware*. ■ Oracle Application Developer Framework (ADF) ■ Oracle Web Services Manager (OWSM)

The Application Developer 11*g* topology is similar to the Oracle Fusion Middleware Infrastructure 12*c* topology, except for the differences described in Section 1.1.3, "Key Differences Between Application Developer 11g and Infrastructure 12c".

1.2.2 Fusion Middleware Infrastructure Standard Upgrade Topology with Oracle HTTP Server

Figure 1–2 shows the Oracle Fusion Middleware 11*g* Application Developer standard upgrade topology with Oracle HTTP Server and the resulting Oracle Fusion Middleware 12*c* Infrastructure topology as it appears after you complete the upgrade procedures in this guide.

Figure 1–2 Infrastructure Standard Upgrade Topology with Oracle HTTP Server



Most of the elements in this topology illustration are described in Table 1–3.

Additional elements and those different from Figure 1–1 are described in Table 1–4.

Table 1–4 Description of the Elements in the Infrastructure Standard Upgrade Topology with Oracle HTTP Server

Element	Description and Links to Additional Documentation
11g Application Developer Topology with Oracle HTTP Server	This is the label for the left side of Figure 1–2. It shows a typical single-host topology created using the Oracle Fusion Middleware 11*g* Application Developer installer. It consists of a single domain that contains a cluster of two managed servers and the Administration Server. It also has an optional file-based store or database with schemas. Figure 1–2 also shows an Oracle HTTP Server instance as part of the 11*g* domain. This document describes, step-by-step, how to upgrade this topology to an equivalent topology created using the Oracle Fusion Middleware 12*c* Infrastructure distribution.
12c Infrastructure Standard Installation Topology with Oracle HTTP Server	This is the label for the right side of the figure. It shows a typical single-host topology created using the Oracle Fusion Middleware 12*c* Infrastructure distribution. Like the Application Developer 11*g* topology, it also consists of a single domain that contains a cluster of two managed servers and the Administration Server. Figure 1–2 also shows an Oracle HTTP Server instance as part of the 12*c* domain.
Oracle HTTP Server "associated with the domain"	An Oracle HTTP Server 11*g* instance that has been configured to be "associated with" the Oracle WebLogic Server domain. In Oracle Fusion Middleware 11*g*, system component instance, such as Oracle HTTP Server, are configured with an Oracle Universal Installer-based configuration wizard and are managed using Oracle Process Manager and Notification Server.
Oracle HTTP Server	Unlike the Oracle HTTP Server 11*g* instance in the left side of the diagram, the Oracle HTTP Server 12*c* instance shown in the 12*c* topology is configured as part of the domain using the Oracle Fusion Middleware Configuration Wizard. It is managed using Oracle Enterprise Manager Fusion Middleware Control, the Oracle Weblogic Scripting Tool (WLST), and the Oracle WebLogic Server Node Manager software.

Note that there are changes to way Oracle HTTP Server instances are created and managed in an Oracle Fusion Middleware 12*c* Oracle WebLogic Server domain. For more information, see Section 1.1.3.3, "Infrastructure 12c Domains Can Include Oracle HTTP Server".

1.3 Understanding the Additional New Features for Oracle Fusion Middleware 12*c*

Before you begin the upgrade to Oracle Fusion Middleware Infrastructure 12*c*, review the new features and changes available in Oracle Fusion Middleware 12*c*. In particular, refer to the following sections in *Understanding Oracle Fusion Middleware*:

- New and Changed Features for 12c (12.1.2)
- New and Deprecated Terminology for 12c (12.1.2)
- What is the WebLogic Management Framework?

1.4 Flow Chart and Task Roadmaps for Upgrading to Oracle Fusion Middleware Infrastructure

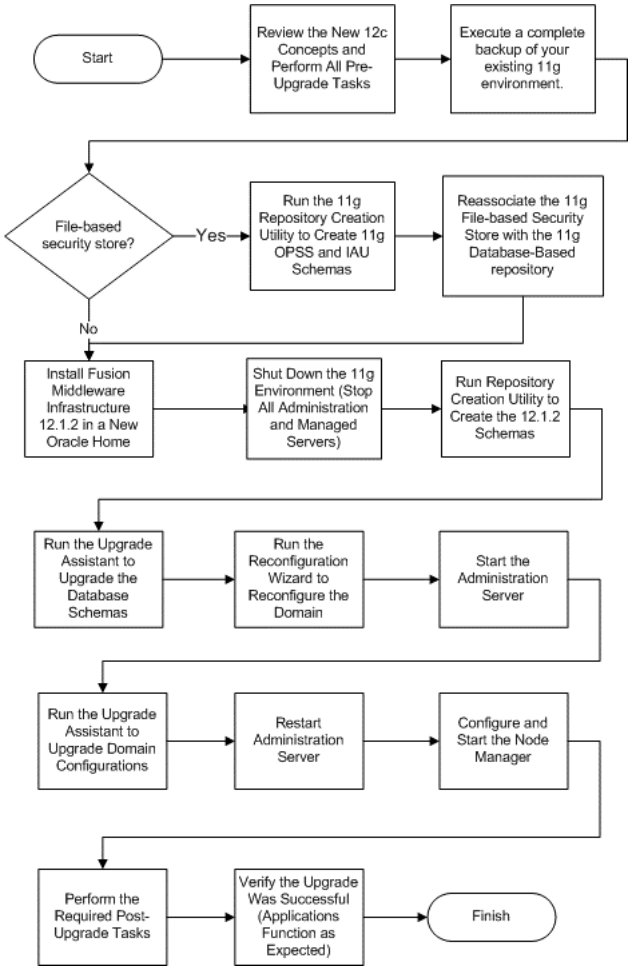
The following sections describe the high-level steps for upgrading the Oracle Fusion Middleware standard upgrade topology:

- Flow Chart for Upgrading the Infrastructure Standard Upgrade Topologies
- Task Roadmap for Upgrading the Infrastructure Standard Upgrade Topologies

1.4.1 Flow Chart for Upgrading the Infrastructure Standard Upgrade Topologies

Figure 1–3 shows the high level procedures associated with the standard Infrastructure upgrade.

Figure 1–3 Flow Chart of the Infrastructure Upgrade Steps



1.4.2 Task Roadmap for Upgrading the Infrastructure Standard Upgrade Topologies

Table 1–5 describes the tasks that must be completed to upgrade to Infrastructure 12.1.2.

Table 1–5 Oracle Fusion Middleware Infrastructure Upgrade Roadmap

Task	Description	More Information
Review the new 12*c* concepts and perform common upgrade tasks.	Before planning your upgrade, you must review the 12*c* concepts, and common upgrade tasks.	*Planning an Upgrade of Oracle Fusion Middleware* Section 1.1, "Understanding the Starting Points for an Infrastructure Upgrade" Section 1.2, "Understanding the Standard Upgrade Topologies".
Execute a compete backup of your existing 11*g* environment.	The backup is important because the upgrade process will reconfigure your existing domain directories.	Section 2.1, "Backing Up Your Existing Oracle Fusion Middleware 11g Environment"
File-based security store?	If you are using a file-based security or audit store in your existing 11*g* environment, then you must perform an important-pre-upgrade task.	Section 2.3, "Reassociating a File-Based Security Store Before Upgrade".
Run the 11g Repository Creation Utility to Create 11g OPSS and IAU Schemas	This step is required only if you are using a file-based security store in your 11*g* Application Developer environment.	Section 2.3, "Reassociating a File-Based Security Store Before Upgrade".
Reassociate the 11g file-based security store with the 11g Database-based repository	This step is required only if you are using a file-based security store or audit store in your 11*g* Application Developer environment.	Section 2.3, "Reassociating a File-Based Security Store Before Upgrade".
Install Infrastructure 12.1.2 in a new Oracle Home.	Install Oracle Fusion Middleware Infrastructure 12*c* in a new Oracle Home on the host where you installed Oracle Fusion Middleware Application Developer 11*g*. If the 11*g* environment includes Oracle HTTP Server instances that are associated with the domain, then Install Oracle HTTP Server 12*c* in the same Oracle home as the Infrastructure.	Section 2.4, "Installing Oracle Fusion Middleware Infrastructure 12.1.2 on APPHOST". Section 2.5, "Installing Oracle HTTP Server 12.1.2 on APPHOST".
Shut down the 11*g* environment.	Stop the Administration Server and all the Managed Servers.	Section 2.6, "Stopping Servers and Processes".
Run Repository Creation Utility to create the 12*c* schemas.	Unlike Oracle Fusion Middleware 11*g*, you cannot configure an Oracle Fusion Middleware 12*c* domain without installing the required schemas in a supported database.	Section 2.8, "Creating the Required 12.1.2 Schemas Before You Upgrade".
Run the Upgrade Assistant to upgrade the database schemas.	Run the Upgrade Assistant to upgrade your existing 11*g* schemas to 12*c*.	Section 2.9, "Upgrading 11g Schemas Using the Upgrade Assistant".
Run the Reconfiguration Wizard to reconfigure the 11*g* domain.	After upgrading the 11*g* schemas, you must run the Reconfiguration Wizard to reconfigure your existing 11*g* domain.	Section 2.10, "Reconfiguring the Domain Using the Reconfiguration Wizard".
Start the Administration Server.	After you reconfigure the 11*g* domain, you must start the Administration Server.	Section 2.11, "Starting the Administration Server".

Table 1–5 (Cont.) Oracle Fusion Middleware Infrastructure Upgrade Roadmap

Task	Description	More Information
Run the Upgrade Assistant to upgrade domain configurations.	Use the Upgrade Assistant to upgrade any WebLogic component configurations.	Section 2.12, "Upgrading the Domain Component Configurations Using the Upgrade Assistant".
Restart Administration Server.	Restart the Administration Server.	Section 3.2, "Restarting the Administration Server".
Configure and start the Node Manager.	Configure the Node Manager, and start it.	Section 3.1, "Configuring and Starting the Node Manager".
Perform the required post-upgrade tasks.	Perform the required post-upgrade tasks like verifying the upgrade and deployed applications.	Section 3.3, "Applying JRF Template to Managed Servers" Section 3.6.2.3, "About Migrating Asynchronous Web Services with Oracle JDeveloper 12c".
Verify the upgrade was successful.	Verify that the upgrade was successful by logging in to the Administration console and Fusion Middleware Control, and verifying the upgraded version number.	See Section 2.14, "Verifying the Domain Component Configurations Upgrade"

1.5 About Upgrading Oracle HTTP Server

This guide explains how to upgrade Oracle HTTP Server 11*g* instances that have been configured so they are "associated with" an Oracle WebLogic Server domain. The upgrade is performed as you are upgrading the domain to which the Oracle HTTP Server has been associated.

