Oracle® Fusion Middleware

Upgrading to the Oracle Fusion Middleware Infrastructure 12*c* (12.1.3)

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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* (12.1.3)

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Preface

Use this guide to upgrade the schemas, domain configurations, and supported 11g Oracle Fusion Middleware technologies to Oracle Fusion Middleware Infrastructure 12*c* (12.1.3).

This guide also provides information for upgrading from Oracle Fusion Middleware Infrastructure 12c (12.1.2) to 12c (12.1.3).

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 Fusion Middleware 12c (12.1.3) documentation set:

- *Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware*
- *Oracle Fusion Middleware Installing and Configuring the Oracle Fusion Middleware Infrastructure*
- *Upgrading Oracle WebLogic Server*
- *Oracle Fusion Middleware Upgrading Oracle Data Integrator*
- *Oracle Fusion Middleware Upgrading Oracle SOA Suite*

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 topics in this chapter 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* (12.1.3)

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:

- As of release 12c (12.1.2), there is 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 *Oracle Fusion Middleware Understanding Oracle Fusion Middleware*.

- As of release 12c (12.1.2), there is 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 *Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware*.

- As of release 12c (12.1.2), there is 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

As of release 12c (12.1.2), there is a new book for Oracle Fusion Middleware documentation library. 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.

Part I

Upgrading to Oracle Infrastructure 12c (12.1.3) from 11g

This section of the guide describes the upgrade process for users who are upgrading from a supported Oracle Fusion Middleware Oracle JRF 11*g* release (which includes Metadata repository (MDS), Oracle Application Developer Framework (ADF), and Oracle Web Services Manager (OWSM)) to the Oracle Infrastructure 12c (12.1.3).

Note: If you are upgrading to Oracle Infrastructure 12c (12.1.3) from a previous Infrastructure 12c release (such as 12c (12.1.2), see Part II, "Upgrading to Oracle Infrastructure 12c (12.1.3) From a Previous 12c Release".

Part I contains the following chapters:

- Chapter 1, "Preparing for the Oracle Fusion Middleware Infrastructure Upgrade"
- Chapter 2, "Performing the Infrastructure Upgrade"

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:

- Section 1.1, "Understanding the Starting Points for an Infrastructure Upgrade"
- Section 1.2, "Upgrading Security to 12.1.3"
- Section 1.3, "Understanding the Standard Upgrade Topologies"
- Section 1.4, "Understanding the Additional New Features for Oracle Fusion Middleware 12c"
- Section 1.5, "Flow Chart and Task Roadmaps for Upgrading to Oracle Fusion Middleware Infrastructure"

1.1 Understanding the Starting Points for an Infrastructure Upgrade

You can upgrade to Oracle Fusion Middleware Infrastructure 12c (12.1.3) 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)
- Oracle Fusion Middleware Infrastructure 12c (12.1.2). For more information on how to upgrade Oracle Fusion Middleware Infrastructure 12.1.2 to 12.1.3, see Chapter 3, "Upgrading to 12c from a Previous Release."

The primary focus of 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 12.1.3.

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:

1.1.1 About Oracle Fusion Middleware Infrastructure 12*c*

Oracle Fusion Middleware Infrastructure distribution, which is available as part of the Oracle Fusion Middleware 12c (12.1.3) 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" in *Oracle Fusion Middleware Understanding Interoperability and Compatibility*.

1.1.2 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:

1.1.2.1 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 *Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware*.

1.1.2.2 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 the required database schemas before you can configure the Oracle Fusion Middleware Infrastructure 12c (12.1.3) 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 12c (12.1.3):

- 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 *Oracle Fusion Middleware Administering Oracle Fusion Middleware*. You must install this schema before upgrading to 12c (12.1.3).
- The OPSS schema, which provides a database-based policy store for Oracle Platform Security Services.

Table 1–1 provides an overview of the policy stores used in 11g and how to upgrade them to 12c (12.1.3).

Table 1–1 Overview of Upgrading the Oracle Fusion Middleware 11g Policy 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 schema. 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 12c (12.1.3).	■ Upgrading a File-Based Security Store ■ Section 2.4, "Reassociating a File-Based Security Store Before Upgrade"
Oracle Internet Directory (OID)-based policy store in 11g	■ Before 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 policy 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 policy store after the upgrade.	■ Upgrading an OID-Based Security Store ■ Section 2.12, "Creating the Required 12.1.3 Schemas Before You Upgrade" ■ Section 2.13, "Upgrading 11g Schemas Using the Upgrade Assistant" ■ Section 2.14, "Reconfiguring the Domain Using the Reconfiguration Wizard"
Database-based policy 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.	■ Upgrading a DB-Based Security Store ■ Section 2.13, "Upgrading 11g Schemas Using the Upgrade Assistant" ■ Section 2.14, "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 12c (12.1.3) schema, depending on 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*	▪ Before the upgrade, create a new 12c IAU schema. ▪ After the schema is created, configuring a database-based audit data store involves: - creating a data source that points to the audit schema you created, - configuring the audit data store to point to the data source	▪ Section 2.12, "Creating the Required 12.1.3 Schemas Before You Upgrade"
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 2.13, "Upgrading 11g Schemas Using the Upgrade Assistant" ▪ Section 2.14, "Reconfiguring the Domain Using the Reconfiguration Wizard"

1.1.2.3 Using an OID-based Policy Store

If you are using an Oracle Internet Directory (OID)-based policy store in 11g, 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 policy store. You do not need to reassociate an OID-based policy store before upgrade.

> **Note:** 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 policy store after the upgrade.

1.1.2.4 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 1.4.

1.2 Upgrading Security to 12.1.3

Before upgrading the OPSS security store, back it up so that it can be recovered in case the upgrade fails. For details about backing up the security store, see Backing Up and Recovering the OPSS Security Store.

The upgrade procedure varies depending on the type of security store you start from. The security store to be upgraded can be file-, OID-, or DB-based. Note the procedures vary according to the type of source audit data store (file- or DB-based).

- Upgrading a DB-Based Security Store
- Upgrading an OID-Based Security Store
- Upgrading a Shared Security Store
- Upgrading a File-Based Security Store

1.3 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.

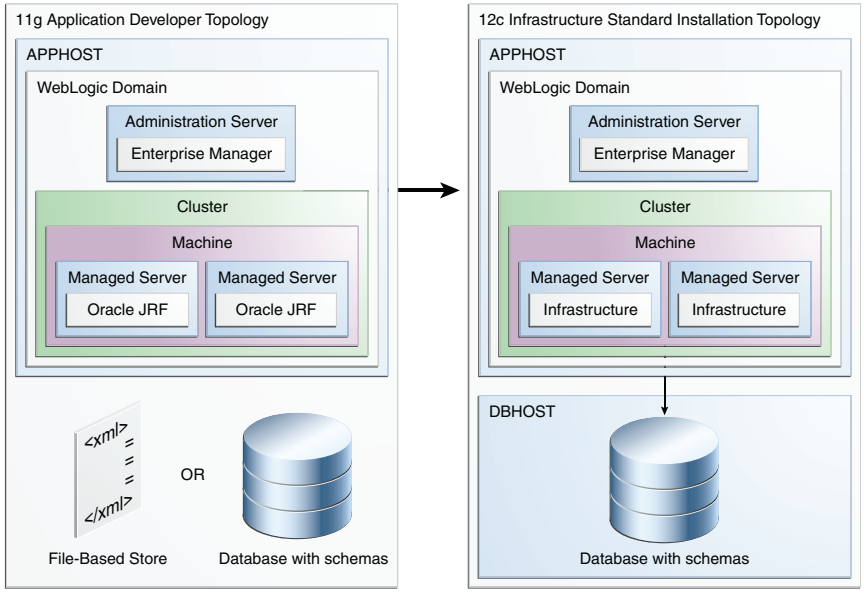
This guide explains step-by-step how to upgrade two specific upgrade topologies:

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

1.3.1 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 1.1.2.2.
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.

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

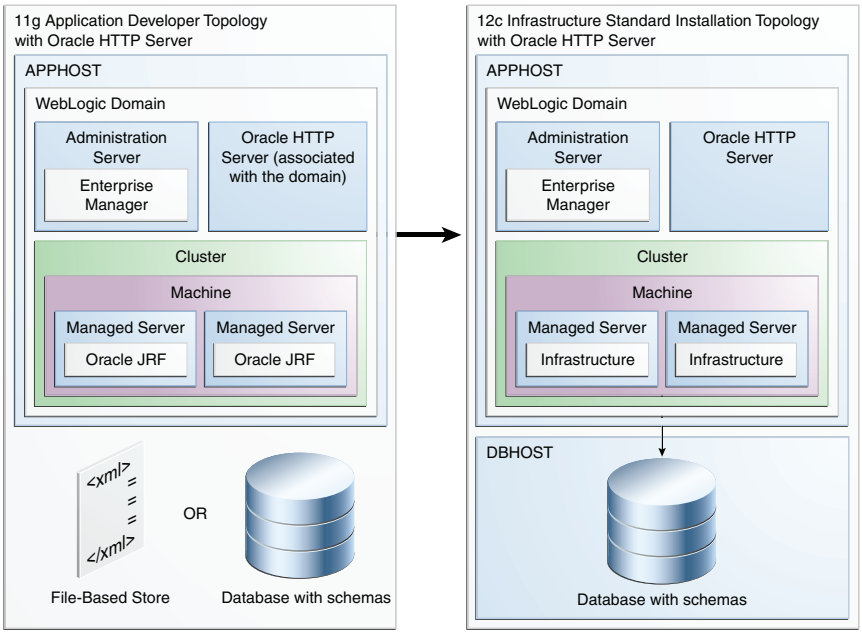
Element	Description and Links to Additional Documentation
WebLogic Domain	A logically related group of Java components (in this case, the administration Server, Managed Servers, and other related software components). For more information, see "What is an Oracle WebLogic Server Domain" in *Oracle Fusion Middleware 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 *Oracle Fusion Middleware 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 *Oracle Fusion Middleware 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 *Oracle Fusion Middleware 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.
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 *Oracle Fusion Middleware 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 *Oracle Fusion Middleware 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 1.1.2, "Key Differences Between Application Developer 11g and Infrastructure 12c".

1.3.2 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 1.1.2.4, "Infrastructure 12c Domains Can Include Oracle HTTP Server".

1.4 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 *Oracle Fusion Middleware Understanding Oracle Fusion Middleware*:

- New and Changed Features for 12c (12.1.3)
- New and Deprecated Terminology for 12c (12.1.3)
- What is the WebLogic Management Framework?

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

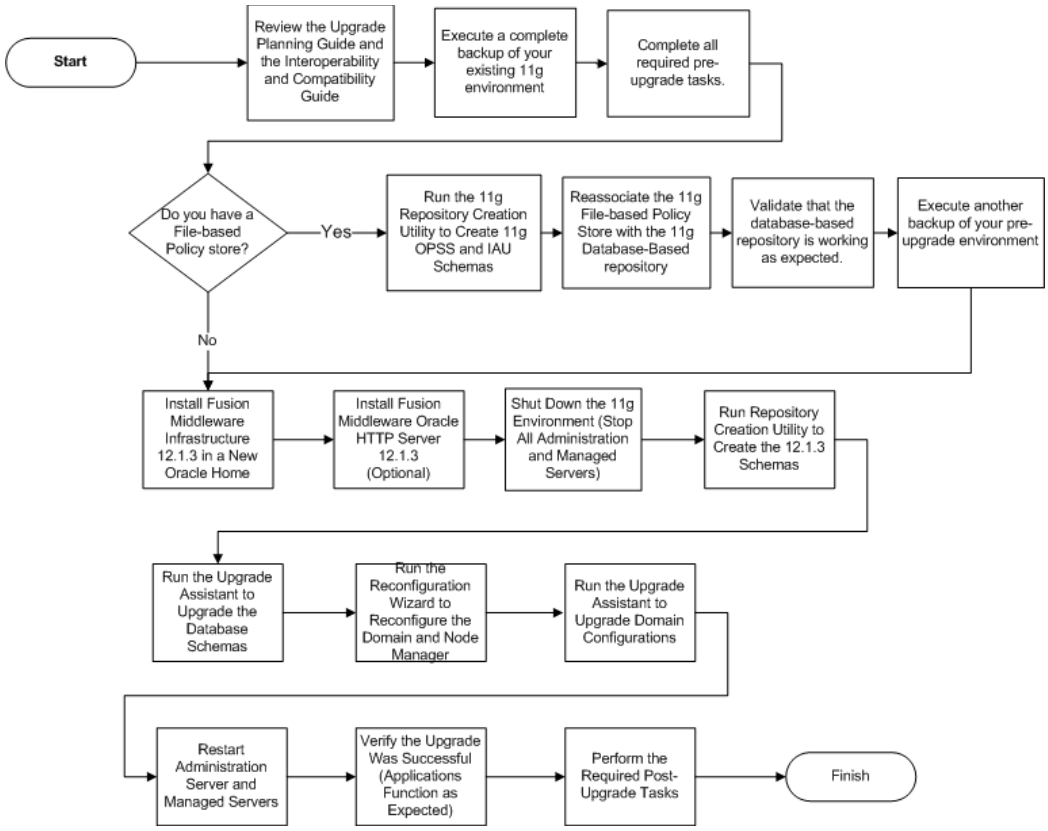
The following sections describe the high-level steps for upgrading the Oracle Fusion Middleware standard upgrade topology:

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

1.5.1 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



1.5.2 Task Roadmap for Upgrading the Infrastructure Standard Upgrade Topologies

Table 1–5 describes the tasks that must be completed to upgrade to Infrastructure 12.1.3.

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 1.3, "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"
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 2.4, "Reassociating a File-Based Security Store Before Upgrade".
Reassociate the 11g file-based policy 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. f you are using an OID-based store, see Using an OID-based Policy Store	Section 2.4, "Reassociating a File-Based Security Store Before Upgrade".
Install Infrastructure 12.1.3 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 2.8, "Installing Oracle Fusion Middleware Infrastructure 12.1.3 on APPHOST". Section 2.9, "Installing Oracle HTTP Server 12.1.3 on APPHOST".
Shut down the 11*g* environment.	Stop the Administration Server and all the Managed Servers.	Section 2.10, "Stopping Servers and Processes".
Run the Upgrade Assistant to upgrade the database schemas.	Run the Upgrade Assistant to upgrade your existing 11g schemas to 12c.	Section 2.13, "Upgrading 11g Schemas Using the Upgrade Assistant".
Run Repository Creation Utility to create the 12*c* schemas. (For 11g to 12c upgrades only.)	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 2.12, "Creating the Required 12.1.3 Schemas Before You Upgrade".
Run the Reconfiguration Wizard to reconfigure the 11*g* domain and Node Manager (if needed).	After upgrading the 11*g* schemas, you must run the Reconfiguration Wizard to reconfigure your existing 11*g* domain and Node Manager.	Section 2.14, "Reconfiguring the Domain Using the Reconfiguration Wizard".
Run the Upgrade Assistant to upgrade domain configurations.	Use the Upgrade Assistant to upgrade any WebLogic component configurations.	Section 2.15, "Upgrading the Domain Component Configurations Using the Upgrade Assistant".
Perform the required post-upgrade tasks.	Perform the required post-upgrade tasks like verifying the upgrade and deployed applications.	Chapter 4, "Tasks to Perform After Upgrade"

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* (12.1.3) 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 12.1.3 Infrastructure, you must back up your existing 11*g* environment. If the upgrade fails for any reason, you will have to restart the upgrade process from the source backup.

For more information, see "Backup and Recovery Strategies for Upgrade" in the *Oracle Fusion Middleware Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware*.

Caution: After you upgrade, any custom changes that you made to your `setDomainEnv` script will be lost. Make sure that you have a backup copy of the script before you upgrade.

For more information on retaining your settings after an upgrade, see Maintaining Your Custom setDomainEnv Settings (Optional).

2.2 Upgrading the Oracle Database

The database that will be used to host your new 12c environment must be supported. It is important that you understand the Oracle Database requirements for Oracle Fusion Middleware 12c (12.1.3) Infrastructure, and, if necessary, upgrade the Oracle Fusion Middleware Database before you begin the Fusion Middleware upgrade.