To upgrade a standalone Oracle HTTP Server instance (one that is *not* associated with an 11*g* domain) refer to *Upgrading a Standalone Oracle HTTP Server*.

1.6 Upgrading Custom Applications Using Oracle JDeveloper 12*c*

If you have deployed custom applications to an Oracle Fusion Middleware Application Developer 11*g* domain, then the application deployments should function as they did in Oracle Fusion Middleware 11*g* after the upgrade procedure is complete.

However, if you want to take advantage of new Oracle Application Development Framework (Oracle ADF) 12*c* (12.1.2) features, download and install Oracle JDeveloper 12*c* (12.1.2). For more information, see *Installing Oracle JDeveloper*.

To test your 11*g* applications in preparation for an upgrade to Oracle Fusion Middleware Infrastructure 12*c*, open your existing Oracle JDeveloper 11*g* projects in Oracle JDeveloper 12*c* (12.1.2). Oracle JDeveloper migrates the projects to 12*c* (12.1.2). You can then test your applications with the embedded application server that is available from within Oracle JDeveloper. After you have reviewed and optionally modified your applications in Oracle JDeveloper 12*c* (12.1.2), upgrade the Application Developer 11*g* domain to Oracle Fusion Middleware Infrastructure 12*c* (12.1.2) and redeploy the applications.

For more information about migrating your applications, see "Migrating From a Previous Version to Oracle JDeveloper 12.1.2" in *Installing Oracle JDeveloper*.

2

Performing the Infrastructure Upgrade

This chapter provides the end-to-end procedure for upgrading an Oracle Fusion Middleware 11*g* Application Developer installation to Oracle Fusion Middleware 12*c* (12.1.2) Infrastructure.

This chapter includes the following sections:

2.1 Backing Up Your Existing Oracle Fusion Middleware 11*g* Environment

Before you upgrade Oracle Fusion Middleware 11*g* Application Developer installation to Oracle Fusion Middleware 12.1.2 Infrastructure, you must back up your existing 11*g* environment. For more information, see "Backup and Recovery Strategies for Upgrade" in the *Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware*.

2.2 Upgrading the Oracle Fusion Middleware Database (If Necessary)

Understand the Oracle Database requirements for Oracle Fusion Middleware 12.1.2 Infrastructure, and upgrade the Oracle Fusion Middleware Database, if necessary.

For more information about upgrading and preparing your Oracle Database for 12*c*, see "Upgrading and Preparing Your Oracle Databases for 12c (12.1.2)" in the Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware.

2.3 Reassociating a File-Based Security Store Before Upgrade

If you are using a file-based security store in your existing 11*g* environment, you must perform the following tasks before you begin the upgrade process.

Refer to the following tasks for more information:

- Task 1, "Creating 11g OPSS and IAU Schemas"
- Task 2, "Reassociating the 11g Security Store with the Database-Based Security Store and OPSS Schema"
- Task 3, "Configuring the Audit Data Store"

Task 1 Creating 11*g* OPSS and IAU Schemas

Create new 11*g* Oracle Platform Security Services (OPSS) and Audit Schemas (IAU) schemas in a supported Database using the 11*g* Repository Creation Utility.

For more information about creating 11*g* schemas, see "Obtaining and Running Repository Creation Utility" in the *Oracle Fusion Middleware Repository Creation Utility User's Guide* for 11*g* Release 1 (11.1.1.7.0).

Task 2 Reassociating the 11*g* Security Store with the Database-Based Security Store and OPSS Schema

If you are using a file-based security store in your 11*g* environment, then reassociate the file-based store with the database-based repository and OPSS schema.

For information about reassociating OPSS schema with Database-based repository, see "Reassociating the OPSS Security Store" in the *Oracle Fusion Middleware Application Security Guide* in the 11*g* Release 1 (11.1.1.7.0) documentation library.

Task 3 Configuring the Audit Data Store

If the audit data store is file based, then you must enable audit loading on the database to change from storing audit records in a file to using a database audit data store.

For information about enabling audit loading, see "Configure the Audit Data Store and Bus-Stop Storage" in *Securing Applications with Oracle Platform Security Services*.

2.4 Installing Oracle Fusion Middleware Infrastructure 12.1.2 on APPHOST

Install Oracle Fusion Middleware Infrastructure 12.1.2 on the host where you installed the Oracle Fusion Middleware 11*g* Application Developer Oracle home.

Note: Do not configure Oracle Fusion Middleware Infrastructure 12.1.2.

Follow the instructions described in Table 2–1 to install Oracle Fusion Middleware Infrastructure 12.1.2.