For more information about upgrading and preparing your Oracle Database for 12*c*, see "Upgrading and Preparing Your Oracle Databases for 12c (12.1.3)" in the Oracle Fusion Middleware *Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware*.

2.3 Maintaining Your Custom setDomainEnv Settings (Optional)

Every domain includes dynamically generated domain and server startup scripts, such as `setDomainEnv`. Oracle recommends that you do not modify these startup scripts, as any changes you make to them will be overwritten during subsequent domain upgrade operations.

Caution: Changes made to the `setDomainEnv` script - or any other startup script - before an upgrade will be overwritten by new, regenerated scripts during the domain reconfiguration process. Consider creating a separate file to store your customized domain settings before you upgrade.

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

During server startup, if this file exists, it is included in the startup sequence and any overrides it defines take effect. The file must be stored in the `domain_home/bin` directory.

For more information on creating the `setUserOverrides` file to maintain your customized domain wide parameters after an upgrade, see "Customizing Domain Wide Server Parameters".

Note: If you are unable to create the `setUserOverrides` script before an upgrade, you will need to reapply your settings as described in Section 4.4, "Reapplying Customizations to setDomainEnv".

2.4 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 1 Creating 11*g* OPSS and IAU Schemas

Create new 11*g* Oracle Platform Security Services (OPSS) schema in a supported database using the 11*g* Repository Creation Utility. Once you have successfully reassociated OPSS to database-based store using OPSS during upgrade, you can create the 12.1.3 Audit (IAU) schema using 12.1.3 RCU.

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).

You might be required to create the IAU 12c (12.1.3) schema, depending on whether or not you are using an Audit Data Store in 11g and the type of Audit Data Store you are using. For more information, see Section 1.1.2.2, "Infrastructure 12c Requires Specific Database Schemas".

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.

If the **Create New Domain** box is not checked, after the reassociate the WebLogic server will not start.

Do the following to re-associate 11g OPSS and IAU (Audit) Schema to make it database based before it can be upgraded:

1. Configure a JDBC Data Source in the Console:
   - Login to the Console and navigate to **Services** and then **DataSources**.
   - Select **New**, then **Generic data source** from the dropdown menu.
   - Give the new data source a name.
   - Enter the **JNDI Name**.

     Note: This name is used when configuring a DB-Based store in the file `jps-config.xml`, and the value used in the re-associate command. An example value for OPSS is `jdbc/opssDataSource` and for IAU is `jdbc/AuditDB`.
   - Select the appropriate DB type in the **DataBase Type** dropdown menu.
   - In the Database Driver pull-down, select **Oracle's Driver** (Thin) for Instance connections; Versions: 9.0.1 and later (this is a Non-XA JDBC driver).

- Make sure that **Supports Global Transactions** is deselected.
- In the area **Connection Properties**, enter data for Database Name, Host Name, Port, Database User Name, and Password. Verify and test the settings.
- In the **Targets** section, this Data Source must be targeted to all servers in the domain. Click **Finish**.

2. Re-associate data file:

   a. Re-associate data file with OPSS for the OPSS schema:

```
$cd $11g_MW_Home/oracle_common/common/bin
$./wlst.sh
connect()
wls:/jrf_domain/serverConfig> reassociateSecurityStore(domain="jpsconfig",
servertype="DB_ORACLE", jpsroot="cn=jpsroot",
datasourcename="jdbc/opssDataSource")
```

   b. Re-associate data file with IAU for the IAU schema:

```
$cd $11g_MW_Home/oracle_common/common/bin
$./wlst.sh
connect()
wls:/base_domain/serverConfig>
setAuditRepository(switchToDB="true",dataSourceName="jdbc/AuditDB")
```

3. Restart all servers.
4. Validate re-association via Enterprise Manager Fusion Middleware Control.

   a. Validating OPSS Re-Association via Enterprise Manager Fusion Middleware Control:

   -Log in to Enterprise Manager Fusion Middleware Control and navigate to **Domain > Security > Security Provider Configuration.**

   - Confirm that the configuration no longer shows **File** as the **Provider Type**.

   - The table should now display the entry **Oracle Database** in the above **Provider Type field**.

   b. Validate Audit DB Configuration via Enterprise Manager Fusion Middleware Control:

   - Log in to Enterprise Manager Fusion Middleware Control and navigate to **Domain > Security > Security Provider Configuration**.

   - Click the **Configure** under the **Audit Service** section of the screen to access the **OHS11GPS61STdomain** screen.

   - Validate that the JNDI DataSource name is correct and is as previously specified, and confirm the Database connection is specified in the **URL** field.

   - If the DB Based Audit Data source is not specified, then click the Magnifying Glass Icon next to the **Data Source JNDI Name**, and select the **Audit Data Source** previous created.

   - Confirm the details in this screen to match what was previously specified in the prior steps above, and then click **Apply**.

Note: The database user that will access the datasource and database store configuration should be the same as the OPSS schema owner.

IAU Schema upgrade should be optional. In 11g by default **Audit Store** is not configured. If **Audit Store** is not configured, we should be able to skip the audit store association.

2.5 Using No-Auth SSL Mode in OID Security Store

If you are upgrading to 12c and using OID for the security policy store with WLS, then you may need to modify the default SSL mode. In Oracle Internet Directory 11g, SSL interoperability mode is enabled by default. But Oracle Internet Directory is fully compliant with the JDK's SSL, provided SSL interoperability mode is disabled.

The default use of No-Auth SSL mode in Oracle Internet Directory (OID) is discouraged for production environments due to the susceptibility to Man-in-the-Middle (MITM) attacks.

However, if No-Auth SSL is required, and WebLogic Server is the client, the following system properties must be applied to the weblogic.properties file before you upgrade:

- -Dweblogic.security.SSL.AllowAnonymousCipher=true
- -Dweblogic.security.SSL.ignoreHostnameVerification=true

Note: Setting these properties will consequently make WLS susceptible to MITM attacks, since anonymous cipher suites will be enabled, and client connections will be made without Hostname Verification checking.

ORACLE STRONGLY RECOMMENDS the use of either server or client/server SSL authentication when using OID with WLS 12c.

2.6 Removing the Server Instance Scope from OWSM Policy Sets

Using the Server Instance scope in policy sets was not recommended in 11g (11.1.1.7.0) and it is not supported in 12c. If, however, you have policy sets that use the Server scope, they will be disabled during the upgrade to 12c. Therefore, before you upgrade to 12c, you must remove the server instance scope from all 11g policy sets.

For instructions, see "Editing a Policy Set" in *Security and Administrator's Guide for Web Services* in the Oracle Fusion Middleware 11g Release 1 (11.1.1.7.0) documentation library.

2.7 Cloning Predefined Documents and Migrating OWSM Policy Attachments

When upgrading, it is important to note that any predefined documents that have not been customized for your environment are replaced with read-only versions, and new, predefined, read-only documents are added. Note, however, that any existing predefined documents that have been customized, as well as any user-created custom policies in the repository, will not be overwritten.

To ensure that you always get all of the latest policies, Oracle recommends that you clone any predefined documents that you have modified and migrate any policy

attachments. For details, see "Upgrading the OWSM Repository" in *Securing Web Services and Managing Policies with Oracle Web Services Manager*.

2.8 Installing Oracle Fusion Middleware Infrastructure 12.1.3 on APPHOST

Install 12.1.3 Infrastructure in a new Oracle home on the same host as that of 11g.

Note: Do not use the Configuration Wizard to configure Oracle Fusion Middleware Infrastructure 12.1.3.

Follow the instructions described in Table 2–1 to install Oracle Fusion Middleware Infrastructure 12.1.3.

Table 2–1 Oracle Fusion Middleware Infrastructure Installation Roadmap

Task	Description	More Information
Prepare your system for the 12.1.3 install.	Before you install Infrastructure 12.1.3, verify that the minimum system and network requirements are met.	"Roadmap for Verifying Your System Environment" in *Oracle Fusion Middleware 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 *Oracle Fusion Middleware Installing and Configuring the Oracle Fusion Middleware Infrastructure*.
Start the Infrastructure 12.1.3 installer.	Start the Infrastructure installer from the location where you downloaded it.	"Starting the Installation Program" in *Oracle Fusion Middleware Installing and Configuring the Oracle Fusion Middleware Infrastructure*.
Navigate the installer screens.	Use the installer to install Infrastructure 12.1.3.	"Navigating the Installation Screens" in *Oracle Fusion Middleware Installing and Configuring the Oracle Fusion Middleware Infrastructure*.