Table 2–1 Oracle Fusion Middleware Infrastructure Installation Roadmap

Task	Description	More Information
Prepare your system for the 12.1.2 install.	Before you install Infrastructure 12.1.2, verify that the minimum system and network requirements are met.	"Roadmap for Verifying Your System Environment" in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*.
Obtain the Infrastructure distribution.	Obtain the Oracle Fusion Middleware Infrastructure distribution (`wls_jrf_generic.jar`).	"Understanding and Obtaining the Oracle Fusion Middleware Infrastructure Distribution" in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*.
Start the Infrastructure 12.1.2 installer.	Start the Infrastructure installer from the location where you downloaded it.	"Starting the Installation Program" in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*.
Navigate the installer screens.	Use the installer to install Infrastructure 12.1.2.	"Navigating the Installation Screens" in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*.

2.5 Installing Oracle HTTP Server 12.1.2 on APPHOST

If your 11*g* domain includes Oracle HTTP Server instances that are associated with the domain, you must install Oracle HTTP Server 12.1.2 on the following machines:

- On machines where 11*g* Oracle HTTP Server instances are running
- On the machine where Administration Server is running

For more information about installing Oracle HTTP Server 12.1.2, see "Installing the Oracle HTTP Server Software" in the *Oracle Fusion Middleware Installing and Configuring Oracle HTTP Server*.

Note: Do not configure Oracle HTTP Server 12.1.2.

2.6 Stopping Servers and Processes

Before running Upgrade Assistant, shut down all Oracle Fusion Middleware Managed Servers, Administration Servers, and system components (such as OHS) that may be using the schemas or configurations you want to update. Failure to do so may result in an incomplete or failed upgrade.

If you are running Node Manager, you should also stop Node Manager. You can do this by closing the console window in which Node Manager is running, or by using the `stopNodeManager` WLST command.

Instructions for stopping an Oracle Fusion Middleware environment are provided in "Stopping an Oracle Fusion Middleware Environment" in *Administering Oracle Fusion Middleware*.

2.7 Using the Schema Version Registry to Identify Existing 11*g* Schemas

Connect to the database as `SYS` user, and use the following SQL command to see a list of the Oracle Fusion Middleware 11*g* schemas that are already installed in your database

```
SELECT comp_id, owner, version, status, upgraded FROM schema_version_registry
```

You can use this list later to help you determine what schemas to create and which schemas you need to upgrade.

2.8 Creating the Required 12.1.2 Schemas Before You Upgrade

Before you upgrade, you must install one or more schemas in a supported database:

- Determining Which Schemas to Create
- Creating the Required Schemas with the Repository Creation Utility

2.8.1 Determining Which Schemas to Create

Consider the following scenarios:

- If you did not use a database in 11*g*, then you must install and configure a supported database, and you must create one or more of the database schemas as described in Section 1.1.3.2, "Infrastructure 12c Requires Specific Database Schemas".
- If you were already using a database to host the schemas for your Application Developer 11*g* domain, then use the schema version registry to list the Oracle Fusion Middleware 11*g* schemas that are already available in your database, as described in Section 2.7.

  Do not create any of the schemas listed in the Schema Version Registry; instead, you can use the Oracle Fusion Middleware Upgrade Assistant later in the upgrade process to upgrade the 11*g* schemas to 12.1.2.

  Note, however, that you must still create specific schemas, as described in Section 1.1.3.2, "Infrastructure 12c Requires Specific Database Schemas".

2.8.2 Creating the Required Schemas with the Repository Creation Utility

Complete the following steps to create necessary schemas:

> **Note:** When you create the new 12.1.2 schemas, be sure to use a unique schema prefix. This prefix enables you to differentiate between any schemas previously installed or upgraded in the database, as opposed to those that you have created specifically for Oracle Fusion Middleware 12.1.2.

1. Starting the Repository Creation Utility (RCU) by doing the following:
   a. Navigate to the *ORACLE_HOME*`/oracle_common/bin` directory on your system.
   b. Start RCU:

      (UNIX) `./rcu`

      (Windows) `rcu.bat`

2. Navigate the RCU screens to create required schemas for Infrastructure upgrade.

   For more information, see "Navigating the RCU Screens to Create the Schemas" in *Installing and Configuring the Oracle Fusion Middleware Infrastructure*.

> **Note:** Edition-based redefinition (EBR) enables you to support multiple versions of a database schema on the same database and at the same time. For more information on creating an edition on the server for redefinition, see "Creating an Edition on the Server for Editions-Based Redefinition" in *Planning an Upgrade of Oracle Fusion Middleware*.

2.9 Upgrading 11*g* Schemas Using the Upgrade Assistant

Follow the instructions in this section to upgrade Infrastructure schemas using the Upgrade Assistant.

- Task 1, "Determine Which Schemas to Upgrade"
- Task 2, "Start the Upgrade Assistant"
- Task 3, "Upgrade the Schemas"
- Task 4, "Verify the Schema Upgrade"
- Task 5, "Check for Invalid Database Objects"

Task 1 Determine Which Schemas to Upgrade

Before you start the Oracle Fusion Middleware Upgrade Assistant, View the list of existing 11*g* schemas in the schema version registry, by using the instructions in Section 2.7.