2.9 Installing Oracle HTTP Server 12.1.3 on APPHOST

If your 11*g* domain includes Oracle HTTP Server instances that are associated with the domain, you must install Oracle HTTP Server 12.1.3 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 12.1.3, see "Installing the Oracle HTTP Server Software" in the *Oracle Fusion Middleware Oracle Fusion Middleware Installing and Configuring Oracle HTTP Server*.

Note: Do not configure Oracle HTTP Server 12.1.3.

2.10 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 *Oracle Fusion Middleware Administering Oracle Fusion Middleware*.

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

The Upgrade Assistant identifies schemas for which an upgrade is available. You can upgrade multiple schemas in a single session of running the Upgrade Assistant.

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.

To determine which of your 11*g* or 12.1.2 schemas can be upgraded to 12.1.3.0.0, see "Identifying Schemas that Can be Upgraded with the Upgrade Assistant" in *Oracle Fusion Middleware Upgrading with the Upgrade Assistant*.

2.12 Creating the Required 12.1.3 Schemas Before You Upgrade

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

- Section 2.12.1, "Determining Which Schemas to Create"
- Section 2.12.2, "Creating the Required Schemas with the Repository Creation Utility"

2.12.1 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 1.1.2.2, "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 2.11.

  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 12.1.3.

  Note, however, that you must still create the required schemas, as described in Section 1.1.2.2, "Infrastructure 12c Requires Specific Database Schemas".

Note: As of release 12c (12.1.2.0), the Service Table (_STB) schema is required for all Infrastructure installations. The Service Table schema must be upgraded each time the infrastructure is upgraded. You cannot use an older version schema with a new Infrastructure installation.

2.12.2 Creating the Required Schemas with the Repository Creation Utility

Complete the following steps to create necessary schemas:

Note: When you create the new 12.1.3 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 12.1.3.

1. Starting the Repository Creation Utility (RCU) by doing the following:
   a. If you have not done so already, set the `JAVA_HOME` variable and add `JAVA_HOME/bin` to `$PATH`.
   b. Navigate to the *`ORACLE_HOME`*`/oracle_common/bin` directory on your system.
   c. 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 *Oracle Fusion Middleware 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 *Oracle Fusion Middleware Planning an Upgrade of Oracle Fusion Middleware*.

2.13 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 using the instructions in "Identifying Schemas that Can be Upgraded with the Upgrade Assistant" in *Oracle Fusion Middleware Upgrading with the Upgrade Assistant*.

The schemas listed in the *Oracle Fusion Middleware Upgrading with the Upgrade Assistant* guide are the component schemas that can be used to support your 12.1.3 components. From this list, identify the schemas that are used by the domain that is being upgraded.

Caution: If your domain is using schemas that are not supported by this upgrade, do not attempt to upgrade the domain. Review the *Oracle Fusion Middleware Understanding Interoperability and Compatibility* guide for more information on supported domain configurations.

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.
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.

Table 2–2 (Cont.) Upgrade Assistant Screens: Upgrading Schemas

Screen	Description and Action Required
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**. Some of the schemas might need system DBA privileges to upgrade. 3. Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Make sure that you select the correct schema from the list. The default schema shown may not be the one you intend to upgrade. 4. Click **Next**. For more information on which schemas need to be upgraded, see Section 1.1.2.2, "Infrastructure 12c Requires Specific Database Schemas,". 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 Oracle Fusion Middleware 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. The Upgrade Progress status bar represents the number of upgrade processes that have been completed. It is NOT meant to identify time remaining. Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. 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 comp_id, owner, version, status, upgraded FROM schema_version_
registry where version like '12.1.3.%';
```

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:

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, run the following script and file a service request.

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

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

2.14 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

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. **Edition Based Database Users Only**: If your schemas are configured with EBR database, a default edition name must be manually supplied before you run the Reconfiguration Wizard.

   Run the following SQL command to set the default edition:

   ```
   ALTER DATABASE DEFAULT EDITION = edition_name;
   ```

   where `edition_name` is the name of the default database edition name.
4. 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.
5. 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 such as those listed in Table 2–3.

Depending on the options you select, you may or may not see all of the screens shown in Table 2–3. In some advanced configurations you will see additional screens. Use the online help for more information on advanced configurations.

Review the full reconfiguration process in "Reconfiguring WebLogic Domains" in *Upgrading Oracle WebLogic Server*.

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 *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.
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 review 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
Database Configuration Type	If you provided the data source connection details in the previous screen, the database connection details will be automatically entered. If the information was not provided on this screen, select **RCU Data** and provide the database credentials to retrieve the schema information for all 12.1.2 schemas that are included in the domain. If you select this option, the fields on this screen are activated. Fill in each field, using the connection information that you specified for the STB component in the Repository Creation Utility (RCU). When you have provided the connection information, click **Get RCU Configuration** to retrieve the schema information. For more information, click **Help**, or refer to "Database Configuration Type" in *Upgrading Oracle WebLogic Server*.
JDBC Component Schema	By default, the schema information will be displayed if you selected **Get RCU Data** on the previous screen and the schema owner is the same for all schemas. If you need to make changes to the data source settings for any of the schemas listed on the screen, select the check box adjacent to each schema name. The changes you make in the fields at the top of the screen will update the schema (or schemas) you have selected below. Make sure that you select only those schemas you want to modify. Notes: ■ You must specify the 11*g* schema details for those schemas that you upgraded in Section 2.13. For the others, specify the 12.1.3 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.
Node Manager	This screen is displayed only if the domain you are reconfiguring is currently using a **Per Domain Default Location** Node Manager. Select **Migrate Existing Configuration** and provide the location of the per domain default location. Enable **Apply Oracle Recommended Defaults**. Provide **Node Manager Credentials**. This is a new User that is being created to administer the Node Manager. The password will be required during start-up, for any components now handled by the Node Manager (including the OHS). **Note:** When upgrading a domain and changing from a per-host Node Manager configuration to a per-domain Node Manager configuration, if you are using custom scripts to start and stop the WebLogic Server environment, you must manually update the scripts to change the Node Manager home location to the new domain-based location. For more information on configuring the Node Manager, see "Default Node Manager Configuration" in *Administering Node Manager for Oracle WebLogic Server*.

Table 2–3 (Cont.) Reconfiguration Wizard Screens

Screen	Description and Action Required
Advanced Configuration	Select all categories (if any) for which you want to perform advanced configuration. For each category you select, the appropriate configuration screen is displayed to allow you to perform advanced configuration. If you do not select any items on this screen, the Configuration Summary screen is displayed next. The screens that appear next will vary depending on which categories you select. Use the Online Help for information on each screen. **NOTE**: If Node Manager is available and you do not select it, you must manually configure Node Manager as described in "Completing the Node Manager Configuration" in *Upgrading Oracle WebLogic Server*. The Node Manager advanced option is available only if you are reconfiguring a domain that is currently using a per-host Node Manager configuration. It enables you to switch to a per-domain Node Manager or continue using the existing per-host Node Manager.
Configuration Summary	Review the detailed configuration settings of the domain before continuing. You can limit the items that are displayed in the right-most panel by selecting a filter option from the View drop-down list. If you need to change the configuration, click Back to return to the appropriate screen. 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.

2.15 Upgrading the Domain Component Configurations Using the Upgrade Assistant

Follow the instructions in this section to upgrade any additional domain component configurations, such as OWSM policy metadata structure and adapter 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**. Select the WebLogic Component Configurations option to upgrade component configurations for a managed WebLogic Server domain. You must enter the domain directory for the domain that you are upgrading now. Click **Next**.
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.
UMS Configuration	Use this screen to specify the login credentials of the remote managed servers hosting your UMS 11g configuration files. The Upgrade Assistant automatically copies remote configuration files if all necessary prerequisites are met and the required login information is provided. **NOTE**: If the UA is unable to locate the managed servers or the configuration files, you will have to manually copy the files and then restart the Upgrade Assistant. For more information, see Section 2.16.3, "Upgrade Assistant: Copying UMS Configuration Files".
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.

2.16 Troubleshooting the Infrastructure Upgrade

If you an encounter an error during the Infrastructure upgrade, refer to the following sections:.

- Reconfiguration Wizard: WebLogic Server Domain Upgrade Process
- Upgrade Assistant: Authentication Failure - JSch Exception: Auth Fail
- Upgrade Assistant: Copying UMS Configuration Files

Caution: As with most Fusion Middleware errors, errors that are detected in the Examine phase can be fixed and the Upgrade Assistant can continue to run. Errors that occur during the Upgrade phase, however, must be corrected using the restored backup files and the upgrade process must be started from the beginning. Do not attempt to rerun an upgrade that errors during the Upgrade phase. The environment should be considered unstable and will need to be restored to its pre-upgrade state.

For more information, see "General Troubleshooting Guidelines" in *Oracle Fusion Middleware Upgrading with the Upgrade Assistant*.

2.16.1 Reconfiguration Wizard: WebLogic Server Domain Upgrade Process

If an error occurs while reconfiguring your domain, refer to the "Important Notes About the Domain Upgrade Process" in *Upgrading Oracle WebLogic Server*.

2.16.2 Upgrade Assistant: Authentication Failure - JSch Exception: Auth Fail

When Running the Upgrade Assistant to upgrade Weblogic Component Configurations, if you provide incorrect login credentials for a UMS server, you will see the following exception in UA log files:

```
[upgrade.UCSUMS.UCSUMS_CONFIGURATION_PLUGIN] [tid: 110] [ecid:
88ab893d-a523-4a83-b5a6-f7b1cf8cb029-00000001,0] [[
com.jcraft.jsch.JSchException: Auth fail
```

The resolution to this error depends on when the error occurred:

If this error occurred during the **Examine phase** (before Upgrade phase): Verify that the username and password you entered are valid for all managed servers and directories and that the username provided has privileges for ssh. Once you have corrected the error, retry the connection.

If this error occurred during the **Upgrade phase**, your upgrade operation did not succeed and you will need to restore your files from backup and start the upgrade again. Make sure that you use the correct server login credentials when prompted.

Caution: Errors that occur during the Upgrade phase are non-reentrant, meaning you cannot simply correct the error and continue through the upgrade. Once you click Upgrade, if an error occurs then the environment must be restored from backup before you start the upgrade process again.

2.16.3 Upgrade Assistant: Copying UMS Configuration Files

If the Upgrade Assistant fails to automatically copy the UMS configuration files, you must stop the upgrade and manually copy the configuration files before attempting to upgrade UMS.

Note: This process is required only if the Upgrade Assistant fails to automatically copy the configuration files or if you prefer to copy the configuration files manually.

This section describes the location of the User Messaging Service (UMS) configuration files that are copied from the remote managed server nodes to the Admin server while upgrading UMS from 11g to 12c. Note that the Upgrade Assistant can automatically copy the remote configuration files, if all necessary prerequisites are met and the required login information is provided. For more information about using Upgrade Assistant to copy configuration files, see *Oracle Fusion Middleware Upgrading with the Upgrade Assistant*.

However, if the Upgrade Assistant cannot locate your files, then you must copy the configuration files from the remote managed server to the same location on the Admin server running the upgrade. The configuration files that must be copied include the UMS server configuration files (appconfig.xml), driver configuration files (driverconfig.xml), and the user preferences files (businessterms.xml). These files are located in the /applications folder for each managed server, as shown in Table 2–5.

After manually copying the configuration files from the managed server to the Admin server, you must start the Upgrade Assistant again using the procedures from Section 2.15, "Upgrading the Domain Component Configurations Using the Upgrade Assistant"

Table 2–5 Configuration File locations

Configuration file	Location
UMS Server (`appconfig.xml`)	<DOMAIN_ HOME>/config/fmwconfig/servers/<MANAGED_SERVER_ NAME>/applications/usermessagingserver/configuration/app config.xml
Driver Configuration (`driverconfig.xml`)	<DOMAIN_ HOME>/config/fmwconfig/servers/<MANAGED_SERVER_ NAME>/applications/usermessagingdriver-<DRIVER_ NAME>/configuration/driverconfig.xml
User Preferences (`businessterms.xml`)	<DOMAIN_ HOME>/config/fmwconfig/servers/<MANAGED_SERVER_ NAME>/applications/usermessagingserver/configuration/bus inessterms.xml

Note: If there are multiple drivers deployed in a domain, then you must ensure that configuration files for all drivers are copied. This can be achieved by replacing the <DRIVER_NAME> with as many drivers deployed in that domain.

2.17 Performing the Post-Upgrade Tasks

After you upgrade Oracle Fusion Middleware 11*g* Application Developer to Oracle Fusion Middleware 12.1.3 Infrastructure, you must complete the post-upgrade tasks described in Chapter 4, "Tasks to Perform After Upgrade".

Part II

Upgrading to Oracle Infrastructure 12c (12.1.3) From a Previous 12c Release

This section describes the process used to upgrade from a previous release of Oracle Infrastructure 12c to Infrastructure 12c (12.1.3).

Part I contains the following chapter:

3

Upgrading to 12c from a Previous Release

This chapter describes the process of upgrading to the Oracle Infrastructure 12c (12.1.3) from a previous Oracle Infrastructure 12c release.

This chapter contains the following topics:

- Section 3.1, "Performing the Required Pre-Upgrade Tasks"
- Section 3.2, "Using the Upgrade Assistant to Upgrade Your 12c Schemas"
- Section 3.3, "Using the Reconfiguration Wizard to Upgrade Your 12c Domain"
- Section 3.4, "Using the Upgrade Assistant to Upgrade Your 12c Configurations"

Caution: The tasks described in this chapter apply only when you are upgrading from an existing Infrastructure 12c release to the Infrastructure 12c (12.1.3) release. If you are upgrading an 11g environment to 12c (12.1.3), use the procedures documented in Part I, "Upgrading to Oracle Infrastructure 12c (12.1.3) from 11g".

3.1 Performing the Required Pre-Upgrade Tasks

When you upgraded to Infrastructure 12c, you were instructed to complete the pre-upgrade steps in Chapter 2 before starting the upgrade. Review those tasks and make sure that you have completed them.

While most of the pre-upgrade steps apply when upgrading from 11g, some of the steps, such as backing up your existing environment, will still apply - and are critical to the success of your upgrade. The list below describes the pre-upgrade steps you should complete before you upgrade your existing 12c Infrastructure:

- Section 2.1, "Backing Up Your Existing Oracle Fusion Middleware 11g Environment"

  Before any upgrade, be sure that you have created a complete backup of your current environment. If there is a problem with the upgrade, you may need to restore your environment and restart the upgrade process.

- Section 2.2, "Upgrading the Oracle Database"

  Review the latest system requirements and verify that your database is still supported.

- Section 2.8, "Installing Oracle Fusion Middleware Infrastructure 12.1.3 on APPHOST"

  You will need to install the 12.1.3 Infrastructure distribution before starting the upgrade.

- Section 2.9, "Installing Oracle HTTP Server 12.1.3 on APPHOST"

  If your 12c domain includes Oracle HTTP Server instances that are associated with the domain, you must upgrade to Oracle HTTP Server 12.1.3.

- Section 2.10, "Stopping Servers and Processes"

  The 12c upgrade is conducted completely offline. Make sure that all of the 12c servers and processes are stopped before starting the upgrade.

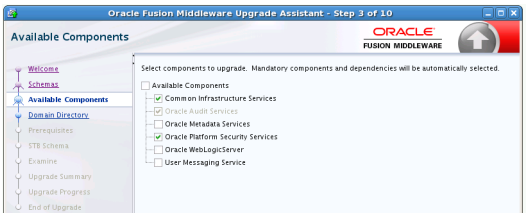
Note: You can click the screen names in the tables below to get additional information about the fields or function of the screen.

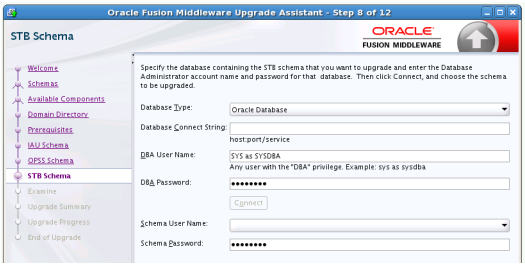
3.2 Using the Upgrade Assistant to Upgrade Your 12c Schemas

Run the Upgrade Assistant (UA) to upgrade the STB, Audit and OPSS schemas:

```
$12.1.3_ORACLE_HOME/oracle_common/upgrade/bin
```

```
./ua
```

Upgrade Assistant 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. Select the following components (related schemas shown): ■ Common Infrastructure Services - Service Table (_STB) ■ Oracle Platform Security Services (_OPSS) ■ Audit Services (_IAU, IAU_APPEND, _IAU_VIEWER) 
Domain Directory	Enter the absolute path to the existing 12c (12.1.2) WebLogic domain directory, or click **Browse** to navigate to and select the domain directory you are upgrading.
Prerequisites	Check each box if the prerequisites for schema upgrade are met. The Upgrade Assistant will not validate these prerequisites.

Upgrade Assistant Screen	Description and Action Required
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**. Some of the schemas might need system DBA privileges to upgrade. 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 STB schema, the screen title appears as "STB Schema" as shown below. ▪ When upgrading the WLS schema (*prefix*_WLS) or UMS schema (*prefix*_UMS), you cannot connect to the database first to obtain the list of available schemas; instead, you must enter the schema name in the **Schema User Name** field, and then click **Next**. ▪ Note that the password is automatically entered. If you use different passwords for your schemas, make sure that you update the Password field. ▪ For information on the fields required to connect to the database, click **Help**, or refer to "Select Schemas" in Oracle Fusion Middleware Upgrading with the Upgrade Assistant. The screen below shows the Service Table schema screen. 
Examine	Verify that the Source Version is 12.1.2 for each schema.
Upgrade Summary	Before you click Upgrade, review the information on this screen to ensure you are upgrading the correct schemas. Specifically you should make sure that the source version is 12.1.3 and the target version is 12.1.3.
Upgrade Progress	This screen shows you the progress of the schema upgrade. The Upgrade Progress status bar represents the number of upgrade processes that have been completed. It is NOT meant to identify time remaining. Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary.

Upgrade Assistant Screen	Description and Action Required
Upgrade Success	This screen shows you the final result of the upgrade. Verify that each schema was successfully upgraded to 12.1.3.

3.3 Using the Reconfiguration Wizard to Upgrade Your 12c Domain

Use the Reconfiguration Wizard to upgrade your existing 12c domain to the latest version.

UNIX Operating Systems, navigate to the following 12.1.3 directory to launch the Reconfiguration Wizard:

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

Windows Operating Systems:

```
ORACLE_HOME\oracle_common\common\bin\reconfig.cmd
```

Table 3–1 Reconfiguration Wizard Screens

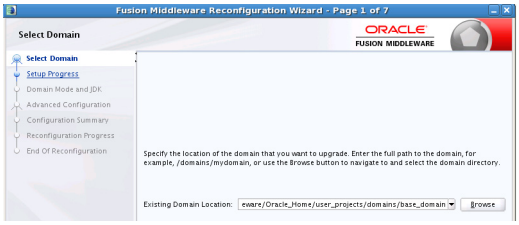
Reconfiguration Wizard Screen	Description and Action Required
Select Domain	Enter the absolute path to the existing 12.12 domain directory, or click **Browse** to navigate to and select the domain directory. 
Reconfiguration Setup Progress	Shows the progress of the application of reconfiguration templates.
Domain Mode and JDK	Domain mode cannot be changed. This setting is imported from the mode specified when the domain was created using the Configuration Wizard. **NOTE**: Oracle recommends that you run a trial upgrade on a development domain first before upgrading a production domain. Any upgrade issues or errors should be resolved before upgrading the production environment. 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 *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.

Table 3–1 (Cont.) Reconfiguration Wizard Screens

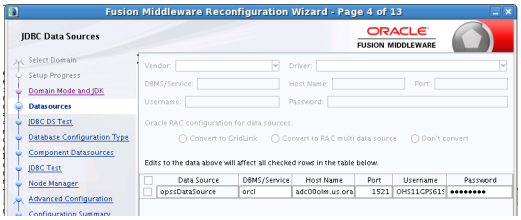
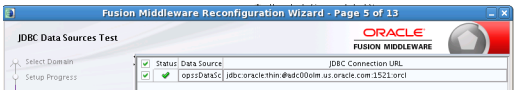
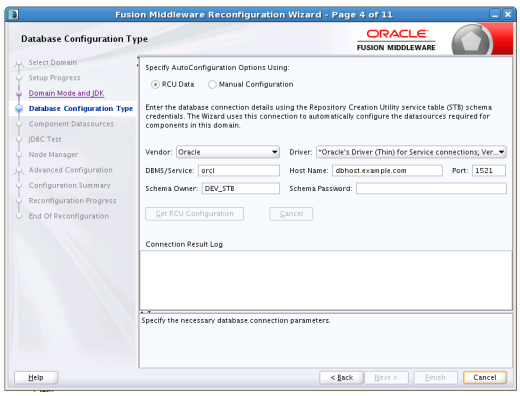
Reconfiguration Wizard Screen	Description and Action Required
JDBC Data Sources	Use this screen to review the configuration of the JDBC data sources defined in your domain source. You should see the OPSS data source automatically configured in this screen.  For information about the fields on this page, 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*.
Database Configuration Type	If you provided the data source connection details in the previous screen, the database connection details will be automatically entered. If the information was not provided on this screen, select **RCU Data** and provide the database credentials to retrieve the schema information for all 12.1.2 schemas that are included in the domain. If you select this option, the fields on this screen are activated. Fill in each field, using the connection information that you specified for the STB component in the Repository Creation Utility (RCU). When you have provided the connection information, click **Get RCU Configuration** to retrieve the schema information.  For more information, click **Help**, or refer to "Database Configuration Type" in *Upgrading Oracle WebLogic Server*.

Table 3–1 (Cont.) Reconfiguration Wizard Screens

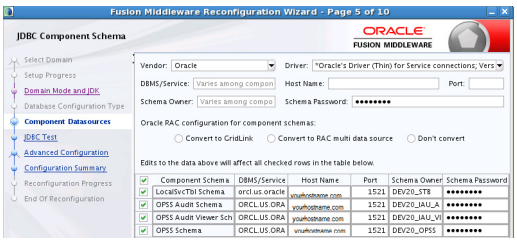
Reconfiguration Wizard Screen	Description and Action Required
JDBC Component Schema	By default, the schema information will be displayed if you selected **Get RCU Data** on the previous screen and the schema owner is the same for all schemas. If you need to make changes to the data source settings for any of the schemas listed on the screen, select the check box adjacent to each schema name. The changes you make in the fields at the top of the screen will update the schema (or schemas) you have selected below. Make sure that you select only those schemas you want to modify.  **Notes**: ■ You must specify the 12.1.2 schema details for those schemas that you upgraded in Section 3.2. ■ 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.

Table 3–1 (Cont.) Reconfiguration Wizard Screens

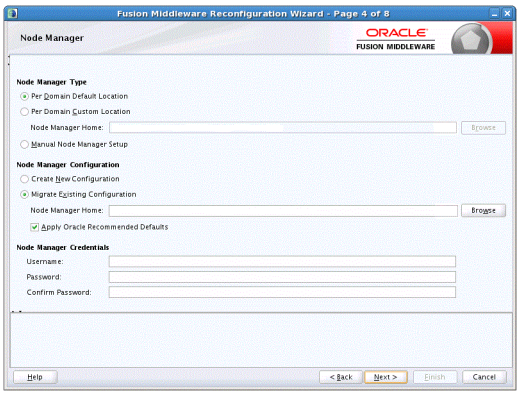
Reconfiguration Wizard Screen	Description and Action Required
Node Manager	This screen is displayed only if the domain you are reconfiguring is currently using a **Per Domain Default Location** Node Manager. Select **Migrate Existing Configuration** and provide the location of the per domain default location. Enable **Apply Oracle Recommended Defaults**. Provide **Node Manager Credentials**. This is a new User that is being created to administer the Node Manager. The password will be required during start-up, for any components now handled by the Node Manager (including the OHS). **Note:** When upgrading a domain and changing from a per-host Node Manager configuration to a per-domain Node Manager configuration, if you are using custom scripts to start and stop the WebLogic Server environment, you must manually update the scripts to change the Node Manager home location to the new domain-based location. For more information on configuring the Node Manager, see "Default Node Manager Configuration" in *Administering Node Manager for Oracle WebLogic Server*. 
Advanced Configuration	Select all categories (if any) for which you want to perform advanced configuration. For each category you select, the appropriate configuration screen is displayed to allow you to perform advanced configuration. If you do not select any items on this screen, the Configuration Summary screen is displayed next.  **NOTE**: If Node Manager is available and you do not select it, you must manually configure Node Manager as described in "Completing the Node Manager Configuration" in *Upgrading Oracle WebLogic Server*. The Node Manager advanced option is available only if you are reconfiguring a domain that is currently using a per-host Node Manager configuration. It enables you to switch to a per-domain Node Manager or continue using the existing per-host Node Manager.
Managed Servers	Use this screen to review the settings for an existing Managed Server(s), if any.
Clusters	Use this screen to review the settings for an existing Cluster(s), if any.

Table 3–1 (Cont.) Reconfiguration Wizard Screens

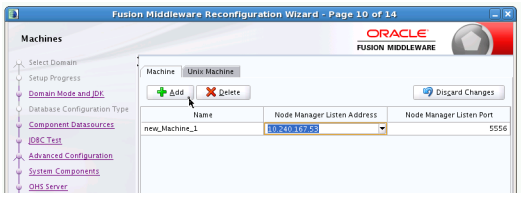
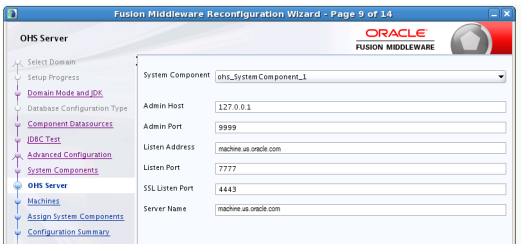
Reconfiguration Wizard Screen	Description and Action Required
Coherence Clusters	This screen is displayed only if you included Coherence in the WebLogic Server installation. It lists the Coherence cluster that is automatically added to the domain.
Machines	In a WebLogic domain, the machine definitions identify physical units of hardware and are associated with the WebLogic Server instances or system components (such as OHS servers) that they host. Use this screen to review the Host/Port settings of the existing Node Manager details that will be included in the reconfiguration as part of the upgrade. Make sure that an actual Listen Address is provided. **Do not use Local Host**. 
System Components	Use this screen to review the current settings for the existing OHS component that is being Reconfigured as part of the co-located upgrade process. To prevent upgrade errors, do not make any changes to the OHS setting on this screen. You can also use this screen to add or delete system components. 
OHS Server	Use this screen to confirm that the Reconfiguration Wizard is picking up the correct Port details (that come from their Source Installation) for each OHS in the domain. **NOTE**: If you are reconfiguring a domain that includes more than one OHS instance, the "System Component" toggle option will appear at the at the top of this screen. Select this option to flip between the different instances, in order to update their configuration details during reconfiguration. Though the OHS servers can have the same Host details, each one must be assigned unique Port details. If they do not already show different Port Details on this screen, these details must be edited to make them different. 

Table 3–1 (Cont.) Reconfiguration Wizard Screens

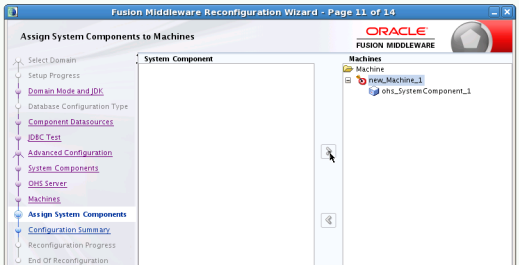
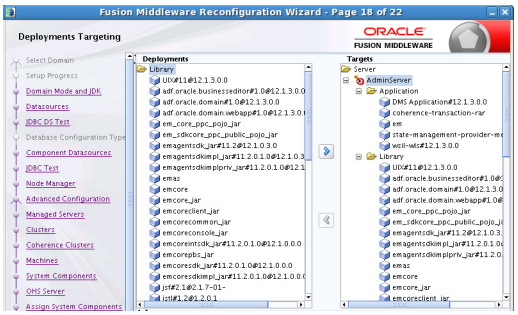
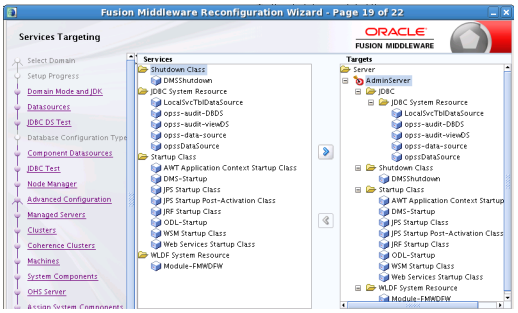
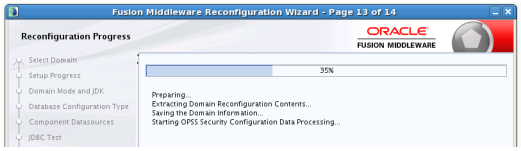
Reconfiguration Wizard Screen	Description and Action Required
Assign System Components to Machines	Use this screen to review the assignment of system components to machines that you defined. **NOTE**: This screen show the OHS component being assigned to the Node Manager. This will reconfigure the OHS Instance to assign it to the 12.1.3 Node Manager, which is required to Start/Stop the OHS instances. 
Deployments Targeting	Applications associated with the product for which you are configuring the domain are targeted automatically to the Managed Server created for that product or to the cluster to which that Managed Server is assigned. In this screen, you can target applications to additional servers and clusters. Use this screen to review the deployment targeting in the domain. 
Services Targeting	Services that are associated with the product for which you are configuring the domain are targeted automatically, to the Managed Server created for that product or to the cluster to which that Managed Server is assigned. In this screen, you can target services to additional servers and clusters. Use this screen to review the service targeting in the domain. 

Table 3–1 (Cont.) Reconfiguration Wizard Screens

Reconfiguration Wizard Screen	Description and Action Required
Configuration Summary	Review the detailed configuration settings of the domain before continuing. You can limit the items that are displayed in the right-most panel by selecting a filter option from the View drop-down list. 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.

3.4 Using the Upgrade Assistant to Upgrade Your 12c Configurations

Do the following to use the Upgrade Assistant to upgrade your existing 12c domain configurations:

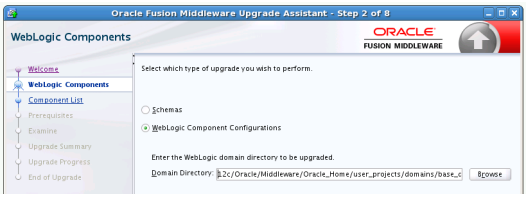
Run the Upgrade Assistant (UA) from the 12.1.3 Oracle Home to upgrade the component configuration:

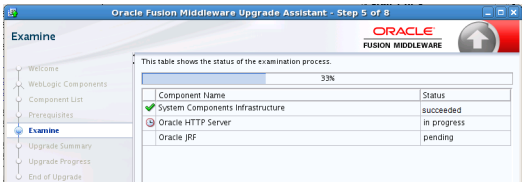
UNIX Operating Systems:

```
ORACLE_HOME/oracle_common/upgrade/bin/.ua
```

Windows Operating Systems:

```
ORACLE_HOME\oracle_common\upgrade\bin\ua.bat
```

Upgrade Assistant 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 **WebLogic Component Configurations**. 

Upgrade Assistant Screen	Description and Action Required
Available Components	This screen provides a list of installed Oracle Fusion Middleware components that have domain configurations that will be upgraded. 
Prerequisites	Check each box if the prerequisites for schema upgrade are met. The Upgrade Assistant will not validate these prerequisites.
Examine	Verify that the upgrade is successful for each component. 
Upgrade Summary	Before you click **Upgrade**, review the information on this screen.
Upgrade Progress	This screen shows you the progress of the upgrade. The Upgrade Progress status bar represents the number of upgrade processes that have been completed. It is NOT meant to identify time remaining. Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary.
Upgrade Success	This screen shows you the final result of the upgrade.

Part III

Performing Post Upgrade Procedures

The procedures documented in this section of the guide may or may not be required for your deployment. Read through the sections to determine which (if any) post-upgrade procedures are required.

Part I contains the following chapters:

4

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:

4.1 Upgrade Validation Checklist

After the upgrade, make sure that you can successfully complete the following basic administration tasks. Detailed information about how to perform each of these steps is documented in the other sections of this chapter.

> **Note:** The order in which you start the following servers is important and failure to start (or stop) them in the correct order can cause issues with the deployment.
>
> For more information, see Section 4.2, "Starting and Stopping Servers in the Correct Order".

1. Verify that the Node Managers can be started.
2. Verify that the Administration Server and any Managed Servers (if included) from the original 12.1.2 Domain Home `bin` directory can be started. Windows operating system users may find it useful to start the servers from a new command prompt (and not the one used to launch the 12c Upgrade Assistant).

   Note: OHS does not need a Managed Server for it's own configuration.
3. Verify that the Webtier (OHS server) can be started.

4. Verify that you can access the Administration console and Enterprise Manager using the following URLs:
   - `http://machinename.my_company_com:administration_port`
   - `http://machinename.my_company_com:administration_port/em`

4.2 Starting and Stopping Servers in the Correct Order

After the Infrastructure upgrade, you should start all of the Administration and Managed servers for your environment and make sure that they are functioning as expected.

The order in which you START and STOP the servers is important, and failure to start or stop them in the correct order can cause issues with the deployment.

Note: Procedures for starting and stopping Oracle Fusion Middleware, including the Administration Server, Managed Servers, and components are provided in "Starting and Stopping Oracle Fusion Middleware" in *Oracle Fusion Middleware Administering Oracle Fusion Middleware*.

Start servers in this order:

1. Node Managers

   See Also: Section 4.2.1, "Starting the Node Manager".
2. Administration Server

   See Also: Section 4.2.2, "Starting the Administration Server"
3. Webtier (including the Oracle HTTP Server)

   See Also: Section 4.2.3, "Starting the Webtier (OHS Server)"
4. Oracle Web Services Manager (OWSM) Managed Server (if installed)
5. Service-Oriented Architecture (SOA) Managed Server (if installed)
6. Oracle Service Bus (OSB) Managed Server (if installed)
7. Business Activity Monitoring (BAM) Managed Server (if installed)

Stop servers in this order:

1. Business Activity Monitoring (BAM) Managed Server (if installed)
2. Oracle Service Bus (OSB) Managed Server (if installed)
3. Service-Oriented Architecture (SOA) Managed Server (if installed)
4. Oracle Web Services Manager (OWSM) Managed Server (if installed)
5. Webtier (including the Oracle HTTP Server)
6. Admin Server
7. Node Managers

For more information on stopping servers, see "Starting and Stopping Oracle Fusion Middleware" in *Oracle Fusion Middleware Administering Oracle Fusion Middleware*.

4.2.1 Starting the Node Manager

To start Node Manager, go to the *DOMAIN_HOME*/bin directory.

On UNIX operating systems, start the Node Manager as shown below, using nohup and nm.out as an example output file:

```
nohup ./startNodeManager.sh > nm.out&
```

On Windows operating systems, run:

```
startNodeManager.cmd
```

Note: To use a per-host Node Manager configuration, ensure that -Dohs.product.home=<MW_HOME> is set for JAVA_OPTIONS in the appropriate Node Manager script. Run the command NodeManager.cmd/sh if you are not using the Node Manager service. Run the command installNodeMgrSvc.cmd if you are using the Node Manager service.

The Host and Port used, should match those used with your Upgraded setup. For more information on how to edit the Host/Port values in the file to install the Node Manager Service with the correct details, see "Configuring Java Node Manager" in *Oracle Fusion Middleware Node Manager Administrator's Guide for Oracle WebLogic Server*

4.2.2 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

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 12.1.3:

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

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

4.2.3 Starting the Webtier (OHS Server)

After starting the Node Manager and Administration Server, you can start the Oracle HTTP (OHS) server. Navigate to the *DOMAIN_HOME*/bin directory and execute the following command:

On Unix operating systems:

```
DOMAIN_HOME/bin/startComponent.sh ohs_name
```

On Windows operating systems:

```
DOMAIN_HOME\bin\startComponent.cmd ohs_name
```

For more information, see "Starting and Stopping System Components" in *Oracle Fusion Middleware Administering Oracle Fusion Middleware*.

4.3 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 the administration tools from the new 12.1.3 Oracle home and not from the previous Oracle home.

During the upgrade process, some OWSM documents, including policy sets and predefined documents such as policies and assertion templates, may need to be upgraded. If a policy set or a predefined document is upgraded, its version number is incremented by 1.

4.4 Reapplying Customizations to setDomainEnv

To complete the upgrade of your application environment to 12.1.3 it might be necessary to re-apply any customizations to startup scripts, such as `setDomainEnv`. During the upgrade, the scripts are overwritten with new 12.1.3 versions. Any customizations you had made in previous releases will need to be reapplied.

For more information, see "Re-apply Customizations to Startup Scripts".

Note: To prevent losing your customizations in a future upgrade, see Section 2.3, "Maintaining Your Custom setDomainEnv Settings (Optional)".

4.5 Configuring an Oracle Fusion Middleware 12c Audit Data Store

If you were using a file-based audit store in Oracle Fusion Middleware11g, then after the upgrade to Oracle Fusion Middleware 12c, 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*.

4.6 Maintaining the Security Status of Older Java EE Web Service Applications

The introduction of global policy attachment support for Java EE web services and clients in 12.1.3 may impact the backwards compatibility of existing Java EE web services and clients (12.1.2 and earlier). If a Java EE web service or client endpoint that depends on the absence of a policy falls within the scope of a global policy attachment,

the presence of the globally-attached policy will alter the security behavior of that endpoint.

> **Note:** In Fusion Middleware 12.1.2 and earlier, global policy attachments defined for SOAP Web Service and SOAP Web Service Client subject types were applicable to Oracle Infrastructure web services and clients only, and were ignored by Java EE web services and clients. After upgrading to 12.1.3, the global policy attachments defined for these subject types will apply to Java EE web services and clients, as well, and may alter the security behavior of existing Java EE web services and clients.

To maintain backwards compatibility, you can disable the global policy attachments for specific endpoints by attaching an OWSM no behavior policy to the service or client, such as `no_authentication_service_policy`, `no_authorization_service_policy`, or no_messageprotection_service_policy. For more information, see "Disabling a Globally Attached Policy" in *Securing Web Services and Managing Policies with Oracle Web Services Manager*.

> **Note:** You can use the WebLogic `Wssp1.5-No-Op.xml` no behavior policy. However, since WebLogic security policies can only be attached to web service clients programmatically, it will require a change to your code. For more information, see "Disabling a Globally Attached Policy" in *Securing WebLogic Web Services for Oracle WebLogic Server*

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

Table 4–1 lists some common administration tasks you will likely want to perform after upgrading to Infrastructure 12.1.3.

Table 4–1 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 *Oracle Fusion Middleware 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 *Oracle Fusion Middleware Administering Oracle Fusion Middleware*.

Table 4–1 (Cont.) Basic Administration Tasks

Task	Description	More Information
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 *Oracle Fusion Middleware 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 *Oracle Fusion Middleware 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 *Oracle Fusion Middleware Administering Oracle Fusion Middleware*.

4.8 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

4.8.1 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

4.8.2 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

4.8.2.1 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*.

4.8.2.2 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 12.1.3" in *Installing Oracle JDeveloper*.

4.8.2.3 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 *Oracle Fusion Middleware Developing Oracle Infrastructure Web Services*.