These are the component schemas you want to select in the Upgrade Assistant.

Task 2 Start the Upgrade Assistant

Complete the following steps to start the Upgrade Assistant:

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. Enter the following command to start the Upgrade Assistant.

   (UNIX) `./ua`

   (Windows) `ua.bat`

Task 3 Upgrade the Schemas

The Upgrade Assistant displays a sequence of screens listed in Table 2–2 when upgrading schemas. Perform the respective action(s) for each of the screens.

Table 2–2 Upgrade Assistant Screens: Upgrading Schemas

Screen	Description and Action Required
Welcome	This screen provides an overview of the Upgrade Assistant and some information about important pre-upgrade tasks.
Schemas	Select **Schemas**.
Available Components	This screen provides a list of installed Oracle Fusion Middleware components that have schemas that can be upgraded. When you select a component, the schemas and any dependencies are automatically selected. To determine which components to select, refer to Task 1, "Determine Which Schemas to Upgrade".
Domain Directory	This screen appears if you selected **Oracle Platform Security Services** or **Oracle Audit Services** on the **Available Components** screen. Enter the absolute path to the existing 11*g* WebLogic domain directory, or click **Browse** to navigate to and select the 11*g* domain directory you are upgrading.
Prerequisites	Check if the prerequisites for schema upgrade are met.
Select Schemas	Use this screen to enter database connection details for each of the schemas you are upgrading. 1. Select a the database type from the **Database Type** drop-down menu. 2. Enter the database connection details, and click **Connect**. 3. Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. 4. Click **Next**. Notes: ■ The title of Select Schemas screen varies, depending upon the schemas you are upgrading. For example, if you are upgrading the MDS schema, the screen title appears as "MDS Schema". ■ When upgrading the WLS schema, you cannot connect to the database first to obtain the list of available schemas; instead, you must enter the WLS schema name in the **Schema User Name** field, and then click **Next**. ■ For information on the fields required to connect to the database, click **Help**, or refer to "Select Schemas" in Upgrading with the Upgrade Assistant.
Examine	Review the status of the Upgrade Assistant as it examines each component, verifying that the component is ready for upgrade.
Upgrade Summary	Review the summary of the options that you have selected for schema upgrade. Click **Upgrade** to upgrade the schemas, or click **Back** if you wish to change the configurations.
Upgrade Progress	Review the status of the upgrade process. Click **Next** when the upgrade is complete.
Upgrade Success	Click **Close** if the Upgrade was successful. If the upgrade failed or if you canceled the upgrade before it completed successfully, you should review the log files, restore the backed up environment, and restart the Upgrade Assistant.

Task 4 Verify the Schema Upgrade

Use the following SQL command to verify that the schema version in `schema_version_registry` has been properly updated.

```
SELECT OWNER, VERSION, STATUS, UPGRADED FROM SCHEMA_VERSION_REGISTRY;
```

Check that the number in the **VERSION** column matches the latest version number for that schema. See Table 1-1, "Schemas That Require an Upgrade" in *Upgrading with the Upgrade Assistant* to verify that the updated version number is correct for your schema(s).

In the query result, the **STATUS** field will be either **UPGRADING** or **UPGRADED** during the schema patching operation, and will become **VALID** when the operation is completed.

If the status appears as **INVALID**, the schema update failed. You should examine the logs files to determine the reason for the failure.

Task 5 Check for Invalid Database Objects

If you are using an Oracle database, you should recompile database objects after running the Upgrade Assistant by connecting to the database as `SYS` and running the following from SQL*Plus:

```
SQL>@?/rdbms/admin/utlrp.sql
```

This will compile the database objects that were upgraded by Upgrade Assistant.

Then issue the following query to ensure there are no longer any invalid database objects:

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

None of the database objects for the upgraded schema should be invalid at this point. If there are any, run the utlrp.sql command again and check again. If the problem persists, you should file a service request.

2.10 Reconfiguring the Domain Using the Reconfiguration Wizard

Follow the instructions in this section to reconfigure the existing 11*g* domain using the reconfiguration wizard.

- Task 1, "Starting the Reconfiguration Wizard"
- Task 2, "Reconfiguring the Domain"

Task 1 Starting the Reconfiguration Wizard

Start the Reconfiguration Wizard in graphical mode by doing the following:

1. Log in to the system on which the domain resides.
2. Open command shell (on UNIX operating systems) or open command prompt window (on Windows operating systems).
3. Go to the following directory:

   (UNIX) *ORACLE_HOME*`/oracle_common/common/bin`

   (Windows) *ORACLE_HOME*`\oracle_common\common\bin`

   where *ORACLE_HOME* is your Oracle home directory.
4. Execute the following command:

   ```
   (UNIX) ./reconfig.sh -log=log_file
   (Windows) reconfig.cmd -log=log_file
   ```

   Replace *log_file* with the absolute path of the log file you'd like to create for the domain reconfiguration session. This can be helpful if you need to troubleshoot the reconfiguration process.

Notes: When you run the `reconfig.cmd` or `reconfig.sh` command, the following error message might be displayed to indicate that the default cache directory is not valid:

```
*sys-package-mgr*: can't create package cache dir
```

You can change the cache directory by setting the environment variable `CONFIG_JVM_ARGS`. For example:

```
CONFIG_JVM_ARGS=-Dpython.cachedir=valid_directory
```

Task 2 Reconfiguring the Domain

The Reconfiguration Wizard displays a sequence of screens listed in Table 2–3. Perform the respective action(s) for each of the screens.

Table 2–3 Reconfiguration Wizard Screens

Screen	Description and Action Required
Select Domain	Enter the absolute path to the existing 11*g* domain directory, or click **Browse** to navigate to and select the domain directory.
Reconfiguration Setup Progress	Shows the progress of the application of reconfiguration templates.
Domain Mode and JDK	Domain mode cannot be changed. Select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. Note that Oracle Fusion Middleware 12*c* requires Java SE 7. For more information, see "Verifying Certification and System Requirements" in *Planning an Installation of Oracle Fusion Middleware*.
Database Configuration Type	Select **Manual Configuration**, and click **Next**. Note that if you are not upgrading any schemas from 11*g*, then you can use the **RCU Data** option to connect to the Server Table (STB) schema. The Repository Creation Utility will automatically use service table to load the other 12*c* schema credentials automatically. However, in many cases, during domain reconfiguration, you must select a combination of new 12*c* and upgraded 11*g* schemas, so Oracle recommends that you use the **Manual Configuration** option, and that you enter the data source information manually to be sure you are connecting to the correct schemas. For more information, click **Help**, or refer to "Database Configuration Type" in *Upgrading Oracle WebLogic Server*.
JDBC Data Sources	This screen is displayed if you created custom data sources for a database-based OPSS security store or Audit Data store in 11*g*. Use this screen to configure the JDBC data sources defined in your domain source. For information about the fields on this page, click **Help**, or refer to "JDBC Data Sources" in *Upgrading Oracle WebLogic Server*.
JDBC Data Sources Test	Test the data source connections you configured on the JDBC Data Sources screen. For information about the fields on this page, click **Help**, or refer to "JDBC Data Sources Test" in *Upgrading Oracle WebLogic Server*.

Table 2–3 (Cont.) Reconfiguration Wizard Screens

Screen	Description and Action Required
JDBC Component Schema	Specify the data source settings for each of the schemas listed on the screen, by selecting the check box adjacent to each schema name. Notes: ■ You must specify the 11*g* schema details for those schemas that you upgraded in Section 2.9. For the others, specify the 12.1.2 schema details. ■ For information about the fields on this page, click **Help**, or refer to "JDBC Component Schema" in *Upgrading Oracle WebLogic Server*.
JDBC Component Schema Test	Test the configurations that you specified for the data sources in the previous screen. Select the check boxes adjacent to the names of the schemas to test, and click **Test Selected Connections**. The result of the test is indicated in the **Status** column. Click **Next** when the test is successful for all the schemas.
Advanced Configuration	Select **Deployments and Services** if one or more of the following applies: ■ If you are using Oracle Web Services Manager (Oracle WSM) in your 11*g* domain; otherwise, the reconfiguration of the domain might fail. ■ If you have created new OPSS and IAU 12*c* schemas as part of the upgrade process. If you are not using Oracle WSM or the 12*c* OPSS and IAU schemas, then there is no need to select any of the options on this page.
Deployments Targeting	If you are using Oracle Web Services Manager, then target the owsm-pm application deployment to the Administration Server: 1. Locate and select **wsm-pm** in the **Deployments** list box. 2. Select **AdminServer** in the **Targets** list box. 3. Click arrow icon  to target wsm-pm to the Administration Server.
Services Targeting	If you have created OPSS and IAU 12*c* schemas as part of the upgrade process, then select the **opss-audit-DBDS**, **opss-audit-viewDS**, and **opss-data-source** in the **Services** list box and target them to the Managed Servers in the domain, which are listed in the **Targets** list box. Otherwise, no action is required on this screen when you are upgrading or reconfiguring the domain.
Configuration Summary	Review the configuration summary. Click **Reconfig** to reconfigure the domain, or click **Back** if you wish to change the configurations.
Reconfiguration Progress	Review the reconfiguration progress. Click **Next** when the process is complete.
Reconfiguration Success	Review the final status of the reconfiguration process. Click **Finish** to exit the Reconfiguration Wizard.

2.11 Starting the Administration Server

Start the Administration Server by running the following command from the directory *DOMAIN_HOME*`/bin` (on UNIX) or *DOMAIN_HOME*`\bin` (on Windows):

(UNIX) `./startWebLogic.sh`

(Windows) `startWebLogic.cmd`

Note: Do not start the Managed Servers.

To verify that the 11*g* domain was reconfigured successfully, log in to the Administration console using the following URL, and verify if the version number displayed on the console is 12.1.2:

`http://`*`administration_server_host`*`:`*`administration_server_port`*`/console`

2.12 Upgrading the Domain Component Configurations Using the Upgrade Assistant

Follow the instructions in this section to upgrade any additional domain component configurations using the Upgrade Assistant.

- Task 1, "Starting the Upgrade Assistant"
- Task 2, "Upgrading Any Component Configurations"

Task 1 Starting the Upgrade Assistant

Start the Upgrade Assistant on the host where Administration Server is running, by doing the following:

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. Enter the following command to start the Upgrade Assistant.

   (UNIX) `./ua`

   (Windows) `ua.bat`

Task 2 Upgrading Any Component Configurations

The Upgrade Assistant displays a sequence of screens listed in Table 2–4 when upgrading WebLogic Component Configurations. Perform the respective action(s) for each of the screens.

Table 2–4 Upgrade Assistant Screens: Upgrading WebLogic Component Configurations

Screen	Description and Action Required
Welcome	This screen provides an overview of the Upgrade Assistant and some information about important pre-upgrade tasks. Click **Next** to continue.
WebLogic Components	Select **WebLogic Component Configurations**. Enter the details of the domain that you wish to upgrade, in the following fields: ■ **Host:** Enter the host on which WebLogic Administration Server is running. Make sure you enter the full host name. For example: `host.example.com` ■ **Port:** Enter the listening port of the Administration Server. Typically, the Administration Server listens on port 7001. ■ **Username:** Enter the username that is used to log in to the Administration Server. ■ **Password:** Enter the password for the administrator account that is used to log in to the Administration Server. Click **Next**.

Table 2–4 (Cont.) Upgrade Assistant Screens: Upgrading WebLogic Component

Screen	Description and Action Required
OWSM Policy Manager	This screen is displayed if your 11*g* environment has multiple WebLogic Server domains, but the OWSM Policy Manager is only in one WLS domain and the OWSM agents are in other domains. Provide the credentials for the WebLogic Administration Server domain where the Oracle Web Services Manager (OWSM) Policy Manager is deployed. For information about the fields on this page, click **Help**, or refer to "OWSM Policy Manager" in *Upgrading with the Upgrade Assistant*.
Component List	This screen provides a list of components that will be included in the domain component configuration upgrade.
Prerequisites	Check if the prerequisites for component configurations upgrade are met.
Examine	Review the status of the Upgrade Assistant as it examines each component, verifying that the component is ready for upgrade.
Upgrade Summary	Review the summary of the options that you have selected for schema upgrade. Click **Upgrade** to upgrade the schemas, or click **Back** if you wish to change the configurations.
Upgrade Progress	Review the status of the upgrade process. Click **Next** when the upgrade is complete.
Upgrade Success	Click **Close** if the Upgrade was successful. If the upgrade failed or if you canceled the upgrade before it completed successfully, you should review the log files, restore the backed up environment, and restart the Upgrade Assistant.

2.13 Performing the Post-Upgrade Tasks

After you upgrade Oracle Fusion Middleware 11*g* Application Developer to Oracle Fusion Middleware 12.1.2 Infrastructure, you must complete the post-upgrade tasks described in Chapter 3, "Tasks to Perform After Upgrade".

2.14 Verifying the Domain Component Configurations Upgrade

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

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

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

Note: After upgrade, you must run any of your administration tools from the new 12.1.2 Oracle home and not from the 11*g* Oracle home.

3

Tasks to Perform After Upgrade

This chapter summarizes the tasks you might have to perform after upgrading to Oracle Fusion Middleware 12*c* Infrastructure.

This chapter includes the following sections:

3.1 Configuring and Starting the Node Manager

Configure the Node Manager, and start it.

For more information about configuring the Node Manager, see "Completing the Node Manager Configuration" in *Upgrading Oracle WebLogic Server*.

For information about starting the Node Manager, see "Starting and Stopping Node Manager" in the *Oracle Fusion Middleware Administering Oracle Fusion Middleware*.

3.2 Restarting the Administration Server

Stop and start the WebLogic Administration Server.

For information about stopping and starting the Administration Server, see "Starting and Stopping Administration Servers" in the *Oracle Fusion Middleware Administering Oracle Fusion Middleware*.

3.3 Applying JRF Template to Managed Servers

If you used Oracle Enterprise Manager Fusion Middleware Control to apply the Oracle JRF template to any existing Managed Servers in your 11*g* domain, then you must do the following to target JRF resources to the 12.1.2 Managed Servers, as it is not done as part of upgrade:

Note: This does not apply to other scenarios where you applied the Oracle JRF template using the Fusion Middleware Configuration Wizard or the WLST command line.

1. Run the following script to identify the servers or clusters to which you need to apply JRF template:

   ORACLE_HOME/oracle_common/common/bin/wlst.sh *ORACLE_HOME*/oracle_common/util/upgrade/checkForApplyJRF.py *absolute_path_to_domain*

   Sample output:

   ```
   Checking target AdminServer... passed
   Checking target new_ManagedServer_1... failed
   Checking target new_ManagedServer_2... failed
   Checking target new_ManagedServer_3... not JRF enabled
   Checking target new_Cluster_1... not JRF enabled

   The following Server and/or Clusters have been found that will require applyJRF
   to be invoked again: ['new_ManagedServer_1', 'new_ManagedServer_2']
   ```

2. Complete the following steps for those severs or clusters identified in the previous step:

   a. Run the following command to launch the WebLogic Scripting Tool (WLST):

      (UNIX) *ORACLE_HOME*/oracle_common/common/bin/wlst.sh

      (Windows) *ORACLE_HOME*\oracle_common\common\bin\wlst.cmd

   b. Run the `applyJRF` command in `offline` mode against the target(s) as shown in the following:

      ```
      wls:/offline>applyJRF('targetName1', 'absolute_path_to_domain')

      wls:/offline>applyJRF('targetName2', 'absolute_path_to_domain')

      ...

      wls:/offline>exit()
      ```

Note: You can also apply JRF template to the Managed Servers or clusters by logging in to the Fusion Middleware Control using the following URL, and clicking **APPLY JRF Template** for the target Managed Server or cluster:

`http://`*adminstration_server_host*`:`*administration_server_port*`/em`

3.4 Configuring an Oracle Fusion Middleware 12*c* Audit Data Store

If you were using a file-based audit store in Oracle Fusion Middleware11*g*, then after the upgrade to Oracle Fusion Middleware 12*c*, you should enable the loading of audit data to a database-based Audit Data Store.

As a part of the overall upgrade process, you should have created the IAU schema in the database where your other Oracle Fusion Middleware schemas reside. For more information about using the Audit Data Store, see "Managing the Audit Data Store" in *Securing Applications with Oracle Platform Security Services*.

3.5 Documentation Resources for Managing Your Upgraded Oracle Fusion Middleware 12*c* Software

Table 3–1 lists some common administration tasks you will likely want to perform after upgrading to Infrastructure 12.1.2.

Table 3–1 Basic Administration Tasks

Task	Description	More Information
Getting familiar with Fusion Middleware administration tools	Get familiar with the various tools available which you can use to manage your environment.	"Overview of Oracle Fusion Middleware Administration Tools" in *Administering Oracle Fusion Middleware*.
Starting and stopping products and servers	Learn how to start and stop Oracle Fusion Middleware, including the Administration Server, Managed Servers, and components.	"Starting and Stopping Oracle Fusion Middleware" in *Administering Oracle Fusion Middleware*.
Configuring Secure Sockets Layer (SSL)	Learn how to set up secure communications among between Oracle Fusion Middleware components using SSL.	"Configuring SSL in Oracle Fusion Middleware" in *Administering Oracle Fusion Middleware*.
Monitoring Oracle Fusion Middleware	Learn how to keep track of the status of Oracle Fusion Middleware components.	"Monitoring Oracle Fusion Middleware" in *Administering Oracle Fusion Middleware*.
Understanding Backup and Recovery Procedures	Learn the recommended backup and recovery procedures for Oracle Fusion Middleware.	"Introducing Backup and Recovery" in *Administering Oracle Fusion Middleware*.

3.6 Using Your 11*g* Application Deployments in Oracle Fusion Middleware 12*c*

After you upgrade to Oracle Fusion Middleware 12*c*, the custom Java and Oracle Application Development Framework (ADF) applications you previously deployed on Oracle Fusion Middleware 11*g* work as they did in Oracle Fusion Middleware 11*g*.

However, there are some new features and capabilities available in Oracle ADF 12*c* and in Oracle JDeveloper 12*c*.

The following sections provide some additional information about how you can migrate your applications to Oracle JDeveloper 12*c*:

- About Oracle Application Development Framework (ADF) 12c
- About Oracle JDeveloper 12c

3.6.1 About Oracle Application Development Framework (ADF) 12*c*

Information about the Oracle ADF can be found in the following Oracle Fusion Middleware 12*c* documentation resources:

- *Understanding Oracle Application Development Framework*
- The Oracle Application Development Framework (ADF) Common tasks page in the Oracle Fusion Middleware 12*c* Documentation Library

3.6.2 About Oracle JDeveloper 12*c*

This section provides the following information:

- Installing Oracle JDeveloper 12c
- Migrating Applications Using Oracle JDeveloper 12c
- About Migrating Asynchronous Web Services with Oracle JDeveloper 12c

3.6.2.1 Installing Oracle JDeveloper 12*c*

To install Oracle JDeveloper 12*c*, refer to *Installing Oracle JDeveloper*.

Note that Oracle JDeveloper provides an embedded version of Oracle WebLogic Server that can be used to locally test your applications. For more information, see "Deploying and Testing Applications Developed in Oracle JDeveloper" in *Installing Oracle JDeveloper*.

3.6.2.2 Migrating Applications Using Oracle JDeveloper 12*c*

After you install Oracle JDeveloper 12*c*, you can open your custom application projects in Oracle JDeveloper 12*c* and automatically migrate them to Oracle JDeveloper 12*c*.

For more information, see "Migrating From a Previous Version to Oracle JDeveloper 12.1.2" in *Installing Oracle JDeveloper*.

3.6.2.3 About Migrating Asynchronous Web Services with Oracle JDeveloper 12*c*

If your application contains ADF BC asynchronous Web Services, ensure that you rebuild it using Oracle JDeveloper or the `ojdeploy` command line tool to generate the required deployment descriptors in your deployment archive.

For more information about developing asynchronous Web Services, see "Developing Asynchronous Web Services" in *Developing Oracle Infrastructure Web Services*.